GUHRING

DRILLING TOOLS

NEW!

INTERACTIVE PDF

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Dr. Jörg Gühring

President

Oliver Gühring

Sales and Marketing Director

7000

Employees world-wide

3500

Employees Germany

Internal training and further education program

International knowledge transfer thanks to world-wide exchange program for employees



Dietmar Pfränger

R&D, Logistics, Technical and Production Director

Bernd Schatz

Financial and Commercial Director



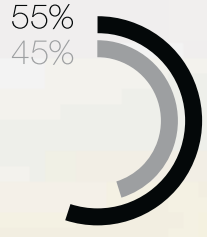
Core segment tools

90000

Standard tools

4000

Tool types





TOOL MATERIALS
Internal carbide production

Optimal co-ordination of all tool parameters thanks to own R&D sectors



MACHINE & EQUIPMENT DIVISION
Internal machine tool and equipment divisions





GEOMETRIES

Internal R&D for tool development

COATINGS

Internal coating systems and
internal coating development



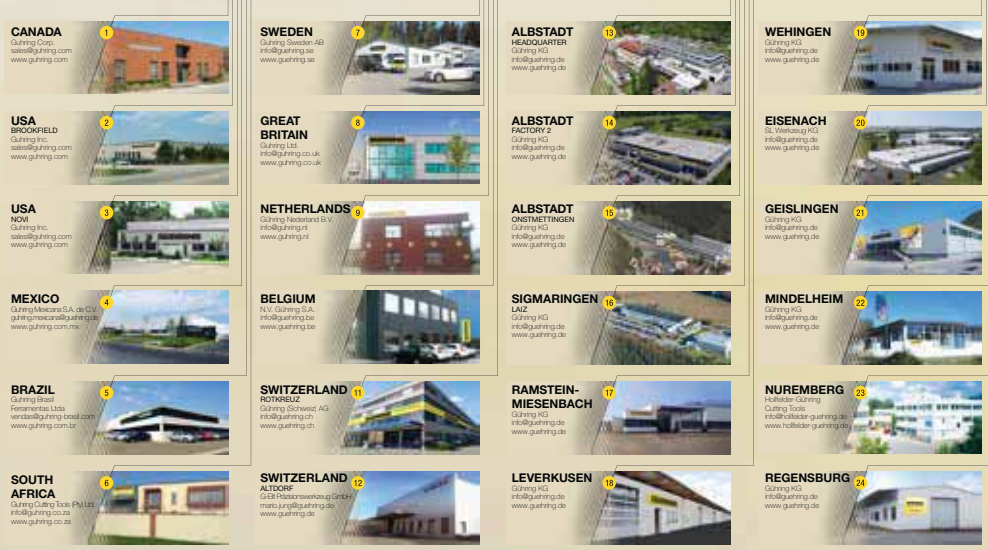
Everything from one supplier – comprehensive and global

With a global network of manufacturing sites Guhring develops and produces precision tools for every major market. Customers from various industries rely on our innovative cutting tools, manufactured to the highest level of uniform quality standards across the globe.

48
SUBSIDIARIES

MORE THAN 70
PRODUCTION AND SERVICE CENTERS





With innovative technologies Guhring meets specific customer requirements from process proposal to production application of precision tools – flexibly, promptly, globally. To aide in this experience, field experts across the world are available to offer on-site support at customer locations. Production, service and contact persons are available from one supplier world-wide.

Internal carbide production

Internal machine construction

Internal coating plants

Highest quality standards world-wide



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Everything from ONE SUPPLIER

Our variety of drills ranges from micro-precision drills down to Ø 0.05 mm to special solutions up to Ø 180 mm, including both HSS and solid carbide. 50,000 products to cover every application.



SOLID CARBIDE RATIO DRILLS

from page 273

INTERCHANGEABLE INSERT DRILLING SYSTEM HT 800

from page 369

HSS/HSCO TWIST DRILLS

- straight shank
- Morse taper shank

from page 89

DEEP HOLE DRILLS

- single-fluted and two-fluted gun drills
- spiral deep hole drills

from page 355

1:1

ZOOM

MICRO-PRECISION DRILLS
CARBIDE + HSS-E-PM

from page 81 & 247

NC SPOTTING DRILLS & CENTER DRILLS

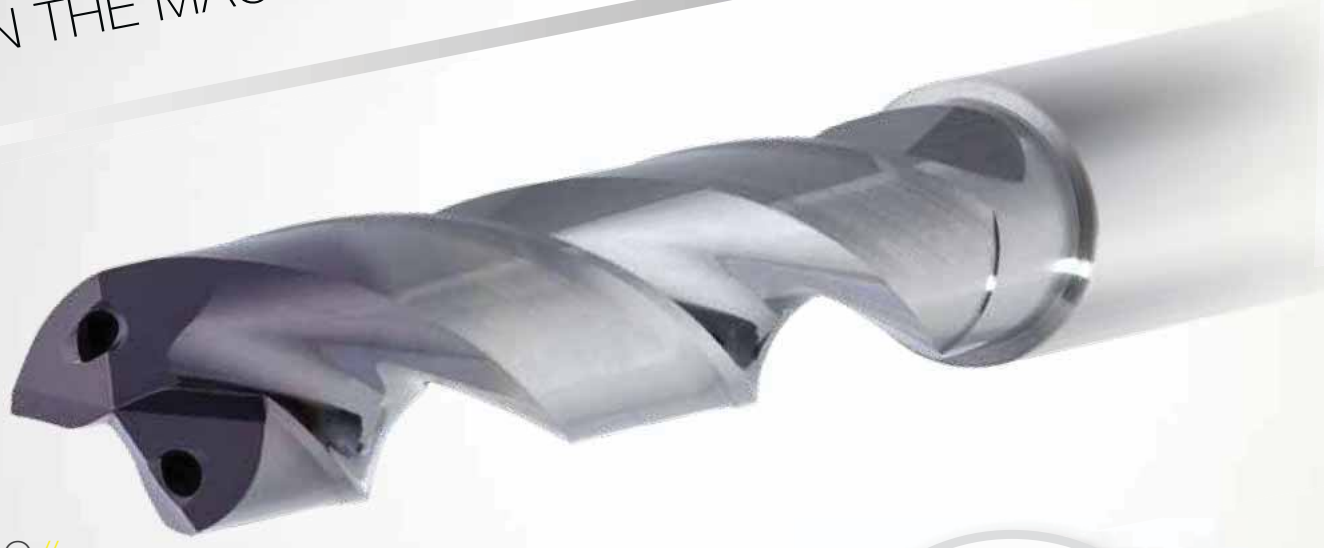
from page 35

Innovations

Guhring sets the standard with every innovation. Perfection in research, development and tool manufacturing. Machining perfection is our aspiration.

PREMIUM QUALITY
IN THE MACHINING OF STEEL

NEW



//RATIO//

RT 100 S

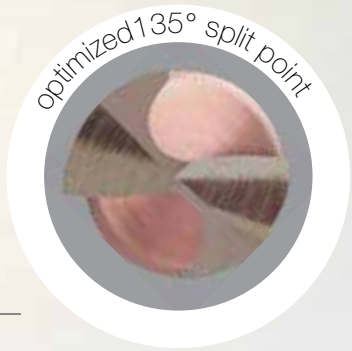
// Optimized micro-geometry for steel
// High cutting parameters
// Consistently long tool life



NEW

AeroX

OPTIMIZED DRILL CORE
Heavily reduced tapered core for additional tool stability while simultaneously minimizing forces

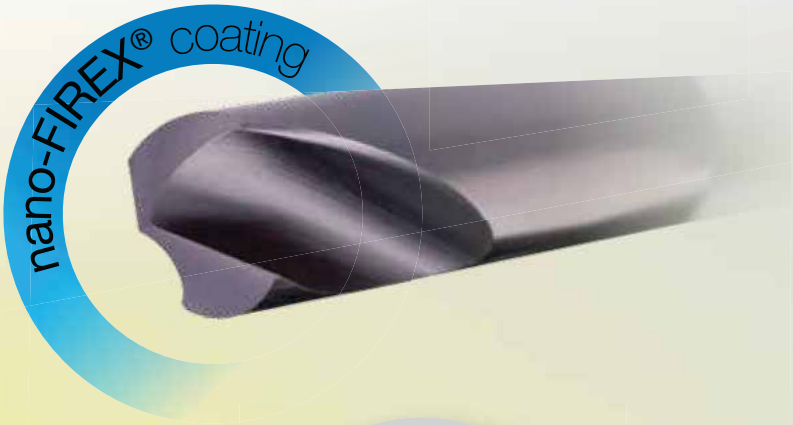




// HSCO8 twist drills for assembly work in general or high-alloyed materials, titanium and aluminum materials
// Quick drill advance thanks to optimized 135° NAS 907 split point

NEW

nano-FIREX® coating
for maximum wear and heat resistance



HSCO
NC spotting drills
with nano-FIREX® coating

// Accurate spotting with higher cutting parameters and tool life
// Maximum performance thanks to nano-FIREX® coating

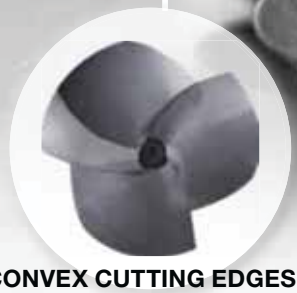


Innovations

State-of-the-art materials require progressive machining processes. Guhring secures the technology leadership with trend-setting research and innovative concepts for rotary cutting tools.

SpyroTec

THE INNOVATIVE, HELICAL HSS AND HSCO COUNTERSINK



CONVEX CUTTING EDGES

// Three different convex cutting edges in combination with three unequal helix angles enable extremely stable and low-vibration cutting processes without any chatter marks.

TiAlN COATING

// The titanium aluminum nitride coating provides high hardness and excellent thermal protection.

CUTTING MATERIAL

// The high-speed steel cobalt substrate holds up well in high temperature applications, providing long tool life in a wide variety of materials.

NEW

MORE ECONOMICALLY EFFICIENT DRILLING *of aluminum materials*



//RATIO//

RT 100 AL

// Entire material range of soft and tough aluminum found in both wrought and cast alloys.
// Special drills for Ø 3 mm to 20 mm and depths up to 12xD
// Wet machining and MQL possible



Open point geometry
and **concave cutting edge form**
for optimal chip formation.

Sharp, micro-treated cutting edges
for ideal cutting behavior,
even in heat-treated AlSi-alloys.



Thanks to **the highly polished surface finish of the web thinning, front rake face and clearance areas** the process temperatures are significantly reduced, preventing formation of built-up edges.

The tools are designed with a **bright finish**.

The **polished flute geometry** of the RT 100 Al minimizes friction, and guarantees reliable chip evacuation and prevents material adhesion.

Specially manufactured carbide grades for the machining of non-ferrous metals.

HA shank to DIN 6535.

R&D FIBER COMPOSITE PLASTICS
tooling solutions for highly abrasive materials

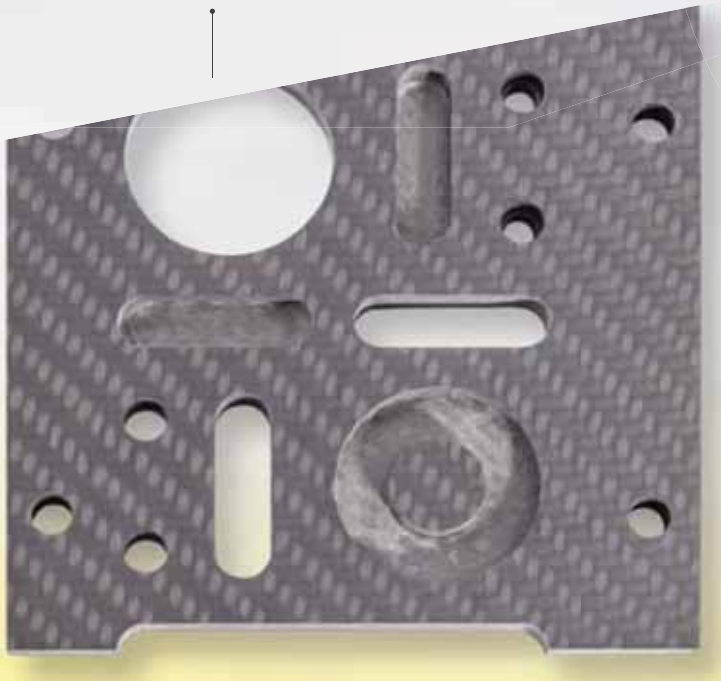
MACHINING OF FCP

Optimized tools for the machining of glass fibre reinforced plastics (GFRP) and carbon fiber reinforced plastics (CFRP) as well as stack materials

// Components without fiber projections
// Delamination-free component surface
// No damage to component through “peel-up” or “push out”
// Prevention of fiber splitting “pull-out” on component
// Minimizing burr development
// Prevention of thermal damage

FCP DRILLING OPERATION
with optimal machining quality

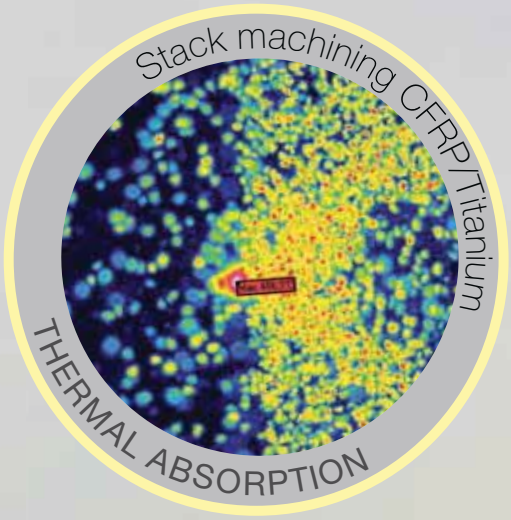




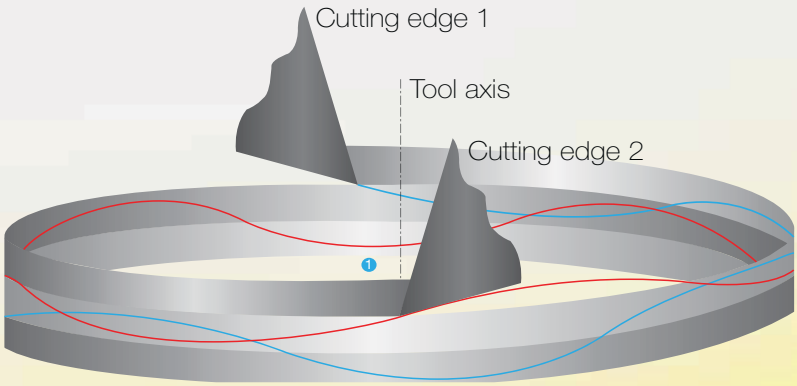
NEW

VIBRATION SUPPORTED MACHINING

process optimization thanks to overlayed movement



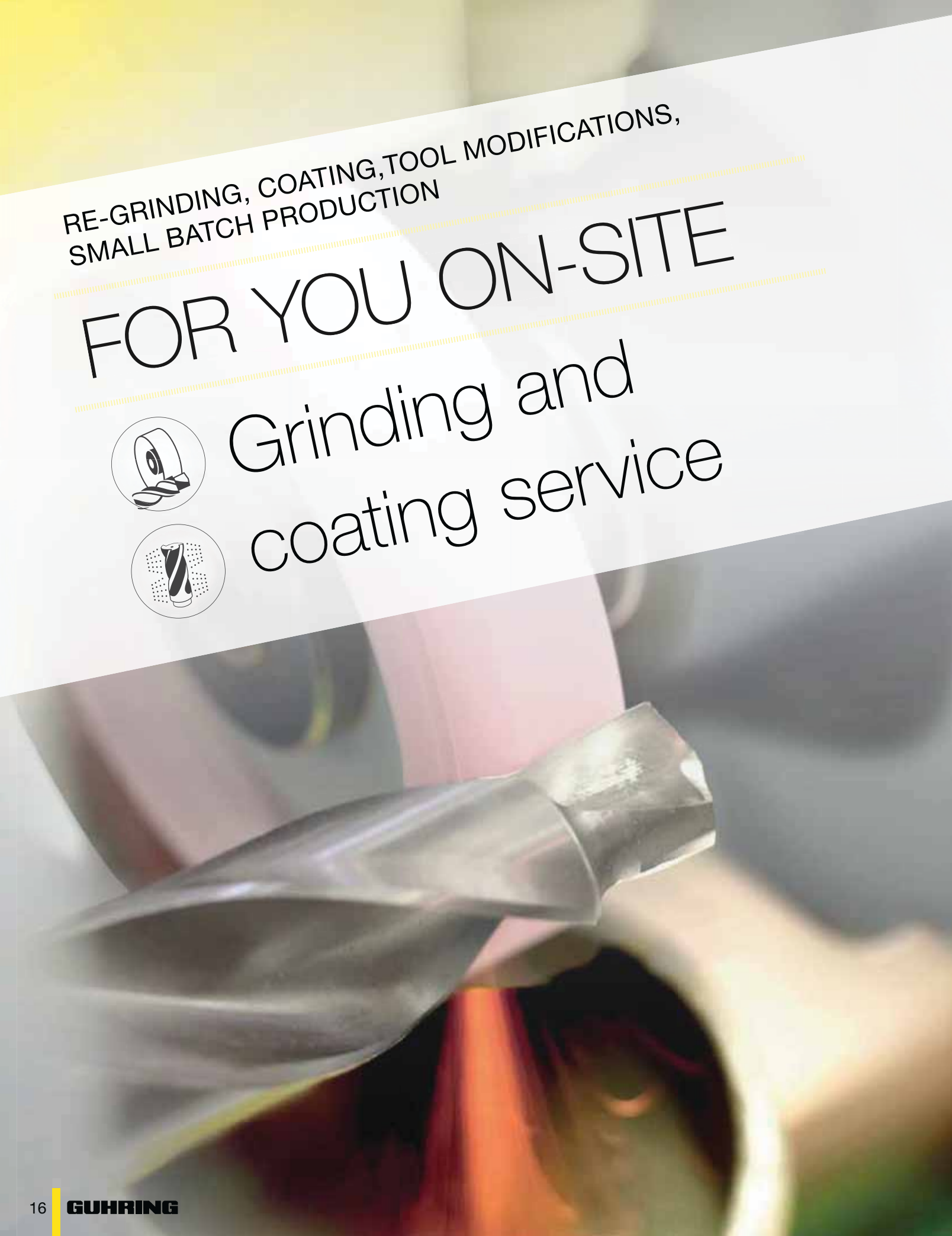
// More favorable chip development/improved chip fracture
// Improved chip evacuation
// Production of nominal fracture points in chip
// Reduced built-up edge
// Lower machining forces and temperatures



RE-GRINDING, COATING, TOOL MODIFICATIONS,
SMALL BATCH PRODUCTION

FOR YOU ON-SITE

Grinding and coating service















Special tools made to customer requirements – Guhring's recipe for success

We respond to customer requirements with **excellence in machining**. Guhring provides support through ingenuity, innovative technologies, and expertise in process improvement and precision custom tool design in order to meet customer-specific requirements.



GM300

TOOL HOLDERS



Tool holders and clamping devices for every application

ISO code

P	Steel, high-alloyed steel
M	Stainless steel
K	Grey cast iron, spher, graphite/mall. cast iron
N	Aluminum and other non-ferrous metals
S	Special, super and titanium alloys
H	Hardened steel and chilled cast iron

On the following tool selection pages you will find recommendations regarding application suitability based on material groups for every tool.

★ = 1st choice
● = Optimal suitability
○ = Limited suitability

Pictograms

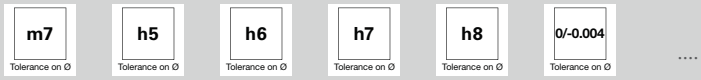
Tool material



Cutting depth



Tolerance on Ø



Shank form



straight | weldon flat | whistle notch | straight cylindrical | Morse taper

Cutting direction



right | left | neutral

Internal coolant



Form



Point angle



Web thinning



Type



Coatings

- bright
- steam oxide
- nitrided
- nitrided lands
- TiN
- TiAlN
- SuperA™
- nano-A™
- FIREX/nano-FIREX
- TiCN
- nano-Si™
- nickel-plated

Material classifications

	Material group	Examples
P	Common structural steels	A283, A516, Gr50, 30, 35, 42, 45, 50, 55, 60, 65, 70, 75 , 80, 85, 90, 100, 110, 135, 140, 145, 150, 160
	Free-cutting steels	1151, 1215, L10, 10L10, 10L15, 10L17, 10L20, 10L23, 10L25, 10L30, 10L35, 10L40, 10L42, 10L45, 10L49, 10L50, 10L55, 11L15, 11L16, 11L17, 11L37, 11L38, 11L39, 11L41, 11L44, 11L46, 12L11, 12L12, 12L13, 12L14, 12L15, 41L25, 41L30, 41L35, 41L40, 41L42, 41L47, 41L50 51L15, 51L17, 51L20, 86L20, 86L40
	Unalloyed heat-treatable steels	1005, 1006, 1008, 1009, 1010, 1011, 1012, 1013, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1025, 1026, 1029, 1030, 1033, 1035, 1037, 1038, 1039, 1040, 1042, 1043, 1044, 1045, 1046, 1049, 1050, 1053, 1055, 1059, 1060, 1064, 1065, 1069, 1070, 1071, 1074, 1075, 1078, 1080, 1084, 1085, 1086, 1090, 1095
	Alloyed heat-treatable steels	1330, 1335, 1340, 1345, 2340, 3140, 3145, 3150, 3230, 3240, 3335, 3340, 3435, 3450, 4032, 4037, 4063, 4130, 4135, 4137, 4140, 4142, 4145, 4147, 4150, 4161, 4337, 4340, 4640, 5045, 5046, 5060, 5130, 5132, 5135, 5140, 5145, 5157, 5150, 5155, 5160, 6130, 6135, 6140, 6145, 6150, 7140, 6145, 6150, 7140, 8630, 8632, 8635, 8637, 8640, 8642, 8645, 8650, 8650, 8660, 8735, 8740, 8742, 9250, 9254, 9255, 9260, 9262, 9840, 9850
	Unalloyed case hardened steels	1005, 1006, 1008, 1009, 1010, 1011, 1012, 1013, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1025, 1026, 1029, 1030, 1033, 1035, 1037, 1038, 1039, 1040, 1042, 1043, 1044, 1045, 1046, 1049, 1050, 1053, 1055, 1059, 1060, 1064, 1065, 1069, 1070, 1071, 1074, 1075, 1078, 1080, 1084, 1085, 1086, 1090, 1095
	Alloyed case hardened steels	2317, 2512, 2515, 2517, 3115, 3120, 3215, 3220, 3312, 3316, 3325, 4012, 4023, 4024, 4027, 4028, 4118, 4119, 4125, 4317, 4320, 4419, 4422, 4427, 4608, 4615, 4617, 4620, 4621, 4626, 4718, 4720, 4815, 4817, 4820, 5015, 5115, 5117, 5120, 6115, 6118, 6120, 6125, 8115, 8615, 8617, 8620, 8622, 8625, 8627, 8720, 8822, 9310, 9315, 9317
	Nitriding steels	1132, 1137, 1138, 1139, 1140, 1141, 1144, 1145, 1146, 1151
	Tool steels	A2, A3, A4, A5, A6, A8, A9, A10, O1, O2, O6, O7, A7, D2, D3, D4, D5, D7, H10, H11, H12, H13, H14, H19, H20, H21, H22, H23, H24, H25, H26, H41, H42, H43, L1, L3, W1, W2, W5
	High speed steels	M1, M2, M3-1, M3-2, M4, M6, M7, M10, M30, M33, M34, M36, M41, M42, M43, M44, M46, M47, T1, T2, T4, T5, T6, T8, T15
	Spring steels	5150, 5155, 6145, 6150, 9255
H	Hardened steels >48-60 Rc	Heat Treated Steels
M	Stainless steels, sulphured	203 Ez, 303 Se, 303 Ma, 303 Pb, 303 PlusX, 430F Se, 416 Se, 416 PlusX, 420F, 420F Se, 440F, 440F Se
	austenitic	201, 202, 301, 302B, 303, 304, 304L, 305, 308, 309, 309S, 310, 310S, 314, 316, 316L, 317, 321, 330, 347, 348, 384, 385, Nitronic 32, Nitronic 33, Nitronic 40, Nitronic 50, Nitronic 60, 17-7PH
	martensitic	403, 405, 410, 414, 416, 420, 422, 430, 431, 440A, 440B, 440C, 446, 501, 502, 630, Greek Ascoloy
K	Cast iron	A48-20 B, A48-30 B, A48-40 B, A48-50B, A159G1800, A159G2500, A159G3000, A159G3500, A159G4000
	Spheroidal graphite iron and malleable cast iron	60-10-18, 60-40-18, 65-45-12, 80-55-06, 100-70-03, 120-90-02, 32510, 35018, 40010, 50005, 60004, 70003, 80002, 90001, A220-70003, A220-8002, A536
	Chilled cast iron	
S	Special alloys	Inconel, Hastelloy, Monel, Nimonic, MAR-M246, DS-Ni, Waspalloy, Rene41
	Ti and Ti-alloys	Ti6AL4V, 5390A, TiCu2
N	Aluminium and Al-alloys	EC 1060, 1100, 1145, 1175, 1235, 2011, 2014, 2017, 2018, 2021, 2024, 2025, 2117, 2218, 2219, 2618, 3003, 3004, 3005, 4032, 4032-T6, 5005, 5050, 5052, 5056, 5083, 5086, 5154, 5252, 5254, 5454, 5456, 5457, 5652, 5657, 6053, 6061, 6061-T6, 6063, 6066, 6070, 6101, 6151, 6253, 6262, 6463, 6951, 7001, 7004, 7005, 7039, 7049, 7050, 7075, 7075-T6, 7079, 7175, 7178
	Al wrought alloys	1100-0, 3003-H18, 5056-0, 2024-T4, 4043-H18
	Al cast alloys	295-T6, 319-F, 356-T6, 380-F, 384-F, 390-F, 443-F, 413-F, 518-F, 713-TS, 850-TS
	Magnesium alloys	AZ31B, AZ63A, AZ80A, AZ91C, EZ33A, HK31A, QE22A, ZK60A
	Copper, low-alloyed	C10100, C27000, C71500, C52400, C77000, C17200, C71500, C95500, C86500
	Brass, short-chipping	CUZn10, CUZn20

Center Drills, NC Spot Drills, & C-Sinks

Center drills, 60° angle

P	M	K	N	S	H	Tool illustration	Shank form	Standard	Form	Cutting direction	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
●	○	●	●	○			Cyl	DIN 333	A	R	HSS	○	0.500 - 12.500	581	504	36
●	○	●	●	○			Cyl	DIN 333	A	R	HSS	S	0.500 - 8.000	613	512	37
●	○	●	●	○			Cyl	DIN 333	A	L	HSS	○	0.500 - 12.500	582	504	38
●	○	●	●	○			Cyl	DIN 333	A	R	HSS	○	1.000 - 12.500	590	508	39
●	●	●	●	○			Cyl	DIN 333	A	R	M35 Cobalt	○	1.000 - 4.000	381	492	40
●	○	●	●	○			Cyl	ASME B94.11 M	A	R	HSS	○	#1 - #8	594	509	41
●	○	●	●	○			Cyl	BS 328	A	R	HSS	○	#1 - #7	292	487	42
●	○	●	●	○			Cyl	BS 328	A	L	HSS	○	#1 - #7	294	488	43
●	○	●	●	○			Cyl	WN	A	R	HSS	○	0.500 - 10.000	281	483	44
●	○	●	●	○			Cyl	WN	A	L	HSS	○	0.800 - 5.000	282	484	45
○	○	○	○	○	○		Cyl	WN	A	R	Carbide	○	0.500 - 6.300	736	524	46
●	○	●	●	○			Cyl	WN	A	R	HSS	○	1.000 - 3.150	280	483	47
●	○	●	●	○			Cyl	DIN 333	R	R	HSS	○	0.500 - 12.500	583	505	48
●	○	●	●	○			Cyl	DIN 333	R	R	HSS	S	0.800 - 8.000	614	512	49
●	○	●	●	○			Cyl	DIN 333	R	L	HSS	○	0.800 - 5.000	584	505	50
●	○	●	●	○			Cyl	WN	R	R	HSS	○	0.500 - 10.000	283	484	51
●	○	●	●	○			Cyl	WN	R	L	HSS	○	1.600 - 4.000	284	485	52
●	○	●	●	○			Flat	DIN 333	A	R	HSS	○	1.600 - 10.000	587	507	53
●	○	●	●	○			Flat	DIN 333	A	R	HSS	○	1.600 - 10.000	287	486	54
●	○	●	●	○			Flat	DIN 333	R	R	HSS	○	1.000 - 10.000	588	507	55
●	○	●	●	○			Flat	DIN 333	R	R	HSS	○	2.000 - 8.000	288	486	56

Center drills, 60°/120° double angle

P	M	K	N	S	H	Tool illustration	Shank form	Standard	Form	Cutting direction	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
●	○	●	●	○			Cyl	DIN 333	B	R	HSS	○	1.000 - 10.000	585	506	57
●	○	●	●	○			Cyl	DIN 333	B	L	HSS	○	1.000 - 10.000	586	506	58

Center Drills, NC Spot Drills, & C-Sinks

P	M	K	N	S	H	Tool illustration	Shank form	Coolant	Form	Cutting direction	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
Center drills, 60°/120° double angle																
●	○	●	●	○			Cyl	DIN 333	B	R	HSS	○	1.000 - 6.300	591	509	59
●	○	●	●	○			Cyl	WN	B	R	HSS	○	1.000 - 6.300	285	485	60
●	○	●	●	○			Cyl	ASME B94.11 M	B	R	HSS	○	#11 - #18	595	510	61
●	○	●	●	○			Flat	DIN 333	B	R	HSS	○	1.600 - 8.000	589	508	62
●	○	●	●	○			Flat	WN	B	R	HSS	○	1.600 - 5.000	289	487	63
90° NC-spot drills																
●	○	●	●	○			Cyl			R	HSS	○	3.000 - 25.400	557	502	64
●	○	●	●	○			Cyl			R	HSS	S	3.000 - 25.400	568	503	65
●	○	●	●	○			Cyl			R	HSS	○	6.350 - 25.400	559	502	66
●	●	●	●	○			B			R	M35 Cobalt	○	3.000 - 20.000	1136	531	67
●	●	●	●	○			B			R	M35 Cobalt	F	3.000 - 20.000	1133	530	68
○	○	○	○	○	○		Cyl			R	Carbide	○	4.000 - 20.000	723	523	69
120° NC-spot drills																
●	○	●	●	○			Cyl			R	HSS	○	3.000 - 25.400	556	501	70
●	○	●	●	○			Cyl			R	HSS	S	3.000 - 25.400	567	503	71
●	●	●	●	○			B			R	M35 Cobalt	○	3.000 - 20.000	1134	530	72
●	●	●	●	○			B			R	M35 Cobalt	F	3.000 - 20.000	1135	531	73
○	○	○	○	○	○		HA			R	Carbide	○	5.000 - 20.000	724	523	74
142° NC-spot drills																
○	○	○	○	○	○		HB			R	Carbide	○	4.000 - 20.000	546	498	75
90° Countersinks, SpyroTec																
●	●	●	○	○			Cyl			R	M35 Cobalt	A	6.300 - 31.000	5500	549	76
●	●	●	○	○			Tri-Flat			R	M35 Cobalt	A	6.300 - 31.000	5501	549	77
●	○	●	○	○			Cyl			R	HSS	A	6.300 - 31.000	5503	549	78

HSS, HSCO, HSS-E-PM Drills

HSCO micro-precision drills

P	M	K	N	S	H	Tool illustration	Shank form	Coolant	Type	Cutting direction	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
•	•	•	•	○			Cyl		N	R	HSS-E-PM		0.050 - 1.920	301	488	82
•	•	•	•	○			Cyl		N	L	HSS-E-PM		0.130 - 1.850	303	489	84
•	•	•	•	○			Cyl		N	R	HSS-E-PM	S	0.160 - 1.900	660	518	86

Stub drills

P	M	K	N	S	H	Tool illustration	Shank form	Coolant	Type	Cutting direction	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
•		•	○				Cyl		N	R	HSS	>Ø 2,36	0.350 - 44.000	223	479	90
•		•	○				Cyl		N	L	HSS	>Ø 6,00	0.320 - 50.000	226	480	94
•		•	○				Cyl		N	R	HSS	S	0.500 - 30.160	653	516	97
			•				Cyl		H	R	HSS		0.690 - 21.000	224	479	100
			•				Cyl		W	R	HSS		1.000 - 20.000	225	480	102
•	○	○	•				Cyl		GT 80	R	HSS	>Ø 16,0	1.000 - 20.000	552	500	104
•	○	○	•				Cyl		GT 80	L	HSS	>Ø 16,0	1.000 - 19.840	553	501	107
•	•	•	○	•	○		Cyl		GV 120	R	M35 Cobalt	>Ø 2,36	0.400 - 25.400	329	491	109
•	•	•	○	•	○		Cyl		GV 120	R	M35 Cobalt	S	0.500 - 15.500	659	518	112
•	•	•	•				Cyl		GU500 DZ	R	M35 Cobalt		1.000 - 14.290	5524	556	114
•	•	•	•				Cyl		GU500 DZ	R	M35 Cobalt	S	1.000 - 14.290	5520	554	116
•	○	•	○	○	○		Cyl		GT500 DZ	R	HSS-E-PM	S	1.000 - 14.000	5521	554	118
•	○	•	○	○	○		Cyl		GT500 DZ	R	HSS-E-PM	F	1.000 - 14.290	515	495	120

Jobber drills

P	M	K	N	S	H	Tool illustration	Shank form	Coolant	Type	Cutting direction	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
•		•	○				Cyl		N	R	HSS	>Ø 2,36	0.200 - 20.000	205	476	124
•		•	○				Cyl		N	L	HSS	>Ø 6,00	0.200 - 20.000	208	477	130
•		•	○				Cyl		N	R	HSS	S	0.200 - 19.000	651	515	133
•		•	○				Cyl		N	L	HSS	S	0.250 - 14.250	664	519	137
			•				Cyl		H	R	HSS		0.200 - 20.000	206	476	139
			•				Cyl		W	R	HSS		0.200 - 20.000	207	477	142

(continued on next page)

HSS, HSCO, HSS-E-PM Drills

Jobber drills, continued

P	M	K	N	S	H	Tool illustration	Shank form	Coolant	Type	Cutting direction	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
●		●	●				Cyl		GT 100	R	HSS	>Ø 2,36	0.600 - 16.000	549	499	145
●		●	○				Cyl		GT 100	L	HSS	>Ø 2,36	1.000 - 15.500	550	499	148
●		●	●				Cyl		GT 100	R	HSS	S	1.000 - 15.000	652	515	150
●	○	●	○				Cyl		N	R	M35 Cobalt	>Ø 2,36	0.200 - 20.000	305	489	153
●	○	●	○				Cyl		N	L	M35 Cobalt	>Ø 6,00	0.360 - 18.500	308	490	157
○	●			●			Cyl		Ti	R	M35 Cobalt		0.200 - 19.000	605	511	159
○	●			●			Cyl		Ti	R	M35 Cobalt	S	0.500 - 14.500	657	517	162
○	●			●			Cyl		Ti	R	M35 Cobalt	F	0.400 - 15.000	2458	536	164
●	●	●	●	●	○		HE		GT80 IC	R	M35 Cobalt		5.000 - 20.000	1131	529	166
●	●	●	●	●	○		HE		GT80 IC	R	M35 Cobalt	S	5.000 - 20.000	1132	529	167
●	○	●	●				Cyl		GT 100	R	M35 Cobalt	>Ø 2,36	1.000 - 16.000	622	514	168
●	○	●	○				Cyl		GT 100	R	M35 Cobalt	S	1.000 - 15.000	658	517	171
●		○					Cyl		GT 100	R	M35 Cobalt	C	3.000 - 11.910	1221	533	173
○		●	○				Cyl		GT 100	R	M35 Cobalt	A	3.000 - 12.000	1223	533	174
●	●	●	●				Cyl		GU500 DZ	R	M35 Cobalt		1.000 - 14.290	5523	555	176
●	●	●	●				Cyl		GU500 DZ	R	M35 Cobalt	S	1.000 - 14.290	5519	553	178
●	●	●	●	●	○		Cyl		AeroX	R	M42 Cobalt		1.000 - 13.000	1018	527	180
●	○	●	○	○	○		Cyl		GT500 DZ	R	HSS-E-PM	S	1.000 - 14.000	5522	555	182
●	○	●	○	○	○		Cyl		GT500 DZ	R	HSS-E-PM	F	1.000 - 14.290	530	497	184

HSS, HSCO, HSS-E-PM Drills

Bushing length drills

P	M	K	N	S	H	Tool illustration	Shank form	Coolant	Type	Cutting direction	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
•		•	•				Cyl		N	R	HSS	S	1.000 - 13.000	666	519	188

Taper length drills

P	M	K	N	S	H	Tool illustration	Shank form	Coolant	Type	Cutting direction	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
•		•	○				Cyl		N	R	HSS	>Ø 2,36	0.400 - 36.510	217	478	189
•		•	○				Cyl		N	R	HSS	S	0.500 - 22.220	667	520	192
			•				Cyl		W	R	HSS		0.500 - 20.640	219	478	194
○			•				Cyl		GT 50	R	HSS		1.000 - 32.600	501	493	196
•		•	•				Cyl		GT 100	R	HSS	>Ø 2,36	1.000 - 14.000	535	498	199
•		•	•				Cyl		GT 100	R	HSS	S	1.000 - 14.000	668	520	202
•	○	•	•	○			Cyl		GT 100 IC	R	HSS		3.000 - 13.000	390	493	204
•	○	•	•	○			Cyl		N	R	M35 Cobalt	>Ø 2,36	0.500 - 22.000	317	490	205
○	•			•			Cyl		Ti	R	M35 Cobalt		1.000 - 15.000	617	513	207
○	•			•			Cyl		Ti	R	M35 Cobalt	S	1.000 - 10.200	669	521	209
•	•	•	•		○		Cyl		GT 100	R	M35 Cobalt	>Ø 2,36	1.000 - 16.000	336	491	210
•	•	•	•				Cyl		GU500 DZ	R	M35 Cobalt		1.000 - 14.290	5536	557	212
•	•	•	•				Cyl		GU500 DZ	R	M35 Cobalt	S	1.000 - 14.290	5537	557	214

Extra length drills, series 1

P	M	K	N	S	H	Tool illustration	Shank form	Coolant	Type	Cutting direction	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
•		•	○				Cyl		N	R	HSS	>Ø 2,36	1.600 - 13.000	235	481	218
○			•				Cyl		GT 50	R	HSS		2.000 - 12.700	524	496	220
•		•	•				Cyl		GT 100	R	HSS	>Ø 2,36	1.950 - 13.000	502	494	221
•		•	•	○			Cyl		GT 100	R	HSS	S	2.000 - 12.700	670	521	223
•	•	•	•	•	○		Cyl		GT 100	R	M35 Cobalt		2.700 - 10.000	618	513	224

HSS, HSCO, HSS-E-PM Drills

P	M	K	N	S	H	Tool illustration	Shank form	Coolant	Type	Cutting direction	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
Extra length drills, series 2																
•		•	•				Cyl		GT 100	R	HSS	>Ø 2,36	2.000 - 13.000	503	494	225
•		•	•	○			Cyl		GT 100	R	HSS	S	2.700 - 8.500	671	522	226
•	•	•	•	•	○		Cyl		GT 100	R	M35 Cobalt		3.000 - 10.000	619	514	227
Extra length drills, series 3																
•		•	•				Cyl		GT 100	R	HSS		2.500 - 13.000	504	495	228
Morse taper shank drills, jobber length																
•		•	○				MT		N	R	HSS	>Ø 2,36	2.380 - 79.370	245	481	232
•		•	○				MT		N	R	HSS	S	3.000 - 30.500	654	516	235
•	○	•	○				MT		N	R	M35 Cobalt		3.000 - 25.400	345	492	237
Morse taper shank drills, bushing length																
•		•	○				MT		N	R	HSS		4.000 - 29.370	257	482	239
•		•	•				MT		GT 100	R	HSS	>Ø 16,0	6.000 - 31.500	551	500	241
Morse taper shank drills, extra length series 1																
•		•	○				MT		N	R	HSS		8.000 - 50.000	266	482	242
•		•	•				MT		GT 100	R	HSS	>Ø 16,0	8.000 - 30.000	526	496	243
Morse taper shank drills, extra length series 2																
•		•	•				MT		GT 100	R	HSS	>Ø 16,0	8.000 - 30.000	527	497	244

Carbide Drills

P	M	K	N	S	H	Tool illustration	Cutting Depth	Coolant	Type	Shank form	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
General purpose carbide micro-precision drills																
•		•					5xD		N	HA	Carbide	A	0.100 - 3.000	3899	542	248
ExclusiveLine™ high-performance carbide micro-precision drills																
•	•	•	○	○			4xD		N	HA	Carbide	A	0.500 - 3.000	6400	566	250
•	•	•	○	○			5xD		N	HA	Carbide	A	1.400 - 3.000	6405	568	251
•	•	•	○	○			7xD		N	HA	Carbide	A	0.500 - 3.000	6401	567	252
•	•	•	○	○			8xD		N	HA	Carbide	A	1.400 - 3.000	6408	568	253
•	•	•	○	○			15xD		N	HA	Carbide	A	1.400 - 3.000	6412	569	254
Stub carbide drills																
○	○	○	•	○			~3xD		N	Cyl	Carbide	○	0.500 - 16.000	730	522	258
○	○	○	•	○			~3xD		N	Cyl	Carbide	F	1.000 - 16.000	2463	537	260
Jobber length carbide drills																
○	○	○	•	○			~5xD		N	Cyl	Carbide	○	1.000 - 12.700	732	524	264
○	○	○	•	○			~5xD		N	Cyl	Carbide	F	1.000 - 12.700	2464	537	266
•		•	•				8xD		GT 100	Cyl	Carbide	○	3.170 - 12.700	2601	539	268
•		•	•				8xD		GT 100	Cyl	Carbide	S	3.170 - 12.700	2602	540	270
3xD carbide drills																
○	•	○	○	○	○		3xD		RT 100 F	Cyl	Carbide	S	3.000 - 15.000	1702	536	274
•	○	•	○	○	○		3xD		RT 100 U	Cyl	Carbide	S	3.000 - 16.000	1242	534	276
•	○	•	○	○	○		3xD		RT 100 U	HE	Carbide	S	3.000 - 20.000	1184	532	278
•	○	•	○	○	○		3xD		RT 100 U	HA	Carbide	F	3.000 - 20.000	5514	552	280
	•			•	○		3xD		RT 100 US	HA	Carbide	a	3.000 - 12.700	5741	562	282

(continued on next page)

Carbide Drills

3xD carbide drills, continued

P	M	K	N	S	H	Tool illustration	Cutting Depth	Coolant	Type	Shank form	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
●				●	○		3xD		RT 100 HF	HA	Carbide	Y	3.000 - 20.000	8524	575	284
★	○	●	○	○	○		3xD		RT 100 U	HA	Carbide	F	3.000 - 20.000	5510	550	286
●	○	●	○	○	○		3xD		RT 100 U	HE	Carbide	F	3.000 - 20.000	5610	558	288
	★			●			3xD		RT 100 VA	HA	Carbide	a	3.000 - 20.000	8510	573	290
●				★	○		3xD		RT 100 HF	HA	Carbide	F	3.000 - 20.000	8520	574	292

5xD carbide drills

P	M	K	N	S	H	Tool illustration	Cutting Depth	Coolant	Type	Shank form	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
●	○	●	○	○	○		5xD		RT 100 U	Cyl	Carbide	S	3.000 - 16.000	1243	534	296
●	○	●	○	○	○		5xD		RT 100 U	HA	Carbide	F	3.000 - 20.000	5515	552	298
○	○	○	○	●	○		5xD		RT 100 F	HA	Carbide	S	3.000 - 20.000	1662	535	300
●	○	●	○	○	○		5xD		RT 100 U	HE	Carbide	S	3.000 - 20.000	1183	532	302
●	○	●	○	○	○		5xD		RT 100 U	HA	Carbide	F	3.000 - 20.000	5511	550	304
●	○	●	○	○	○		5xD		RT 100 U	HE	Carbide	F	3.000 - 20.000	5611	558	306
★	○	○	○	○	○		5xD		RT 100 S	HA	Carbide	F	3.000 - 20.000	5759	564	308
			★				5xD		RT100 Al	HA	Carbide	○	3.000 - 20.000	5768	563	310
	●			●	○		5xD		RT 100 US	HA	Carbide	a	3.000 - 20.000	5744	562	312
	★			●			5xD		RT 100 VA	HA	Carbide	a	3.000 - 20.000	8511	573	314
●				★	○		5xD		RT 100 HF	HA	Carbide	Y	3.000 - 20.000	8521	574	316
		★					5xD		RT 100 R	HA	Carbide	F	3.000 - 20.000	6501	569	318

3-flute 5xD carbide drills

P	M	K	N	S	H	Tool illustration	Cutting Depth	Coolant	Type	Shank form	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
○		○	○				5xD		GS 200 U	Cyl	Carbide	○	3.000 - 20.000	1452	535	320
○		○	○				5xD		GS 200 U	Cyl	Carbide	S	3.000 - 20.000	609	511	322
		●	●				5xD		FT 200 G	HA	Carbide	○	3.000 - 20.000	5518	553	324

Carbide Drills

P	M	K	N	S	H	Tool illustration	Cutting Depth	Coolant	Type	Shank form	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
7xD carbide drills																
●	○	●	○	○	○		7xD		RT 100 U	HA	Carbide	F	3.000 - 20.000	5512	551	328
●	○	●	○	○	○		7xD		RT 100 U	HE	Carbide	F	3.000 - 20.000	5612	559	330
	★			●	○		7xD		RT 100 US	HA	Carbide	a	3.000 - 12.700	5746	563	332
●				★	○		7xD		RT 100 HF	HA	Carbide	Y	3.000 - 16.000	8522	575	334
		★					7xD		RT 100 R	HA	Carbide	F	4.000 - 20.000	6502	570	335
8xD carbide drills																
★	○	○	○	○	○		8xD		RT 100 S	HA	Carbide	F	3.000 - 20.000	5760	564	337
12xD carbide drills																
●	○	●	○	○	○		12xD		RT 100 U	HA	Carbide	F	3.000 - 20.000	5525	556	339
RT 150 GG/GN straight flute drills																
		○	●				4xD		RT 150 GG	HA	Carbide	○	3.000 - 20.000	768	525	344
		●	○				4xD		RT 150 GG	HA	Carbide	○	3.000 - 20.000	6068	565	346
		○	●				7xD		RT 150 GG	HA	Carbide	○	3.000 - 20.000	769	526	348
		●	○				7xD		RT 150 GG	HA	Carbide	○	3.000 - 20.000	6069	565	349
		○	●				10xD		RT 150 GG	HA	Carbide	○	3.000 - 16.000	5513	551	350
		●	○				10xD		RT 150 GG	HA	Carbide	○	3.000 - 20.000	6070	566	351
		●	●				15xD		RT 150 GN	HA	Carbide	○	5.000 - 14.000	773	526	352
RT 100 T coolant fed deep hole twist drills																
●	●	●	○	○	○		15xD		RT 100 T	HA	Carbide	A	3.000 - 14.000	6509	570	356
●	●	●	○	○	○		20xD		RT 100 T	HA	Carbide	A	3.000 - 14.000	6511	571	357
●	●	●	○	○	○		25xD		RT 100 T	HA	Carbide	A	3.000 - 12.000	6512	571	358
●	●	●	○	○	○		30xD		RT 100 T	HA	Carbide	A	3.000 - 10.000	6513	572	359
●	●	●	○	○	○		40xD		RT 100 T	HA	Carbide	A	3.000 - 8.000	6514	572	360

Gun Drills

EB 100 solid carbide gun drills

P	M	K	N	S	H	Tool illustration	Cutting Depth	Coolant	Type	Shank form	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
●	●	○		○	○		25xD		EB 100	HA	Carbide	a	2.380 - 12.000	5646	560	364
●	●	○		○	○		50xD		EB 100	HA	Carbide	a	2.380 - 8.000	5647	561	364
●	●	○		○	○		75xD		EB 100	HA	Carbide	a	2.380 - 6.000	5648	561	365

EB 100 carbide fixed length gun drills w/steel shanks

P	M	K	N	S	H	Tool illustration	Cutting Depth	Coolant	Type	Shank form	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
○	○	○	●	●	○		45,00		EB 100	HA	Carbide		1.200 - 3.200	5024	548	366
○	○	○	●	●	○		80,00		EB 100	HA	Carbide		1.200 - 5.000	5020	548	366
○	○	○	●	●	○		120,00		EB 100	HA	Carbide		1.500 - 5.000	5026	548	366
○	○	○	●	●	○		160,00		EB 100	HA	Carbide		1.500 - 8.000	5021	548	366

EB 80 conventional brazed head gun drills

P	M	K	N	S	H	Tool illustration	Cutting Depth	Coolant	Type	Shank form	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
○	●	○		●	○		40xD		EB 80	HA	Carbide	C	3.970 - 12.700	5641	559	367
○	●	○		●	○		80xD		EB 80	HA	Carbide	C	4.950 - 12.650	5642	560	367

Replaceable Tip Drills

HT 800 drill bodies

P	M	K	N	S	H	Tool illustration	Cutting Depth	Coolant	Type	Shank form	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
							1xD		HT 800 WP	HE		Ni	11.000 - 40.000	4105		372
							1.5xD		HT 800 WP	HE		Ni	11.000 - 40.000	4106		373
							3xD		HT 800 WP	HE		Ni	11.000 - 40.000	4107		375
							5xD		HT 800 WP	HE		Ni	11.000 - 40.000	4108		377
							7xD		HT 800 WP	HE		Ni	11.000 - 31.990	4109		379
							10xD		HT 800 WP	HE		Ni	11.000 - 31.990	4110		381

HT 800 drill inserts

P	M	K	N	S	H	Tool illustration		Type	Shank form	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
○	○	○	○	○	○		Pilot Drilling	HT 800 WP		Carbide	a	11.000 - 40.000	4111	542	383
○		•					Cast Iron	HT 800 WP		Carbide	F	11.000 - 40.000	4113	544	386
			•				Aluminum	HT 800 WP		Carbide	○	11.000 - 40.000	4114	545	389
•	○	○					Steel	HT 800 WP		Carbide	F	11.000 - 40.000	4112	543	392
○	•			○	○		Stainless Steel	HT 800 WP		Carbide	a	11.000 - 40.000	4115	546	395
•							Steel Beams	HT 800 WP		Carbide	F	11.000 - 40.000	4229	547	398

HT 800 countersink inserts

P	M	K	N	S	H	Tool illustration		Type	Shank form	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
			•				Aluminum			Carbide	○		7635		399
•	○	○		○	○		Steel			Carbide	S		7645		400
○		•					Cast Iron			Carbide	A		7632		401

HT 800 clamping screws

Tool illustration		Series no.	Cutting data page	Page
		6128		402
		4071		403

Replaceable Tip Drills

P	M	K	N	S	H	Tool illustration	Cutting Depth	Coolant	Type	Shank form	Tool material	Coating	Diameter (mm)	Series no.	Cutting data page	Page
RT 800 drill bodies																
							3xD		RT 800 WP	HE		Ni		5242		404
							5xD		RT 800 WP	HE		Ni		5243		405
							7xD		RT 800 WP	HE		Ni		5248		406
RT 800 drill inserts																
●	○	●	○						RT 800 WP		Carbide	S	16.000 - 40.500	1047	527	407
●	○	●	○						RT 800 WP		Carbide	F	16.000 - 40.500	2485	538	409
		○	●						RT 800 WP		Carbide		16.000 - 40.000	2747	540	411
RT 800 clamping screws																
														1071		413
Torque wrenches																
														4915		414
Torx socket sets																
														4917		415
Torx screwdriver																
														1612		416

Re-production – even in part – is not permitted.

Possible misprints or any type of intermediate changes do not entitle to any claims.
All DIN marked products can be supplied deviating from the catalogue dimensions as long as they correspond to the specified DIN standard.

NC SPOT DRILLS AND CENTER DRILLS



Center drills, 60° angle

Series no. **581**

DIN 333	A	N	118°		R
Standard	Form	Type	Point angle	Web Thinning	Cutting direction

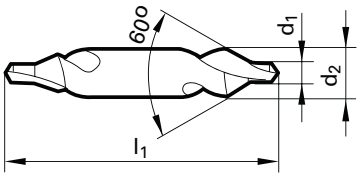
Tool material **HSS**

Surface

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000 • relieved cone • without protective countersink
• for center holes to DIN 332, part 1, form A • d1 ≤ 0.8 mm: not double ended





Speeds and feeds information on pg. 504

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0197*	0.50*	3.15	25.00	9005810005000
0.0315*	0.80*	3.15	25.00	9005810008000
0.0394	1.00	3.15	31.50	9005810010000
0.0492	1.25	3.15	31.50	9005810012500
0.0630	1.60	4.00	35.50	9005810016000
0.0787	2.00	5.00	40.00	9005810020000
0.0984	2.50	6.30	45.00	9005810025000
0.1240	3.15	8.00	50.00	9005810031500
0.1575	4.00	10.00	56.00	9005810040000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.1969	5.00	12.50	63.00	9005810050000
0.2480	6.30	16.00	71.00	9005810063000
0.3150	8.00	20.00	80.00	9005810080000
0.3937	10.00	25.00	100.00	9005810100000

Center drills, 60° angle

Series no. **613**

DIN 333 Standard | A Form | N Type | 118° Point angle | Web Thinning | R Cutting direction

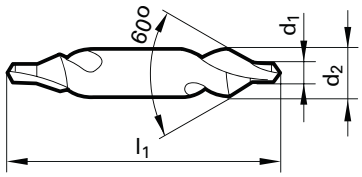
Tool material **HSS**

Surface **S**

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000 • relieved cone • without protective countersink
• for center holes to DIN 332, part 1, form A • d1 ≤ 0.8 mm: not double ended
• increased wear resistance





Speeds and feeds information on pg. 512

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0197*	0.50*	3.15	25.00	9006130005000
0.0315*	0.80*	3.15	25.00	9006130008000
0.0394	1.00	3.15	31.50	9006130010000
0.0492	1.25	3.15	31.50	9006130012500
0.0630	1.60	4.00	35.50	9006130016000
0.0787	2.00	5.00	40.00	9006130020000
0.0984	2.50	6.30	45.00	9006130025000
0.1240	3.15	8.00	50.00	9006130031500
0.1575	4.00	10.00	56.00	9006130040000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.1969	5.00	12.50	63.00	9006130050000
0.2480	6.30	16.00	71.00	9006130063000
0.3150	8.00	20.00	80.00	9006130080000

Center drills, 60° angle

Series no. **582**

WN	A	N	118°		L
Guhring Std.	Form	Type	Point angle	Web Thinning	Cutting direction

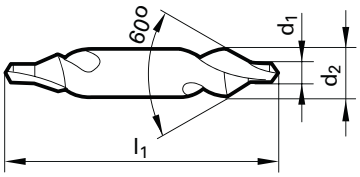
Tool material **HSS**

Surface ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000 • relieved cone • without protective countersink
• for center holes to DIN 332, part 1, form A • d1 ≤ 0.8 mm: not double ended





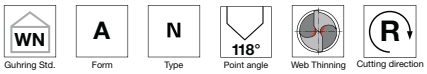
Speeds and feeds information on pg. 504

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0197*	0.50*	3.15	25.00	9005820005000
0.0315*	0.80*	3.15	25.00	9005820008000
0.0394	1.00	3.15	31.50	9005820010000
0.0492	1.25	3.15	31.50	9005820012500
0.0630	1.60	4.00	35.50	9005820016000
0.0787	2.00	5.00	40.00	9005820020000
0.0984	2.50	6.30	45.00	9005820025000
0.1240	3.15	8.00	50.00	9005820031500
0.1575	4.00	10.00	56.00	9005820040000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.1969	5.00	12.50	63.00	9005820050000
0.2480	6.30	16.00	71.00	9005820063000
0.3150	8.00	20.00	80.00	9005820080000

Center drills, 60° angle

Series no. **590**



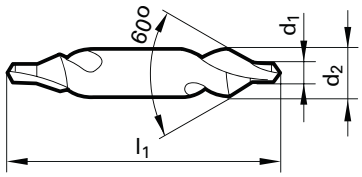
Tool material **HSS**

Surface ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000 • relieved cone
• with reinforced neck to provide high fracture resistance
• without protective countersink
• recess between countersink and hole for additional lubricant space
• for center holes to DIN 332, part 1, form A





Speeds and feeds information on pg. 508

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0394	1.00	3.15	31.50	9005900010000
0.0492	1.25	3.15	31.50	9005900012500
0.0630	1.60	4.00	35.50	9005900016000
0.0787	2.00	5.00	40.00	9005900020000
0.0984	2.50	6.30	45.00	9005900025000
0.1240	3.15	8.00	50.00	9005900031500
0.1575	4.00	10.00	56.00	9005900040000
0.1969	5.00	12.50	63.00	9005900050000
0.2480	6.30	16.00	71.00	9005900063000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.3150	8.00	20.00	80.00	9005900080000
0.3937	10.00	25.00	100.00	9005900100000

Center drills, 60° angle

Series no. **381**

DIN 333	A	N	118°		R
Standard	Form	Type	Point angle	Web Thinning	Cutting direction

Tool material: **HSCO**

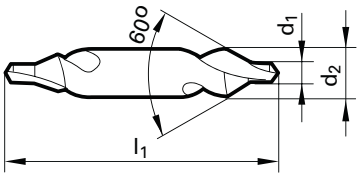
Surface: ◯

P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
• relieved cone
• without protective countersink
• increased wear resistance
• for center holes to DIN 332, part 1, form A

materials over 800 N/mm² • stainless/acid-/heat-resistant CrNi steels





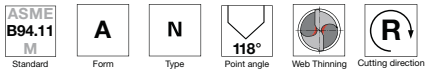
Speeds and feeds information on pg. 492

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0394	1.00	3.15	31.50	9003810010000
0.0492	1.25	3.15	31.50	9003810012500
0.0630	1.60	4.00	35.50	9003810016000
0.0787	2.00	5.00	40.00	9003810020000
0.0984	2.50	6.30	45.00	9003810025000
0.1240	3.15	8.00	50.00	9003810031500
0.1575	4.00	10.00	56.00	9003810040000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #

Center drills, 60° angle

Series no. **594**



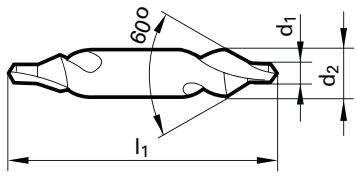
Tool material: **HSS**

Surface: ○

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.980
- relieved cone
- for center holes form A to US standards





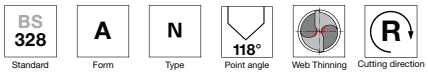
Speeds and feeds information on pg. 509

Diameter (d1) inch	Diameter (d1) mm	Size	d2 mm	l1 mm	EDP #
0.0469	1.19	1	3.18	32.00	9005940011900
0.0780	1.98	2	4.76	48.00	9005940019800
0.1094	2.78	3	6.35	51.00	9005940027800
0.1248	3.17	4	7.94	54.00	9005940031700
0.1874	4.76	5	11.11	70.00	9005940047600
0.2189	5.56	6	12.70	76.00	9005940055600
0.2500	6.35	7	15.88	83.00	9005940063500
0.3126	7.94	8	19.05	89.00	9005940079400

Diameter (d1) inch	Diameter (d1) mm	Size	d2 mm	l1 mm	EDP #

Center drills, 60° angle

Series no. **292**



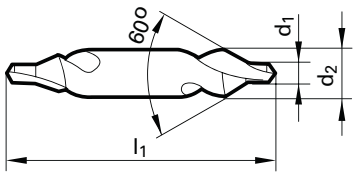
Tool material **HSS**

Surface ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.190
- relieved cone
- for center holes form A to British standards





Speeds and feeds information on pg. 487

Diameter (d1) inch	Diameter (d1) mm	Size	d2 mm	l1 mm	EDP #
0.0469	1.19	1	3.17	38.00	9002920011900
0.0626	1.59	2	4.76	44.00	9002920015900
0.0937	2.38	3	6.35	51.00	9002920023800
0.1248	3.17	4	7.94	57.00	9002920031700
0.1874	4.76	5	11.11	63.00	9002920047600
0.2500	6.35	6	15.87	76.00	9002920063500
0.3126	7.94	7	19.05	89.00	9002920079400

Diameter (d1) inch	Diameter (d1) mm	Size	d2 mm	l1 mm	EDP #

Center drills, 60° angle

Series no. **294**

BS 328 Standard | A Form | N Type | 118° Point angle | Web Thinning | L Cutting direction

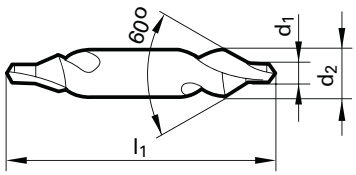
Tool material **HSS**

Surface ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.190
• relieved cone
• for center holes form A to British standards





Speeds and feeds information on pg. 488

Diameter (d1) inch	Diameter (d1) mm	Size	d2 mm	l1 mm	EDP #
0.0469	1.19	1	3.17	38.00	9002940011900
0.0626	1.59	2	4.76	44.00	9002940015900
0.0937	2.38	3	6.35	51.00	9002940023800
0.1248	3.17	4	7.94	57.00	9002940031700
0.1874	4.76	5	11.11	63.00	9002940047600
0.2500	6.35	6	15.87	76.00	9002940063500
0.3126	7.94	7	19.05	89.00	9002940079400

Diameter (d1) inch	Diameter (d1) mm	Size	d2 mm	l1 mm	EDP #

Center drills, 60° angle

Series no. **281**

WN	A	N	118°		R
Guhring Std.	Form	Type	Point angle	Web Thinning	Cutting direction

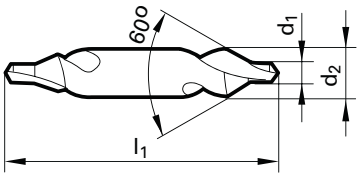
Tool material: **HSS**

Surface: ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
- relieved cone
- without protective countersink
- for center holes acc. to DIN 332 sheet 1 (issue 09.1960x retracted), Form A
- d1 ≤ 0.8 mm: not double ended





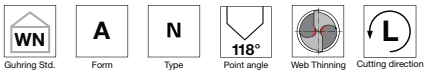
Speeds and feeds information on pg. 483

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0197*	0.50*	3.15	25.00	9002810005000
0.0315*	0.80*	3.15	25.00	9002810008000
0.0394	1.00	3.15	31.50	9002810010000
0.0492	1.25	4.00	35.50	9002810012500
0.0630	1.60	5.00	40.00	9002810016000
0.0787	2.00	6.30	45.00	9002810020000
0.0984	2.50	8.00	50.00	9002810025000
0.1240	3.15	10.00	56.00	9002810031500
0.1575	4.00	12.50	63.00	9002810040000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.1969	5.00	16.00	71.00	9002810050000
0.2480	6.30	20.00	80.00	9002810063000
0.3150	8.00	25.00	100.00	9002810080000
0.3937	10.00	31.50	125.00	9002810100000

Center drills, 60° angle

Series no. **282**



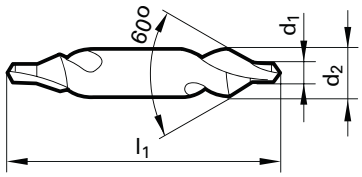
Tool material **HSS**

Surface ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
- relieved cone
- without protective countersink
- for center holes acc. to DIN 332 sheet 1 (issue 09.1960x retracted), Form A
- d1 ≤ 0.8 mm: not double ended





Speeds and feeds information on pg. 484

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0315*	0.80*	3.15	25.00	9002820008000
0.0394	1.00	3.15	31.50	9002820010000
0.0492	1.25	4.00	35.50	9002820012500
0.0630	1.60	5.00	40.00	9002820016000
0.0787	2.00	6.30	45.00	9002820020000
0.0984	2.50	8.00	50.00	9002820025000
0.1240	3.15	10.00	56.00	9002820031500
0.1575	4.00	12.50	63.00	9002820040000
0.1969	5.00	16.00	71.00	9002820050000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #

Center drills, 60° angle

Series no. **736**

WN	A	N	118°		R
Guhring Std.	Form	Type	Point angle	Web Thinning	Cutting direction

Tool material: **Carbide**

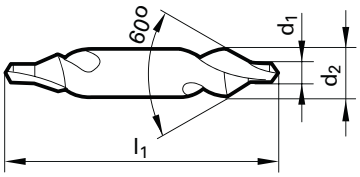
Surface: ◯

P	Steel	○
M	Stainless steel	○
K	Cast iron	○
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
• relieved cone
• without protective countersink
• for center holes to DIN 332, part 1, form A
• d1 ≤ 0.8 mm: not double ended

universal material suitability





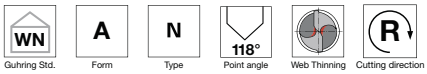
Speeds and feeds information on pg. 524

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0197*	0.50*	3.15	25.00	9007360005000
0.0315*	0.80*	3.15	25.00	9007360008000
0.0394	1.00	3.15	31.50	9007360010000
0.0492	1.25	3.15	31.50	9007360012500
0.0630	1.60	4.00	35.50	9007360016000
0.0787	2.00	5.00	40.00	9007360020000
0.0984	2.50	6.30	45.00	9007360025000
0.1240	3.15	8.00	50.00	9007360031500
0.1575	4.00	10.00	56.00	9007360040000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.1969	5.00	12.50	63.00	9007360050000
0.2480	6.30	16.00	71.00	9007360063000

Center drills, 60° angle

Series no. **280**



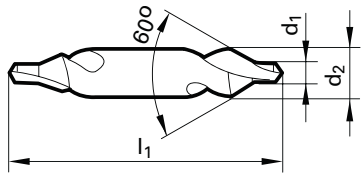
Tool material **HSS**

Surface ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
- relieved cone
- extra length center drills
- without protective countersink
- for center holes acc. to DIN 332, sheet 1, form A
- for deep centering positions





Speeds and feeds information on pg. 483

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0394	1.00	4.00	120.00	9002800010000
0.0630	1.60	5.00	120.00	9002800016000
0.0787	2.00	6.30	120.00	9002800020000
0.0984	2.50	8.00	120.00	9002800025000
0.1240	3.15	10.00	120.00	9002800031500

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #

Center drills, 60° angle

Series no. **583**

DIN 333	R	N	118°		R
Standard	Form	Type	Point angle	Web Thinning	Cutting direction

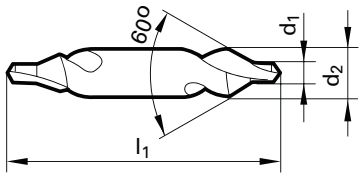
Tool material: **HSS**

Surface: ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
• relieved cone
• correct positioning between lathe centers
• for center holes acc. to DIN 332 part 1, form R • d1 ≤ 0.8 mm: not double ended





Speeds and feeds information on pg. 505

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0197*	0.50*	3.15	25.00	9005830005000
0.0315*	0.80*	3.15	25.00	9005830008000
0.0394	1.00	3.15	31.50	9005830010000
0.0492	1.25	3.15	31.50	9005830012500
0.0630	1.60	4.00	35.50	9005830016000
0.0787	2.00	5.00	40.00	9005830020000
0.0984	2.50	6.30	45.00	9005830025000
0.1240	3.15	8.00	50.00	9005830031500
0.1575	4.00	10.00	56.00	9005830040000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.1969	5.00	12.50	63.00	9005830050000
0.2480	6.30	16.00	71.00	9005830063000
0.3150	8.00	20.00	80.00	9005830080000

Center drills, 60° angle

Series no. **614**

DIN 333 Standard | R Form | N Type | 118° Point angle | Web Thinning | R Cutting direction

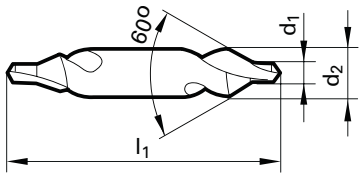
Tool material **HSS**

Surface **S**

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
- relieved cone
- increased wear resistance
- correct positioning between lathe centers
- for center holes acc. to DIN 332 part 1, form R
- d1 ≤ 0.8 mm: not double ended





Speeds and feeds information on pg. 512

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0197*	0.50*	3.15	25.00	9006140005000
0.0315*	0.80*	3.15	25.00	9006140008000
0.0394	1.00	3.15	31.50	9006140010000
0.0492	1.25	3.15	31.50	9006140012500
0.0630	1.60	4.00	35.50	9006140016000
0.0787	2.00	5.00	40.00	9006140020000
0.0984	2.50	6.30	45.00	9006140025000
0.1240	3.15	8.00	50.00	9006140031500
0.1575	4.00	10.00	56.00	9006140040000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.1969	5.00	12.50	63.00	9006140050000
0.2480	6.30	16.00	71.00	9006140063000
0.3150	8.00	20.00	80.00	9006140080000
0.3937	10.00	25.00	100.00	9005810100000

Center drills, 60° angle

Series no. **584**

DIN 333	R	N	118°		L
Standard	Form	Type	Point angle	Web Thinning	Cutting direction

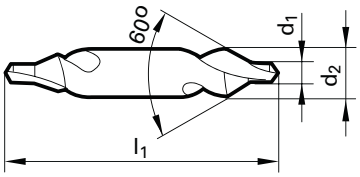
Tool material: **HSS**

Surface: ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
- relieved cone
- correct positioning between lathe centers
- for center holes acc. to DIN 332 part 1, form R
- d1 ≤ 0.8 mm: not double ended





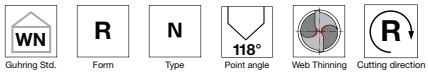
Speeds and feeds information on pg. 505

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0315*	0.80*	3.15	25.00	9005840008000
0.0394	1.00	3.15	31.50	9005840010000
0.0492	1.25	3.15	31.50	9005840012500
0.0630	1.60	4.00	35.50	9005840016000
0.0787	2.00	5.00	40.00	9005840020000
0.0984	2.50	6.30	45.00	9005840025000
0.1240	3.15	8.00	50.00	9005840031500
0.1575	4.00	10.00	56.00	9005840040000
0.1969	5.00	12.50	63.00	9005840050000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #

Center drills, 60° angle

Series no. **283**



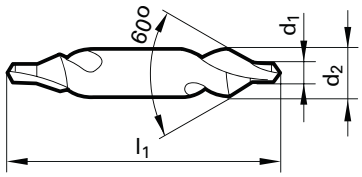
Tool material **HSS**

Surface ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
• relieved cone
• correct positioning between lathe centers
• for center holes to DIN 332, sheet 1 (issue 09.1960x withdrawn), form R
• d1 ≤ 0.8 mm: not double ended



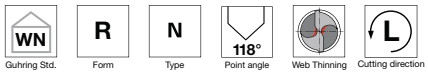


Speeds and feeds information on pg. 484

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0197*	0.50*	3.15	25.00	9002830005000
0.0315*	0.80*	3.15	25.00	9002830008000
0.0394	1.00	3.15	31.50	9002830010000
0.0492	1.25	4.00	35.50	9002830012500
0.0630	1.60	5.00	40.00	9002830016000
0.0787	2.00	6.30	45.00	9002830020000
0.0984	2.50	8.00	50.00	9002830025000
0.1240	3.15	10.00	56.00	9002830031500
0.1575	4.00	12.50	63.00	9002830040000
0.1969	5.00	16.00	71.00	9002830050000
0.2480	6.30	20.00	80.00	9002830063000
0.3150	8.00	25.00	100.00	9002830080000

Center drills, 60° angle

Series no. **284**



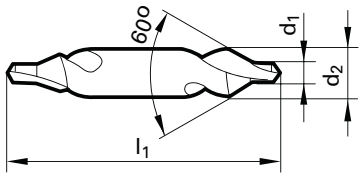
Tool material **HSS**

Surface ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
- relieved cone
- correct positioning between lathe centers
- for center holes to DIN 332, sheet 1 (issue 09.1960x withdrawn), form R





Speeds and feeds information on pg. 485

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0492	1.25	4.00	35.50	9002840012500
0.0630	1.60	5.00	40.00	9002840016000
0.0787	2.00	6.30	45.00	9002840020000
0.0984	2.50	8.00	50.00	9002840025000
0.1240	3.15	10.00	56.00	9002840031500
0.1575	4.00	12.50	63.00	9002840040000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #

Center drills, 60° angle

Series no. **587**

DIN 333 Standard | A Form | N Type | 118° Point angle | Web Thinning | R Cutting direction

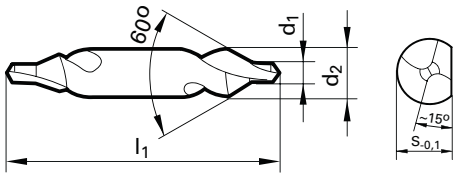
Tool material: **HSS**

Surface: ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
- relieved cone
- for center holes to DIN 332, part 1, form A
- without protective countersink





Speeds and feeds information on pg. 507

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	S	EDP #
0.0630	1.60	4.00	35.50	3.25	9005870016000
0.0787	2.00	5.00	40.00	4.20	9005870020000
0.0984	2.50	6.30	45.00	5.35	9005870025000
0.1240	3.15	8.00	50.00	6.95	9005870031500
0.1575	4.00	10.00	56.00	8.40	9005870040000
0.1969	5.00	12.50	63.00	10.95	9005870050000
0.2480	6.30	16.00	71.00	14.00	9005870063000
0.3150	8.00	20.00	80.00	17.90	9005870080000
0.3937	10.00	25.00	100.00	22.50	9005870100000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	S	EDP #

Center drills, 60° angle

Series no. **287**

DIN 333	A	N	118°		R
Standard	Form	Type	Point angle	Web Thinning	Cutting direction

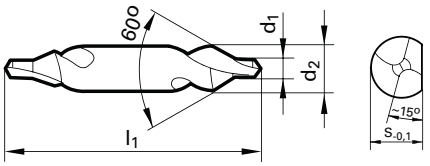
Tool material: **HSS**

Surface: ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
- relieved cone
- without protective countersink
- for center holes acc. to DIN 332 sheet 1 (issue 09.1960x retracted), Form A





Speeds and feeds information on pg. 486

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	S	EDP #
0.0984	2.50	8.00	50.00	4.20	9002870025000
0.1240	3.15	10.00	56.00	5.35	9002870031500
0.1575	4.00	12.50	63.00	6.85	9002870040000
0.1969	5.00	16.00	71.00	8.40	9002870050000
0.2480	6.30	20.00	80.00	10.65	9002870063000
0.3150	8.00	25.00	100.00	13.65	9002870080000
0.3937	10.00	31.50	125.00	17.40	9002870100000
0.0630	1.60	5.00	40.00	25.00	9002870016000
0.0787	2.00	6.30	45.00	31.50	9002870020000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	S	EDP #

Center drills, 60° angle

Series no. **588**

DIN 333 Standard | R Form | N Type | 118° Point angle | Web Thinning | R Cutting direction

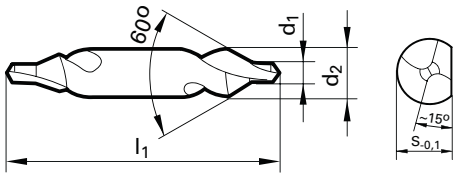
Tool material **HSS**

Surface ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
- relieved cone
- correct positioning between lathe centers
- for center holes acc. to DIN 332 part 1, form R





Speeds and feeds information on pg. 507

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	S	EDP #
0.0630	1.60	4.00	35.50	3.25	9005880016000
0.0787	2.00	5.00	40.00	4.20	9005880020000
0.0984	2.50	6.30	45.00	5.35	9005880025000
0.1240	3.15	8.00	50.00	6.95	9005880031500
0.1575	4.00	10.00	56.00	8.40	9005880040000
0.1969	5.00	12.50	63.00	10.95	9005880050000
0.2480	6.30	16.00	71.00	14.00	9005880063000
0.3150	8.00	20.00	80.00	17.90	9005880080000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	S	EDP #

Center drills, 60° angle

Series no. **288**

DIN 333 Standard | R Form | N Type | 118° Point angle | Web Thinning | R Cutting direction

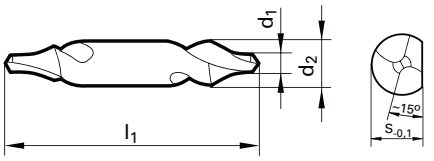
Tool material **HSS**

Surface ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
- relieved cone
- correct positioning between lathe centers
- for center holes to DIN 332, sheet 1 (issue 09.1960x withdrawn), form R





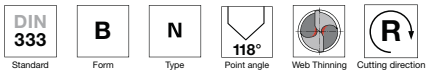
Speeds and feeds information on pg. 486

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	S	EDP #
0.0984	2.50	8.00	50.00	4.20	9002880016000
0.1240	3.15	10.00	56.00	5.35	9002880020000
0.1575	4.00	12.50	63.00	6.85	9002880025000
0.1969	5.00	16.00	71.00	8.40	9002880031500
0.2480	6.30	20.00	80.00	10.65	9002880040000
0.3150	8.00	25.00	100.00	13.65	9002880050000
0.3937	10.00	31.50	125.00	17.40	9002880063000
0.0630	1.60	5.00	40.00	25.00	9002880080000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	S	EDP #

Center drills, double angle 60°/120°

Series no. **585**



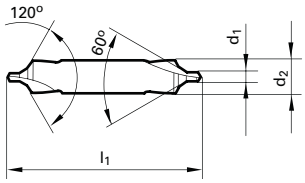
Tool material **HSS**

Surface ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
- relieved cone
- for center holes acc. to DIN 332, sheet 1, form B
- with protective 120° countersink





Speeds and feeds information on pg. 506

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0394	1.00	4.00	35.50	9005850010000
0.0492	1.25	5.00	40.00	9005850012500
0.0630	1.60	6.30	45.00	9005850016000
0.0787	2.00	8.00	50.00	9005850020000
0.0984	2.50	10.00	56.00	9005850025000
0.1240	3.15	11.20	60.00	9005850031500
0.1575	4.00	14.00	67.00	9005850040000
0.1969	5.00	18.00	75.00	9005850050000
0.2480	6.30	20.00	80.00	9005850063000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.3150	8.00	25.00	100.00	9005850080000
0.3937	10.00	31.50	125.00	9005850100000

Center drills, double angle 60°/120°

Series no. **586**

DIN 333	B	N	118°		L
Standard	Form	Type	Point angle	Web Thinning	Cutting direction

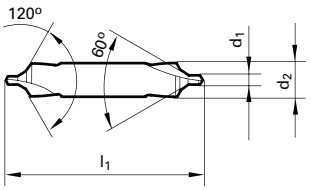
Tool material **HSS**

Surface ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
- relieved cone
- for center holes acc. to DIN 332, sheet 1, form B
- with protective 120° countersink





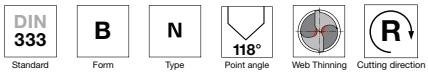
Speeds and feeds information on pg. 506

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0394	1.00	4.00	35.50	9005860010000
0.0492	1.25	5.00	40.00	9005860012500
0.0630	1.60	6.30	45.00	9005860016000
0.0787	2.00	8.00	50.00	9005860020000
0.0984	2.50	10.00	56.00	9005860025000
0.1240	3.15	11.20	60.00	9005860031500
0.1575	4.00	14.00	67.00	9005860040000
0.1969	5.00	18.00	75.00	9005860050000
0.2480	6.30	20.00	80.00	9005860063000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.3150	8.00	25.00	100.00	9005860080000
0.3937	10.00	31.50	125.00	9005860100000

Center drills, double angle 60°/120°

Series no. **591**



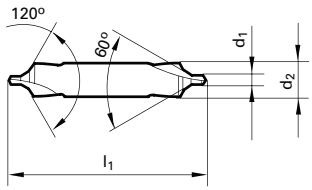
Tool material **HSS**

Surface ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
- relieved cone
- with reinforced neck to provide high fracture resistance
- recess between countersink and hole for additional lubricant space
- for center holes acc. to DIN 332, sheet 1, form B
- with protective 120° countersink





Speeds and feeds information on pg. 509

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0394	1.00	4.00	35.50	9005910010000
0.0492	1.25	5.00	40.00	9005910012500
0.0630	1.60	6.30	45.00	9005910016000
0.0787	2.00	8.00	50.00	9005910020000
0.0984	2.50	10.00	56.00	9005910025000
0.1240	3.15	11.20	60.00	9005910031500
0.1575	4.00	14.00	67.00	9005910040000
0.1969	5.00	18.00	75.00	9005910050000
0.2480	6.30	20.00	80.00	9005910063000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.3150	8.00	25.00	100.00	9005910080000
0.3937	10.00	31.50	125.00	9005910100000

Center drills, double angle 60°/120°

Series no. **285**

WN	B	N	118°		R
Guhring Std.	Form	Type	Point angle	Web Thinning	Cutting direction

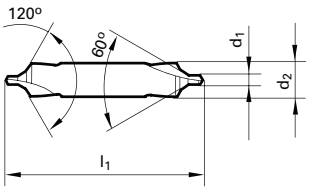
Tool material **HSS**

Surface ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
- relieved cone
- for center holes acc. to DIN 332 sheet 1 (issue 09.1960x retracted), Form B
- with protective 120° countersink





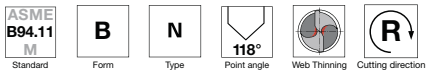
Speeds and feeds information on pg. 485

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #
0.0394	1.00	6.30	40.00	9002850010000
0.0630	1.60	8.00	50.00	9002850016000
0.0787	2.00	10.00	56.00	9002850020000
0.0984	2.50	11.20	63.00	9002850025000
0.1240	3.15	14.00	71.00	9002850031500
0.1575	4.00	16.00	80.00	9002850040000
0.1969	5.00	20.00	90.00	9002850050000
0.2480	6.30	25.00	100.00	9002850063000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	EDP #

Center drills, double angle 60°/120°

Series no. **595**



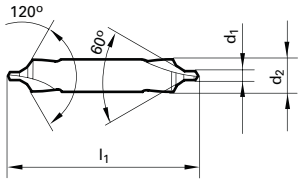
Tool material **HSS**

Surface ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.380
- relieved cone
- for center holes form B to US standards





Speeds and feeds information on pg. 510

Diameter (d1) inch	Diameter (d1) mm	Size	d2 mm	l1 mm	EDP #
0.0469	1.19	11	3.18	32.00	9005950011900
0.0626	1.59	12	4.76	48.00	9005950015900
0.0937	2.38	13	6.35	51.00	9005950023800
0.1094	2.78	14	7.94	54.00	9005950027800
0.1563	3.97	15	11.11	70.00	9005950039700
0.1874	4.76	16	12.70	76.00	9005950047600
0.2189	5.56	17	15.88	83.00	9005950055600
0.2500	6.35	18	19.05	89.00	9005950063500

Diameter (d1) inch	Diameter (d1) mm	Size	d2 mm	l1 mm	EDP #

Center drills, double angle 60°/120°

Series no. **589**

DIN 333	B	N	118°		R
Standard	Form	Type	Point angle	Web Thinning	Cutting direction

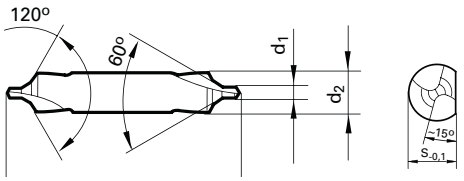
Tool material: **HSS**

Surface: ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
- relieved cone
- for center holes acc. to DIN 332, sheet 1, form B
- with protective 120° countersink





Speeds and feeds information on pg. 508

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	S	EDP #
0.0630	1.60	6.30	45.00	5.35	9005890016000
0.0787	2.00	8.00	50.00	6.95	9005890020000
0.0984	2.50	10.00	56.00	8.40	9005890025000
0.1240	3.15	11.20	60.00	10.00	9005890031500
0.1575	4.00	14.00	67.00	12.65	9005890040000
0.1969	5.00	18.00	75.00	16.40	9005890050000
0.2480	6.30	20.00	80.00	17.90	9005890063000
0.3150	8.00	25.00	100.00	22.50	9005890080000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	S	EDP #

Center drills, double angle 60°/120°

Series no. **289**

DIN 333 Standard | B Form | N Type | 118° Point angle | Web Thinning | R Cutting direction

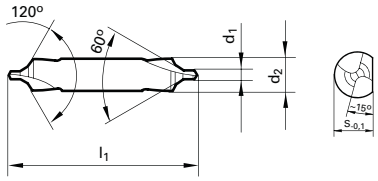
Tool material: **HSS**

Surface: ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000
- relieved cone
- for center holes acc. to DIN 332 sheet 1 (issue 09.1960x retracted), Form B
- with protective 120° countersink





Speeds and feeds information on pg. 487

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	S	EDP #
0.0630	1.60	8.00	50.00	6.50	9002890016000
0.0787	2.00	10.00	56.00	7.95	9002890020000
0.0984	2.50	11.20	63.00	9.50	9002890025000
0.1240	3.15	14.00	71.00	12.00	9002890031500
0.1575	4.00	16.00	80.00	14.40	9002890040000
0.1969	5.00	20.00	90.00	18.40	9002890050000

Diameter (d1) inch	Diameter (d1) mm	d2 mm	l1 mm	S	EDP #

90° NC-spot drills

Series no. **557**

WN	N	90°	h6	R
Guhring Std.	Type	Point angle	Tolerance on Ø	Cutting direction

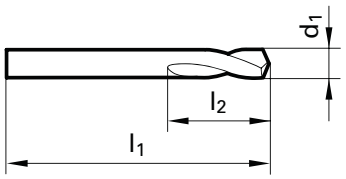
Tool material: **HSS**

Coating: ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

relieved cone • only suitable for spotting





Speeds and feeds information on pg. 502

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr		mm	l1 mm	l2 mm	EDP #
0.1181			3.00	46.00	12.00	9005570030000
0.1575			4.00	55.00	12.00	9005570040000
0.1969			5.00	62.00	14.00	9005570050000
0.2362			6.00	66.00	16.00	9005570060000
0.2500	1/4	E	6.35	70.00	17.00	9005570063500
0.3150			8.00	79.00	21.00	9005570080000
0.3748	3/8		9.52	89.00	25.00	9005570095200
0.3937			10.00	89.00	25.00	9005570100000
0.4724			12.00	102.00	30.00	9005570120000

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #
0.5000	1/2	12.70	102.00	30.00	9005570127000
0.6248	5/8	15.87	115.00	38.00	9005570158700
0.6299		16.00	115.00	38.00	9005570160000
0.7500	3/4	19.05	131.00	45.00	9005570190500
0.7874		20.00	131.00	45.00	9005570200000
0.9843	63/64	25.00	151.00	53.00	9005570250000
1.000	1	25.40	156.00	53.00	9005570254000

90° NC-spot drills

Series no. **568**

WN	N	90°	h6	R
Guhring Std.	Type	Point angle	Tolerance on Ø	Cutting direction

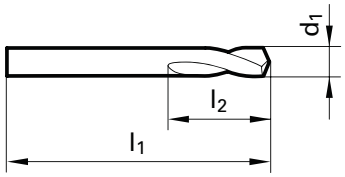
Tool material: **HSS**

Coating: **S**

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

relieved cone • only suitable for spotting





Speeds and feeds information on pg. 503

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr		mm	l1 mm	l2 mm	EDP #
0.1181			3.00	46.00	12.00	9005680030000
0.1575			4.00	55.00	12.00	9005680040000
0.1969			5.00	62.00	14.00	9005680050000
0.2362			6.00	66.00	16.00	9005680060000
0.2500	1/4	E	6.35	70.00	17.00	9005680063500
0.3150			8.00	79.00	21.00	9005680080000
0.3748	3/8		9.52	89.00	25.00	9005680095200
0.3937			10.00	89.00	25.00	9005680100000
0.4724			12.00	102.00	30.00	9005680120000

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #
0.5000	1/2	12.70	102.00	30.00	9005680127000
0.6248	5/8	15.87	115.00	38.00	9005680158700
0.6299		16.00	115.00	38.00	9005680160000
0.7500	3/4	19.05	131.00	45.00	9005680190500
0.7874		20.00	131.00	45.00	9005680200000
0.9843	63/64	25.00	151.00	53.00	9005680250000
1.0000	1	25.40	156.00	53.00	9005680254000

90° NC-spot drills

Series no. **559**

WN	N	90°	h6	R
Guhring Std.	Type	Point angle	Tolerance on Ø	Cutting direction

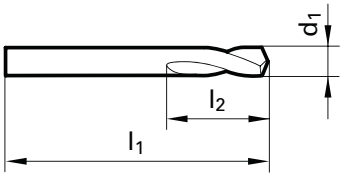
Tool material: **HSS**

Coating: ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

relieved cone • only suitable for spotting





Speeds and feeds information on pg. 502

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr		mm	l1 mm	l2 mm	EDP #
0.2500	1/4	E	6.35	105.00	17.00	9005590063500
0.3150			8.00	118.00	21.00	9005590080000
0.3748	3/8		9.52	132.00	25.00	9005590095200
0.5000	1/2		12.70	159.00	30.00	9005590127000
0.6248	5/8		15.87	186.00	38.00	9005590158700
0.7500	3/4		19.05	213.00	45.00	9005590190500
1.0000	1		25.40	216.00	53.00	9005590254000

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #

90° NC-spot drills

Series no. **1136**

WN Guhring Std. | N Type | 90° Point angle | h6 Tolerance on Ø | R Cutting direction | NEW

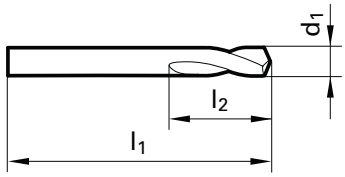
Tool material: **HSCO**

Coating:

P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

relieved cone • only suitable for spotting • ≥ Ø 6.0 mm with driving face to DIN 1835-B • Co-alloyed high speed steel • increased wear resistance





Speeds and feeds information on pg. 531

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #
0.1181		3.00	46.00	12.00	9011360030000
0.1575		4.00	55.00	12.00	9011360040000
0.1969		5.00	62.00	14.00	9011360050000
0.2362		6.00	66.00	16.00	9011360060000
0.3150		8.00	79.00	21.00	9011360080000
0.3937		10.00	89.00	25.00	9011360100000
0.4724		12.00	102.00	30.00	9011360120000
0.6299		16.00	115.00	37.50	9011360160000
0.7874		20.00	131.00	45.00	9011360200000

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #

* Weldon flat on drills ≥ 6mm diameter

90° NC-spot drills

Series no. **1133**

WN Guhring Std. | N Type | 90° Point angle | h6 Tolerance on Ø | R Cutting direction | NEW

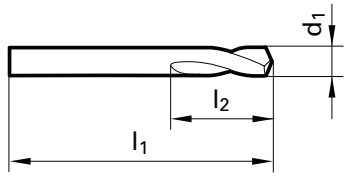
Tool material: **HSCO**

Coating: **F**

P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

relieved cone • only suitable for spotting • ≥ Ø 6.0 mm with driving face to DIN 1835-B • Co-alloyed high speed steel • increased wear resistance





Speeds and feeds information on pg. 530

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #
0.1181		3.00	46.00	12.00	9011330030000
0.1575		4.00	55.00	12.00	9011330040000
0.1969		5.00	62.00	14.00	9011330050000
0.2362		6.00	66.00	16.00	9011330060000
0.3150		8.00	79.00	21.00	9011330080000
0.3937		10.00	89.00	25.00	9011330100000
0.4724		12.00	102.00	30.00	9011330120000
0.6299		16.00	115.00	37.50	9011330160000
0.7874		20.00	131.00	45.00	9011330200000

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #

* Weldon flat on drills ≥ 6mm diameter

90° NC-spot drills

Series no. **723**

WN	N	90°	h6		R
Guhring Std.	Type	Point angle	Tolerance on Ø	Web Thinning	Cutting direction

Tool material: **Carbide**

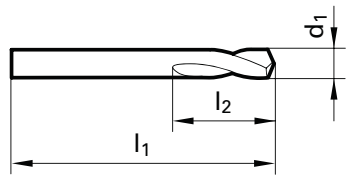
Coating: ◯

P	Steel	○
M	Stainless steel	○
K	Cast iron	○
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 6.000 • facet point grinding • only suitable for spotting

universal material suitability





Speeds and feeds information on pg. 523

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr		mm	l1 mm	l2 mm	EDP #
0.1575			4.00	55.00	12.00	9007230040000
0.1969			5.00	62.00	14.00	9007230050000
0.2362			6.00	66.00	16.00	9007230060000
0.2500	1/4	E	6.35	70.00	17.00	9007230063500
0.3150			8.00	79.00	21.00	9007230080000
0.3748	3/8		9.52	89.00	25.00	9007230095200
0.3937			10.00	89.00	25.00	9007230100000
0.4724			12.00	102.00	30.00	9007230120000
0.5000	1/2		12.70	102.00	30.00	9007230127000

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #
0.6248	5/8	15.87	115.00	38.00	9007230158700
0.6299		16.00	115.00	38.00	9007230160000
0.7500	3/4	19.05	131.00	45.00	9007230190500
0.7874		20.00	131.00	45.00	9007230200000

120° NC-spot drills

Series no. **556**

WN	N	120°	h6	R
Guhring Std.	Type	Point angle	Tolerance on Ø	Cutting direction

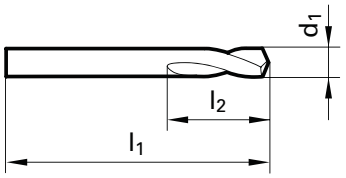
Tool material: **HSS**

Coating: ◯

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

relieved cone • only suitable for spotting





Speeds and feeds information on pg. 501

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr		mm	l1 mm	l2 mm	EDP #
0.1181			3.00	46.00	12.00	9005560030000
0.1575			4.00	55.00	12.00	9005560040000
0.1969			5.00	62.00	14.00	9005560050000
0.2362			6.00	66.00	16.00	9005560060000
0.2500	1/4	E	6.35	70.00	17.00	9005560063500
0.2559			6.50	70.00	17.00	9005560065000
0.3150			8.00	79.00	21.00	9005560080000
0.3748	3/8		9.52	89.00	25.00	9005560095200
0.3937			10.00	89.00	25.00	9005560100000

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #
0.4724		12.00	102.00	30.00	9005560120000
0.5000	1/2	12.70	102.00	30.00	9005560127000
0.6248	5/8	15.87	115.00	38.00	9005560158700
0.6299		16.00	115.00	38.00	9005560160000
0.7500	3/4	19.05	131.00	45.00	9005560190500
0.7874		20.00	131.00	45.00	9005560200000
0.9843	63/64	25.00	151.00	53.00	9005560250000
1.0000	1	25.40	156.00	53.00	9005560254000

120° NC-spot drills

Series no. **567**

WN	N	120°	h6	R
Guhring Std.	Type	Point angle	Tolerance on Ø	Cutting direction

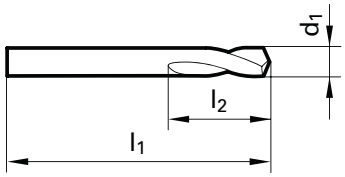
Tool material: **HSS**

Coating: **S**

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

relieved cone • only suitable for spotting





Speeds and feeds information on pg. 503

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr		mm	l1 mm	l2 mm	EDP #
0.1181			3.00	46.00	12.00	9005670030000
0.1575			4.00	55.00	12.00	9005670040000
0.1969			5.00	62.00	14.00	9005670050000
0.2362			6.00	66.00	16.00	9005670060000
0.2500	1/4	E	6.35	70.00	17.00	9005670063500
0.3150			8.00	79.00	21.00	9005670080000
0.3748	3/8		9.52	89.00	25.00	9005670095200
0.3937			10.00	89.00	25.00	9005670100000
0.4724			12.00	102.00	30.00	9005670120000

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #
0.5000	1/2	12.70	102.00	30.00	9005670127000
0.6248	5/8	15.87	115.00	38.00	9005670158700
0.6299		16.00	115.00	38.00	9005670160000
0.7500	3/4	19.05	131.00	45.00	9005670190500
0.7874		20.00	131.00	45.00	9005670200000
0.9843	63/64	25.00	151.00	53.00	9005670250000
1.000	1	25.40	156.00	53.00	9005670254000

120° NC-spot drills

Series no. **1134**

WN Guhring Std. | N Type | 120° Point angle | h6 Tolerance on Ø | R Cutting direction | NEW

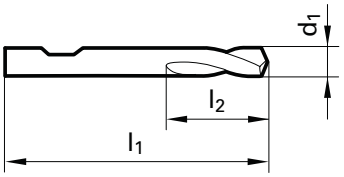
Tool material: **HSCO**

Coating: ◯

P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

relieved cone • only suitable for spotting • ≥ Ø 6.0 mm with driving face to DIN 1835-B • Co-alloyed high speed steel • increased wear resistance





Speeds and feeds information on pg. 530

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #
0.1181		3.00	46.00	12.00	9011340030000
0.1575		4.00	55.00	12.00	9011340040000
0.1969		5.00	62.00	14.00	9011340050000
0.2362		6.00	66.00	16.00	9011340060000
0.3150		8.00	79.00	21.00	9011340080000
0.3937		10.00	89.00	25.00	9011340100000
0.4724		12.00	102.00	30.00	9011340120000
0.6299		16.00	115.00	37.50	9011340160000
0.7874		20.00	131.00	45.00	9011340200000

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #

* Weldon flat on drills ≥ 6mm diameter

120° NC-spot drills

Series no. **1135**

WN Guhring Std. | N Type | 120° Point angle | h6 Tolerance on Ø | R Cutting direction | NEW

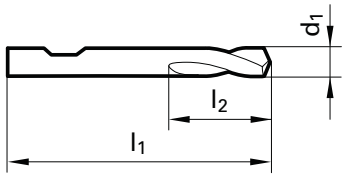
Tool material: **HSCO**

Coating: **F**

P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

relieved cone • only suitable for spotting • ≥ Ø 6.0 mm with driving face to DIN 1835-B • Co-alloyed high speed steel • increased wear resistance





Speeds and feeds information on pg. 531

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #
0.1181		3.00	46.00	12.00	9011350030000
0.1575		4.00	55.00	12.00	9011350040000
0.1969		5.00	62.00	14.00	9011350050000
0.2362		6.00	66.00	16.00	9011350060000
0.3150		8.00	79.00	21.00	9011350080000
0.3937		10.00	89.00	25.00	9011350100000
0.4724		12.00	102.00	30.00	9011350120000
0.6299		16.00	115.00	37.50	9011350160000
0.7874		20.00	131.00	45.00	9011350200000

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #

* Weldon flat on drills ≥ 6mm diameter

142° NC-spot drills

Series no. **724**

WN	N	120°	h6		R
Guhring Std.	Type	Point angle	Tolerance on Ø	Web Thinning	Cutting direction

Tool material: **Carbide**

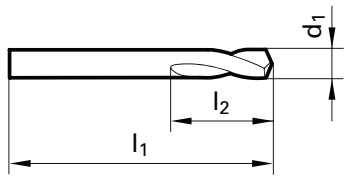
Coating: ◯

P	Steel	○
M	Stainless steel	○
K	Cast iron	○
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 13.500 • facet point grinding • only suitable for spotting

universal material suitability





Speeds and feeds information on pg. 523

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #
0.1969		5.00	62.00	14.00	9007240050000
0.2362		6.00	66.00	16.00	9007240060000
0.2500	1/4	6.35	70.00	17.00	9007240063500
0.3150		8.00	79.00	21.00	9007240080000
0.3748	3/8	9.52	89.00	25.00	9007240095200
0.3937		10.00	89.00	25.00	9007240100000
0.4724		12.00	102.00	30.00	9007240120000
0.5000	1/2	12.70	102.00	30.00	9007240127000
0.6248	5/8	15.87	115.00	37.50	9007240158700

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #
0.6299		16.00	115.00	37.50	9007240160000
0.7500	3/4	19.05	131.00	45.00	9007240190500
0.7874		20.00	131.00	45.00	9007240200000

142° NC-spot drills

Series no. **546**

WN	N	142°	h6	R
Guhring Std.	Type	Point angle	Tolerance on Ø	Cutting direction

Tool material: **Carbide**

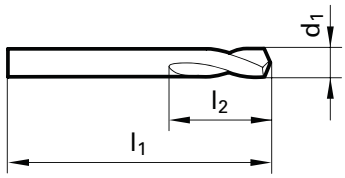
Coating: ◯

P	Steel	○
M	Stainless steel	○
K	Cast iron	○
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

facet point grinding • only suitable for spotting • ≥ Ø 6.0 mm with clamping surface shank form HB

universal material suitability





Speeds and feeds information on pg. 498

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #
0.1575		4.00	55.00	12.00	9005460040000
0.1969		5.00	62.00	14.00	9005460050000
0.2362		6.00	66.00	16.00	9005460060000
0.3150		8.00	79.00	21.00	9005460080000
0.3937		10.00	89.00	25.00	9005460100000
0.4724		12.00	102.00	30.00	9005460120000
0.6299		16.00	115.00	37.50	9005460160000
0.7874		20.00	131.00	45.00	9005460200000

Diameter (d1) inch	wire/ltr	mm	l1 mm	l2 mm	EDP #

* Weldon flat on drills ≥ 6mm diameter

90° Countersinks, SpyroTec

Series no. **5500**

DIN 335 Standard | 90° Point angle | C Form | R Cutting direction | NEW

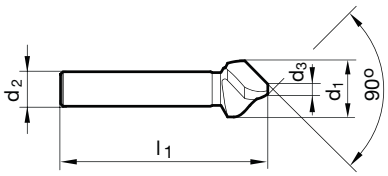
Tool material: **HSCO**

Coating: **A**

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

- 3 different convex cutting edges
- low-vibration cutting processes
- for round and chatter-free countersinking
- considerably lower feed force required
- for universal application





Speeds and feeds information on pg. 549

d1 mm	d2 mm	d3 mm	l1 mm	No. of flutes	EDP #
6.30	5.00	1.50	45.00	3	9055000063000
8.00	6.00	2.00	50.00	3	9055000080000
8.30	6.00	2.00	50.00	3	9055000083000
10.00	6.00	2.50	50.00	3	9055000100000
10.40	6.00	2.50	50.00	3	9055000140000
11.50	8.00	2.80	56.00	3	9055000115000
12.40	8.00	2.80	56.00	3	9055000124000
15.00	10.00	3.20	60.00	3	9055000150000
16.50	10.00	3.20	60.00	3	9055000165000

d1 mm	d2 mm	d3 mm	l1 mm	No. of flutes	EDP #
19.00	10.00	3.50	63.00	3	9055000190000
20.50	10.00	3.50	63.00	3	9055000205000
23.00	10.00	3.80	67.00	3	9055000230000
25.00	10.00	3.80	67.00	3	9055000250000
31.00	12.00	4.20	71.00	3	9055000310000

90° Countersinks, SpyroTec

Series no. **5501**

DIN 335 Standard | 90° Point angle | C Form | R Cutting direction | NEW

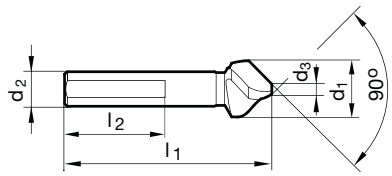
Tool material: **HSCO**

Coating: **A**

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

- 3 different convex cutting edges
- tri-flat shank prevents slipping in the chuck
- perfect for hand drills
- low-vibration cutting processes
- for round and chatter-free countersinking
- considerably lower feed force required
- for universal application





Speeds and feeds information on pg. 549

d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	No. of flutes	EDP #
6.30	5.00	1.50	45.00	30.00	3	9055010063000
8.00	6.00	2.00	50.00	30.00	3	9055010080000
8.30	6.00	2.00	50.00	30.00	3	9055010083000
10.00	6.00	2.50	50.00	30.00	3	9055010100000
10.40	6.00	2.50	50.00	30.00	3	9055010140000
11.50	8.00	2.80	56.00	30.00	3	9055010115000
12.40	8.00	2.80	56.00	30.00	3	9055010124000
15.00	10.00	3.20	60.00	30.00	3	9055010150000
16.50	10.00	3.20	60.00	30.00	3	9055010165000

d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	No. of flutes	EDP #
19.00	10.00	3.50	63.00	30.00	3	9055010190000
20.50	10.00	3.50	63.00	30.00	3	9055010205000
23.00	10.00	3.80	67.00	30.00	3	9055010230000
25.00	10.00	3.80	67.00	30.00	3	9055010250000
31.00	12.00	4.20	71.00	30.00	3	9055010310000

90° Countersinks, SpyroTec

Series no. **5503**

DIN 335 Standard | 90° Point angle | C Form | R Cutting direction | NEW

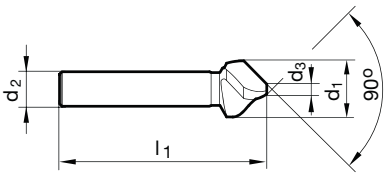
Tool material: **HSCO**

Coating: **A**

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

- long version for recessed machining points
- 3 different convex cutting edges
- low-vibration cutting processes
- for round and chatter-free countersinking
- considerably lower feed force required
- for universal application





Speeds and feeds information on pg. 549

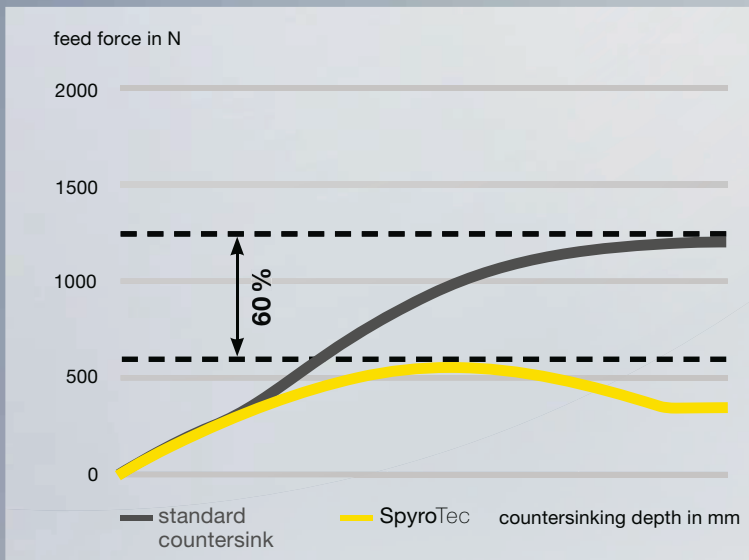
d1 mm	d2 mm	d3 mm	l1 mm	No. of flutes	EDP #
6.30	5.00	1.50	104.00	3	9055030006300
8.30	6.00	2.00	105.00	3	9055030008300
10.40	6.00	2.50	107.00	3	9055030010400
12.40	8.00	2.80	108.00	3	9055030012400
16.50	10.00	3.20	111.00	3	9055030016500
20.50	10.00	3.50	114.00	3	9055030020500
25.00	10.00	3.80	118.00	3	9055030025000
31.00	12.00	4.20	140.00	3	9055030031000

d1 mm	d2 mm	d3 mm	l1 mm	No. of flutes	EDP #

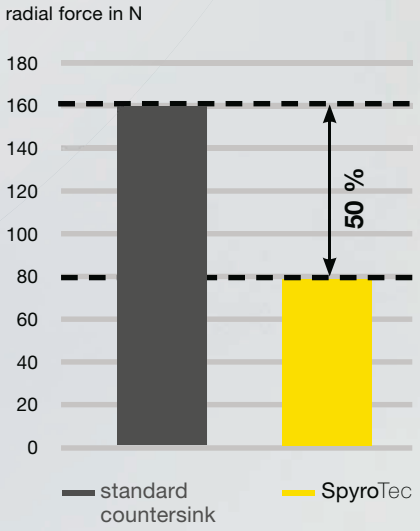
SpyroTec

THE INNOVATIVE, HELICAL HSS AND HSCO COUNTERSINK

The axial and radial forces that occur during countersinking operations are significantly reduced due to the unique geometry of the SpyroTec cutting edges. The convex form and variable pitch of the helical cutting edges results in a stable countersinking process with minimal vibration, even when using a hand drill. Round, precise, chatter-free countersinking is guaranteed. The TiAlN coating ensures higher wear resistance and thermal protection, which guarantees longer tool life in many different materials and applications.

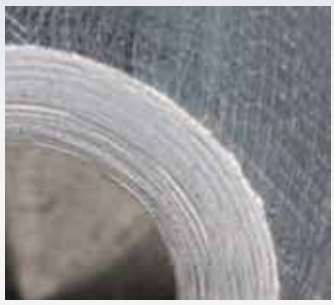


LOWER FEED FORCE BY APPROX. 60%
COMPARED TO STANDARD COUNTERSINKS



LOWER RADIAL FORCE BY APPROX. 50%
COMPARED TO STANDARD COUNTERSINKS

- standard program
- 14 dimensions Ø 6.3 – 31.0 mm
- 90° countersink
  according to DIN 335 form C
- round shank version
- tri-flat shank version
- long length round shank version



Countersinking with standard countersink



SpyroTec



MICRO-PRECISION DRILLS



Micro-precision drills

Series no. **301**

~5xD	DIN 1899	N	118°	0/-0.004	Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Shank form	Cutting direction

Tool material: **HSS-E-PM**

Surface: ◯

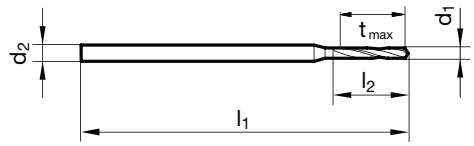
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

facet point grinding • with reinforced shank • < Ø 0.15 mm Co-alloyed high speed steel

high-alloyed steels

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 488

Diameter (d_1) inch	wire/ltr	mm	d2 h7 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0020		0.05	1.00	25.00	0.33	0.40	9003010000500
0.0024		0.06	1.00	25.00	0.31	0.40	9003010000600
0.0028		0.07	1.00	25.00	0.40	0.50	9003010000700
0.0030		0.08	1.00	25.00	0.39	0.50	9003010000750
0.0031		0.08	1.00	25.00	0.38	0.50	9003010000800
0.0035		0.09	1.00	25.00	0.37	0.50	9003010000900
0.0039		0.10	1.00	25.00	0.35	0.50	9003010001000
0.0041		0.11	1.00	25.00	0.34	0.50	9003010001050
0.0043		0.11	1.00	25.00	0.34	0.50	9003010001100
0.0045		0.12	1.00	25.00	0.33	0.50	9003010001150
0.0047		0.12	1.00	25.00	0.32	0.50	9003010001200
0.0049		0.13	1.00	25.00	0.61	0.80	9003010001250
0.0050		0.13	1.00	25.00	0.61	0.80	9003010001280
0.0051		0.13	1.00	25.00	0.61	0.80	9003010001300
0.0055		0.14	1.00	25.00	0.59	0.80	9003010001400
0.0056		0.14	1.00	25.00	0.59	0.80	9003010001430
0.0057		0.15	1.00	25.00	0.58	0.80	9003010001450
0.0058		0.15	1.00	25.00	0.58	0.80	9003010001470
0.0059	#97	0.15	1.00	25.00	0.58	0.80	9003010001500
0.0061		0.16	1.00	25.00	0.87	1.10	9003010001550
0.0063	#96	0.16	1.00	25.00	0.86	1.10	9003010001600
0.0067	#95	0.17	1.00	25.00	0.85	1.10	9003010001700
0.0069		0.18	1.00	25.00	0.84	1.10	9003010001750
0.0071	#94	0.18	1.00	25.00	0.83	1.10	9003010001800
0.0075	#93	0.19	1.00	25.00	0.82	1.10	9003010001900
0.0077		0.20	1.00	25.00	1.21	1.50	9003010001950
0.0079	#92	0.20	1.00	25.00	1.20	1.50	9003010002000
0.0081		0.21	1.00	25.00	1.19	1.50	9003010002050
0.0083	#91	0.21	1.00	25.00	1.19	1.50	9003010002100
0.0087	#90	0.22	1.00	25.00	1.17	1.50	9003010002200
0.0089		0.23	1.00	25.00	1.16	1.50	9003010002250
0.0091	#89	0.23	1.00	25.00	1.16	1.50	9003010002300
0.0093		0.24	1.00	25.00	1.15	1.50	9003010002350
0.0094	#88	0.24	1.00	25.00	1.14	1.50	9003010002400
0.0096		0.25	1.00	25.00	1.53	1.90	9003010002450
0.0098	#87	0.25	1.00	25.00	1.53	1.90	9003010002500
0.0100		0.26	1.00	25.00	1.52	1.90	9003010002550
0.0102		0.26	1.00	25.00	1.51	1.90	9003010002600
0.0104		0.27	1.00	25.00	1.50	1.90	9003010002650
0.0106	#86	0.27	1.00	25.00	1.50	1.90	9003010002700
0.0108		0.28	1.00	25.00	1.49	1.90	9003010002750
0.0110	#85	0.28	1.00	25.00	1.48	1.90	9003010002800
0.0114	#84	0.29	1.00	25.00	1.47	1.90	9003010002900
0.0116		0.30	1.00	25.00	1.46	1.90	9003010002950
0.0118		0.30	1.00	25.00	1.45	1.90	9003010003000

Diameter (d_1) inch	wire/ltr	mm	d2 h7 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0120		0.31	1.00	25.00	1.94	2.40	9003010003050
0.0122	#83	0.31	1.00	25.00	1.94	2.40	9003010003100
0.0124		0.32	1.00	25.00	1.93	2.40	9003010003150
0.0126	#82	0.32	1.00	25.00	1.92	2.40	9003010003200
0.0128		0.33	1.00	25.00	1.91	2.40	9003010003250
0.0130	#81	0.33	1.00	25.00	1.91	2.40	9003010003300
0.0134	#80	0.34	1.00	25.00	1.89	2.40	9003010003400
0.0136		0.35	1.00	25.00	1.88	2.40	9003010003450
0.0138		0.35	1.00	25.00	1.88	2.40	9003010003500
0.0140		0.36	1.00	25.00	1.87	2.40	9003010003550
0.0142		0.36	1.00	25.00	1.86	2.40	9003010003600
0.0144		0.37	1.00	25.00	1.85	2.40	9003010003650
0.0146	#79	0.37	1.00	25.00	1.85	2.40	9003010003700
0.0148		0.38	1.00	25.00	1.84	2.40	9003010003750
0.0150		0.38	1.00	25.00	1.83	2.40	9003010003800
0.0152		0.39	1.00	25.00	2.42	3.00	9003010003850
0.0154		0.39	1.00	25.00	2.42	3.00	9003010003900
0.0157	1/64	0.40	1.00	25.00	2.40	3.00	9003010004000
0.0159		0.41	1.00	25.00	2.39	3.00	9003010004050
0.0161	#78	0.41	1.00	25.00	2.39	3.00	9003010004100
0.0163		0.42	1.00	25.00	2.38	3.00	9003010004150
0.0165		0.42	1.00	25.00	2.37	3.00	9003010004200
0.0167		0.43	1.00	25.00	2.36	3.00	9003010004250
0.0169		0.43	1.00	25.00	2.36	3.00	9003010004300
0.0170		0.43	1.00	25.00	2.35	3.00	9003010004320
0.0173		0.44	1.00	25.00	2.34	3.00	9003010004400
0.0175		0.45	1.00	25.00	2.33	3.00	9003010004450
0.0177		0.45	1.00	25.00	2.33	3.00	9003010004500
0.0181	#77	0.46	1.00	25.00	2.31	3.00	9003010004600
0.0185		0.47	1.00	25.00	2.30	3.00	9003010004700
0.0187		0.48	1.00	25.00	2.29	3.00	9003010004750
0.0189		0.48	1.00	25.00	2.28	3.00	9003010004800
0.0191		0.49	1.00	25.00	2.67	3.40	9003010004850
0.0193		0.49	1.00	25.00	2.67	3.40	9003010004900
0.0195		0.50	1.00	25.00	2.66	3.40	9003010004950
0.0197		0.50	1.00	25.00	2.65	3.40	9003010005000
0.0199		0.51	1.00	25.00	2.64	3.40	9003010005050
0.0201	#76	0.51	1.00	25.00	2.64	3.40	9003010005100
0.0203		0.52	1.00	25.00	2.63	3.40	9003010005150
0.0205		0.52	1.00	25.00	2.62	3.40	9003010005200
0.0207		0.53	1.00	25.00	2.61	3.40	9003010005250
0.0209	#75	0.53	1.00	25.00	2.61	3.40	9003010005300
0.0211		0.54	1.00	25.00	3.10	3.90	9003010005350
0.0213		0.54	1.00	25.00	3.09	3.90	9003010005400
0.0215		0.55	1.00	25.00	3.08	3.90	9003010005450

Diameter (d_1) inch	wire/ltr	mm	d2 h7 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0217		0.55	1.00	25.00	3.08	3.90	9003010005500
0.0219		0.56	1.00	25.00	3.07	3.90	9003010005550
0.0220		0.56	1.00	25.00	3.06	3.90	9003010005600
0.0224	#74	0.57	1.00	25.00	3.05	3.90	9003010005700
0.0228		0.58	1.00	25.00	3.03	3.90	9003010005800
0.0230		0.59	1.00	25.00	3.02	3.90	9003010005850
0.0232		0.59	1.00	25.00	3.02	3.90	9003010005900
0.0234		0.60	1.00	25.00	3.01	3.90	9003010005950
0.0236		0.60	1.00	25.00	3.00	3.90	9003010006000
0.0238		0.61	1.00	25.00	3.29	4.20	9003010006050
0.0240	#73	0.61	1.00	25.00	3.29	4.20	9003010006100
0.0242		0.62	1.00	25.00	3.28	4.20	9003010006150
0.0244		0.62	1.00	25.00	3.27	4.20	9003010006200
0.0246		0.63	1.00	25.00	3.26	4.20	9003010006250
0.0248		0.63	1.00	25.00	3.26	4.20	9003010006300
0.0249		0.63	1.00	25.00	3.25	4.20	9003010006320
0.0252	#72	0.64	1.00	25.00	3.24	4.20	9003010006400
0.0256		0.65	1.00	25.00	3.23	4.20	9003010006500
0.0258		0.66	1.00	25.00	3.22	4.20	9003010006550
0.0260	#71	0.66	1.00	25.00	3.21	4.20	9003010006600
0.0262		0.67	1.00	25.00	3.20	4.20	9003010006650
0.0264		0.67	1.00	25.00	3.20	4.20	9003010006700
0.0266		0.68	1.00	25.00	3.79	4.80	9003010006750
0.0268		0.68	1.00	25.00	3.78	4.80	9003010006800
0.0272		0.69	1.00	25.00	3.77	4.80	9003010006900
0.0276		0.70	1.00	25.00	3.75	4.80	9003010007000
0.0278		0.71	1.00	25.00	3.74	4.80	9003010007050
0.0280	#70	0.71	1.00	25.00	3.74	4.80	9003010007100
0.0283		0.72	1.00	25.00	3.72	4.80	9003010007200
0.0285		0.73	1.00	25.00	3.71	4.80	9003010007250
0.0287		0.73	1.00	25.00	3.71	4.80	9003010007300
0.0291	#69	0.74	1.00	25.00	3.69	4.80	9003010007400
0.0295		0.75	1.00	25.00	3.68	4.80	9003010007500
0.0299		0.76	1.00	25.00	4.16	5.30	9003010007600
0.0303		0.77	1.00	25.00	4.15	5.30	9003010007700
0.0307		0.78	1.00	25.00	4.13	5.30	9003010007800
0.0311	1/32 #68	0.79	1.00	25.00	4.12	5.30	9003010007900
0.0313		0.80	1.50	25.00	4.11	5.30	9003010007950
0.0315		0.80	1.50	25.00	4.10	5.30	9003010008000
0.0319	#67	0.81	1.50	25.00	4.09	5.30	9003010008100
0.0323		0.82	1.50	25.00	4.07	5.30	9003010008200
0.0327		0.83	1.50	25.00	4.06	5.30	9003010008300
0.0331	#66	0.84	1.50	25.00	4.04	5.30	9003010008400
0.0335		0.85	1.50	25.00	4.03	5.30	9003010008500
0.0339		0.86	1.50	25.00	4.71	6.00	9003010008600
0.0343		0.87	1.50	25.00	4.70	6.00	9003010008700
0.0346		0.88	1.50	25.00	4.68	6.00	9003010008800
0.0350	#65	0.89	1.50	25.00	4.67	6.00	9003010008900
0.0354		0.90	1.50	25.00	4.65	6.00	9003010009000
0.0358	#64	0.91	1.50	25.00	4.64	6.00	9003010009100
0.0362		0.92	1.50	25.00	4.62	6.00	9003010009200
0.0364		0.93	1.50	25.00	4.61	6.00	9003010009250
0.0366		0.93	1.50	25.00	4.61	6.00	9003010009300
0.0370	#63	0.94	1.50	25.00	4.59	6.00	9003010009400
0.0374		0.95	1.50	25.00	4.58	6.00	9003010009500
0.0378		0.96	1.50	25.00	5.36	6.80	9003010009600
0.0382	#62	0.97	1.50	25.00	5.35	6.80	9003010009700
0.0386		0.98	1.50	25.00	5.33	6.80	9003010009800
0.0390	#61	0.99	1.50	25.00	5.32	6.80	9003010009900
0.0394		1.00	1.50	25.00	5.30	6.80	9003010010000
0.0398		1.01	1.50	25.00	5.29	6.80	9003010010100
0.0402	#60	1.02	1.50	25.00	5.27	6.80	9003010010200
0.0406		1.03	1.50	25.00	5.26	6.80	9003010010300
0.0409	#59	1.04	1.50	25.00	5.24	6.80	9003010010400
0.0413		1.05	1.50	25.00	5.23	6.80	9003010010500

Diameter (d_1) inch	wire/ltr	mm	d2 h7 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0415		1.06	1.50	25.00	5.22	6.80	9003010010550
0.0417		1.06	1.50	25.00	5.21	6.80	9003010010600
0.0421	#58	1.07	1.50	25.00	6.00	7.60	9003010010700
0.0425		1.08	1.50	25.00	5.98	7.60	9003010010800
0.0429	#57	1.09	1.50	25.00	5.97	7.60	9003010010900
0.0431		1.10	1.50	25.00	5.96	7.60	9003010010950
0.0433		1.10	1.50	25.00	5.95	7.60	9003010011000
0.0437		1.11	1.50	25.00	5.94	7.60	9003010011100
0.0441		1.12	1.50	25.00	5.92	7.60	9003010011200
0.0445		1.13	1.50	25.00	5.91	7.60	9003010011300
0.0449		1.14	1.50	25.00	5.89	7.60	9003010011400
0.0453		1.15	1.50	25.00	5.88	7.60	9003010011500
0.0457		1.16	1.50	25.00	5.86	7.60	9003010011600
0.0461		1.17	1.50	25.00	5.85	7.60	9003010011700
0.0463		1.18	1.50	25.00	5.84	7.60	9003010011750
0.0465	#56	1.18	1.50	25.00	5.83	7.60	9003010011800
0.0469	3/64	1.19	1.50	25.00	6.72	8.50	9003010011900
0.0472		1.20	1.50	25.00	6.70	8.50	9003010012000
0.0476		1.21	1.50	25.00	6.69	8.50	9003010012100
0.0480		1.22	1.50	25.00	6.67	8.50	9003010012200
0.0484		1.23	1.50	25.00	6.66	8.50	9003010012300
0.0488		1.24	1.50	25.00	6.64	8.50	9003010012400
0.0492		1.25	1.50	25.00	6.63	8.50	9003010012500
0.0496		1.26	1.50	25.00	6.61	8.50	9003010012600
0.0498		1.27	1.50	25.00	6.60	8.50	9003010012650
0.0500		1.27	1.50	25.00	6.60	8.50	9003010012700
0.0504		1.28	1.50	25.00	6.58	8.50	9003010012800
0.0508		1.29	1.50	25.00	6.57	8.50	9003010012900
0.0512		1.30	1.50	25.00	6.55	8.50	9003010013000
0.0516		1.31	1.50	25.00	6.54	8.50	9003010013100
0.0520	#55	1.32	1.50	25.00	6.52	8.50	9003010013200
0.0524		1.33	1.50	25.00	7.51	9.50	9003010013300
0.0528		1.34	1.50	25.00	7.49	9.50	9003010013400
0.0531		1.35	1.50	25.00	7.48	9.50	9003010013500
0.0539		1.37	1.50	25.00	7.45	9.50	9003010013700
0.0543		1.38	1.50	25.00	7.43	9.50	9003010013800
0.0547		1.39	1.50	25.00	7.42	9.50	9003010013900
0.0551	#54	1.40	1.50	25.00	7.40	9.50	9003010014000
0.0555		1.41	1.50	25.00	7.39	9.50	9003010014100
0.0559		1.42	1.50	25.00	7.37	9.50	9003010014200
0.0563		1.43	1.50	25.00	7.36	9.50	9003010014300
0.0567		1.44	1.50	25.00	7.34	9.50	9003010014400
0.0571		1.45	1.50	25.00	7.33	9.50	9003010014500
0.0575		1.46	2.00	30.00	7.31	9.50	9003010014600
0.0579		1.47	2.00	30.00	7.30	9.50	9003010014700
0.0591		1.50	2.00	30.00	7.25	9.50	9003010015000
0.0602		1.53	2.00	30.00	8.31	10.60	9003010015300
0.0610		1.55	2.00	30.00	8.28	10.60	9003010015500
0.0626	1/16	1.59	2.00	30.00	8.22	10.60	9003010015900
0.0630		1.60	2.00	30.00	8.20	10.60	9003010016000
0.0634	#52	1.61	2.00	30.00	8.19	10.60	9003010016100
0.0650		1.65	2.00	30.00	8.13	10.60	9003010016500
0.0669	#51	1.70	2.00	30.00	8.05	10.60	9003010017000
0.0673		1.71	2.00	30.00	9.24	11.80	9003010017100
0.0681		1.73	2.00	30.00	9.21	11.80	9003010017300
0.0687		1.75	2.00	30.00	9.18	11.80	9003010017450
0.0689		1.75	2.00	30.00	9.18	11.80	9003010017500
0.0699		1.78	2.00	30.00	9.14	11.80	9003010017750
0.0709		1.80	2.00	30.00	9.10	11.80	9003010018000
0.0720		1.83	2.00	30.00	9.06	11.80	9003010018300
0.0724		1.84	2.00	30.00	9.04	11.80	9003010018400
0.0728	#49	1.85	2.00	30.00	9.03	11.80	9003010018500
0.0748		1.90	2.00	30.00	8.95	11.80	9003010019000
0.0756		1.92	2.00	30.00	10.32	13.20	9003010019200

Micro-precision drills

Series no. **303**

~5xD	DIN 1899	N	118°	0/-0.004	Cyl	L
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Shank form	Cutting direction

Tool material: **HSS-E-PM**

Surface: ◯

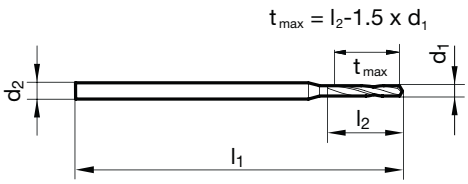
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

facet point grinding • with reinforced shank • < Ø 0.15 mm Co-alloyed high speed steel

high-alloyed steels





Speeds and feeds information on pg. 489

Diameter (d_1) inch	wire/ltr	mm	d2 h7 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0051		0.13	1.00	25.00	0.61	0.80	9003030001300
0.0055		0.14	1.00	25.00	0.59	0.80	9003030001400
0.0059	#97	0.15	1.00	25.00	0.58	0.80	9003030001500
0.0063	#96	0.16	1.00	25.00	0.86	1.10	9003030001600
0.0067	#95	0.17	1.00	25.00	0.85	1.10	9003030001700
0.0071	#94	0.18	1.00	25.00	0.83	1.10	9003030001800
0.0073		0.19	1.00	25.00	0.82	1.10	9003030001850
0.0075	#93	0.19	1.00	25.00	0.82	1.10	9003030001900
0.0077		0.20	1.00	25.00	1.21	1.50	9003030001950
0.0079	#92	0.20	1.00	25.00	1.20	1.50	9003030002000
0.0083	#91	0.21	1.00	25.00	1.19	1.50	9003030002100
0.0085		0.22	1.00	25.00	1.18	1.50	9003030002150
0.0087	#90	0.22	1.00	25.00	1.17	1.50	9003030002200
0.0089		0.23	1.00	25.00	1.16	1.50	9003030002250
0.0091	#89	0.23	1.00	25.00	1.16	1.50	9003030002300
0.0094	#88	0.24	1.00	25.00	1.14	1.50	9003030002400
0.0096		0.25	1.00	25.00	1.53	1.90	9003030002450
0.0098	#87	0.25	1.00	25.00	1.53	1.90	9003030002500
0.0100		0.26	1.00	25.00	1.52	1.90	9003030002550
0.0102		0.26	1.00	25.00	1.51	1.90	9003030002600
0.0104		0.27	1.00	25.00	1.50	1.90	9003030002650
0.0106	#86	0.27	1.00	25.00	1.50	1.90	9003030002700
0.0110	#85	0.28	1.00	25.00	1.48	1.90	9003030002800
0.0114	#84	0.29	1.00	25.00	1.47	1.90	9003030002900
0.0116		0.30	1.00	25.00	1.46	1.90	9003030002950
0.0118		0.30	1.00	25.00	1.45	1.90	9003030003000
0.0122	#83	0.31	1.00	25.00	1.94	2.40	9003030003100
0.0126	#82	0.32	1.00	25.00	1.92	2.40	9003030003200
0.0130	#81	0.33	1.00	25.00	1.91	2.40	9003030003300
0.0134	#80	0.34	1.00	25.00	1.89	2.40	9003030003400
0.0138		0.35	1.00	25.00	1.88	2.40	9003030003500
0.0142		0.36	1.00	25.00	1.86	2.40	9003030003600
0.0146	#79	0.37	1.00	25.00	1.85	2.40	9003030003700
0.0150		0.38	1.00	25.00	1.83	2.40	9003030003800
0.0154		0.39	1.00	25.00	2.42	3.00	9003030003900
0.0157	1/64	0.40	1.00	25.00	2.40	3.00	9003030004000
0.0161	#78	0.41	1.00	25.00	2.39	3.00	9003030004100
0.0165		0.42	1.00	25.00	2.37	3.00	9003030004200
0.0169		0.43	1.00	25.00	2.36	3.00	9003030004300
0.0173		0.44	1.00	25.00	2.34	3.00	9003030004400
0.0177		0.45	1.00	25.00	2.33	3.00	9003030004500
0.0181	#77	0.46	1.00	25.00	2.31	3.00	9003030004600

Diameter (d_1) inch	wire/ltr	mm	d2 h7 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0185		0.47	1.00	25.00	2.30	3.00	9003030004700
0.0189		0.48	1.00	25.00	2.28	3.00	9003030004800
0.0193		0.49	1.00	25.00	2.67	3.40	9003030004900
0.0197		0.50	1.00	25.00	2.65	3.40	9003030005000
0.0201	#76	0.51	1.00	25.00	2.64	3.40	9003030005100
0.0205		0.52	1.00	25.00	2.62	3.40	9003030005200
0.0207		0.53	1.00	25.00	2.61	3.40	9003030005250
0.0209	#75	0.53	1.00	25.00	2.61	3.40	9003030005300
0.0211		0.54	1.00	25.00	3.10	3.90	9003030005350
0.0213		0.54	1.00	25.00	3.09	3.90	9003030005400
0.0215		0.55	1.00	25.00	3.08	3.90	9003030005450
0.0217		0.55	1.00	25.00	3.08	3.90	9003030005500
0.0219		0.56	1.00	25.00	3.07	3.90	9003030005550
0.0220		0.56	1.00	25.00	3.06	3.90	9003030005600
0.0222		0.57	1.00	25.00	3.05	3.90	9003030005650
0.0224	#74	0.57	1.00	25.00	3.05	3.90	9003030005700
0.0228		0.58	1.00	25.00	3.03	3.90	9003030005800
0.0232		0.59	1.00	25.00	3.02	3.90	9003030005900
0.0236		0.60	1.00	25.00	3.00	3.90	9003030006000
0.0240	#73	0.61	1.00	25.00	3.29	4.20	9003030006100
0.0244		0.62	1.00	25.00	3.27	4.20	9003030006200
0.0248		0.63	1.00	25.00	3.26	4.20	9003030006300
0.0252	#72	0.64	1.00	25.00	3.24	4.20	9003030006400
0.0256		0.65	1.00	25.00	3.23	4.20	9003030006500
0.0260	#71	0.66	1.00	25.00	3.21	4.20	9003030006600
0.0264		0.67	1.00	25.00	3.20	4.20	9003030006700
0.0266		0.68	1.00	25.00	3.79	4.80	9003030006750
0.0268		0.68	1.00	25.00	3.78	4.80	9003030006800
0.0272		0.69	1.00	25.00	3.77	4.80	9003030006900
0.0276		0.70	1.00	25.00	3.75	4.80	9003030007000
0.0280	#70	0.71	1.00	25.00	3.74	4.80	9003030007100
0.0283		0.72	1.00	25.00	3.72	4.80	9003030007200
0.0287		0.73	1.00	25.00	3.71	4.80	9003030007300
0.0291	#69	0.74	1.00	25.00	3.69	4.80	9003030007400
0.0295		0.75	1.00	25.00	3.68	4.80	9003030007500
0.0299		0.76	1.00	25.00	4.16	5.30	9003030007600
0.0303		0.77	1.00	25.00	4.15	5.30	9003030007700
0.0307		0.78	1.00	25.00	4.13	5.30	9003030007800
0.0311	1/32 #68	0.79	1.00	25.00	4.12	5.30	9003030007900
0.0315		0.80	1.50	25.00	4.10	5.30	9003030008000
0.0319	#67	0.81	1.50	25.00	4.09	5.30	9003030008100
0.0323		0.82	1.50	25.00	4.07	5.30	9003030008200

Micro-precision drills

Series no. **303**

Diameter (d_1) inch	wire/ltr	mm	d2 h7 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0327		0.83	1.50	25.00	4.06	5.30	9003030008300
0.0331	#66	0.84	1.50	25.00	4.04	5.30	9003030008400
0.0335		0.85	1.50	25.00	4.03	5.30	9003030008500
0.0339		0.86	1.50	25.00	4.71	6.00	9003030008600
0.0343		0.87	1.50	25.00	4.70	6.00	9003030008700
0.0346		0.88	1.50	25.00	4.68	6.00	9003030008800
0.0350	#65	0.89	1.50	25.00	4.67	6.00	9003030008900
0.0354		0.90	1.50	25.00	4.65	6.00	9003030009000
0.0358	#64	0.91	1.50	25.00	4.64	6.00	9003030009100
0.0360		0.92	1.50	25.00	4.63	6.00	9003030009150
0.0362		0.92	1.50	25.00	4.62	6.00	9003030009200
0.0366		0.93	1.50	25.00	4.61	6.00	9003030009300
0.0368		0.94	1.50	25.00	4.60	6.00	9003030009350
0.0370	#63	0.94	1.50	25.00	4.59	6.00	9003030009400
0.0374		0.95	1.50	25.00	4.58	6.00	9003030009500
0.0378		0.96	1.50	25.00	5.36	6.80	9003030009600
0.0382	#62	0.97	1.50	25.00	5.35	6.80	9003030009700
0.0386		0.98	1.50	25.00	5.33	6.80	9003030009800
0.0390	#61	0.99	1.50	25.00	5.32	6.80	9003030009900
0.0394		1.00	1.50	25.00	5.30	6.80	9003030010000
0.0396		1.01	1.50	25.00	5.29	6.80	9003030010050
0.0398		1.01	1.50	25.00	5.29	6.80	9003030010100
0.0402	#60	1.02	1.50	25.00	5.27	6.80	9003030010200
0.0406		1.03	1.50	25.00	5.26	6.80	9003030010300
0.0409	#59	1.04	1.50	25.00	5.24	6.80	9003030010400

Diameter (d_1) inch	wire/ltr	mm	d2 h7 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0413		1.05	1.50	25.00	5.23	6.80	9003030010500
0.0417		1.06	1.50	25.00	5.21	6.80	9003030010600
0.0421	#58	1.07	1.50	25.00	6.00	7.60	9003030010700
0.0425		1.08	1.50	25.00	5.98	7.60	9003030010800
0.0429	#57	1.09	1.50	25.00	5.97	7.60	9003030010900
0.0433		1.10	1.50	25.00	5.95	7.60	9003030011000
0.0437		1.11	1.50	25.00	5.94	7.60	9003030011100
0.0441		1.12	1.50	25.00	5.92	7.60	9003030011200
0.0453		1.15	1.50	25.00	5.88	7.60	9003030011500
0.0461		1.17	1.50	25.00	5.85	7.60	9003030011700
0.0465	#56	1.18	1.50	25.00	5.83	7.60	9003030011800
0.0469	3/64	1.19	1.50	25.00	6.72	8.50	9003030011900
0.0472		1.20	1.50	25.00	6.70	8.50	9003030012000
0.0480		1.22	1.50	25.00	6.67	8.50	9003030012200
0.0492		1.25	1.50	25.00	6.63	8.50	9003030012500
0.0500		1.27	1.50	25.00	6.60	8.50	9003030012700
0.0508		1.29	1.50	25.00	6.57	8.50	9003030012900
0.0512		1.30	1.50	25.00	6.55	8.50	9003030013000
0.0520	#55	1.32	1.50	25.00	6.52	8.50	9003030013200
0.0524		1.33	1.50	25.00	7.51	9.50	9003030013300
0.0531		1.35	1.50	25.00	7.48	9.50	9003030013500
0.0535		1.36	1.50	25.00	7.46	9.50	9003030013600
0.0551	#54	1.40	1.50	25.00	7.40	9.50	9003030014000
0.0728	#49	1.85	2.00	30.00	9.03	11.80	9003030018500

Micro-precision drills

Series no. **660**

~5xD	DIN 1899	N	118°	0/-0.004	Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Shank form	Cutting direction

Tool material: **HSS-E-PM**

Surface: **S**

P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

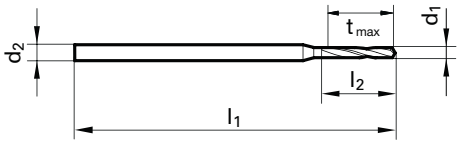
●=Optimal
○=Limited

facet point grinding • with reinforced shank • increased wear resistance

high-alloyed steels



$t_{max} = l_2 - 1.5 \times d_1$



Speeds and feeds information on pg. 518

Diameter (d_1) inch	wire/ltr	mm	d2 h7 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0050		0.13	1.00	25.00	0.61	0.80	9006600001280
0.0063	#96	0.16	1.00	25.00	0.86	1.10	9006600001600
0.0067	#95	0.17	1.00	25.00	0.85	1.10	9006600001700
0.0071	#94	0.18	1.00	25.00	0.83	1.10	9006600001800
0.0075	#93	0.19	1.00	25.00	0.82	1.10	9006600001900
0.0079	#92	0.20	1.00	25.00	1.20	1.50	9006600002000
0.0083	#91	0.21	1.00	25.00	1.19	1.50	9006600002100
0.0087	#90	0.22	1.00	25.00	1.17	1.50	9006600002200
0.0091	#89	0.23	1.00	25.00	1.16	1.50	9006600002300
0.0093		0.24	1.00	25.00	1.15	1.50	9006600002350
0.0094	#88	0.24	1.00	25.00	1.14	1.50	9006600002400
0.0096		0.25	1.00	25.00	1.53	1.90	9006600002450
0.0098	#87	0.25	1.00	25.00	1.53	1.90	9006600002500
0.0100		0.26	1.00	25.00	1.52	1.90	9006600002550
0.0102		0.26	1.00	25.00	1.51	1.90	9006600002600
0.0104		0.27	1.00	25.00	1.50	1.90	9006600002650
0.0106	#86	0.27	1.00	25.00	1.50	1.90	9006600002700
0.0110	#85	0.28	1.00	25.00	1.48	1.90	9006600002800
0.0114	#84	0.29	1.00	25.00	1.47	1.90	9006600002900
0.0118		0.30	1.00	25.00	1.45	1.90	9006600003000
0.0120		0.31	1.00	25.00	1.94	2.40	9006600003050
0.0122	#83	0.31	1.00	25.00	1.94	2.40	9006600003100
0.0126	#82	0.32	1.00	25.00	1.92	2.40	9006600003200
0.0130	#81	0.33	1.00	25.00	1.91	2.40	9006600003300
0.0134	#80	0.34	1.00	25.00	1.89	2.40	9006600003400
0.0138		0.35	1.00	25.00	1.88	2.40	9006600003500
0.0142		0.36	1.00	25.00	1.86	2.40	9006600003600
0.0146	#79	0.37	1.00	25.00	1.85	2.40	9006600003700
0.0150		0.38	1.00	25.00	1.83	2.40	9006600003800
0.0154		0.39	1.00	25.00	2.42	3.00	9006600003900
0.0157	1/64	0.40	1.00	25.00	2.40	3.00	9006600004000
0.0161	#78	0.41	1.00	25.00	2.39	3.00	9006600004100
0.0165		0.42	1.00	25.00	2.37	3.00	9006600004200
0.0169		0.43	1.00	25.00	2.36	3.00	9006600004300
0.0173		0.44	1.00	25.00	2.34	3.00	9006600004400
0.0177		0.45	1.00	25.00	2.33	3.00	9006600004500
0.0181	#77	0.46	1.00	25.00	2.31	3.00	9006600004600
0.0185		0.47	1.00	25.00	2.30	3.00	9006600004700
0.0189		0.48	1.00	25.00	2.28	3.00	9006600004800
0.0193		0.49	1.00	25.00	2.67	3.40	9006600004900
0.0197		0.50	1.00	25.00	2.65	3.40	9006600005000

Diameter (d_1) inch	wire/ltr	mm	d2 h7 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0201	#76	0.51	1.00	25.00	2.64	3.40	9006600005100
0.0205		0.52	1.00	25.00	2.62	3.40	9006600005200
0.0209	#75	0.53	1.00	25.00	2.61	3.40	9006600005300
0.0213		0.54	1.00	25.00	3.09	3.90	9006600005400
0.0217		0.55	1.00	25.00	3.08	3.90	9006600005500
0.0220		0.56	1.00	25.00	3.06	3.90	9006600005600
0.0224	#74	0.57	1.00	25.00	3.05	3.90	9006600005700
0.0228		0.58	1.00	25.00	3.03	3.90	9006600005800
0.0232		0.59	1.00	25.00	3.02	3.90	9006600005900
0.0236		0.60	1.00	25.00	3.00	3.90	9006600006000
0.0240	#73	0.61	1.00	25.00	3.29	4.20	9006600006100
0.0244		0.62	1.00	25.00	3.27	4.20	9006600006200
0.0248		0.63	1.00	25.00	3.26	4.20	9006600006300
0.0252	#72	0.64	1.00	25.00	3.24	4.20	9006600006400
0.0256		0.65	1.00	25.00	3.23	4.20	9006600006500
0.0260	#71	0.66	1.00	25.00	3.21	4.20	9006600006600
0.0264		0.67	1.00	25.00	3.20	4.20	9006600006700
0.0268		0.68	1.00	25.00	3.78	4.80	9006600006800
0.0272		0.69	1.00	25.00	3.77	4.80	9006600006900
0.0276		0.70	1.00	25.00	3.75	4.80	9006600007000
0.0280	#70	0.71	1.00	25.00	3.74	4.80	9006600007100
0.0283		0.72	1.00	25.00	3.72	4.80	9006600007200
0.0287		0.73	1.00	25.00	3.71	4.80	9006600007300
0.0291	#69	0.74	1.00	25.00	3.69	4.80	9006600007400
0.0295		0.75	1.00	25.00	3.68	4.80	9006600007500
0.0299		0.76	1.00	25.00	4.16	5.30	9006600007600
0.0303		0.77	1.00	25.00	4.15	5.30	9006600007700
0.0307		0.78	1.00	25.00	4.13	5.30	9006600007800
0.0311	1/32	#68	0.79	1.00	25.00	4.12	5.30	9006600007900
0.0315		0.80	1.50	25.00	4.10	5.30	9006600008000
0.0319	#67	0.81	1.50	25.00	4.09	5.30	9006600008100
0.0323		0.82	1.50	25.00	4.07	5.30	9006600008200
0.0327		0.83	1.50	25.00	4.06	5.30	9006600008300
0.0331	#66	0.84	1.50	25.00	4.04	5.30	9006600008400
0.0335		0.85	1.50	25.00	4.03	5.30	9006600008500
0.0339		0.86	1.50	25.00	4.71	6.00	9006600008600
0.0343		0.87	1.50	25.00	4.70	6.00	9006600008700
0.0346		0.88	1.50	25.00	4.68	6.00	9006600008800
0.0354		0.90	1.50	25.00	4.65	6.00	9006600009000
0.0358	#64	0.91	1.50	25.00	4.64	6.00	9006600009100
0.0370	#63	0.94	1.50	25.00	4.59	6.00	9006600009400

Micro-precision drills

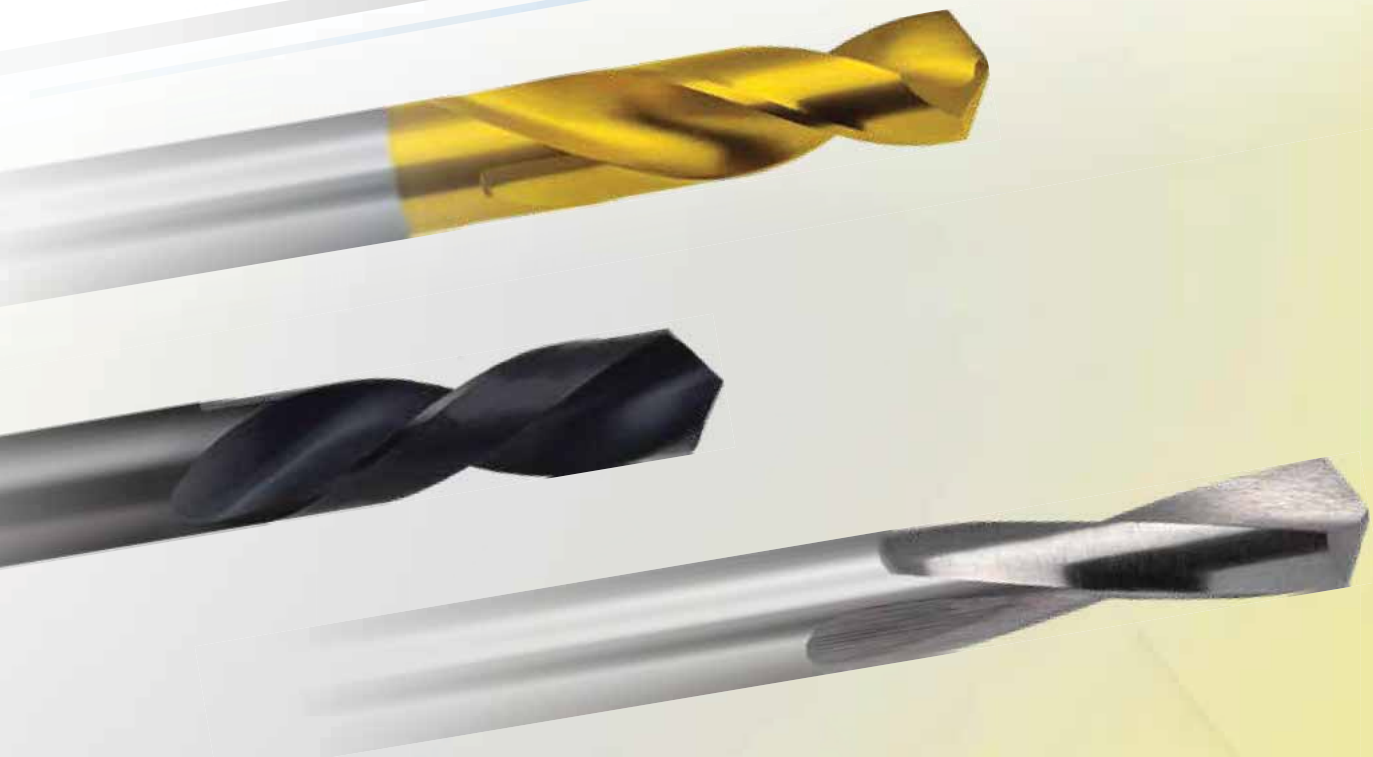
Series no. **660**

Diameter (d_1) inch	wire/ltr	mm	d2 h7 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0374		0.95	1.50	25.00	4.58	6.00	9006600009500
0.0382	#62	0.97	1.50	25.00	5.35	6.80	9006600009700
0.0386		0.98	1.50	25.00	5.33	6.80	9006600009800
0.0394		1.00	1.50	25.00	5.30	6.80	9006600010000
0.0402	#60	1.02	1.50	25.00	5.27	6.80	9006600010200
0.0409	#59	1.04	1.50	25.00	5.24	6.80	9006600010400
0.0413		1.05	1.50	25.00	5.23	6.80	9006600010500
0.0421	#58	1.07	1.50	25.00	6.00	7.60	9006600010700
0.0425		1.08	1.50	25.00	5.98	7.60	9006600010800
0.0433		1.10	1.50	25.00	5.95	7.60	9006600011000
0.0453		1.15	1.50	25.00	5.88	7.60	9006600011500
0.0465	#56	1.18	1.50	25.00	5.83	7.60	9006600011800

Diameter (d_1) inch	wire/ltr	mm	d2 h7 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0469	3/64	1.19	1.50	25.00	6.72	8.50	9006600011900
0.0472		1.20	1.50	25.00	6.70	8.50	9006600012000
0.0492		1.25	1.50	25.00	6.63	8.50	9006600012500
0.0512		1.30	1.50	25.00	6.55	8.50	9006600013000
0.0531		1.35	1.50	25.00	7.48	9.50	9006600013500
0.0547		1.39	1.50	25.00	7.42	9.50	9006600013900
0.0551	#54	1.40	1.50	25.00	7.40	9.50	9006600014000
0.0559		1.42	1.50	25.00	7.37	9.50	9006600014200
0.0571		1.45	1.50	25.00	7.33	9.50	9006600014500
0.0591		1.50	2.00	30.00	7.25	9.50	9006600015000
0.0709		1.80	2.00	30.00	9.10	11.80	9006600018000



STUB LENGTH HSS, HSCO, HSS-E-PM DRILLS



Stub length drills

Series no. **223**

~3xD	DIN 1897	N	118°	h8		Cyl	R	
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction	

Tool material: **HSS**

Surface: >Ø 2.36

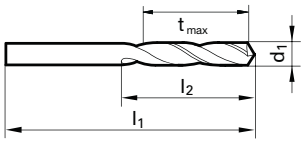
P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • for use in automatic/capstan lathes • also for hand drilling machines

thin materials

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 479

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0157	1/64	0.40	19.00	1.90	2.50	9002230004000
0.0197		0.50	20.00	2.25	3.00	9002230005000
0.0217		0.55	21.00	2.68	3.50	9002230005500
0.0236		0.60	21.00	2.60	3.50	9002230006000
0.0256		0.65	22.00	3.03	4.00	9002230006500
0.0260	#71	0.66	22.00	3.01	4.00	9002230006600
0.0276		0.70	23.00	3.45	4.50	9002230007000
0.0283		0.72	23.00	3.42	4.50	9002230007200
0.0295		0.75	23.00	3.38	4.50	9002230007500
0.0311	1/32 #68	0.79	24.00	3.82	5.00	9002230007900
0.0315		0.80	24.00	3.80	5.00	9002230008000
0.0323		0.82	24.00	3.77	5.00	9002230008200
0.0350	#65	0.89	25.00	4.17	5.50	9002230008900
0.0354		0.90	25.00	4.15	5.50	9002230009000
0.0374		0.95	25.00	4.08	5.50	9002230009500
0.0386		0.98	26.00	4.53	6.00	9002230009800
0.0394		1.00	26.00	4.50	6.00	9002230010000
0.0402	#60	1.02	26.00	4.47	6.00	9002230010200
0.0409	#59	1.04	26.00	4.44	6.00	9002230010400
0.0413		1.05	26.00	4.43	6.00	9002230010500
0.0421	#58	1.07	28.00	5.40	7.00	9002230010700
0.0429	#57	1.09	28.00	5.37	7.00	9002230010900
0.0433		1.10	28.00	5.35	7.00	9002230011000
0.0453		1.15	28.00	5.28	7.00	9002230011500
0.0465	#56	1.18	28.00	5.23	7.00	9002230011800
0.0469	3/64	1.19	30.00	6.22	8.00	9002230011900
0.0472		1.20	30.00	6.20	8.00	9002230012000
0.0492		1.25	30.00	6.13	8.00	9002230012500
0.0496		1.26	30.00	6.11	8.00	9002230012600
0.0504		1.28	30.00	6.08	8.00	9002230012800
0.0512		1.30	30.00	6.05	8.00	9002230013000
0.0520	#55	1.32	30.00	6.02	8.00	9002230013200
0.0531		1.35	32.00	6.98	9.00	9002230013500
0.0551	#54	1.40	32.00	6.90	9.00	9002230014000
0.0571		1.45	32.00	6.83	9.00	9002230014500
0.0591		1.50	32.00	6.75	9.00	9002230015000
0.0594	#53	1.51	34.00	7.74	10.00	9002230015100
0.0598		1.52	34.00	7.72	10.00	9002230015200
0.0610		1.55	34.00	7.68	10.00	9002230015500
0.0626	1/16	1.59	34.00	7.62	10.00	9002230015900
0.0630		1.60	34.00	7.60	10.00	9002230016000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0634	#52	1.61	34.00	7.59	10.00	9002230016100
0.0650		1.65	34.00	7.53	10.00	9002230016500
0.0669	#51	1.70	34.00	7.45	10.00	9002230017000
0.0677		1.72	36.00	8.42	11.00	9002230017200
0.0685		1.74	36.00	8.39	11.00	9002230017400
0.0689		1.75	36.00	8.38	11.00	9002230017500
0.0701	#50	1.78	36.00	8.33	11.00	9002230017800
0.0709		1.80	36.00	8.30	11.00	9002230018000
0.0728	#49	1.85	36.00	8.23	11.00	9002230018500
0.0748		1.90	36.00	8.15	11.00	9002230019000
0.0760	#48	1.93	38.00	9.11	12.00	9002230019300
0.0768		1.95	38.00	9.08	12.00	9002230019500
0.0776		1.97	38.00	9.05	12.00	9002230019700
0.0780	5/64	1.98	38.00	9.03	12.00	9002230019800
0.0783	#47	1.99	38.00	9.02	12.00	9002230019900
0.0787		2.00	38.00	9.00	12.00	9002230020000
0.0807		2.05	38.00	8.93	12.00	9002230020500
0.0811	#46	2.06	38.00	8.91	12.00	9002230020600
0.0819	#45	2.08	38.00	8.88	12.00	9002230020800
0.0827		2.10	38.00	8.85	12.00	9002230021000
0.0835		2.12	38.00	8.82	12.00	9002230021200
0.0846		2.15	40.00	9.78	13.00	9002230021500
0.0858	#44	2.18	40.00	9.73	13.00	9002230021800
0.0866		2.20	40.00	9.70	13.00	9002230022000
0.0874		2.22	40.00	9.67	13.00	9002230022200
0.0886		2.25	40.00	9.63	13.00	9002230022500
0.0890	#43	2.26	40.00	9.61	13.00	9002230022600
0.0906		2.30	40.00	9.55	13.00	9002230023000
0.0925		2.35	40.00	9.48	13.00	9002230023500
0.0933	#42	2.37	43.00	10.45	14.00	9002230023700
0.0937	3/32	2.38	43.00	10.43	14.00	9002230023800
0.0945		2.40	43.00	10.40	14.00	9002230024000
0.0961	#41	2.44	43.00	10.34	14.00	9002230024400
0.0965		2.45	43.00	10.33	14.00	9002230024500
0.0976		2.48	43.00	10.28	14.00	9002230024800
0.0980	#40	2.49	43.00	10.27	14.00	9002230024900
0.0984		2.50	43.00	10.25	14.00	9002230025000
0.0996	#39	2.53	43.00	10.21	14.00	9002230025300
0.1004		2.55	43.00	10.18	14.00	9002230025500
0.1016	#38	2.58	43.00	10.13	14.00	9002230025800
0.1024		2.60	43.00	10.10	14.00	9002230026000

Stub length drills

Series no. 223

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1039	#37	2.64	43.00	10.04	14.00	9002230026400
0.1043		2.65	43.00	10.03	14.00	9002230026500
0.1063		2.70	46.00	11.95	16.00	9002230027000
0.1067	#36	2.71	46.00	11.94	16.00	9002230027100
0.1083		2.75	46.00	11.88	16.00	9002230027500
0.1094	7/64	2.78	46.00	11.83	16.00	9002230027800
0.1098	#35	2.79	46.00	11.82	16.00	9002230027900
0.1102		2.80	46.00	11.80	16.00	9002230028000
0.1110	#34	2.82	46.00	11.77	16.00	9002230028200
0.1122		2.85	46.00	11.73	16.00	9002230028500
0.1130	#33	2.87	46.00	11.70	16.00	9002230028700
0.1142		2.90	46.00	11.65	16.00	9002230029000
0.1150		2.92	46.00	11.62	16.00	9002230029200
0.1161	#32	2.95	46.00	11.58	16.00	9002230029500
0.1169		2.97	46.00	11.55	16.00	9002230029700
0.1181		3.00	46.00	11.50	16.00	9002230030000
0.1201	#31	3.05	49.00	13.43	18.00	9002230030500
0.1220		3.10	49.00	13.35	18.00	9002230031000
0.1240		3.15	49.00	13.28	18.00	9002230031500
0.1248	1/8	3.17	49.00	13.25	18.00	9002230031700
0.1260		3.20	49.00	13.20	18.00	9002230032000
0.1280		3.25	49.00	13.13	18.00	9002230032500
0.1283	#30	3.26	49.00	13.11	18.00	9002230032600
0.1299		3.30	49.00	13.05	18.00	9002230033000
0.1319		3.35	49.00	12.98	18.00	9002230033500
0.1339		3.40	52.00	14.90	20.00	9002230034000
0.1358	#29	3.45	52.00	14.83	20.00	9002230034500
0.1378		3.50	52.00	14.75	20.00	9002230035000
0.1398		3.55	52.00	14.68	20.00	9002230035500
0.1406	9/64 #28	3.57	52.00	14.65	20.00	9002230035700
0.1417		3.60	52.00	14.60	20.00	9002230036000
0.1437		3.65	52.00	14.53	20.00	9002230036500
0.1441	#27	3.66	52.00	14.51	20.00	9002230036600
0.1457		3.70	52.00	14.45	20.00	9002230037000
0.1469	#26	3.73	52.00	14.41	20.00	9002230037300
0.1476		3.75	52.00	14.38	20.00	9002230037500
0.1496	#25	3.80	55.00	16.30	22.00	9002230038000
0.1516		3.85	55.00	16.23	22.00	9002230038500
0.1520	#24	3.86	55.00	16.21	22.00	9002230038600
0.1535		3.90	55.00	16.15	22.00	9002230039000
0.1539	#23	3.91	55.00	16.14	22.00	9002230039100
0.1555		3.95	55.00	16.08	22.00	9002230039500
0.1563	5/32	3.97	55.00	16.05	22.00	9002230039700
0.1571	#22	3.99	55.00	16.02	22.00	9002230039900
0.1575		4.00	55.00	16.00	22.00	9002230040000
0.1583		4.02	55.00	15.97	22.00	9002230040200
0.1591	#21	4.04	55.00	15.94	22.00	9002230040400
0.1610	#20	4.09	55.00	15.87	22.00	9002230040900
0.1614		4.10	55.00	15.85	22.00	9002230041000
0.1634		4.15	55.00	15.78	22.00	9002230041500
0.1654		4.20	55.00	15.70	22.00	9002230042000
0.1661	#19	4.22	55.00	15.67	22.00	9002230042200
0.1673		4.25	55.00	15.63	22.00	9002230042500
0.1693	#18	4.30	58.00	17.55	24.00	9002230043000
0.1720	11/64	4.37	58.00	17.45	24.00	9002230043700
0.1728	#17	4.39	58.00	17.42	24.00	9002230043900
0.1732		4.40	58.00	17.40	24.00	9002230044000
0.1752		4.45	58.00	17.33	24.00	9002230044500
0.1772	#16	4.50	58.00	17.25	24.00	9002230045000
0.1791		4.55	58.00	17.18	24.00	9002230045500
0.1799	#15	4.57	58.00	17.15	24.00	9002230045700
0.1811		4.60	58.00	17.10	24.00	9002230046000
0.1819	#14	4.62	58.00	17.07	24.00	9002230046200
0.1850	#13	4.70	58.00	16.95	24.00	9002230047000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1870		4.75	58.00	16.88	24.00	9002230047500
0.1874	3/16	4.76	62.00	18.86	26.00	9002230047600
0.1890	#12	4.80	62.00	18.80	26.00	9002230048000
0.1909	#11	4.85	62.00	18.73	26.00	9002230048500
0.1929		4.90	62.00	18.65	26.00	9002230049000
0.1937	#10	4.92	62.00	18.62	26.00	9002230049200
0.1961	#9	4.98	62.00	18.53	26.00	9002230049800
0.1969		5.00	62.00	18.50	26.00	9002230050000
0.1988		5.05	62.00	18.43	26.00	9002230050500
0.1992	#8	5.06	62.00	18.41	26.00	9002230050600
0.2008		5.10	62.00	18.35	26.00	9002230051000
0.2012	#7	5.11	62.00	18.34	26.00	9002230051100
0.2031	13/64	5.16	62.00	18.26	26.00	9002230051600
0.2039	#6	5.18	62.00	18.23	26.00	9002230051800
0.2047		5.20	62.00	18.20	26.00	9002230052000
0.2055	#5	5.22	62.00	18.17	26.00	9002230052200
0.2067		5.25	62.00	18.13	26.00	9002230052500
0.2087		5.30	62.00	18.05	26.00	9002230053000
0.2091	#4	5.31	66.00	20.04	28.00	9002230053100
0.2106		5.35	66.00	19.98	28.00	9002230053500
0.2126		5.40	66.00	19.90	28.00	9002230054000
0.2130	#3	5.41	66.00	19.89	28.00	9002230054100
0.2146		5.45	66.00	19.83	28.00	9002230054500
0.2165		5.50	66.00	19.75	28.00	9002230055000
5.5500		5.55	66.00	19.68	28.00	9002230055500
0.2189	7/32	5.56	66.00	19.66	28.00	9002230055600
0.2205		5.60	66.00	19.60	28.00	9002230056000
0.2209	#2	5.61	66.00	19.59	28.00	9002230056100
0.2244		5.70	66.00	19.45	28.00	9002230057000
0.2264		5.75	66.00	19.38	28.00	9002230057500
0.2280	#1	5.79	66.00	19.32	28.00	9002230057900
0.2283		5.80	66.00	19.30	28.00	9002230058000
0.2323		5.90	66.00	19.15	28.00	9002230059000
0.2339	A	5.94	66.00	19.09	28.00	9002230059400
0.2343	15/64	5.95	66.00	19.08	28.00	9002230059500
0.2362		6.00	66.00	19.00	28.00	9002230060000
0.2378	B	6.04	70.00	21.94	31.00	9002230060400
0.2382		6.05	70.00	21.93	31.00	9002230060500
0.2402		6.10	70.00	21.85	31.00	9002230061000
0.2421	C	6.15	70.00	21.78	31.00	9002230061500
0.2441		6.20	70.00	21.70	31.00	9002230062000
0.2461	D	6.25	70.00	21.63	31.00	9002230062500
0.2480		6.30	70.00	21.55	31.00	9002230063000
0.2500	1/4 E	6.35	70.00	21.48	31.00	9002230063500
0.2520		6.40	70.00	21.40	31.00	9002230064000
0.2559		6.50	70.00	21.25	31.00	9002230065000
0.2571		6.53	70.00	21.21	31.00	9002230065300
0.2598		6.60	70.00	21.10	31.00	9002230066000
0.2610	G	6.63	70.00	21.06	31.00	9002230066300
0.2638		6.70	70.00	20.95	31.00	9002230067000
0.2657	17/64 H	6.75	74.00	23.88	34.00	9002230067500
0.2677		6.80	74.00	23.80	34.00	9002230068000
0.2697		6.85	74.00	23.73	34.00	9002230068500
0.2717	I	6.90	74.00	23.65	34.00	9002230069000
0.2736		6.95	74.00	23.58	34.00	9002230069500
0.2756		7.00	74.00	23.50	34.00	9002230070000
0.2768	J	7.03	74.00	23.46	34.00	9002230070300
0.2795		7.10	74.00	23.35	34.00	9002230071000
0.2811	9/32 K	7.14	74.00	23.29	34.00	9002230071400
0.2835		7.20	74.00	23.20	34.00	9002230072000
0.2854		7.25	74.00	23.13	34.00	9002230072500
0.2874		7.30	74.00	23.05	34.00	9002230073000
0.2902	L	7.37	74.00	22.95	34.00	9002230073700
0.2913		7.40	74.00	22.90	34.00	9002230074000

Stub length drills

Series no. 223

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2933		7.45	74.00	22.83	34.00	9002230074500
0.2949	M	7.49	74.00	22.77	34.00	9002230074900
0.2953		7.50	74.00	22.75	34.00	9002230075000
0.2969	19/64	7.54	79.00	25.69	37.00	9002230075400
0.2992		7.60	79.00	25.60	37.00	9002230076000
0.3020	N	7.67	79.00	25.50	37.00	9002230076700
0.3031		7.70	79.00	25.45	37.00	9002230077000
0.3051		7.75	79.00	25.38	37.00	9002230077500
0.3071		7.80	79.00	25.30	37.00	9002230078000
0.3091		7.85	79.00	25.23	37.00	9002230078500
0.3110		7.90	79.00	25.15	37.00	9002230079000
0.3126	5/16	7.94	79.00	25.09	37.00	9002230079400
0.3150		8.00	79.00	25.00	37.00	9002230080000
0.3161	O	8.03	79.00	24.96	37.00	9002230080300
0.3169		8.05	79.00	24.93	37.00	9002230080500
0.3189		8.10	79.00	24.85	37.00	9002230081000
0.3209		8.15	79.00	24.78	37.00	9002230081500
0.3228	P	8.20	79.00	24.70	37.00	9002230082000
0.3248		8.25	79.00	24.63	37.00	9002230082500
0.3268		8.30	79.00	24.55	37.00	9002230083000
0.3280	21/64	8.33	79.00	24.51	37.00	9002230083300
0.3307		8.40	79.00	24.40	37.00	9002230084000
0.3319	Q	8.43	79.00	24.36	37.00	9002230084300
0.3346		8.50	79.00	24.25	37.00	9002230085000
0.3386		8.60	84.00	27.10	40.00	9002230086000
0.3390	R	8.61	84.00	27.09	40.00	9002230086100
0.3406		8.65	84.00	27.03	40.00	9002230086500
0.3425		8.70	84.00	26.95	40.00	9002230087000
0.3437	11/32	8.73	84.00	26.91	40.00	9002230087300
0.3445		8.75	84.00	26.88	40.00	9002230087500
0.3465		8.80	84.00	26.80	40.00	9002230088000
0.3480	S	8.84	84.00	26.74	40.00	9002230088400
0.3504		8.90	84.00	26.65	40.00	9002230089000
0.3524		8.95	84.00	26.58	40.00	9002230089500
0.3543		9.00	84.00	26.50	40.00	9002230090000
0.3579	T	9.09	84.00	26.37	40.00	9002230090900
0.3583		9.10	84.00	26.35	40.00	9002230091000
0.3594	23/64	9.13	84.00	26.31	40.00	9002230091300
0.3622		9.20	84.00	26.20	40.00	9002230092000
0.3642		9.25	84.00	26.13	40.00	9002230092500
0.3661		9.30	84.00	26.05	40.00	9002230093000
0.3677	U	9.34	84.00	25.99	40.00	9002230093400
0.3701		9.40	84.00	25.90	40.00	9002230094000
0.3740		9.50	84.00	25.75	40.00	9002230095000
0.3748	3/8	9.52	89.00	28.72	43.00	9002230095200
0.3772	V	9.58	89.00	28.63	43.00	9002230095800
0.3780		9.60	89.00	28.60	43.00	9002230096000
0.3799		9.65	89.00	28.53	43.00	9002230096500
0.3819		9.70	89.00	28.45	43.00	9002230097000
0.3839		9.75	89.00	28.38	43.00	9002230097500
0.3858	W	9.80	89.00	28.30	43.00	9002230098000
0.3898		9.90	89.00	28.15	43.00	9002230099000
0.3906	25/64	9.92	89.00	28.12	43.00	9002230099200
0.3937		10.00	89.00	28.00	43.00	9002230100000
0.3957		10.05	89.00	27.93	43.00	9002230100500
0.3969	X	10.08	89.00	27.88	43.00	9002230100800
0.3976		10.10	89.00	27.85	43.00	9002230101000
0.3996		10.15	89.00	27.78	43.00	9002230101500
0.4016		10.20	89.00	27.70	43.00	9002230102000
0.4035		10.25	89.00	27.63	43.00	9002230102500
0.4039	Y	10.26	89.00	27.61	43.00	9002230102600
0.4055		10.30	89.00	27.55	43.00	9002230103000
0.4063	13/32	10.32	89.00	27.52	43.00	9002230103200
0.4094		10.40	89.00	27.40	43.00	9002230104000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4130	Z	10.49	89.00	27.27	43.00	9002230104900
0.4134		10.50	89.00	27.25	43.00	9002230105000
0.4173		10.60	89.00	27.10	43.00	9002230106000
0.4213		10.70	95.00	30.95	47.00	9002230107000
0.4220	27/64	10.72	95.00	30.92	47.00	9002230107200
0.4232		10.75	95.00	30.88	47.00	9002230107500
0.4252		10.80	95.00	30.80	47.00	9002230108000
0.4291		10.90	95.00	30.65	47.00	9002230109000
0.4331		11.00	95.00	30.50	47.00	9002230110000
0.4370		11.10	95.00	30.35	47.00	9002230111000
0.4374	7/16	11.11	95.00	30.34	47.00	9002230111100
0.4409		11.20	95.00	30.20	47.00	9002230112000
0.4429		11.25	95.00	30.13	47.00	9002230112500
0.4449		11.30	95.00	30.05	47.00	9002230113000
0.4488		11.40	95.00	29.90	47.00	9002230114000
0.4528		11.50	95.00	29.75	47.00	9002230115000
0.4531	29/64	11.51	95.00	29.74	47.00	9002230115100
0.4567		11.60	95.00	29.60	47.00	9002230116000
0.4606		11.70	95.00	29.45	47.00	9002230117000
0.4626		11.75	95.00	29.38	47.00	9002230117500
0.4646		11.80	95.00	29.30	47.00	9002230118000
0.4685		11.90	102.00	33.15	51.00	9002230119000
0.4689	15/32	11.91	102.00	33.14	51.00	9002230119100
0.4724		12.00	102.00	33.00	51.00	9002230120000
0.4764		12.10	102.00	32.85	51.00	9002230121000
0.4783		12.15	102.00	32.78	51.00	9002230121500
0.4803		12.20	102.00	32.70	51.00	9002230122000
0.4823		12.25	102.00	32.63	51.00	9002230122500
0.4843	31/64	12.30	102.00	32.55	51.00	9002230123000
0.4882		12.40	102.00	32.40	51.00	9002230124000
0.4921		12.50	102.00	32.25	51.00	9002230125000
0.4961		12.60	102.00	32.10	51.00	9002230126000
0.5000	1/2	12.70	102.00	31.95	51.00	9002230127000
0.5020		12.75	102.00	31.88	51.00	9002230127500
0.5039		12.80	102.00	31.80	51.00	9002230128000
0.5079		12.90	102.00	31.65	51.00	9002230129000
0.5118		13.00	102.00	31.50	51.00	9002230130000
0.5157	33/64	13.10	102.00	31.35	51.00	9002230131000
0.5197		13.20	102.00	31.20	51.00	9002230132000
0.5217		13.25	107.00	34.13	54.00	9002230132500
0.5236		13.30	107.00	34.05	54.00	9002230133000
0.5276		13.40	107.00	33.90	54.00	9002230134000
0.5311	17/32	13.49	107.00	33.77	54.00	9002230134900
0.5315		13.50	107.00	33.75	54.00	9002230135000
0.5354		13.60	107.00	33.60	54.00	9002230136000
0.5394		13.70	107.00	33.45	54.00	9002230137000
0.5413		13.75	107.00	33.38	54.00	9002230137500
0.5433		13.80	107.00	33.30	54.00	9002230138000
0.5469	35/64	13.89	107.00	33.17	54.00	9002230138900
0.5472		13.90	107.00	33.15	54.00	9002230139000
0.5512		14.00	107.00	33.00	54.00	9002230140000
0.5551		14.10	111.00	34.85	56.00	9002230141000
0.5591		14.20	111.00	34.70	56.00	9002230142000
0.5610		14.25	111.00	34.63	56.00	9002230142500
0.5626	9/16	14.29	111.00	34.57	56.00	9002230142900
0.5669		14.40	111.00	34.40	56.00	9002230144000
0.5709		14.50	111.00	34.25	56.00	9002230145000
0.5748		14.60	111.00	34.10	56.00	9002230146000
0.5780	37/64	14.68	111.00	33.98	56.00	9002230146800
0.5807		14.75	111.00	33.88	56.00	9002230147500
0.5827		14.80	111.00	33.80	56.00	9002230148000
0.5866		14.90	111.00	33.65	56.00	9002230149000
0.5906		15.00	111.00	33.50	56.00	9002230150000
0.5937	19/32	15.08	115.00	35.38	58.00	9002230150800

Stub length drills

Series no. **223**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.5945		15.10	115.00	35.35	58.00	9002230151000
0.5984		15.20	115.00	35.20	58.00	9002230152000
0.6004		15.25	115.00	35.13	58.00	9002230152500
0.6063		15.40	115.00	34.90	58.00	9002230154000
0.6094	39/64	15.48	115.00	34.78	58.00	9002230154800
0.6102		15.50	115.00	34.75	58.00	9002230155000
0.6142		15.60	115.00	34.60	58.00	9002230156000
0.6181		15.70	115.00	34.45	58.00	9002230157000
0.6201		15.75	115.00	34.38	58.00	9002230157500
0.6220		15.80	115.00	34.30	58.00	9002230158000
0.6248	5/8	15.87	115.00	34.20	58.00	9002230158700
0.6299		16.00	115.00	34.00	58.00	9002230160000
0.6339		16.10	119.00	35.85	60.00	9002230161000
0.6358		16.15	119.00	35.78	60.00	9002230161500
0.6398		16.25	119.00	35.63	60.00	9002230162500
0.6406	41/64	16.27	119.00	35.60	60.00	9002230162700
0.6417		16.30	119.00	35.55	60.00	9002230163000
0.6496		16.50	119.00	35.25	60.00	9002230165000
0.6563	21/32	16.67	119.00	35.00	60.00	9002230166700
0.6594		16.75	119.00	34.88	60.00	9002230167500
0.6693		17.00	119.00	34.50	60.00	9002230170000
0.6720	43/64	17.07	123.00	36.40	62.00	9002230170700
0.6732		17.10	123.00	36.35	62.00	9002230171000
0.6791		17.25	123.00	36.13	62.00	9002230172500
0.6811		17.30	123.00	36.05	62.00	9002230173000
0.6874	11/16	17.46	123.00	35.81	62.00	9002230174600
0.6890		17.50	123.00	35.75	62.00	9002230175000
0.6929		17.60	123.00	35.60	62.00	9002230176000
0.6988		17.75	123.00	35.38	62.00	9002230177500
0.7031	45/64	17.86	123.00	35.21	62.00	9002230178600
0.7087		18.00	123.00	35.00	62.00	9002230180000
0.7126		18.10	127.00	36.85	64.00	9002230181000
0.7165		18.20	127.00	36.70	64.00	9002230182000
0.7185		18.25	127.00	36.63	64.00	9002230182500
0.7189	23/32	18.26	127.00	36.61	64.00	9002230182600
0.7283		18.50	127.00	36.25	64.00	9002230185000
0.7343	47/64	18.65	127.00	36.03	64.00	9002230186500
0.7382		18.75	127.00	35.88	64.00	9002230187500
0.7480		19.00	127.00	35.50	64.00	9002230190000
0.7500	3/4	19.05	131.00	37.43	66.00	9002230190500

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.7520		19.10	131.00	37.35	66.00	9002230191000
0.7579		19.25	131.00	37.13	66.00	9002230192500
0.7657	49/64	19.45	131.00	36.83	66.00	9002230194500
0.7677		19.50	131.00	36.75	66.00	9002230195000
0.7776		19.75	131.00	36.38	66.00	9002230197500
0.7811	25/32	19.84	131.00	36.24	66.00	9002230198400
0.7874		20.00	131.00	36.00	66.00	9002230200000
0.7913		20.10	136.00	37.85	68.00	9002230201000
0.7969	51/64	20.24	136.00	37.64	68.00	9002230202400
0.8071		20.50	136.00	37.25	68.00	9002230205000
0.8126	13/16	20.64	136.00	37.04	68.00	9002230206400
0.8169		20.75	136.00	36.88	68.00	9002230207500
0.8189		20.80	136.00	36.80	68.00	9002230208000
0.8268		21.00	136.00	36.50	68.00	9002230210000
0.8280	53/64	21.03	136.00	36.46	68.00	9002230210300
0.8366		21.25	141.00	38.13	70.00	9002230212500
0.8437	27/32	21.43	141.00	37.86	70.00	9002230214300
0.8465		21.50	141.00	37.75	70.00	9002230215000
0.8661		22.00	141.00	37.00	70.00	9002230220000
0.8748	7/8	22.22	141.00	36.67	70.00	9002230222200
0.8858		22.50	146.00	38.25	72.00	9002230225000
0.8906	57/64	22.62	146.00	38.07	72.00	9002230226200
0.9055		23.00	146.00	37.50	72.00	9002230230000
0.9063	29/32	23.02	146.00	37.47	72.00	9002230230200
0.9220	59/64	23.42	146.00	36.87	72.00	9002230234200
0.9252		23.50	146.00	36.75	72.00	9002230235000
0.9374	15/16	23.81	151.00	39.29	75.00	9002230238100
0.9449		24.00	151.00	39.00	75.00	9002230240000
0.9532	61/64	24.21	151.00	38.69	75.00	9002230242100
0.9646		24.50	151.00	38.25	75.00	9002230245000
0.9689	31/32	24.61	151.00	38.09	75.00	9002230246100
0.9843	63/64	25.00	151.00	37.50	75.00	9002230250000
1.0000	1.0000	25.40	156.00	39.90	78.00	9002230254000
1.0311	1 1/32	26.19	156.00	38.72	78.00	9002230261900
1.0433		26.50	156.00	38.25	78.00	9002230265000
1.1024		28.00	162.00	39.00	81.00	9002230280000
1.1248	1 1/8	28.57	168.00	41.15	84.00	9002230285700
1.1563	1 5/32	29.37	168.00	39.95	84.00	9002230293700
1.1811		30.00	168.00	39.00	84.00	9002230300000
1.2500	1 1/4	31.75	180.00	42.38	90.00	9002230317500

Stub length drills

Series no. **226**

~3xD	DIN 1897	N	118°	h8		Cyl	L
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface: >Ø 2.36

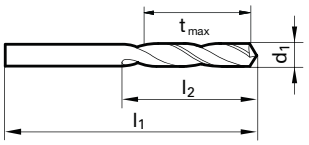
P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 14.050 • relieved cone • for use in automatic/capstan lathes

thin materials

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 480

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0197		0.50	20.00	2.25	3.00	9002260005000
0.0217		0.55	21.00	2.68	3.50	9002260005500
0.0236		0.60	21.00	2.60	3.50	9002260006000
0.0256		0.65	22.00	3.03	4.00	9002260006500
0.0276		0.70	23.00	3.45	4.50	9002260007000
0.0295		0.75	23.00	3.38	4.50	9002260007500
0.0315		0.80	24.00	3.80	5.00	9002260008000
0.0335		0.85	24.00	3.73	5.00	9002260008500
0.0354		0.90	25.00	4.15	5.50	9002260009000
0.0374		0.95	25.00	4.08	5.50	9002260009500
0.0394		1.00	26.00	4.50	6.00	9002260010000
0.0402	#60	1.02	26.00	4.47	6.00	9002260010200
0.0413		1.05	26.00	4.43	6.00	9002260010500
0.0421	#58	1.07	28.00	5.40	7.00	9002260010700
0.0429	#57	1.09	28.00	5.37	7.00	9002260010900
0.0433		1.10	28.00	5.35	7.00	9002260011000
0.0453		1.15	28.00	5.28	7.00	9002260011500
0.0465	#56	1.18	28.00	5.23	7.00	9002260011800
0.0469	3/64	1.19	30.00	6.22	8.00	9002260011900
0.0472		1.20	30.00	6.20	8.00	9002260012000
0.0492		1.25	30.00	6.13	8.00	9002260012500
0.0512		1.30	30.00	6.05	8.00	9002260013000
0.0520	#55	1.32	30.00	6.02	8.00	9002260013200
0.0524		1.33	32.00	7.01	9.00	9002260013300
0.0531		1.35	32.00	6.98	9.00	9002260013500
0.0551	#54	1.40	32.00	6.90	9.00	9002260014000
0.0571		1.45	32.00	6.83	9.00	9002260014500
0.0591		1.50	32.00	6.75	9.00	9002260015000
0.0594	#53	1.51	34.00	7.74	10.00	9002260015100
0.0610		1.55	34.00	7.68	10.00	9002260015500
0.0626	1/16	1.59	34.00	7.62	10.00	9002260015900
0.0630		1.60	34.00	7.60	10.00	9002260016000
0.0634	#52	1.61	34.00	7.59	10.00	9002260016100
0.0650		1.65	34.00	7.53	10.00	9002260016500
0.0669	#51	1.70	34.00	7.45	10.00	9002260017000
0.0689		1.75	36.00	8.38	11.00	9002260017500
0.0701	#50	1.78	36.00	8.33	11.00	9002260017800
0.0709		1.80	36.00	8.30	11.00	9002260018000
0.0713		1.81	36.00	8.29	11.00	9002260018100
0.0728	#49	1.85	36.00	8.23	11.00	9002260018500

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0748		1.90	36.00	8.15	11.00	9002260019000
0.0760	#48	1.93	38.00	9.11	12.00	9002260019300
0.0768		1.95	38.00	9.08	12.00	9002260019500
0.0783	#47	1.99	38.00	9.02	12.00	9002260019900
0.0787		2.00	38.00	9.00	12.00	9002260020000
0.0807		2.05	38.00	8.93	12.00	9002260020500
0.0811	#46	2.06	38.00	8.91	12.00	9002260020600
0.0819	#45	2.08	38.00	8.88	12.00	9002260020800
0.0827		2.10	38.00	8.85	12.00	9002260021000
0.0846		2.15	40.00	9.78	13.00	9002260021500
0.0858	#44	2.18	40.00	9.73	13.00	9002260021800
0.0866		2.20	40.00	9.70	13.00	9002260022000
0.0886		2.25	40.00	9.63	13.00	9002260022500
0.0890	#43	2.26	40.00	9.61	13.00	9002260022600
0.0906		2.30	40.00	9.55	13.00	9002260023000
0.0925		2.35	40.00	9.48	13.00	9002260023500
0.0933	#42	2.37	43.00	10.45	14.00	9002260023700
0.0937	3/32	2.38	43.00	10.43	14.00	9002260023800
0.0945		2.40	43.00	10.40	14.00	9002260024000
0.0961	#41	2.44	43.00	10.34	14.00	9002260024400
0.0965		2.45	43.00	10.33	14.00	9002260024500
0.0980	#40	2.49	43.00	10.27	14.00	9002260024900
0.0984		2.50	43.00	10.25	14.00	9002260025000
0.0996	#39	2.53	43.00	10.21	14.00	9002260025300
0.1004		2.55	43.00	10.18	14.00	9002260025500
0.1016	#38	2.58	43.00	10.13	14.00	9002260025800
0.1024		2.60	43.00	10.10	14.00	9002260026000
0.1039	#37	2.64	43.00	10.04	14.00	9002260026400
0.1043		2.65	43.00	10.03	14.00	9002260026500
0.1063		2.70	46.00	11.95	16.00	9002260027000
0.1067	#36	2.71	46.00	11.94	16.00	9002260027100
0.1083		2.75	46.00	11.88	16.00	9002260027500
0.1094	7/64	2.78	46.00	11.83	16.00	9002260027800
0.1098	#35	2.79	46.00	11.82	16.00	9002260027900
0.1102		2.80	46.00	11.80	16.00	9002260028000
0.1110	#34	2.82	46.00	11.77	16.00	9002260028200
0.1122		2.85	46.00	11.73	16.00	9002260028500
0.1130	#33	2.87	46.00	11.70	16.00	9002260028700
0.1142		2.90	46.00	11.65	16.00	9002260029000
0.1161	#32	2.95	46.00	11.58	16.00	9002260029500

Stub length drills

Series no. 226

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1181		3.00	46.00	11.50	16.00	9002260030000
0.1201	#31	3.05	49.00	13.43	18.00	9002260030500
0.1220		3.10	49.00	13.35	18.00	9002260031000
0.1240		3.15	49.00	13.28	18.00	9002260031500
0.1248	1/8	3.17	49.00	13.25	18.00	9002260031700
0.1260		3.20	49.00	13.20	18.00	9002260032000
0.1272		3.23	49.00	13.16	18.00	9002260032300
0.1280		3.25	49.00	13.13	18.00	9002260032500
0.1283	#30	3.26	49.00	13.11	18.00	9002260032600
0.1299		3.30	49.00	13.05	18.00	9002260033000
0.1319		3.35	49.00	12.98	18.00	9002260033500
0.1339		3.40	52.00	14.90	20.00	9002260034000
0.1358	#29	3.45	52.00	14.83	20.00	9002260034500
0.1378		3.50	52.00	14.75	20.00	9002260035000
0.1398		3.55	52.00	14.68	20.00	9002260035500
0.1417		3.60	52.00	14.60	20.00	9002260036000
0.1457		3.70	52.00	14.45	20.00	9002260037000
0.1469	#26	3.73	52.00	14.41	20.00	9002260037300
0.1476		3.75	52.00	14.38	20.00	9002260037500
0.1484		3.77	55.00	16.35	22.00	9002260037700
0.1496	#25	3.80	55.00	16.30	22.00	9002260038000
0.1512		3.84	55.00	16.24	22.00	9002260038400
0.1516		3.85	55.00	16.23	22.00	9002260038500
0.1520	#24	3.86	55.00	16.21	22.00	9002260038600
0.1535		3.90	55.00	16.15	22.00	9002260039000
0.1539	#23	3.91	55.00	16.14	22.00	9002260039100
0.1555		3.95	55.00	16.08	22.00	9002260039500
0.1563	5/32	3.97	55.00	16.05	22.00	9002260039700
0.1571	#22	3.99	55.00	16.02	22.00	9002260039900
0.1575		4.00	55.00	16.00	22.00	9002260040000
0.1591	#21	4.04	55.00	15.94	22.00	9002260040400
0.1594		4.05	55.00	15.93	22.00	9002260040500
0.1614		4.10	55.00	15.85	22.00	9002260041000
0.1634		4.15	55.00	15.78	22.00	9002260041500
0.1654		4.20	55.00	15.70	22.00	9002260042000
0.1661	#19	4.22	55.00	15.67	22.00	9002260042200
0.1673		4.25	55.00	15.63	22.00	9002260042500
0.1693	#18	4.30	58.00	17.55	24.00	9002260043000
0.1713		4.35	58.00	17.48	24.00	9002260043500
0.1720	11/64	4.37	58.00	17.45	24.00	9002260043700
0.1728	#17	4.39	58.00	17.42	24.00	9002260043900
0.1732		4.40	58.00	17.40	24.00	9002260044000
0.1752		4.45	58.00	17.33	24.00	9002260044500
0.1772	#16	4.50	58.00	17.25	24.00	9002260045000
0.1799	#15	4.57	58.00	17.15	24.00	9002260045700
0.1811		4.60	58.00	17.10	24.00	9002260046000
0.1810		4.62	58.00	17.07	24.00	9002260046200
0.1850	#13	4.70	58.00	16.95	24.00	9002260047000
0.1870		4.75	58.00	16.88	24.00	9002260047500
0.1874	3/16	4.76	62.00	18.86	26.00	9002260047600
0.1890	#12	4.80	62.00	18.80	26.00	9002260048000
0.1909	#11	4.85	62.00	18.73	26.00	9002260048500
0.1929		4.90	62.00	18.65	26.00	9002260049000
0.1937	#10	4.92	62.00	18.62	26.00	9002260049200
0.1961	#9	4.98	62.00	18.53	26.00	9002260049800
0.1969		5.00	62.00	18.50	26.00	9002260050000
0.1988		5.05	62.00	18.43	26.00	9002260050500
0.2008		5.10	62.00	18.35	26.00	9002260051000
0.2012	#7	5.11	62.00	18.34	26.00	9002260051100
0.2028		5.15	62.00	18.28	26.00	9002260051500
0.2031	13/64	5.16	62.00	18.26	26.00	9002260051600
0.2039	#6	5.18	62.00	18.23	26.00	9002260051800
0.2047		5.20	62.00	18.20	26.00	9002260052000
0.2055	#5	5.22	62.00	18.17	26.00	9002260052200
0.2067		5.25	62.00	18.13	26.00	9002260052500

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2087		5.30	62.00	18.05	26.00	9002260053000
0.2091	#4	5.31	66.00	20.04	28.00	9002260053100
0.2106		5.35	66.00	19.98	28.00	9002260053500
0.2126		5.40	66.00	19.90	28.00	9002260054000
0.2130	#3	5.41	66.00	19.89	28.00	9002260054100
0.2165		5.50	66.00	19.75	28.00	9002260055000
0.2189	7/32	5.56	66.00	19.66	28.00	9002260055600
0.2205		5.60	66.00	19.60	28.00	9002260056000
0.2209	#2	5.61	66.00	19.59	28.00	9002260056100
0.2224		5.65	66.00	19.53	28.00	9002260056500
0.2244		5.70	66.00	19.45	28.00	9002260057000
0.2264		5.75	66.00	19.38	28.00	9002260057500
0.2280	#1	5.79	66.00	19.32	28.00	9002260057900
0.2283		5.80	66.00	19.30	28.00	9002260058000
0.2323		5.90	66.00	19.15	28.00	9002260059000
0.2343	15/64	5.95	66.00	19.08	28.00	9002260059500
0.2362		6.00	66.00	19.00	28.00	9002260060000
0.2378	B	6.04	70.00	21.94	31.00	9002260060400
0.2402		6.10	70.00	21.85	31.00	9002260061000
0.2421	C	6.15	70.00	21.78	31.00	9002260061500
0.2441		6.20	70.00	21.70	31.00	9002260062000
0.2461	D	6.25	70.00	21.63	31.00	9002260062500
0.2480		6.30	70.00	21.55	31.00	9002260063000
0.2500	1/4 E	6.35	70.00	21.48	31.00	9002260063500
0.2520		6.40	70.00	21.40	31.00	9002260064000
0.2559		6.50	70.00	21.25	31.00	9002260065000
0.2571		6.53	70.00	21.21	31.00	9002260065300
0.2598		6.60	70.00	21.10	31.00	9002260066000
0.2610	G	6.63	70.00	21.06	31.00	9002260066300
0.2638		6.70	70.00	20.95	31.00	9002260067000
0.2657	17/64 H	6.75	74.00	23.88	34.00	9002260067500
0.2677		6.80	74.00	23.80	34.00	9002260068000
0.2717	I	6.90	74.00	23.65	34.00	9002260069000
0.2736		6.95	74.00	23.58	34.00	9002260069500
0.2756		7.00	74.00	23.50	34.00	9002260070000
0.2795		7.10	74.00	23.35	34.00	9002260071000
0.2811	9/32 K	7.14	74.00	23.29	34.00	9002260071400
0.2835		7.20	74.00	23.20	34.00	9002260072000
0.2854		7.25	74.00	23.13	34.00	9002260072500
0.2874		7.30	74.00	23.05	34.00	9002260073000
0.2902	L	7.37	74.00	22.95	34.00	9002260073700
0.2913		7.40	74.00	22.90	34.00	9002260074000
0.2949	M	7.49	74.00	22.77	34.00	9002260074900
0.2953		7.50	74.00	22.75	34.00	9002260075000
0.2969	19/64	7.54	79.00	25.69	37.00	9002260075400
0.2992		7.60	79.00	25.60	37.00	9002260076000
0.3031		7.70	79.00	25.45	37.00	9002260077000
0.3051		7.75	79.00	25.38	37.00	9002260077500
0.3071		7.80	79.00	25.30	37.00	9002260078000
0.3110		7.90	79.00	25.15	37.00	9002260079000
0.3126	5/16	7.94	79.00	25.09	37.00	9002260079400
0.3150		8.00	79.00	25.00	37.00	9002260080000
0.3161	O	8.03	79.00	24.96	37.00	9002260080300
0.3189		8.10	79.00	24.85	37.00	9002260081000
0.3228	P	8.20	79.00	24.70	37.00	9002260082000
0.3268		8.30	79.00	24.55	37.00	9002260083000
0.3307		8.40	79.00	24.40	37.00	9002260084000
0.3319	Q	8.43	79.00	24.36	37.00	9002260084300
0.3346		8.50	79.00	24.25	37.00	9002260085000
0.3386		8.60	84.00	27.10	40.00	9002260086000
0.3425		8.70	84.00	26.95	40.00	9002260087000
0.3437	11/32	8.73	84.00	26.91	40.00	9002260087300
0.3445		8.75	84.00	26.88	40.00	9002260087500
0.3465		8.80	84.00	26.80	40.00	9002260088000
0.3480	S	8.84	84.00	26.74	40.00	9002260088400

Stub length drills

Series no. 226

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3504		8.90	84.00	26.65	40.00	9002260089000
0.3543		9.00	84.00	26.50	40.00	9002260090000
0.3579	T	9.09	84.00	26.37	40.00	9002260090900
0.3583		9.10	84.00	26.35	40.00	9002260091000
0.3594	23/64	9.13	84.00	26.31	40.00	9002260091300
0.3622		9.20	84.00	26.20	40.00	9002260092000
0.3677	U	9.34	84.00	25.99	40.00	9002260093400
0.3701		9.40	84.00	25.90	40.00	9002260094000
0.3740		9.50	84.00	25.75	40.00	9002260095000
0.3748	3/8	9.52	89.00	28.72	43.00	9002260095200
0.3780		9.60	89.00	28.60	43.00	9002260096000
0.3819		9.70	89.00	28.45	43.00	9002260097000
0.3839		9.75	89.00	28.38	43.00	9002260097500
0.3858	W	9.80	89.00	28.30	43.00	9002260098000
0.3898		9.90	89.00	28.15	43.00	9002260099000
0.3937		10.00	89.00	28.00	43.00	9002260100000
0.3969	X	10.08	89.00	27.88	43.00	9002260100800
0.3976		10.10	89.00	27.85	43.00	9002260101000
0.4016		10.20	89.00	27.70	43.00	9002260102000
0.4035		10.25	89.00	27.63	43.00	9002260102500
0.4055		10.30	89.00	27.55	43.00	9002260103000
0.4063	13/32	10.32	89.00	27.52	43.00	9002260103200
0.4094		10.40	89.00	27.40	43.00	9002260104000
0.4130	Z	10.49	89.00	27.27	43.00	9002260104900
0.4134		10.50	89.00	27.25	43.00	9002260105000
0.4173		10.60	89.00	27.10	43.00	9002260106000
0.4252		10.80	95.00	30.80	47.00	9002260108000
0.4291		10.90	95.00	30.65	47.00	9002260109000
0.4331		11.00	95.00	30.50	47.00	9002260110000
0.4370		11.10	95.00	30.35	47.00	9002260111000
0.4374	7/16	11.11	95.00	30.34	47.00	9002260111100
0.4409		11.20	95.00	30.20	47.00	9002260112000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4429		11.25	95.00	30.13	47.00	9002260112500
0.4449		11.30	95.00	30.05	47.00	9002260113000
0.4488		11.40	95.00	29.90	47.00	9002260114000
0.4528		11.50	95.00	29.75	47.00	9002260115000
0.4531	29/64	11.51	95.00	29.74	47.00	9002260115100
0.4606		11.70	95.00	29.45	47.00	9002260117000
0.4626		11.75	95.00	29.38	47.00	9002260117500
0.4646		11.80	95.00	29.30	47.00	9002260118000
0.4724		12.00	102.00	33.00	51.00	9002260120000
0.4764		12.10	102.00	32.85	51.00	9002260121000
0.4803		12.20	102.00	32.70	51.00	9002260122000
0.4843	31/64	12.30	102.00	32.55	51.00	9002260123000
0.4882		12.40	102.00	32.40	51.00	9002260124000
0.4921		12.50	102.00	32.25	51.00	9002260125000
0.4961		12.60	102.00	32.10	51.00	9002260126000
0.5000	1/2	12.70	102.00	31.95	51.00	9002260127000
0.5118		13.00	102.00	31.50	51.00	9002260130000
0.5354		13.60	107.00	33.60	54.00	9002260136000
0.5906		15.00	111.00	33.50	56.00	9002260150000
0.5984		15.20	115.00	35.20	58.00	9002260152000
0.6181		15.70	115.00	34.45	58.00	9002260157000
0.6201		15.75	115.00	34.38	58.00	9002260157500
0.6248	5/8	15.87	115.00	34.20	58.00	9002260158700
0.6496		16.50	119.00	35.25	60.00	9002260165000
0.6693		17.00	119.00	34.50	60.00	9002260170000
0.7500	3/4	19.05	131.00	37.43	66.00	9002260190500
0.7811	25/32	19.84	131.00	36.24	66.00	9002260198400
1.0000	1.0000	25.40	156.00	39.90	78.00	9002260254000
1.0039		25.50	156.00	39.75	78.00	9002260255000
1.2008		30.50	174.00	41.25	87.00	9002260305000
1.7500	1 3/4	44.45	214.00	41.33	108.00	9002260444500

Stub length drills

Series no. **653**

~3xD	DIN 1897	N	118°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material **HSS**

Surface **S**

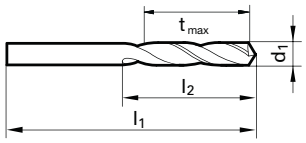
P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • also for hand drilling machines
• for use in automatic/capstan lathes

thin materials

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 516

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.0197		0.50	20.00	2.25	3.00	9006530005000
0.0236		0.60	21.00	2.60	3.50	9006530006000
0.0276		0.70	23.00	3.45	4.50	9006530007000
0.0295		0.75	23.00	3.38	4.50	9006530007500
0.0315		0.80	24.00	3.80	5.00	9006530008000
0.0354		0.90	25.00	4.15	5.50	9006530009000
0.0394		1.00	26.00	4.50	6.00	9006530010000
0.0402	#60	1.02	26.00	4.47	6.00	9006530010200
0.0413		1.05	26.00	4.43	6.00	9006530010500
0.0421	#58	1.07	28.00	5.40	7.00	9006530010700
0.0429	#57	1.09	28.00	5.37	7.00	9006530010900
0.0433		1.10	28.00	5.35	7.00	9006530011000
0.0437		1.11	28.00	5.34	7.00	9006530011100
0.0453		1.15	28.00	5.28	7.00	9006530011500
0.0465	#56	1.18	28.00	5.23	7.00	9006530011800
0.0469	3/64	1.19	30.00	6.22	8.00	9006530011900
0.0472		1.20	30.00	6.20	8.00	9006530012000
0.0492		1.25	30.00	6.13	8.00	9006530012500
0.0504		1.28	30.00	6.08	8.00	9006530012800
0.0512		1.30	30.00	6.05	8.00	9006530013000
0.0520	#55	1.32	30.00	6.02	8.00	9006530013200
0.0531		1.35	32.00	6.98	9.00	9006530013500
0.0551	#54	1.40	32.00	6.90	9.00	9006530014000
0.0571		1.45	32.00	6.83	9.00	9006530014500
0.0591		1.50	32.00	6.75	9.00	9006530015000
0.0594	#53	1.51	34.00	7.74	10.00	9006530015100
0.0610		1.55	34.00	7.68	10.00	9006530015500
0.0626	1/16	1.59	34.00	7.62	10.00	9006530015900
0.0630		1.60	34.00	7.60	10.00	9006530016000
0.0634	#52	1.61	34.00	7.59	10.00	9006530016100
0.0650		1.65	34.00	7.53	10.00	9006530016500
0.0669	#51	1.70	34.00	7.45	10.00	9006530017000
0.0701	#50	1.78	36.00	8.33	11.00	9006530017800
0.0709		1.80	36.00	8.30	11.00	9006530018000
0.0728	#49	1.85	36.00	8.23	11.00	9006530018500
0.0748		1.90	36.00	8.15	11.00	9006530019000
0.0760	#48	1.93	38.00	9.11	12.00	9006530019300
0.0768		1.95	38.00	9.08	12.00	9006530019500
0.0780	5/64	1.98	38.00	9.03	12.00	9006530019800
0.0783	#47	1.99	38.00	9.02	12.00	9006530019900
0.0787		2.00	38.00	9.00	12.00	9006530020000
0.0811	#46	2.06	38.00	8.91	12.00	9006530020600

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.0819	#45	2.08	38.00	8.88	12.00	9006530020800
0.0827		2.10	38.00	8.85	12.00	9006530021000
0.0858	#44	2.18	40.00	9.73	13.00	9006530021800
0.0866		2.20	40.00	9.70	13.00	9006530022000
0.0886		2.25	40.00	9.63	13.00	9006530022500
0.0890	#43	2.26	40.00	9.61	13.00	9006530022600
0.0906		2.30	40.00	9.55	13.00	9006530023000
0.0925		2.35	40.00	9.48	13.00	9006530023500
0.0933	#42	2.37	43.00	10.45	14.00	9006530023700
0.0937	3/32	2.38	43.00	10.43	14.00	9006530023800
0.0945		2.40	43.00	10.40	14.00	9006530024000
0.0961	#41	2.44	43.00	10.34	14.00	9006530024400
0.0965		2.45	43.00	10.33	14.00	9006530024500
0.0984		2.50	43.00	10.25	14.00	9006530025000
0.0996	#39	2.53	43.00	10.21	14.00	9006530025300
0.1004		2.55	43.00	10.18	14.00	9006530025500
0.1016	#38	2.58	43.00	10.13	14.00	9006530025800
0.1024		2.60	43.00	10.10	14.00	9006530026000
0.1039	#37	2.64	43.00	10.04	14.00	9006530026400
0.1063		2.70	46.00	11.95	16.00	9006530027000
0.1067	#36	2.71	46.00	11.94	16.00	9006530027100
0.1083		2.75	46.00	11.88	16.00	9006530027500
0.1094	7/64	2.78	46.00	11.83	16.00	9006530027800
0.1102		2.80	46.00	11.80	16.00	9006530028000
0.1130	#33	2.87	46.00	11.70	16.00	9006530028700
0.1142		2.90	46.00	11.65	16.00	9006530029000
0.1161	#32	2.95	46.00	11.58	16.00	9006530029500
0.1181		3.00	46.00	11.50	16.00	9006530030000
0.1201	#31	3.05	49.00	13.43	18.00	9006530030500
0.1220		3.10	49.00	13.35	18.00	9006530031000
0.1248	1/8	3.17	49.00	13.25	18.00	9006530031700
0.1260		3.20	49.00	13.20	18.00	9006530032000
0.1280		3.25	49.00	13.13	18.00	9006530032500
0.1283	#30	3.26	49.00	13.11	18.00	9006530032600
0.1299		3.30	49.00	13.05	18.00	9006530033000
0.1339		3.40	52.00	14.90	20.00	9006530034000
0.1358	#29	3.45	52.00	14.83	20.00	9006530034500
0.1378		3.50	52.00	14.75	20.00	9006530035000
0.1406	9/64 #28	3.57	52.00	14.65	20.00	9006530035700
0.1417		3.60	52.00	14.60	20.00	9006530036000
0.1437		3.65	52.00	14.53	20.00	9006530036500
0.1441	#27	3.66	52.00	14.51	20.00	9006530036600

Stub length drills

Series no. 653

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1457		3.70	52.00	14.45	20.00	9006530037000
0.1469	#26	3.73	52.00	14.41	20.00	9006530037300
0.1476		3.75	52.00	14.38	20.00	9006530037500
0.1496	#25	3.80	55.00	16.30	22.00	9006530038000
0.1535		3.90	55.00	16.15	22.00	9006530039000
0.1563	5/32	3.97	55.00	16.05	22.00	9006530039700
0.1571	#22	3.99	55.00	16.02	22.00	9006530039900
0.1575		4.00	55.00	16.00	22.00	9006530040000
0.1591	#21	4.04	55.00	15.94	22.00	9006530040400
0.1610	#20	4.09	55.00	15.87	22.00	9006530040900
0.1614		4.10	55.00	15.85	22.00	9006530041000
0.1634		4.15	55.00	15.78	22.00	9006530041500
0.1654		4.20	55.00	15.70	22.00	9006530042000
0.1673		4.25	55.00	15.63	22.00	9006530042500
0.1693	#18	4.30	58.00	17.55	24.00	9006530043000
0.1720	11/64	4.37	58.00	17.45	24.00	9006530043700
0.1732		4.40	58.00	17.40	24.00	9006530044000
0.1772	#16	4.50	58.00	17.25	24.00	9006530045000
0.1799	#15	4.57	58.00	17.15	24.00	9006530045700
0.1811		4.60	58.00	17.10	24.00	9006530046000
0.1819	#14	4.62	58.00	17.07	24.00	9006530046200
0.1831		4.65	58.00	17.03	24.00	9006530046500
0.1850	#13	4.70	58.00	16.95	24.00	9006530047000
0.1874	3/16	4.76	62.00	18.86	26.00	9006530047600
0.1890	#12	4.80	62.00	18.80	26.00	9006530048000
0.1909	#11	4.85	62.00	18.73	26.00	9006530048500
0.1929		4.90	62.00	18.65	26.00	9006530049000
0.1937	#10	4.92	62.00	18.62	26.00	9006530049200
0.1961	#9	4.98	62.00	18.53	26.00	9006530049800
0.1969		5.00	62.00	18.50	26.00	9006530050000
0.1988		5.05	62.00	18.43	26.00	9006530050500
0.1992	#8	5.06	62.00	18.41	26.00	9006530050600
0.2008		5.10	62.00	18.35	26.00	9006530051000
0.2012	#7	5.11	62.00	18.34	26.00	9006530051100
0.2031	13/64	5.16	62.00	18.26	26.00	9006530051600
0.2039	#6	5.18	62.00	18.23	26.00	9006530051800
0.2047		5.20	62.00	18.20	26.00	9006530052000
0.2067		5.25	62.00	18.13	26.00	9006530052500
0.2087		5.30	62.00	18.05	26.00	9006530053000
0.2091	#4	5.31	66.00	20.04	28.00	9006530053100
0.2126		5.40	66.00	19.90	28.00	9006530054000
0.2130	#3	5.41	66.00	19.89	28.00	9006530054100
0.2165		5.50	66.00	19.75	28.00	9006530055000
0.2189	7/32	5.56	66.00	19.66	28.00	9006530055600
0.2197		5.58	66.00	19.63	28.00	9006530055800
0.2205		5.60	66.00	19.60	28.00	9006530056000
0.2209	#2	5.61	66.00	19.59	28.00	9006530056100
0.2244		5.70	66.00	19.45	28.00	9006530057000
0.2264		5.75	66.00	19.38	28.00	9006530057500
0.2283		5.80	66.00	19.30	28.00	9006530058000
0.2323		5.90	66.00	19.15	28.00	9006530059000
0.2343	15/64	5.95	66.00	19.08	28.00	9006530059500
0.2362		6.00	66.00	19.00	28.00	9006530060000
0.2382		6.05	70.00	21.93	31.00	9006530060500
0.2402		6.10	70.00	21.85	31.00	9006530061000
0.2421	C	6.15	70.00	21.78	31.00	9006530061500
0.2441		6.20	70.00	21.70	31.00	9006530062000
0.2461	D	6.25	70.00	21.63	31.00	9006530062500
0.2480		6.30	70.00	21.55	31.00	9006530063000
0.2500	1/4 E	6.35	70.00	21.48	31.00	9006530063500
0.2520		6.40	70.00	21.40	31.00	9006530064000
0.2539		6.45	70.00	21.33	31.00	9006530064500
0.2559		6.50	70.00	21.25	31.00	9006530065000
0.2571	F	6.53	70.00	21.21	31.00	9006530065300
0.2598		6.60	70.00	21.10	31.00	9006530066000
0.2638		6.70	70.00	20.95	31.00	9006530067000

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2657	17/64 H	6.75	74.00	23.88	34.00	9006530067500
0.2677		6.80	74.00	23.80	34.00	9006530068000
0.2717	I	6.90	74.00	23.65	34.00	9006530069000
0.2756		7.00	74.00	23.50	34.00	9006530070000
0.2795		7.10	74.00	23.35	34.00	9006530071000
0.2811	9/32 K	7.14	74.00	23.29	34.00	9006530071400
0.2835		7.20	74.00	23.20	34.00	9006530072000
0.2854		7.25	74.00	23.13	34.00	9006530072500
0.2874		7.30	74.00	23.05	34.00	9006530073000
0.2902	L	7.37	74.00	22.95	34.00	9006530073700
0.2913		7.40	74.00	22.90	34.00	9006530074000
0.2953		7.50	74.00	22.75	34.00	9006530075000
0.2969	19/64	7.54	79.00	25.69	37.00	9006530075400
0.2992		7.60	79.00	25.60	37.00	9006530076000
0.3020	N	7.67	79.00	25.50	37.00	9006530076700
0.3031		7.70	79.00	25.45	37.00	9006530077000
0.3071		7.80	79.00	25.30	37.00	9006530078000
0.3110		7.90	79.00	25.15	37.00	9006530079000
0.3126	5/16	7.94	79.00	25.09	37.00	9006530079400
0.3150		8.00	79.00	25.00	37.00	9006530080000
0.3161	O	8.03	79.00	24.96	37.00	9006530080300
0.3189		8.10	79.00	24.85	37.00	9006530081000
0.3228	P	8.20	79.00	24.70	37.00	9006530082000
0.3248		8.25	79.00	24.63	37.00	9006530082500
0.3268		8.30	79.00	24.55	37.00	9006530083000
0.3280	21/64	8.33	79.00	24.51	37.00	9006530083300
0.3307		8.40	79.00	24.40	37.00	9006530084000
0.3319	Q	8.43	79.00	24.36	37.00	9006530084300
0.3346		8.50	79.00	24.25	37.00	9006530085000
0.3366		8.55	84.00	27.18	40.00	9006530085500
0.3386		8.60	84.00	27.10	40.00	9006530086000
0.3390	R	8.61	84.00	27.09	40.00	9006530086100
0.3425		8.70	84.00	26.95	40.00	9006530087000
0.3437	11/32	8.73	84.00	26.91	40.00	9006530087300
0.3445		8.75	84.00	26.88	40.00	9006530087500
0.3465		8.80	84.00	26.80	40.00	9006530088000
0.3504		8.90	84.00	26.65	40.00	9006530089000
0.3543		9.00	84.00	26.50	40.00	9006530090000
0.3579	T	9.09	84.00	26.37	40.00	9006530090900
0.3594	23/64	9.13	84.00	26.31	40.00	9006530091300
0.3622		9.20	84.00	26.20	40.00	9006530092000
0.3642		9.25	84.00	26.13	40.00	9006530092500
0.3661		9.30	84.00	26.05	40.00	9006530093000
0.3701		9.40	84.00	25.90	40.00	9006530094000
0.3740		9.50	84.00	25.75	40.00	9006530095000
0.3748	3/8	9.52	89.00	28.72	43.00	9006530095200
0.3772	V	9.58	89.00	28.63	43.00	9006530095800
0.3819		9.70	89.00	28.45	43.00	9006530097000
0.3858	W	9.80	89.00	28.30	43.00	9006530098000
0.3898		9.90	89.00	28.15	43.00	9006530099000
0.3906	25/64	9.92	89.00	28.12	43.00	9006530099200
0.3937		10.00	89.00	28.00	43.00	9006530100000
0.3976		10.10	89.00	27.85	43.00	9006530101000
0.4016		10.20	89.00	27.70	43.00	9006530102000
0.4055		10.30	89.00	27.55	43.00	9006530103000
0.4063	13/32	10.32	89.00	27.52	43.00	9006530103200
0.4130	Z	10.49	89.00	27.27	43.00	9006530104900
0.4134		10.50	89.00	27.25	43.00	9006530105000
0.4173		10.60	89.00	27.10	43.00	9006530106000
0.4220	27/64	10.72	95.00	30.92	47.00	9006530107200
0.4232		10.75	95.00	30.88	47.00	9006530107500
0.4252		10.80	95.00	30.80	47.00	9006530108000
0.4331		11.00	95.00	30.50	47.00	9006530110000
0.4374	7/16	11.11	95.00	30.34	47.00	9006530111100
0.4409		11.20	95.00	30.20	47.00	9006530112000
0.4449		11.30	95.00	30.05	47.00	9006530113000

Stub length drills

Series no. **653**

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4488		11.40	95.00	29.90	47.00	9006530114000
0.4528		11.50	95.00	29.75	47.00	9006530115000
0.4531	29/64	11.51	95.00	29.74	47.00	9006530115100
0.4646		11.80	95.00	29.30	47.00	9006530118000
0.4689	15/32	11.91	102.00	33.14	51.00	9006530119100
0.4724		12.00	102.00	33.00	51.00	9006530120000
0.4764		12.10	102.00	32.85	51.00	9006530121000
0.4803		12.20	102.00	32.70	51.00	9006530122000
0.4843	31/64	12.30	102.00	32.55	51.00	9006530123000
0.4921		12.50	102.00	32.25	51.00	9006530125000
0.5000	1/2	12.70	102.00	31.95	51.00	9006530127000
0.5039		12.80	102.00	31.80	51.00	9006530128000
0.5118		13.00	102.00	31.50	51.00	9006530130000
0.5157	33/64	13.10	102.00	31.35	51.00	9006530131000
0.5311	17/32	13.49	107.00	33.77	54.00	9006530134900
0.5315		13.50	107.00	33.75	54.00	9006530135000
0.5433		13.80	107.00	33.30	54.00	9006530138000
0.5469	35/64	13.89	107.00	33.17	54.00	9006530138900
0.5512		14.00	107.00	33.00	54.00	9006530140000
0.5626	9/16	14.29	111.00	34.57	56.00	9006530142900
0.5709		14.50	111.00	34.25	56.00	9006530145000
0.5827		14.80	111.00	33.80	56.00	9006530148000
0.5906		15.00	111.00	33.50	56.00	9006530150000
0.5937	19/32	15.08	115.00	35.38	58.00	9006530150800
0.6024		15.30	115.00	35.05	58.00	9006530153000
0.6102		15.50	115.00	34.75	58.00	9006530155000
0.6220		15.80	115.00	34.30	58.00	9006530158000
0.6248	5/8	15.87	115.00	34.20	58.00	9006530158700
0.6299		16.00	115.00	34.00	58.00	9006530160000
0.6406	41/64	16.27	119.00	35.60	60.00	9006530162700

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.6496		16.50	119.00	35.25	60.00	9006530165000
0.6563	21/32	16.67	119.00	35.00	60.00	9006530166700
0.6693		17.00	119.00	34.50	60.00	9006530170000
0.6874	11/16	17.46	123.00	35.81	62.00	9006530174600
0.6890		17.50	123.00	35.75	62.00	9006530175000
0.7031	45/64	17.86	123.00	35.21	62.00	9006530178600
0.7087		18.00	123.00	35.00	62.00	9006530180000
0.7185		18.25	127.00	36.63	64.00	9006530182500
0.7189	23/32	18.26	127.00	36.61	64.00	9006530182600
0.7283		18.50	127.00	36.25	64.00	9006530185000
0.7343	47/64	18.65	127.00	36.03	64.00	9006530186500
0.7480		19.00	127.00	35.50	64.00	9006530190000
0.7500	3/4	19.05	131.00	37.43	66.00	9006530190500
0.7677		19.50	131.00	36.75	66.00	9006530195000
0.7874		20.00	131.00	36.00	66.00	9006530200000
0.8071		20.50	136.00	37.25	68.00	9006530205000
0.8126	13/16	20.64	136.00	37.04	68.00	9006530206400
0.8268		21.00	136.00	36.50	68.00	9006530210000
0.8465		21.50	141.00	37.75	70.00	9006530215000
0.8661		22.00	141.00	37.00	70.00	9006530220000
0.8858		22.50	146.00	38.25	72.00	9006530225000
0.8906	57/64	22.62	146.00	38.07	72.00	9006530226200
0.9055		23.00	146.00	37.50	72.00	9006530230000
0.9220	59/64	23.42	146.00	36.87	72.00	9006530234200
0.9449		24.00	151.00	39.00	75.00	9006530240000
0.9646		24.50	151.00	38.25	75.00	9006530245000
0.9843	63/64	25.00	151.00	37.50	75.00	9006530250000
1.0000	1.0000	25.40	156.00	39.90	78.00	9006530254000
1.1220		28.50	168.00	41.25	84.00	9006530285000

Stub length drills

Series no. **224**

~3xD	DIN 1897	H	118°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface: ◯

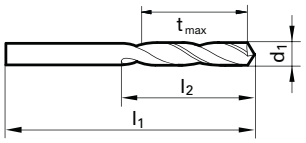
P	Steel	
M	Stainless steel	
K	Cast iron	
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 14.500 • relieved cone

hard and crumbly materials • brass, magnesium alloys • bronze, phosphor bronze • slate, mica, pertinax

$t_{max} = l_2 - 1.5 \times d_1$





Speeds and feeds information on pg. 479

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	d_2 h6 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0354		0.90	0.90	25.00	4.15	5.50	9002240009000
0.0394		1.00	1.00	26.00	4.50	6.00	9002240010000
0.0433		1.10	1.10	28.00	5.35	7.00	9002240011000
0.0472		1.20	1.20	30.00	6.20	8.00	9002240012000
0.0512		1.30	1.30	30.00	6.05	8.00	9002240013000
0.0551	#54	1.40	1.40	32.00	6.90	9.00	9002240014000
0.0591		1.50	1.50	32.00	6.75	9.00	9002240015000
0.0610		1.55	1.55	34.00	7.68	10.00	9002240015500
0.0626	1/16	1.59	1.59	34.00	7.62	10.00	9002240015900
0.0630		1.60	1.60	34.00	7.60	10.00	9002240016000
0.0669	#51	1.70	1.70	34.00	7.45	10.00	9002240017000
0.0701	#50	1.78	1.78	36.00	8.33	11.00	9002240017800
0.0709		1.80	1.80	36.00	8.30	11.00	9002240018000
0.0748		1.90	1.90	36.00	8.15	11.00	9002240019000
0.0780	5/64	1.98	1.98	38.00	9.03	12.00	9002240019800
0.0787		2.00	2.00	38.00	9.00	12.00	9002240020000
0.0827		2.10	2.10	38.00	8.85	12.00	9002240021000
0.0866		2.20	2.20	40.00	9.70	13.00	9002240022000
0.0906		2.30	2.30	40.00	9.55	13.00	9002240023000
0.0937	3/32	2.38	2.38	43.00	10.43	14.00	9002240023800
0.0945		2.40	2.40	43.00	10.40	14.00	9002240024000
0.0965		2.45	2.45	43.00	10.33	14.00	9002240024500
0.0984		2.50	2.50	43.00	10.25	14.00	9002240025000
0.1004		2.55	2.55	43.00	10.18	14.00	9002240025500
0.1024		2.60	2.60	43.00	10.10	14.00	9002240026000
0.1043		2.65	2.65	43.00	10.03	14.00	9002240026500
0.1063		2.70	2.70	46.00	11.95	16.00	9002240027000
0.1094	7/64	2.78	2.78	46.00	11.83	16.00	9002240027800
0.1102		2.80	2.80	46.00	11.80	16.00	9002240028000
0.1142		2.90	2.90	46.00	11.65	16.00	9002240029000
0.1161	#32	2.95	2.95	46.00	11.58	16.00	9002240029500
0.1181		3.00	3.00	46.00	11.50	16.00	9002240030000
0.1220		3.10	3.10	49.00	13.35	18.00	9002240031000
0.1248	1/8	3.17	3.17	49.00	13.25	18.00	9002240031700
0.1260		3.20	3.20	49.00	13.20	18.00	9002240032000
0.1299		3.30	3.30	49.00	13.05	18.00	9002240033000
0.1319		3.35	3.35	49.00	12.98	18.00	9002240033500
0.1339		3.40	3.40	52.00	14.90	20.00	9002240034000
0.1378		3.50	3.50	52.00	14.75	20.00	9002240035000
0.1406	9/64	#28 3.57	3.57	52.00	14.65	20.00	9002240035700

Diameter (d_1) inch	wire/ltr	mm	d_2 h6 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1417		3.60	3.60	52.00	14.60	20.00	9002240036000
0.1457		3.70	3.70	52.00	14.45	20.00	9002240037000
0.1496	#25	3.80	3.80	55.00	16.30	22.00	9002240038000
0.1516		3.85	3.85	55.00	16.23	22.00	9002240038500
0.1535		3.90	3.90	55.00	16.15	22.00	9002240039000
0.1563	5/32	3.97	3.97	55.00	16.05	22.00	9002240039700
0.1575		4.00	4.00	55.00	16.00	22.00	9002240040000
0.1614		4.10	4.10	55.00	15.85	22.00	9002240041000
0.1654		4.20	4.20	55.00	15.70	22.00	9002240042000
0.1693	#18	4.30	4.30	58.00	17.55	24.00	9002240043000
0.1720	11/64	4.37	4.37	58.00	17.45	24.00	9002240043700
0.1732		4.40	4.40	58.00	17.40	24.00	9002240044000
0.1772	#16	4.50	4.50	58.00	17.25	24.00	9002240045000
0.1811		4.60	4.60	58.00	17.10	24.00	9002240046000
0.1850	#13	4.70	4.70	58.00	16.95	24.00	9002240047000
0.1874	3/16	4.76	4.76	62.00	18.86	26.00	9002240047600
0.1890	#12	4.80	4.80	62.00	18.80	26.00	9002240048000
0.1929		4.90	4.90	62.00	18.65	26.00	9002240049000
0.1969		5.00	5.00	62.00	18.50	26.00	9002240050000
0.2008		5.10	5.10	62.00	18.35	26.00	9002240051000
0.2031	13/64	5.16	5.16	62.00	18.26	26.00	9002240051600
0.2047		5.20	5.20	62.00	18.20	26.00	9002240052000
0.2087		5.30	5.30	62.00	18.05	26.00	9002240053000
0.2126		5.40	5.40	66.00	19.90	28.00	9002240054000
0.2165		5.50	5.50	66.00	19.75	28.00	9002240055000
0.2189	7/32	5.56	5.56	66.00	19.66	28.00	9002240055600
0.2205		5.60	5.60	66.00	19.60	28.00	9002240056000
0.2244		5.70	5.70	66.00	19.45	28.00	9002240057000
0.2283		5.80	5.80	66.00	19.30	28.00	9002240058000
0.2323		5.90	5.90	66.00	19.15	28.00	9002240059000
0.2343	15/64	5.95	5.95	66.00	19.08	28.00	9002240059500
0.2362		6.00	6.00	66.00	19.00	28.00	9002240060000
0.2441		6.20	6.20	70.00	21.70	31.00	9002240062000
0.2480		6.30	6.30	70.00	21.55	31.00	9002240063000
0.2500	1/4	E 6.35	6.35	70.00	21.48	31.00	9002240063500
0.2520		6.40	6.40	70.00	21.40	31.00	9002240064000
0.2559		6.50	6.50	70.00	21.25	31.00	9002240065000
0.2598		6.60	6.60	70.00	21.10	31.00	9002240066000
0.2657	17/64	H 6.75	6.75	74.00	23.88	34.00	9002240067500
0.2677		6.80	6.80	74.00	23.80	34.00	9002240068000

Stub length drills

Series no. **224**

Diameter (d_1) inch	wire/ltr	mm	d_2 h_6 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2756		7.00	7.00	74.00	23.50	34.00	9002240070000
0.2811	9/32 K	7.14	7.14	74.00	23.29	34.00	9002240071400
0.2854		7.25	7.25	74.00	23.13	34.00	9002240072500
0.2953		7.50	7.50	74.00	22.75	34.00	9002240075000
0.3126	5/16	7.94	7.94	79.00	25.09	37.00	9002240079400
0.3150		8.00	8.00	79.00	25.00	37.00	9002240080000
0.3161	O	8.03	8.03	79.00	24.96	37.00	9002240080300
0.3189		8.10	8.10	79.00	24.85	37.00	9002240081000
0.3280	21/64	8.33	8.33	79.00	24.51	37.00	9002240083300
0.3346		8.50	8.50	79.00	24.25	37.00	9002240085000
0.3543		9.00	9.00	84.00	26.50	40.00	9002240090000
0.3740		9.50	9.50	84.00	25.75	40.00	9002240095000
0.3748	3/8	9.52	9.52	89.00	28.72	43.00	9002240095200
0.3858	W	9.80	9.80	89.00	28.30	43.00	9002240098000
0.3906	25/64	9.92	9.92	89.00	28.12	43.00	9002240099200
0.3937		10.00	10.00	89.00	28.00	43.00	9002240100000
0.4016		10.20	10.20	89.00	27.70	43.00	9002240102000
0.4063	13/32	10.32	10.32	89.00	27.52	43.00	9002240103200
0.4134		10.50	10.50	89.00	27.25	43.00	9002240105000
0.4220	27/64	10.72	10.72	95.00	30.92	47.00	9002240107200

Diameter (d_1) inch	wire/ltr	mm	d_2 h_6 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4331		11.00	11.00	95.00	30.50	47.00	9002240110000
0.4374	7/16	11.11	11.11	95.00	30.34	47.00	9002240111100
0.4528		11.50	11.50	95.00	29.75	47.00	9002240115000
0.4689	15/32	11.91	11.91	102.00	33.14	51.00	9002240119100
0.4724		12.00	12.00	102.00	33.00	51.00	9002240120000
0.4843	31/64	12.30	12.30	102.00	32.55	51.00	9002240123000
0.4921		12.50	12.50	102.00	32.25	51.00	9002240125000
0.5000	1/2	12.70	12.70	102.00	31.95	51.00	9002240127000
0.5118		13.00	13.00	102.00	31.50	51.00	9002240130000
0.5315		13.50	13.50	107.00	33.75	54.00	9002240135000
0.5512		14.00	14.00	107.00	33.00	54.00	9002240140000
0.5906		15.00	15.00	111.00	33.50	56.00	9002240150000
0.6299		16.00	16.00	115.00	34.00	58.00	9002240160000
0.6693		17.00	17.00	119.00	34.50	60.00	9002240170000
0.7087		18.00	18.00	123.00	35.00	62.00	9002240180000
0.7480		19.00	19.00	127.00	35.50	64.00	9002240190000
0.7874		20.00	20.00	131.00	36.00	66.00	9002240200000
0.8268		21.00	21.00	136.00	36.50	68.00	9002240210000
0.8661		22.00	22.00	141.00	37.00	70.00	9002240220000

Stub length drills

Series no. **225**

~3xD	DIN 1897	W	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material **HSS**

Surface ◯

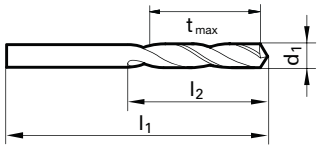
P	Steel	
M	Stainless steel	
K	Cast iron	
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.380 • relieved cone

soft, long chipping materials • aluminum, Al-alloys (long-chipping) • zinc, refined copper, silumin, Elektron • soft synthetic materials, wood

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 480

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	26.00	4.50	6.00	9002250010000
0.0433		1.10	28.00	5.35	7.00	9002250011000
0.0469	3/64	1.19	30.00	6.22	8.00	9002250011900
0.0472		1.20	30.00	6.20	8.00	9002250012000
0.0512		1.30	30.00	6.05	8.00	9002250013000
0.0551	#54	1.40	32.00	6.90	9.00	9002250014000
0.0591		1.50	32.00	6.75	9.00	9002250015000
0.0626	1/16	1.59	34.00	7.62	10.00	9002250015900
0.0630		1.60	34.00	7.60	10.00	9002250016000
0.0669	#51	1.70	34.00	7.45	10.00	9002250017000
0.0709		1.80	36.00	8.30	11.00	9002250018000
0.0748		1.90	36.00	8.15	11.00	9002250019000
0.0780	5/64	1.98	38.00	9.03	12.00	9002250019800
0.0787		2.00	38.00	9.00	12.00	9002250020000
0.0827		2.10	38.00	8.85	12.00	9002250021000
0.0866		2.20	40.00	9.70	13.00	9002250022000
0.0886		2.25	40.00	9.63	13.00	9002250022500
0.0906		2.30	40.00	9.55	13.00	9002250023000
0.0937	3/32	2.38	43.00	10.43	14.00	9002250023800
0.0945		2.40	43.00	10.40	14.00	9002250024000
0.0984		2.50	43.00	10.25	14.00	9002250025000
0.1024		2.60	43.00	10.10	14.00	9002250026000
0.1063		2.70	46.00	11.95	16.00	9002250027000
0.1067	#36	2.71	46.00	11.94	16.00	9002250027100
0.1083		2.75	46.00	11.88	16.00	9002250027500
0.1094	7/64	2.78	46.00	11.83	16.00	9002250027800
0.1102		2.80	46.00	11.80	16.00	9002250028000
0.1142		2.90	46.00	11.65	16.00	9002250029000
0.1181		3.00	46.00	11.50	16.00	9002250030000
0.1201	#31	3.05	49.00	13.43	18.00	9002250030500
0.1220		3.10	49.00	13.35	18.00	9002250031000
0.1248	1/8	3.17	49.00	13.25	18.00	9002250031700
0.1260		3.20	49.00	13.20	18.00	9002250032000
0.1299		3.30	49.00	13.05	18.00	9002250033000
0.1339		3.40	52.00	14.90	20.00	9002250034000
0.1378		3.50	52.00	14.75	20.00	9002250035000
0.1417		3.60	52.00	14.60	20.00	9002250036000
0.1457		3.70	52.00	14.45	20.00	9002250037000
0.1496	#25	3.80	55.00	16.30	22.00	9002250038000
0.1535		3.90	55.00	16.15	22.00	9002250039000
0.1563	5/32	3.97	55.00	16.05	22.00	9002250039700

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1575		4.00	55.00	16.00	22.00	9002250040000
0.1614		4.10	55.00	15.85	22.00	9002250041000
0.1654		4.20	55.00	15.70	22.00	9002250042000
0.1693	#18	4.30	58.00	17.55	24.00	9002250043000
0.1720	11/64	4.37	58.00	17.45	24.00	9002250043700
0.1732		4.40	58.00	17.40	24.00	9002250044000
0.1772	#16	4.50	58.00	17.25	24.00	9002250045000
0.1811		4.60	58.00	17.10	24.00	9002250046000
0.1850	#13	4.70	58.00	16.95	24.00	9002250047000
0.1874	3/16	4.76	62.00	18.86	26.00	9002250047600
0.1890	#12	4.80	62.00	18.80	26.00	9002250048000
0.1929		4.90	62.00	18.65	26.00	9002250049000
0.1969		5.00	62.00	18.50	26.00	9002250050000
0.2008		5.10	62.00	18.35	26.00	9002250051000
0.2031	13/64	5.16	62.00	18.26	26.00	9002250051600
0.2047		5.20	62.00	18.20	26.00	9002250052000
0.2067		5.25	62.00	18.13	26.00	9002250052500
0.2087		5.30	62.00	18.05	26.00	9002250053000
0.2126		5.40	66.00	19.90	28.00	9002250054000
0.2165		5.50	66.00	19.75	28.00	9002250055000
0.2189	7/32	5.56	66.00	19.66	28.00	9002250055600
0.2205		5.60	66.00	19.60	28.00	9002250056000
0.2244		5.70	66.00	19.45	28.00	9002250057000
0.2283		5.80	66.00	19.30	28.00	9002250058000
0.2323		5.90	66.00	19.15	28.00	9002250059000
0.2343	15/64	5.95	66.00	19.08	28.00	9002250059500
0.2362		6.00	66.00	19.00	28.00	9002250060000
0.2402		6.10	70.00	21.85	31.00	9002250061000
0.2441		6.20	70.00	21.70	31.00	9002250062000
0.2480		6.30	70.00	21.55	31.00	9002250063000
0.2500	1/4 E	6.35	70.00	21.48	31.00	9002250063500
0.2520		6.40	70.00	21.40	31.00	9002250064000
0.2559		6.50	70.00	21.25	31.00	9002250065000
0.2571		6.53	70.00	21.21	31.00	9002250065300
0.2598		6.60	70.00	21.10	31.00	9002250066000
0.2657	17/64 H	6.75	74.00	23.88	34.00	9002250067500
0.2677		6.80	74.00	23.80	34.00	9002250068000
0.2717	I	6.90	74.00	23.65	34.00	9002250069000
0.2756		7.00	74.00	23.50	34.00	9002250070000
0.2795		7.10	74.00	23.35	34.00	9002250071000
0.2811	9/32 K	7.14	74.00	23.29	34.00	9002250071400

Stub length drills

Series no. **225**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2874		7.30	74.00	23.05	34.00	9002250073000
0.2953		7.50	74.00	22.75	34.00	9002250075000
0.2992		7.60	79.00	25.60	37.00	9002250076000
0.3071		7.80	79.00	25.30	37.00	9002250078000
0.3126	5/16	7.94	79.00	25.09	37.00	9002250079400
0.3150		8.00	79.00	25.00	37.00	9002250080000
0.3189		8.10	79.00	24.85	37.00	9002250081000
0.3228	P	8.20	79.00	24.70	37.00	9002250082000
0.3268		8.30	79.00	24.55	37.00	9002250083000
0.3280	21/64	8.33	79.00	24.51	37.00	9002250083300
0.3307		8.40	79.00	24.40	37.00	9002250084000
0.3346		8.50	79.00	24.25	37.00	9002250085000
0.3386		8.60	84.00	27.10	40.00	9002250086000
0.3425		8.70	84.00	26.95	40.00	9002250087000
0.3543		9.00	84.00	26.50	40.00	9002250090000
0.3701		9.40	84.00	25.90	40.00	9002250094000
0.3740		9.50	84.00	25.75	40.00	9002250095000
0.3748	3/8	9.52	89.00	28.72	43.00	9002250095200
0.3858	W	9.80	89.00	28.30	43.00	9002250098000
0.3937		10.00	89.00	28.00	43.00	9002250100000
0.4016		10.20	89.00	27.70	43.00	9002250102000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4134		10.50	89.00	27.25	43.00	9002250105000
0.4331		11.00	95.00	30.50	47.00	9002250110000
0.4374	7/16	11.11	95.00	30.34	47.00	9002250111100
0.4528		11.50	95.00	29.75	47.00	9002250115000
0.4646		11.80	95.00	29.30	47.00	9002250118000
0.4689	15/32	11.91	102.00	33.14	51.00	9002250119100
0.4724		12.00	102.00	33.00	51.00	9002250120000
0.4921		12.50	102.00	32.25	51.00	9002250125000
0.5000	1/2	12.70	102.00	31.95	51.00	9002250127000
0.5039		12.80	102.00	31.80	51.00	9002250128000
0.5118		13.00	102.00	31.50	51.00	9002250130000
0.5512		14.00	107.00	33.00	54.00	9002250140000
0.5709		14.50	111.00	34.25	56.00	9002250145000
0.5906		15.00	111.00	33.50	56.00	9002250150000
0.6299		16.00	115.00	34.00	58.00	9002250160000
0.6693		17.00	119.00	34.50	60.00	9002250170000
0.6890		17.50	123.00	35.75	62.00	9002250175000
0.7087		18.00	123.00	35.00	62.00	9002250180000
0.7480		19.00	127.00	35.50	64.00	9002250190000
0.7874		20.00	131.00	36.00	66.00	9002250200000

Stub length drills

Series no. **552**

~3xD	DIN 1897	GT 80	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface:

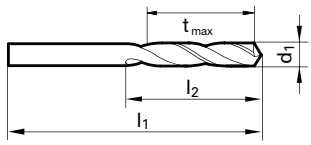
P	Steel	●
M	Stainless steel	○
K	Cast iron	○
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • for higher tensile steels • bright
< 2.36 mm

free-cutting steels • acid resist./stainless steels • case hardening/heat treatable steels up to 800 N/mm² • short/medium chip length Al/Cu-alloys

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 500

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	26.00	4.50	6.00	9005520010000
0.0402	#60	1.02	26.00	4.47	6.00	9005520010200
0.0409	#59	1.04	26.00	4.44	6.00	9005520010400
0.0413		1.05	26.00	4.43	6.00	9005520010500
0.0421	#58	1.07	28.00	5.40	7.00	9005520010700
0.0429	#57	1.09	28.00	5.37	7.00	9005520010900
0.0433		1.10	28.00	5.35	7.00	9005520011000
0.0453		1.15	28.00	5.28	7.00	9005520011500
0.0465	#56	1.18	28.00	5.23	7.00	9005520011800
0.0469	3/64	1.19	30.00	6.22	8.00	9005520011900
0.0472		1.20	30.00	6.20	8.00	9005520012000
0.0492		1.25	30.00	6.13	8.00	9005520012500
0.0512		1.30	30.00	6.05	8.00	9005520013000
0.0520	#55	1.32	30.00	6.02	8.00	9005520013200
0.0531		1.35	32.00	6.98	9.00	9005520013500
0.0551	#54	1.40	32.00	6.90	9.00	9005520014000
0.0571		1.45	32.00	6.83	9.00	9005520014500
0.0591		1.50	32.00	6.75	9.00	9005520015000
0.0594	#53	1.51	34.00	7.74	10.00	9005520015100
0.0602		1.53	34.00	7.71	10.00	9005520015300
0.0610		1.55	34.00	7.68	10.00	9005520015500
0.0626	1/16	1.59	34.00	7.62	10.00	9005520015900
0.0630		1.60	34.00	7.60	10.00	9005520016000
0.0634	#52	1.61	34.00	7.59	10.00	9005520016100
0.0650		1.65	34.00	7.53	10.00	9005520016500
0.0669	#51	1.70	34.00	7.45	10.00	9005520017000
0.0681		1.73	36.00	8.41	11.00	9005520017300
0.0689		1.75	36.00	8.38	11.00	9005520017500
0.0701	#50	1.78	36.00	8.33	11.00	9005520017800
0.0709		1.80	36.00	8.30	11.00	9005520018000
0.0717		1.82	36.00	8.27	11.00	9005520018200
0.0728	#49	1.85	36.00	8.23	11.00	9005520018500
0.0748		1.90	36.00	8.15	11.00	9005520019000
0.0760	#48	1.93	38.00	9.11	12.00	9005520019300
0.0768		1.95	38.00	9.08	12.00	9005520019500
0.0780	5/64	1.98	38.00	9.03	12.00	9005520019800
0.0783	#47	1.99	38.00	9.02	12.00	9005520019900
0.0787		2.00	38.00	9.00	12.00	9005520020000
0.0807		2.05	38.00	8.93	12.00	9005520020500
0.0811	#46	2.06	38.00	8.91	12.00	9005520020600
0.0819	#45	2.08	38.00	8.88	12.00	9005520020800

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0827		2.10	38.00	8.85	12.00	9005520021000
0.0839		2.13	40.00	9.81	13.00	9005520021300
0.0846		2.15	40.00	9.78	13.00	9005520021500
0.0858	#44	2.18	40.00	9.73	13.00	9005520021800
0.0866		2.20	40.00	9.70	13.00	9005520022000
0.0886		2.25	40.00	9.63	13.00	9005520022500
0.0890	#43	2.26	40.00	9.61	13.00	9005520022600
0.0906		2.30	40.00	9.55	13.00	9005520023000
0.0913		2.32	40.00	9.52	13.00	9005520023200
0.0925		2.35	40.00	9.48	13.00	9005520023500
0.0933	#42	2.37	43.00	10.45	14.00	9005520023700
0.0937	3/32	2.38	43.00	10.43	14.00	9005520023800
0.0945		2.40	43.00	10.40	14.00	9005520024000
0.0961	#41	2.44	43.00	10.34	14.00	9005520024400
0.0965		2.45	43.00	10.33	14.00	9005520024500
0.0980	#40	2.49	43.00	10.27	14.00	9005520024900
0.0984		2.50	43.00	10.25	14.00	9005520025000
0.0996	#39	2.53	43.00	10.21	14.00	9005520025300
0.1004		2.55	43.00	10.18	14.00	9005520025500
0.1016	#38	2.58	43.00	10.13	14.00	9005520025800
0.1024		2.60	43.00	10.10	14.00	9005520026000
0.1039	#37	2.64	43.00	10.04	14.00	9005520026400
0.1043		2.65	43.00	10.03	14.00	9005520026500
0.1063		2.70	46.00	11.95	16.00	9005520027000
0.1067	#36	2.71	46.00	11.94	16.00	9005520027100
0.1083		2.75	46.00	11.88	16.00	9005520027500
0.1094	7/64	2.78	46.00	11.83	16.00	9005520027800
0.1098	#35	2.79	46.00	11.82	16.00	9005520027900
0.1102		2.80	46.00	11.80	16.00	9005520028000
0.1110	#34	2.82	46.00	11.77	16.00	9005520028200
0.1130	#33	2.87	46.00	11.70	16.00	9005520028700
0.1142		2.90	46.00	11.65	16.00	9005520029000
0.1161	#32	2.95	46.00	11.58	16.00	9005520029500
0.1181		3.00	46.00	11.50	16.00	9005520030000
0.1201	#31	3.05	49.00	13.43	18.00	9005520030500
0.1220		3.10	49.00	13.35	18.00	9005520031000
0.1240		3.15	49.00	13.28	18.00	9005520031500
0.1248	1/8	3.17	49.00	13.25	18.00	9005520031700
0.1260		3.20	49.00	13.20	18.00	9005520032000
0.1280		3.25	49.00	13.13	18.00	9005520032500
0.1283	#30	3.26	49.00	13.11	18.00	9005520032600

Stub length drills

Series no. **552**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1299		3.30	49.00	13.05	18.00	9005520033000
0.1319		3.35	49.00	12.98	18.00	9005520033500
0.1339		3.40	52.00	14.90	20.00	9005520034000
0.1358	#29	3.45	52.00	14.83	20.00	9005520034500
0.1378		3.50	52.00	14.75	20.00	9005520035000
0.1398		3.55	52.00	14.68	20.00	9005520035500
0.1406	9/64 #28	3.57	52.00	14.65	20.00	9005520035700
0.1417		3.60	52.00	14.60	20.00	9005520036000
0.1437		3.65	52.00	14.53	20.00	9005520036500
0.1441	#27	3.66	52.00	14.51	20.00	9005520036600
0.1457		3.70	52.00	14.45	20.00	9005520037000
0.1469	#26	3.73	52.00	14.41	20.00	9005520037300
0.1476		3.75	52.00	14.38	20.00	9005520037500
0.1496	#25	3.80	55.00	16.30	22.00	9005520038000
0.1520	#24	3.86	55.00	16.21	22.00	9005520038600
0.1535		3.90	55.00	16.15	22.00	9005520039000
0.1539	#23	3.91	55.00	16.14	22.00	9005520039100
0.1555		3.95	55.00	16.08	22.00	9005520039500
0.1563	5/32	3.97	55.00	16.05	22.00	9005520039700
0.1571	#22	3.99	55.00	16.02	22.00	9005520039900
0.1575		4.00	55.00	16.00	22.00	9005520040000
0.1591	#21	4.04	55.00	15.94	22.00	9005520040400
0.1594		4.05	55.00	15.93	22.00	9005520040500
0.1610	#20	4.09	55.00	15.87	22.00	9005520040900
0.1614		4.10	55.00	15.85	22.00	9005520041000
0.1634		4.15	55.00	15.78	22.00	9005520041500
0.1654		4.20	55.00	15.70	22.00	9005520042000
0.1661	#19	4.22	55.00	15.67	22.00	9005520042200
0.1673		4.25	55.00	15.63	22.00	9005520042500
0.1693	#18	4.30	58.00	17.55	24.00	9005520043000
0.1713		4.35	58.00	17.48	24.00	9005520043500
0.1720	11/64	4.37	58.00	17.45	24.00	9005520043700
0.1728	#17	4.39	58.00	17.42	24.00	9005520043900
0.1732		4.40	58.00	17.40	24.00	9005520044000
0.1752		4.45	58.00	17.33	24.00	9005520044500
0.1772	#16	4.50	58.00	17.25	24.00	9005520045000
0.1799	#15	4.57	58.00	17.15	24.00	9005520045700
0.1811		4.60	58.00	17.10	24.00	9005520046000
0.1819	#14	4.62	58.00	17.07	24.00	9005520046200
0.1831		4.65	58.00	17.03	24.00	9005520046500
0.1850	#13	4.70	58.00	16.95	24.00	9005520047000
0.1870		4.75	58.00	16.88	24.00	9005520047500
0.1874	3/16	4.76	62.00	18.86	26.00	9005520047600
0.1890	#12	4.80	62.00	18.80	26.00	9005520048000
0.1909	#11	4.85	62.00	18.73	26.00	9005520048500
0.1929		4.90	62.00	18.65	26.00	9005520049000
0.1937	#10	4.92	62.00	18.62	26.00	9005520049200
0.1961	#9	4.98	62.00	18.53	26.00	9005520049800
0.1969		5.00	62.00	18.50	26.00	9005520050000
0.1992	#8	5.06	62.00	18.41	26.00	9005520050600
0.2008		5.10	62.00	18.35	26.00	9005520051000
0.2012	#7	5.11	62.00	18.34	26.00	9005520051100
0.2031	13/64	5.16	62.00	18.26	26.00	9005520051600
0.2039	#6	5.18	62.00	18.23	26.00	9005520051800
0.2047		5.20	62.00	18.20	26.00	9005520052000
0.2055	#5	5.22	62.00	18.17	26.00	9005520052200
0.2087		5.30	62.00	18.05	26.00	9005520053000
0.2091	#4	5.31	66.00	20.04	28.00	9005520053100
0.2126		5.40	66.00	19.90	28.00	9005520054000
0.2130	#3	5.41	66.00	19.89	28.00	9005520054100
0.2165		5.50	66.00	19.75	28.00	9005520055000
0.2189	7/32	5.56	66.00	19.66	28.00	9005520055600

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2205		5.60	66.00	19.60	28.00	9005520056000
0.2209	#2	5.61	66.00	19.59	28.00	9005520056100
0.2244		5.70	66.00	19.45	28.00	9005520057000
0.2280	#1	5.79	66.00	19.32	28.00	9005520057900
0.2283		5.80	66.00	19.30	28.00	9005520058000
0.2323		5.90	66.00	19.15	28.00	9005520059000
0.2339	A	5.94	66.00	19.09	28.00	9005520059400
0.2343	15/64	5.95	66.00	19.08	28.00	9005520059500
0.2362		6.00	66.00	19.00	28.00	9005520060000
0.2378	B	6.04	70.00	21.94	31.00	9005520060400
0.2402		6.10	70.00	21.85	31.00	9005520061000
0.2421	C	6.15	70.00	21.78	31.00	9005520061500
0.2441		6.20	70.00	21.70	31.00	9005520062000
0.2461	D	6.25	70.00	21.63	31.00	9005520062500
0.2480		6.30	70.00	21.55	31.00	9005520063000
0.2500	1/4 E	6.35	70.00	21.48	31.00	9005520063500
0.2520		6.40	70.00	21.40	31.00	9005520064000
0.2559		6.50	70.00	21.25	31.00	9005520065000
0.2571		6.53	70.00	21.21	31.00	9005520065300
0.2598		6.60	70.00	21.10	31.00	9005520066000
0.2610	G	6.63	70.00	21.06	31.00	9005520066300
0.2638		6.70	70.00	20.95	31.00	9005520067000
0.2657	17/64 H	6.75	74.00	23.88	34.00	9005520067500
0.2677		6.80	74.00	23.80	34.00	9005520068000
0.2717	I	6.90	74.00	23.65	34.00	9005520069000
0.2756		7.00	74.00	23.50	34.00	9005520070000
0.2768	J	7.03	74.00	23.46	34.00	9005520070300
0.2795		7.10	74.00	23.35	34.00	9005520071000
0.2811	9/32 K	7.14	74.00	23.29	34.00	9005520071400
0.2835		7.20	74.00	23.20	34.00	9005520072000
0.2874		7.30	74.00	23.05	34.00	9005520073000
0.2902	L	7.37	74.00	22.95	34.00	9005520073700
0.2913		7.40	74.00	22.90	34.00	9005520074000
0.2949	M	7.49	74.00	22.77	34.00	9005520074900
0.2953		7.50	74.00	22.75	34.00	9005520075000
0.2969	19/64	7.54	79.00	25.69	37.00	9005520075400
0.2992		7.60	79.00	25.60	37.00	9005520076000
0.3020	N	7.67	79.00	25.50	37.00	9005520076700
0.3031		7.70	79.00	25.45	37.00	9005520077000
0.3071		7.80	79.00	25.30	37.00	9005520078000
0.3110		7.90	79.00	25.15	37.00	9005520079000
0.3126	5/16	7.94	79.00	25.09	37.00	9005520079400
0.3150		8.00	79.00	25.00	37.00	9005520080000
0.3161	O	8.03	79.00	24.96	37.00	9005520080300
0.3189		8.10	79.00	24.85	37.00	9005520081000
0.3228	P	8.20	79.00	24.70	37.00	9005520082000
0.3268		8.30	79.00	24.55	37.00	9005520083000
0.3280	21/64	8.33	79.00	24.51	37.00	9005520083300
0.3307		8.40	79.00	24.40	37.00	9005520084000
0.3319	Q	8.43	79.00	24.36	37.00	9005520084300
0.3346		8.50	79.00	24.25	37.00	9005520085000
0.3386		8.60	84.00	27.10	40.00	9005520086000
0.3390	R	8.61	84.00	27.09	40.00	9005520086100
0.3425		8.70	84.00	26.95	40.00	9005520087000
0.3437	11/32	8.73	84.00	26.91	40.00	9005520087300
0.3465		8.80	84.00	26.80	40.00	9005520088000
0.3480	S	8.84	84.00	26.74	40.00	9005520088400
0.3504		8.90	84.00	26.65	40.00	9005520089000
0.3543		9.00	84.00	26.50	40.00	9005520090000
0.3579	T	9.09	84.00	26.37	40.00	9005520090900
0.3583		9.10	84.00	26.35	40.00	9005520091000
0.3594	23/64	9.13	84.00	26.31	40.00	9005520091300

Stub length drills

Series no. **552**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3622		9.20	84.00	26.20	40.00	9005520092000
0.3661		9.30	84.00	26.05	40.00	9005520093000
0.3677	U	9.34	84.00	25.99	40.00	9005520093400
0.3701		9.40	84.00	25.90	40.00	9005520094000
0.3740		9.50	84.00	25.75	40.00	9005520095000
0.3748	3/8	9.52	89.00	28.72	43.00	9005520095200
0.3772	V	9.58	89.00	28.63	43.00	9005520095800
0.3780		9.60	89.00	28.60	43.00	9005520096000
0.3819		9.70	89.00	28.45	43.00	9005520097000
0.3858	W	9.80	89.00	28.30	43.00	9005520098000
0.3898		9.90	89.00	28.15	43.00	9005520099000
0.3906	25/64	9.92	89.00	28.12	43.00	9005520099200
0.3937		10.00	89.00	28.00	43.00	9005520100000
0.3969	X	10.08	89.00	27.88	43.00	9005520100800
0.4016		10.20	89.00	27.70	43.00	9005520102000
0.4039	Y	10.26	89.00	27.61	43.00	9005520102600
0.4063	13/32	10.32	89.00	27.52	43.00	9005520103200
0.4130	Z	10.49	89.00	27.27	43.00	9005520104900
0.4134		10.50	89.00	27.25	43.00	9005520105000
0.4173		10.60	89.00	27.10	43.00	9005520106000
0.4220	27/64	10.72	95.00	30.92	47.00	9005520107200
0.4252		10.80	95.00	30.80	47.00	9005520108000
0.4331		11.00	95.00	30.50	47.00	9005520110000
0.4374	7/16	11.11	95.00	30.34	47.00	9005520111100
0.4409		11.20	95.00	30.20	47.00	9005520112000
0.4449		11.30	95.00	30.05	47.00	9005520113000
0.4488		11.40	95.00	29.90	47.00	9005520114000
0.4528		11.50	95.00	29.75	47.00	9005520115000
0.4531	29/64	11.51	95.00	29.74	47.00	9005520115100
0.4646		11.80	95.00	29.30	47.00	9005520118000
0.4689	15/32	11.91	102.00	33.14	51.00	9005520119100
0.4724		12.00	102.00	33.00	51.00	9005520120000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4843	31/64	12.30	102.00	32.55	51.00	9005520123000
0.4882		12.40	102.00	32.40	51.00	9005520124000
0.4921		12.50	102.00	32.25	51.00	9005520125000
0.5000	1/2	12.70	102.00	31.95	51.00	9005520127000
0.5079		12.90	102.00	31.65	51.00	9005520129000
0.5118		13.00	102.00	31.50	51.00	9005520130000
0.5157	33/64	13.10	102.00	31.35	51.00	9005520131000
0.5311	17/32	13.49	107.00	33.77	54.00	9005520134900
0.5315		13.50	107.00	33.75	54.00	9005520135000
0.5469	35/64	13.89	107.00	33.17	54.00	9005520138900
0.5512		14.00	107.00	33.00	54.00	9005520140000
0.5626	9/16	14.29	111.00	34.57	56.00	9005520142900
0.5709		14.50	111.00	34.25	56.00	9005520145000
0.5780	37/64	14.68	111.00	33.98	56.00	9005520146800
0.5906		15.00	111.00	33.50	56.00	9005520150000
0.5937	19/32	15.08	115.00	35.38	58.00	9005520150800
0.6094	39/64	15.48	115.00	34.78	58.00	9005520154800
0.6102		15.50	115.00	34.75	58.00	9005520155000
0.6248	5/8	15.87	115.00	34.20	58.00	9005520158700
0.6299		16.00	115.00	34.00	58.00	9005520160000
0.6406	41/64	16.27	119.00	35.60	60.00	9005520162700
0.6496		16.50	119.00	35.25	60.00	9005520165000
0.6693		17.00	119.00	34.50	60.00	9005520170000
0.6720	43/64	17.07	123.00	36.40	62.00	9005520170700
0.6874	11/16	17.46	123.00	35.81	62.00	9005520174600
0.7031	45/64	17.86	123.00	35.21	62.00	9005520178600
0.7087		18.00	123.00	35.00	62.00	9005520180000
0.7189	23/32	18.26	127.00	36.61	64.00	9005520182600
0.7480		19.00	127.00	35.50	64.00	9005520190000
0.7500	3/4	19.05	131.00	37.43	66.00	9005520190500
0.7811	25/32	19.84	131.00	36.24	66.00	9005520198400
0.7874		20.00	131.00	36.00	66.00	9005520200000

Stub length drills

Series no. **553**

~3xD	DIN 1897	GT 80	130°	h8		Cyl	L
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface:

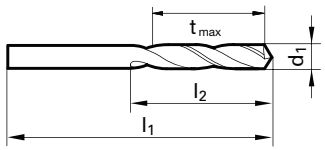
P	Steel	●
M	Stainless steel	○
K	Cast iron	○
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • for higher tensile steels • bright
< 2.36 mm

free-cutting steels • acid resist./stainless steels • case hardening/heat treatable steels up to 800 N/mm² • short/medium chip length Al/Cu-alloys

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 501

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	26.00	4.50	6.00	9005530010000
0.0402	#60	1.02	26.00	4.47	6.00	9005530010200
0.0421	#58	1.07	28.00	5.40	7.00	9005530010700
0.0429	#57	1.09	28.00	5.37	7.00	9005530010900
0.0433		1.10	28.00	5.35	7.00	9005530011000
0.0453		1.15	28.00	5.28	7.00	9005530011500
0.0465	#56	1.18	28.00	5.23	7.00	9005530011800
0.0472		1.20	30.00	6.20	8.00	9005530012000
0.0492		1.25	30.00	6.13	8.00	9005530012500
0.0512		1.30	30.00	6.05	8.00	9005530013000
0.0520	#55	1.32	30.00	6.02	8.00	9005530013200
0.0531		1.35	32.00	6.98	9.00	9005530013500
0.0551	#54	1.40	32.00	6.90	9.00	9005530014000
0.0571		1.45	32.00	6.83	9.00	9005530014500
0.0591		1.50	32.00	6.75	9.00	9005530015000
0.0594	#53	1.51	34.00	7.74	10.00	9005530015100
0.0610		1.55	34.00	7.68	10.00	9005530015500
0.0626	1/16	1.59	34.00	7.62	10.00	9005530015900
0.0630		1.60	34.00	7.60	10.00	9005530016000
0.0634	#52	1.61	34.00	7.59	10.00	9005530016100
0.0650		1.65	34.00	7.53	10.00	9005530016500
0.0669	#51	1.70	34.00	7.45	10.00	9005530017000
0.0689		1.75	36.00	8.38	11.00	9005530017500
0.0701	#50	1.78	36.00	8.33	11.00	9005530017800
0.0709		1.80	36.00	8.30	11.00	9005530018000
0.0728	#49	1.85	36.00	8.23	11.00	9005530018500
0.0748		1.90	36.00	8.15	11.00	9005530019000
0.0760	#48	1.93	38.00	9.11	12.00	9005530019300
0.0768		1.95	38.00	9.08	12.00	9005530019500
0.0780	5/64	1.98	38.00	9.03	12.00	9005530019800
0.0783	#47	1.99	38.00	9.02	12.00	9005530019900
0.0787		2.00	38.00	9.00	12.00	9005530020000
0.0807		2.05	38.00	8.93	12.00	9005530020500
0.0811	#46	2.06	38.00	8.91	12.00	9005530020600
0.0819	#45	2.08	38.00	8.88	12.00	9005530020800
0.0858	#44	2.18	40.00	9.73	13.00	9005530021800
0.0866		2.20	40.00	9.70	13.00	9005530022000
0.0886		2.25	40.00	9.63	13.00	9005530022500
0.0890	#43	2.26	40.00	9.61	13.00	9005530022600
0.0906		2.30	40.00	9.55	13.00	9005530023000
0.0925		2.35	40.00	9.48	13.00	9005530023500
0.0937	3/32	2.38	43.00	10.43	14.00	9005530023800

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0945		2.40	43.00	10.40	14.00	9005530024000
0.0961	#41	2.44	43.00	10.34	14.00	9005530024400
0.0984		2.50	43.00	10.25	14.00	9005530025000
0.0996	#39	2.53	43.00	10.21	14.00	9005530025300
0.1004		2.55	43.00	10.18	14.00	9005530025500
0.1016	#38	2.58	43.00	10.13	14.00	9005530025800
0.1024		2.60	43.00	10.10	14.00	9005530026000
0.1039	#37	2.64	43.00	10.04	14.00	9005530026400
0.1043		2.65	43.00	10.03	14.00	9005530026500
0.1067	#36	2.71	46.00	11.94	16.00	9005530027100
0.1083		2.75	46.00	11.88	16.00	9005530027500
0.1094	7/64	2.78	46.00	11.83	16.00	9005530027800
0.1098	#35	2.79	46.00	11.82	16.00	9005530027900
0.1102		2.80	46.00	11.80	16.00	9005530028000
0.1110	#34	2.82	46.00	11.77	16.00	9005530028200
0.1130	#33	2.87	46.00	11.70	16.00	9005530028700
0.1142		2.90	46.00	11.65	16.00	9005530029000
0.1161	#32	2.95	46.00	11.58	16.00	9005530029500
0.1181		3.00	46.00	11.50	16.00	9005530030000
0.1201	#31	3.05	49.00	13.43	18.00	9005530030500
0.1220		3.10	49.00	13.35	18.00	9005530031000
0.1240		3.15	49.00	13.28	18.00	9005530031500
0.1248	1/8	3.17	49.00	13.25	18.00	9005530031700
0.1260		3.20	49.00	13.20	18.00	9005530032000
0.1283	#30	3.26	49.00	13.11	18.00	9005530032600
0.1339		3.40	52.00	14.90	20.00	9005530034000
0.1358	#29	3.45	52.00	14.83	20.00	9005530034500
0.1378		3.50	52.00	14.75	20.00	9005530035000
0.1406	9/64	#28	3.57	52.00	14.65	20.00	9005530035700
0.1417		3.60	52.00	14.60	20.00	9005530036000
0.1441	#27	3.66	52.00	14.51	20.00	9005530036600
0.1457		3.70	52.00	14.45	20.00	9005530037000
0.1469	#26	3.73	52.00	14.41	20.00	9005530037300
0.1476		3.75	52.00	14.38	20.00	9005530037500
0.1496	#25	3.80	55.00	16.30	22.00	9005530038000
0.1520	#24	3.86	55.00	16.21	22.00	9005530038600
0.1535		3.90	55.00	16.15	22.00	9005530039000
0.1539	#23	3.91	55.00	16.14	22.00	9005530039100
0.1555		3.95	55.00	16.08	22.00	9005530039500
0.1563	5/32	3.97	55.00	16.05	22.00	9005530039700
0.1571	#22	3.99	55.00	16.02	22.00	9005530039900
0.1575		4.00	55.00	16.00	22.00	9005530040000

Stub length drills

Series no. 553

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1591	#21	4.04	55.00	15.94	22.00	9005530040400
0.1610	#20	4.09	55.00	15.87	22.00	9005530040900
0.1634		4.15	55.00	15.78	22.00	9005530041500
0.1654		4.20	55.00	15.70	22.00	9005530042000
0.1661	#19	4.22	55.00	15.67	22.00	9005530042200
0.1693	#18	4.30	58.00	17.55	24.00	9005530043000
0.1720	11/64	4.37	58.00	17.45	24.00	9005530043700
0.1732		4.40	58.00	17.40	24.00	9005530044000
0.1752		4.45	58.00	17.33	24.00	9005530044500
0.1772	#16	4.50	58.00	17.25	24.00	9005530045000
0.1799	#15	4.57	58.00	17.15	24.00	9005530045700
0.1811		4.60	58.00	17.10	24.00	9005530046000
0.1819	#14	4.62	58.00	17.07	24.00	9005530046200
0.1831		4.65	58.00	17.03	24.00	9005530046500
0.1850	#13	4.70	58.00	16.95	24.00	9005530047000
0.1874	3/16	4.76	62.00	18.86	26.00	9005530047600
0.1890	#12	4.80	62.00	18.80	26.00	9005530048000
0.1909	#11	4.85	62.00	18.73	26.00	9005530048500
0.1937	#10	4.92	62.00	18.62	26.00	9005530049200
0.1961	#9	4.98	62.00	18.53	26.00	9005530049800
0.1969		5.00	62.00	18.50	26.00	9005530050000
0.1992	#8	5.06	62.00	18.41	26.00	9005530050600
0.2008		5.10	62.00	18.35	26.00	9005530051000
0.2012	#7	5.11	62.00	18.34	26.00	9005530051100
0.2031	13/64	5.16	62.00	18.26	26.00	9005530051600
0.2039	#6	5.18	62.00	18.23	26.00	9005530051800
0.2055	#5	5.22	62.00	18.17	26.00	9005530052200
0.2087		5.30	62.00	18.05	26.00	9005530053000
0.2165		5.50	66.00	19.75	28.00	9005530055000
0.2189	7/32	5.56	66.00	19.66	28.00	9005530055600
0.2205		5.60	66.00	19.60	28.00	9005530056000
0.2209	#2	5.61	66.00	19.59	28.00	9005530056100
0.2244		5.70	66.00	19.45	28.00	9005530057000
0.2280	#1	5.79	66.00	19.32	28.00	9005530057900
0.2283		5.80	66.00	19.30	28.00	9005530058000
0.2323		5.90	66.00	19.15	28.00	9005530059000
0.2339	A	5.94	66.00	19.09	28.00	9005530059400
0.2343	15/64	5.95	66.00	19.08	28.00	9005530059500
0.2362		6.00	66.00	19.00	28.00	9005530060000
0.2402		6.10	70.00	21.85	31.00	9005530061000
0.2421	C	6.15	70.00	21.78	31.00	9005530061500
0.2461	D	6.25	70.00	21.63	31.00	9005530062500
0.2500	1/4 E	6.35	70.00	21.48	31.00	9005530063500
0.2559		6.50	70.00	21.25	31.00	9005530065000
0.2571		6.53	70.00	21.21	31.00	9005530065300
0.2598		6.60	70.00	21.10	31.00	9005530066000
0.2610	G	6.63	70.00	21.06	31.00	9005530066300
0.2657	17/64 H	6.75	74.00	23.88	34.00	9005530067500
0.2677		6.80	74.00	23.80	34.00	9005530068000
0.2717	I	6.90	74.00	23.65	34.00	9005530069000
0.2756		7.00	74.00	23.50	34.00	9005530070000
0.2768	J	7.03	74.00	23.46	34.00	9005530070300
0.2811	9/32 K	7.14	74.00	23.29	34.00	9005530071400

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2835		7.20	74.00	23.20	34.00	9005530072000
0.2874		7.30	74.00	23.05	34.00	9005530073000
0.2902	L	7.37	74.00	22.95	34.00	9005530073700
0.2913		7.40	74.00	22.90	34.00	9005530074000
0.2949	M	7.49	74.00	22.77	34.00	9005530074900
0.2953		7.50	74.00	22.75	34.00	9005530075000
0.2969	19/64	7.54	79.00	25.69	37.00	9005530075400
0.3020	N	7.67	79.00	25.50	37.00	9005530076700
0.3031		7.70	79.00	25.45	37.00	9005530077000
0.3126	5/16	7.94	79.00	25.09	37.00	9005530079400
0.3150		8.00	79.00	25.00	37.00	9005530080000
0.3228	P	8.20	79.00	24.70	37.00	9005530082000
0.3268		8.30	79.00	24.55	37.00	9005530083000
0.3280	21/64	8.33	79.00	24.51	37.00	9005530083300
0.3319	Q	8.43	79.00	24.36	37.00	9005530084300
0.3346		8.50	79.00	24.25	37.00	9005530085000
0.3390	R	8.61	84.00	27.09	40.00	9005530086100
0.3437	11/32	8.73	84.00	26.91	40.00	9005530087300
0.3480	S	8.84	84.00	26.74	40.00	9005530088400
0.3543		9.00	84.00	26.50	40.00	9005530090000
0.3579	T	9.09	84.00	26.37	40.00	9005530090900
0.3594	23/64	9.13	84.00	26.31	40.00	9005530091300
0.3677	U	9.34	84.00	25.99	40.00	9005530093400
0.3740		9.50	84.00	25.75	40.00	9005530095000
0.3748	3/8	9.52	89.00	28.72	43.00	9005530095200
0.3772	V	9.58	89.00	28.63	43.00	9005530095800
0.3858	W	9.80	89.00	28.30	43.00	9005530098000
0.3906	25/64	9.92	89.00	28.12	43.00	9005530099200
0.3937		10.00	89.00	28.00	43.00	9005530100000
0.4016		10.20	89.00	27.70	43.00	9005530102000
0.4039	Y	10.26	89.00	27.61	43.00	9005530102600
0.4063	13/32	10.32	89.00	27.52	43.00	9005530103200
0.4130	Z	10.49	89.00	27.27	43.00	9005530104900
0.4134		10.50	89.00	27.25	43.00	9005530105000
0.4220	27/64	10.72	95.00	30.92	47.00	9005530107200
0.4331		11.00	95.00	30.50	47.00	9005530110000
0.4374	7/16	11.11	95.00	30.34	47.00	9005530111100
0.4528		11.50	95.00	29.75	47.00	9005530115000
0.4531	29/64	11.51	95.00	29.74	47.00	9005530115100
0.4689	15/32	11.91	102.00	33.14	51.00	9005530119100
0.4724		12.00	102.00	33.00	51.00	9005530120000
0.4843	31/64	12.30	102.00	32.55	51.00	9005530123000
0.4921		12.50	102.00	32.25	51.00	9005530125000
0.5000	1/2	12.70	102.00	31.95	51.00	9005530127000
0.5157	33/64	13.10	102.00	31.35	51.00	9005530131000
0.5311	17/32	13.49	107.00	33.77	54.00	9005530134900
0.5512		14.00	107.00	33.00	54.00	9005530140000
0.5626	9/16	14.29	111.00	34.57	56.00	9005530142900
0.6102		15.50	115.00	34.75	58.00	9005530155000
0.6248	5/8	15.87	115.00	34.20	58.00	9005530158700
0.7500	3/4	19.05	131.00	37.43	66.00	9005530190500
0.7874		20.00	131.00	36.00	66.00	9005530200000

Stub length drills

Series no. **329**

~3xD Cutting depth | DIN 1897 Standard | GV 120 Type | 130° Point angle | h8 Tolerance on Ø | Web Thinning | Cyl Shank form | R Cutting direction

Tool material **HSCO**

Surface >Ø 2.36

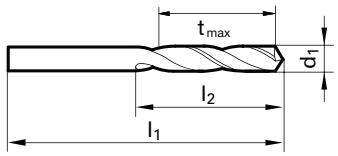
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	●
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • Co-alloyed high speed steel • increased wear resistance

acid resist./stainless steels • spring steels • austenitic stainless steels • Hastelloy, Inconel, Nimonic

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 491

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0157	1/64	0.40	19.00	1.90	2.50	9003290004000
0.0197		0.50	20.00	2.25	3.00	9003290005000
0.0201	#76	0.51	20.00	2.24	3.00	9003290005100
0.0217		0.55	21.00	2.68	3.50	9003290005500
0.0224	#74	0.57	21.00	2.65	3.50	9003290005700
0.0236		0.60	21.00	2.60	3.50	9003290006000
0.0240	#73	0.61	22.00	3.09	4.00	9003290006100
0.0252	#72	0.64	22.00	3.04	4.00	9003290006400
0.0256		0.65	22.00	3.03	4.00	9003290006500
0.0276		0.70	23.00	3.45	4.50	9003290007000
0.0287		0.73	23.00	3.41	4.50	9003290007300
0.0291	#69	0.74	23.00	3.39	4.50	9003290007400
0.0295		0.75	23.00	3.38	4.50	9003290007500
0.0311	1/32 #68	0.79	24.00	3.82	5.00	9003290007900
0.0315		0.80	24.00	3.80	5.00	9003290008000
0.0319	#67	0.81	24.00	3.79	5.00	9003290008100
0.0323		0.82	24.00	3.77	5.00	9003290008200
0.0331	#66	0.84	24.00	3.74	5.00	9003290008400
0.0335		0.85	24.00	3.73	5.00	9003290008500
0.0343		0.87	25.00	4.20	5.50	9003290008700
0.0354		0.90	25.00	4.15	5.50	9003290009000
0.0358	#64	0.91	25.00	4.14	5.50	9003290009100
0.0370	#63	0.94	25.00	4.09	5.50	9003290009400
0.0374		0.95	25.00	4.08	5.50	9003290009500
0.0382	#62	0.97	26.00	4.55	6.00	9003290009700
0.0390	#61	0.99	26.00	4.52	6.00	9003290009900
0.0394		1.00	26.00	4.50	6.00	9003290010000
0.0402	#60	1.02	26.00	4.47	6.00	9003290010200
0.0413		1.05	26.00	4.43	6.00	9003290010500
0.0417		1.06	26.00	4.41	6.00	9003290010600
0.0421	#58	1.07	28.00	5.40	7.00	9003290010700
0.0429	#57	1.09	28.00	5.37	7.00	9003290010900
0.0433		1.10	28.00	5.35	7.00	9003290011000
0.0453		1.15	28.00	5.28	7.00	9003290011500
0.0465	#56	1.18	28.00	5.23	7.00	9003290011800
0.0469	3/64	1.19	30.00	6.22	8.00	9003290011900
0.0472		1.20	30.00	6.20	8.00	9003290012000
0.0484		1.23	30.00	6.16	8.00	9003290012300
0.0492		1.25	30.00	6.13	8.00	9003290012500
0.0504		1.28	30.00	6.08	8.00	9003290012800
0.0512		1.30	30.00	6.05	8.00	9003290013000
0.0520	#55	1.32	30.00	6.02	8.00	9003290013200
0.0524		1.33	32.00	7.01	9.00	9003290013300
0.0531		1.35	32.00	6.98	9.00	9003290013500
0.0551	#54	1.40	32.00	6.90	9.00	9003290014000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0571		1.45	32.00	6.83	9.00	9003290014500
0.0579		1.47	32.00	6.80	9.00	9003290014700
0.0591		1.50	32.00	6.75	9.00	9003290015000
0.0594	#53	1.51	34.00	7.74	10.00	9003290015100
0.0610		1.55	34.00	7.68	10.00	9003290015500
0.0618		1.57	34.00	7.65	10.00	9003290015700
0.0626	1/16	1.59	34.00	7.62	10.00	9003290015900
0.0630		1.60	34.00	7.60	10.00	9003290016000
0.0634	#52	1.61	34.00	7.59	10.00	9003290016100
0.0650		1.65	34.00	7.53	10.00	9003290016500
0.0669	#51	1.70	34.00	7.45	10.00	9003290017000
0.0681		1.73	36.00	8.41	11.00	9003290017300
0.0689		1.75	36.00	8.38	11.00	9003290017500
0.0701	#50	1.78	36.00	8.33	11.00	9003290017800
0.0709		1.80	36.00	8.30	11.00	9003290018000
0.0717		1.82	36.00	8.27	11.00	9003290018200
0.0728	#49	1.85	36.00	8.23	11.00	9003290018500
0.0748		1.90	36.00	8.15	11.00	9003290019000
0.0760	#48	1.93	38.00	9.11	12.00	9003290019300
0.0768		1.95	38.00	9.08	12.00	9003290019500
0.0776		1.97	38.00	9.05	12.00	9003290019700
0.0780	5/64	1.98	38.00	9.03	12.00	9003290019800
0.0783	#47	1.99	38.00	9.02	12.00	9003290019900
0.0787		2.00	38.00	9.00	12.00	9003290020000
0.0799		2.03	38.00	8.96	12.00	9003290020300
0.0811	#46	2.06	38.00	8.91	12.00	9003290020600
0.0819	#45	2.08	38.00	8.88	12.00	9003290020800
0.0827		2.10	38.00	8.85	12.00	9003290021000
0.0846		2.15	40.00	9.78	13.00	9003290021500
0.0858	#44	2.18	40.00	9.73	13.00	9003290021800
0.0866		2.20	40.00	9.70	13.00	9003290022000
0.0886		2.25	40.00	9.63	13.00	9003290022500
0.0890	#43	2.26	40.00	9.61	13.00	9003290022600
0.0906		2.30	40.00	9.55	13.00	9003290023000
0.0913		2.32	40.00	9.52	13.00	9003290023200
0.0925		2.35	40.00	9.48	13.00	9003290023500
0.0929		2.36	40.00	9.46	13.00	9003290023600
0.0933	#42	2.37	43.00	10.45	14.00	9003290023700
0.0937	3/32	2.38	43.00	10.43	14.00	9003290023800
0.0945		2.40	43.00	10.40	14.00	9003290024000
0.0953		2.42	43.00	10.37	14.00	9003290024200
0.0961	#41	2.44	43.00	10.34	14.00	9003290024400
0.0965		2.45	43.00	10.33	14.00	9003290024500
0.0972		2.47	43.00	10.30	14.00	9003290024700
0.0980	#40	2.49	43.00	10.27	14.00	9003290024900

Stub length drills

Series no. 329

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0984		2.50	43.00	10.25	14.00	9003290025000
0.0996	#39	2.53	43.00	10.21	14.00	9003290025300
0.1004		2.55	43.00	10.18	14.00	9003290025500
0.1016	#38	2.58	43.00	10.13	14.00	9003290025800
0.1024		2.60	43.00	10.10	14.00	9003290026000
0.1039	#37	2.64	43.00	10.04	14.00	9003290026400
0.1043		2.65	43.00	10.03	14.00	9003290026500
0.1063		2.70	46.00	11.95	16.00	9003290027000
0.1067	#36	2.71	46.00	11.94	16.00	9003290027100
0.1083		2.75	46.00	11.88	16.00	9003290027500
0.1094	7/64	2.78	46.00	11.83	16.00	9003290027800
0.1098	#35	2.79	46.00	11.82	16.00	9003290027900
0.1102		2.80	46.00	11.80	16.00	9003290028000
0.1110	#34	2.82	46.00	11.77	16.00	9003290028200
0.1130	#33	2.87	46.00	11.70	16.00	9003290028700
0.1142		2.90	46.00	11.65	16.00	9003290029000
0.1161	#32	2.95	46.00	11.58	16.00	9003290029500
0.1181		3.00	46.00	11.50	16.00	9003290030000
0.1189		3.02	49.00	13.47	18.00	9003290030200
0.1201	#31	3.05	49.00	13.43	18.00	9003290030500
0.1220		3.10	49.00	13.35	18.00	9003290031000
0.1240		3.15	49.00	13.28	18.00	9003290031500
0.1248	1/8	3.17	49.00	13.25	18.00	9003290031700
0.1260		3.20	49.00	13.20	18.00	9003290032000
0.1280		3.25	49.00	13.13	18.00	9003290032500
0.1283	#30	3.26	49.00	13.11	18.00	9003290032600
0.1299		3.30	49.00	13.05	18.00	9003290033000
0.1339		3.40	52.00	14.90	20.00	9003290034000
0.1358	#29	3.45	52.00	14.83	20.00	9003290034500
0.1378		3.50	52.00	14.75	20.00	9003290035000
0.1398		3.55	52.00	14.68	20.00	9003290035500
0.1406	9/64 #28	3.57	52.00	14.65	20.00	9003290035700
0.1417		3.60	52.00	14.60	20.00	9003290036000
0.1441	#27	3.66	52.00	14.51	20.00	9003290036600
0.1457		3.70	52.00	14.45	20.00	9003290037000
0.1469	#26	3.73	52.00	14.41	20.00	9003290037300
0.1476		3.75	52.00	14.38	20.00	9003290037500
0.1496	#25	3.80	55.00	16.30	22.00	9003290038000
0.1516		3.85	55.00	16.23	22.00	9003290038500
0.1520	#24	3.86	55.00	16.21	22.00	9003290038600
0.1535		3.90	55.00	16.15	22.00	9003290039000
0.1539	#23	3.91	55.00	16.14	22.00	9003290039100
0.1543		3.92	55.00	16.12	22.00	9003290039200
0.1555		3.95	55.00	16.08	22.00	9003290039500
0.1563	5/32	3.97	55.00	16.05	22.00	9003290039700
0.1571	#22	3.99	55.00	16.02	22.00	9003290039900
0.1575		4.00	55.00	16.00	22.00	9003290040000
0.1591	#21	4.04	55.00	15.94	22.00	9003290040400
0.1594		4.05	55.00	15.93	22.00	9003290040500
0.1610	#20	4.09	55.00	15.87	22.00	9003290040900
0.1614		4.10	55.00	15.85	22.00	9003290041000
0.1634		4.15	55.00	15.78	22.00	9003290041500
0.1654		4.20	55.00	15.70	22.00	9003290042000
0.1661	#19	4.22	55.00	15.67	22.00	9003290042200
0.1673		4.25	55.00	15.63	22.00	9003290042500
0.1693	#18	4.30	58.00	17.55	24.00	9003290043000
0.1720	11/64	4.37	58.00	17.45	24.00	9003290043700
0.1728	#17	4.39	58.00	17.42	24.00	9003290043900
0.1732		4.40	58.00	17.40	24.00	9003290044000
0.1752		4.45	58.00	17.33	24.00	9003290044500
0.1772	#16	4.50	58.00	17.25	24.00	9003290045000
0.1799	#15	4.57	58.00	17.15	24.00	9003290045700
0.1811		4.60	58.00	17.10	24.00	9003290046000
0.1819	#14	4.62	58.00	17.07	24.00	9003290046200
0.1831		4.65	58.00	17.03	24.00	9003290046500
0.1850	#13	4.70	58.00	16.95	24.00	9003290047000
0.1870		4.75	58.00	16.88	24.00	9003290047500

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1874	3/16	4.76	62.00	18.86	26.00	9003290047600
0.1890	#12	4.80	62.00	18.80	26.00	9003290048000
0.1909	#11	4.85	62.00	18.73	26.00	9003290048500
0.1929		4.90	62.00	18.65	26.00	9003290049000
0.1937	#10	4.92	62.00	18.62	26.00	9003290049200
0.1949		4.95	62.00	18.58	26.00	9003290049500
0.1961	#9	4.98	62.00	18.53	26.00	9003290049800
0.1969		5.00	62.00	18.50	26.00	9003290050000
0.1992	#8	5.06	62.00	18.41	26.00	9003290050600
0.2008		5.10	62.00	18.35	26.00	9003290051000
0.2012	#7	5.11	62.00	18.34	26.00	9003290051100
0.2028		5.15	62.00	18.28	26.00	9003290051500
0.2031	13/64	5.16	62.00	18.26	26.00	9003290051600
0.2039	#6	5.18	62.00	18.23	26.00	9003290051800
0.2047		5.20	62.00	18.20	26.00	9003290052000
0.2055	#5	5.22	62.00	18.17	26.00	9003290052200
0.2067		5.25	62.00	18.13	26.00	9003290052500
0.2087		5.30	62.00	18.05	26.00	9003290053000
0.2091	#4	5.31	66.00	20.04	28.00	9003290053100
0.2106		5.35	66.00	19.98	28.00	9003290053500
0.2126		5.40	66.00	19.90	28.00	9003290054000
0.2130	#3	5.41	66.00	19.89	28.00	9003290054100
0.2146		5.45	66.00	19.83	28.00	9003290054500
0.2165		5.50	66.00	19.75	28.00	9003290055000
0.2185		5.55	66.00	19.68	28.00	9003290055500
0.2189	7/32	5.56	66.00	19.66	28.00	9003290055600
0.2205		5.60	66.00	19.60	28.00	9003290056000
0.2209	#2	5.61	66.00	19.59	28.00	9003290056100
0.2244		5.70	66.00	19.45	28.00	9003290057000
0.2264		5.75	66.00	19.38	28.00	9003290057500
0.2280	#1	5.79	66.00	19.32	28.00	9003290057900
0.2283		5.80	66.00	19.30	28.00	9003290058000
0.2303		5.85	66.00	19.23	28.00	9003290058500
0.2323		5.90	66.00	19.15	28.00	9003290059000
0.2343	15/64	5.95	66.00	19.08	28.00	9003290059500
0.2362		6.00	66.00	19.00	28.00	9003290060000
0.2378	B	6.04	70.00	21.94	31.00	9003290060400
0.2402		6.10	70.00	21.85	31.00	9003290061000
0.2421	C	6.15	70.00	21.78	31.00	9003290061500
0.2441		6.20	70.00	21.70	31.00	9003290062000
0.2461	D	6.25	70.00	21.63	31.00	9003290062500
0.2480		6.30	70.00	21.55	31.00	9003290063000
0.2488		6.32	70.00	21.52	31.00	9003290063200
0.2500	1/4 E	6.35	70.00	21.48	31.00	9003290063500
0.2520		6.40	70.00	21.40	31.00	9003290064000
0.2539		6.45	70.00	21.33	31.00	9003290064500
0.2559		6.50	70.00	21.25	31.00	9003290065000
0.2571		6.53	70.00	21.21	31.00	9003290065300
0.2598		6.60	70.00	21.10	31.00	9003290066000
0.2610	G	6.63	70.00	21.06	31.00	9003290066300
0.2638		6.70	70.00	20.95	31.00	9003290067000
0.2657	17/64 H	6.75	74.00	23.88	34.00	9003290067500
0.2677		6.80	74.00	23.80	34.00	9003290068000
0.2697		6.85	74.00	23.73	34.00	9003290068500
0.2717	I	6.90	74.00	23.65	34.00	9003290069000
0.2756		7.00	74.00	23.50	34.00	9003290070000
0.2768	J	7.03	74.00	23.46	34.00	9003290070300
0.2776		7.05	74.00	23.43	34.00	9003290070500
0.2795		7.10	74.00	23.35	34.00	9003290071000
0.2811	9/32 K	7.14	74.00	23.29	34.00	9003290071400
0.2835		7.20	74.00	23.20	34.00	9003290072000
0.2854		7.25	74.00	23.13	34.00	9003290072500
0.2874		7.30	74.00	23.05	34.00	9003290073000
0.2902	L	7.37	74.00	22.95	34.00	9003290073700
0.2913		7.40	74.00	22.90	34.00	9003290074000
0.2949	M	7.49	74.00	22.77	34.00	9003290074900
0.2953		7.50	74.00	22.75	34.00	9003290075000

Stub length drills

Series no. 329

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2969	19/64	7.54	79.00	25.69	37.00	9003290075400
0.2992		7.60	79.00	25.60	37.00	9003290076000
0.3020	N	7.67	79.00	25.50	37.00	9003290076700
0.3031		7.70	79.00	25.45	37.00	9003290077000
0.3051		7.75	79.00	25.38	37.00	9003290077500
0.3071		7.80	79.00	25.30	37.00	9003290078000
0.3110		7.90	79.00	25.15	37.00	9003290079000
0.3126	5/16	7.94	79.00	25.09	37.00	9003290079400
0.3150		8.00	79.00	25.00	37.00	9003290080000
0.3161	O	8.03	79.00	24.96	37.00	9003290080300
0.3189		8.10	79.00	24.85	37.00	9003290081000
0.3209		8.15	79.00	24.78	37.00	9003290081500
0.3228	P	8.20	79.00	24.70	37.00	9003290082000
0.3248		8.25	79.00	24.63	37.00	9003290082500
0.3268		8.30	79.00	24.55	37.00	9003290083000
0.3280	21/64	8.33	79.00	24.51	37.00	9003290083300
0.3307		8.40	79.00	24.40	37.00	9003290084000
0.3319	Q	8.43	79.00	24.36	37.00	9003290084300
0.3346		8.50	79.00	24.25	37.00	9003290085000
0.3366		8.55	84.00	27.18	40.00	9003290085500
0.3386		8.60	84.00	27.10	40.00	9003290086000
0.3390	R	8.61	84.00	27.09	40.00	9003290086100
0.3425		8.70	84.00	26.95	40.00	9003290087000
0.3437	11/32	8.73	84.00	26.91	40.00	9003290087300
0.3445		8.75	84.00	26.88	40.00	9003290087500
0.3465		8.80	84.00	26.80	40.00	9003290088000
0.3480	S	8.84	84.00	26.74	40.00	9003290088400
0.3504		8.90	84.00	26.65	40.00	9003290089000
0.3543		9.00	84.00	26.50	40.00	9003290090000
0.3563		9.05	84.00	26.43	40.00	9003290090500
0.3579	T	9.09	84.00	26.37	40.00	9003290090900
0.3583		9.10	84.00	26.35	40.00	9003290091000
0.3594	23/64	9.13	84.00	26.31	40.00	9003290091300
0.3622		9.20	84.00	26.20	40.00	9003290092000
0.3642		9.25	84.00	26.13	40.00	9003290092500
0.3661		9.30	84.00	26.05	40.00	9003290093000
0.3677	U	9.34	84.00	25.99	40.00	9003290093400
0.3701		9.40	84.00	25.90	40.00	9003290094000
0.3740		9.50	84.00	25.75	40.00	9003290095000
0.3748	3/8	9.52	89.00	28.72	43.00	9003290095200
0.3772	V	9.58	89.00	28.63	43.00	9003290095800
0.3780		9.60	89.00	28.60	43.00	9003290096000
0.3819		9.70	89.00	28.45	43.00	9003290097000
0.3839		9.75	89.00	28.38	43.00	9003290097500
0.3858	W	9.80	89.00	28.30	43.00	9003290098000
0.3898		9.90	89.00	28.15	43.00	9003290099000
0.3906	25/64	9.92	89.00	28.12	43.00	9003290099200
0.3937		10.00	89.00	28.00	43.00	9003290100000
0.3969	X	10.08	89.00	27.88	43.00	9003290100800
0.3976		10.10	89.00	27.85	43.00	9003290101000
0.4016		10.20	89.00	27.70	43.00	9003290102000
0.4039	Y	10.26	89.00	27.61	43.00	9003290102600
0.4055		10.30	89.00	27.55	43.00	9003290103000
0.4063	13/32	10.32	89.00	27.52	43.00	9003290103200
0.4094		10.40	89.00	27.40	43.00	9003290104000
0.4130	Z	10.49	89.00	27.27	43.00	9003290104900
0.4134		10.50	89.00	27.25	43.00	9003290105000
0.4173		10.60	89.00	27.10	43.00	9003290106000
0.4193		10.65	95.00	31.03	47.00	9003290106500
0.4220	27/64	10.72	95.00	30.92	47.00	9003290107200
0.4252		10.80	95.00	30.80	47.00	9003290108000
0.4291		10.90	95.00	30.65	47.00	9003290109000
0.4331		11.00	95.00	30.50	47.00	9003290110000
0.4370		11.10	95.00	30.35	47.00	9003290111000
0.4374	7/16	11.11	95.00	30.34	47.00	9003290111100
0.4409		11.20	95.00	30.20	47.00	9003290112000
0.4429		11.25	95.00	30.13	47.00	9003290112500

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4449		11.30	95.00	30.05	47.00	9003290113000
0.4488		11.40	95.00	29.90	47.00	9003290114000
0.4528		11.50	95.00	29.75	47.00	9003290115000
0.4531	29/64	11.51	95.00	29.74	47.00	9003290115100
0.4567		11.60	95.00	29.60	47.00	9003290116000
0.4606		11.70	95.00	29.45	47.00	9003290117000
0.4646		11.80	95.00	29.30	47.00	9003290118000
0.4689	15/32	11.91	102.00	33.14	51.00	9003290119100
0.4724		12.00	102.00	33.00	51.00	9003290120000
0.4764		12.10	102.00	32.85	51.00	9003290121000
0.4803		12.20	102.00	32.70	51.00	9003290122000
0.4843	31/64	12.30	102.00	32.55	51.00	9003290123000
0.4882		12.40	102.00	32.40	51.00	9003290124000
0.4921		12.50	102.00	32.25	51.00	9003290125000
0.5000	1/2	12.70	102.00	31.95	51.00	9003290127000
0.5039		12.80	102.00	31.80	51.00	9003290128000
0.5079		12.90	102.00	31.65	51.00	9003290129000
0.5118		13.00	102.00	31.50	51.00	9003290130000
0.5157	33/64	13.10	102.00	31.35	51.00	9003290131000
0.5197		13.20	102.00	31.20	51.00	9003290132000
0.5311	17/32	13.49	107.00	33.77	54.00	9003290134900
0.5315		13.50	107.00	33.75	54.00	9003290135000
0.5413		13.75	107.00	33.38	54.00	9003290137500
0.5469	35/64	13.89	107.00	33.17	54.00	9003290138900
0.5512		14.00	107.00	33.00	54.00	9003290140000
0.5551		14.10	111.00	34.85	56.00	9003290141000
0.5626	9/16	14.29	111.00	34.57	56.00	9003290142900
0.5709		14.50	111.00	34.25	56.00	9003290145000
0.5780	37/64	14.68	111.00	33.98	56.00	9003290146800
0.5807		14.75	111.00	33.88	56.00	9003290147500
0.5906		15.00	111.00	33.50	56.00	9003290150000
0.5937	19/32	15.08	115.00	35.38	58.00	9003290150800
0.6004		15.25	115.00	35.13	58.00	9003290152500
0.6094	39/64	15.48	115.00	34.78	58.00	9003290154800
0.6102		15.50	115.00	34.75	58.00	9003290155000
0.6248	5/8	15.87	115.00	34.20	58.00	9003290158700
0.6299		16.00	115.00	34.00	58.00	9003290160000
0.6378		16.20	119.00	35.70	60.00	9003290162000
0.6406	41/64	16.27	119.00	35.60	60.00	9003290162700
0.6496		16.50	119.00	35.25	60.00	9003290165000
0.6563	21/32	16.67	119.00	35.00	60.00	9003290166700
0.6693		17.00	119.00	34.50	60.00	9003290170000
0.6720	43/64	17.07	123.00	36.40	62.00	9003290170700
0.6874	11/16	17.46	123.00	35.81	62.00	9003290174600
0.6890		17.50	123.00	35.75	62.00	9003290175000
0.7031	45/64	17.86	123.00	35.21	62.00	9003290178600
0.7087		18.00	123.00	35.00	62.00	9003290180000
0.7283		18.50	127.00	36.25	64.00	9003290185000
0.7343	47/64	18.65	127.00	36.03	64.00	9003290186500
0.7480		19.00	127.00	35.50	64.00	9003290190000
0.7500	3/4	19.05	131.00	37.43	66.00	9003290190500
0.7657	49/64	19.45	131.00	36.83	66.00	9003290194500
0.7677		19.50	131.00	36.75	66.00	9003290195000
0.7811	25/32	19.84	131.00	36.24	66.00	9003290198400
0.7874		20.00	131.00	36.00	66.00	9003290200000
0.7972		20.25	136.00	37.63	68.00	9003290202500
0.8071		20.50	136.00	37.25	68.00	9003290205000
0.8126	13/16	20.64	136.00	37.04	68.00	9003290206400
0.8268		21.00	136.00	36.50	68.00	9003290210000
0.8465		21.50	141.00	37.75	70.00	9003290215000
0.8661		22.00	141.00	37.00	70.00	9003290220000
0.8740		22.20	141.00	36.70	70.00	9003290222000
0.9055		23.00	146.00	37.50	72.00	9003290230000
0.9449		24.00	151.00	39.00	75.00	9003290240000
0.9646		24.50	151.00	38.25	75.00	9003290245000
0.9843	63/64	25.00	151.00	37.50	75.00	9003290250000
1.0000	1.0000	25.40	156.00	39.90	78.00	9003290254000

Stub length drills 659

~3xD	DIN 1897	GV 120	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: HSCO

Surface: S

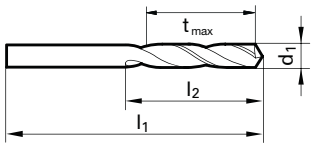
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	●
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • Co-alloyed high speed steel • increased wear resistance

acid resist./stainless steels • spring steels • austenitic stainless steels • Hastelloy, Inconel, Nimonic

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 518

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.0197		0.50	20.00	2.25	3.00	9006590005000
0.0236		0.60	21.00	2.60	3.50	9006590006000
0.0256		0.65	22.00	3.03	4.00	9006590006500
0.0276		0.70	23.00	3.45	4.50	9006590007000
0.0291	#69	0.74	23.00	3.39	4.50	9006590007400
0.0295		0.75	23.00	3.38	4.50	9006590007500
0.0311	1/32 #68	0.79	24.00	3.82	5.00	9006590007900
0.0315		0.80	24.00	3.80	5.00	9006590008000
0.0335		0.85	24.00	3.73	5.00	9006590008500
0.0354		0.90	25.00	4.15	5.50	9006590009000
0.0374		0.95	25.00	4.08	5.50	9006590009500
0.0394		1.00	26.00	4.50	6.00	9006590010000
0.0402	#60	1.02	26.00	4.47	6.00	9006590010200
0.0421	#58	1.07	28.00	5.40	7.00	9006590010700
0.0429	#57	1.09	28.00	5.37	7.00	9006590010900
0.0433		1.10	28.00	5.35	7.00	9006590011000
0.0453		1.15	28.00	5.28	7.00	9006590011500
0.0465	#56	1.18	28.00	5.23	7.00	9006590011800
0.0469	3/64	1.19	30.00	6.22	8.00	9006590011900
0.0472		1.20	30.00	6.20	8.00	9006590012000
0.0492		1.25	30.00	6.13	8.00	9006590012500
0.0512		1.30	30.00	6.05	8.00	9006590013000
0.0520	#55	1.32	30.00	6.02	8.00	9006590013200
0.0551	#54	1.40	32.00	6.90	9.00	9006590014000
0.0571		1.45	32.00	6.83	9.00	9006590014500
0.0591		1.50	32.00	6.75	9.00	9006590015000
0.0594	#53	1.51	34.00	7.74	10.00	9006590015100
0.0602		1.53	34.00	7.71	10.00	9006590015300
0.0618		1.57	34.00	7.65	10.00	9006590015700
0.0626	1/16	1.59	34.00	7.62	10.00	9006590015900
0.0630		1.60	34.00	7.60	10.00	9006590016000
0.0634	#52	1.61	34.00	7.59	10.00	9006590016100
0.0669	#51	1.70	34.00	7.45	10.00	9006590017000
0.0701	#50	1.78	36.00	8.33	11.00	9006590017800
0.0709		1.80	36.00	8.30	11.00	9006590018000
0.0728	#49	1.85	36.00	8.23	11.00	9006590018500
0.0748		1.90	36.00	8.15	11.00	9006590019000
0.0760	#48	1.93	38.00	9.11	12.00	9006590019300
0.0776		1.97	38.00	9.05	12.00	9006590019700
0.0780	5/64	1.98	38.00	9.03	12.00	9006590019800
0.0783	#47	1.99	38.00	9.02	12.00	9006590019900
0.0787		2.00	38.00	9.00	12.00	9006590020000

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.0819	#45	2.08	38.00	8.88	12.00	9006590020800
0.0827		2.10	38.00	8.85	12.00	9006590021000
0.0858	#44	2.18	40.00	9.73	13.00	9006590021800
0.0866		2.20	40.00	9.70	13.00	9006590022000
0.0886		2.25	40.00	9.63	13.00	9006590022500
0.0890	#43	2.26	40.00	9.61	13.00	9006590022600
0.0906		2.30	40.00	9.55	13.00	9006590023000
0.0933	#42	2.37	43.00	10.45	14.00	9006590023700
0.0937	3/32	2.38	43.00	10.43	14.00	9006590023800
0.0945		2.40	43.00	10.40	14.00	9006590024000
0.0961	#41	2.44	43.00	10.34	14.00	9006590024400
0.0965		2.45	43.00	10.33	14.00	9006590024500
0.0980	#40	2.49	43.00	10.27	14.00	9006590024900
0.0984		2.50	43.00	10.25	14.00	9006590025000
0.0996	#39	2.53	43.00	10.21	14.00	9006590025300
0.1004		2.55	43.00	10.18	14.00	9006590025500
0.1016	#38	2.58	43.00	10.13	14.00	9006590025800
0.1024		2.60	43.00	10.10	14.00	9006590026000
0.1039	#37	2.64	43.00	10.04	14.00	9006590026400
0.1063		2.70	46.00	11.95	16.00	9006590027000
0.1067	#36	2.71	46.00	11.94	16.00	9006590027100
0.1094	7/64	2.78	46.00	11.83	16.00	9006590027800
0.1102		2.80	46.00	11.80	16.00	9006590028000
0.1110	#34	2.82	46.00	11.77	16.00	9006590028200
0.1122		2.85	46.00	11.73	16.00	9006590028500
0.1142		2.90	46.00	11.65	16.00	9006590029000
0.1161	#32	2.95	46.00	11.58	16.00	9006590029500
0.1181		3.00	46.00	11.50	16.00	9006590030000
0.1201	#31	3.05	49.00	13.43	18.00	9006590030500
0.1220		3.10	49.00	13.35	18.00	9006590031000
0.1248	1/8	3.17	49.00	13.25	18.00	9006590031700
0.1260		3.20	49.00	13.20	18.00	9006590032000
0.1280		3.25	49.00	13.13	18.00	9006590032500
0.1283	#30	3.26	49.00	13.11	18.00	9006590032600
0.1299		3.30	49.00	13.05	18.00	9006590033000
0.1339		3.40	52.00	14.90	20.00	9006590034000
0.1358	#29	3.45	52.00	14.83	20.00	9006590034500
0.1378		3.50	52.00	14.75	20.00	9006590035000
0.1406	9/64 #28	3.57	52.00	14.65	20.00	9006590035700
0.1417		3.60	52.00	14.60	20.00	9006590036000
0.1441	#27	3.66	52.00	14.51	20.00	9006590036600
0.1457		3.70	52.00	14.45	20.00	9006590037000

Stub length drills

Series no. 659

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1469	#26	3.73	52.00	14.41	20.00	9006590037300
0.1496	#25	3.80	55.00	16.30	22.00	9006590038000
0.1520	#24	3.86	55.00	16.21	22.00	9006590038600
0.1535		3.90	55.00	16.15	22.00	9006590039000
0.1539	#23	3.91	55.00	16.14	22.00	9006590039100
0.1563	5/32	3.97	55.00	16.05	22.00	9006590039700
0.1575		4.00	55.00	16.00	22.00	9006590040000
0.1591	#21	4.04	55.00	15.94	22.00	9006590040400
0.1610	#20	4.09	55.00	15.87	22.00	9006590040900
0.1614		4.10	55.00	15.85	22.00	9006590041000
0.1634		4.15	55.00	15.78	22.00	9006590041500
0.1654		4.20	55.00	15.70	22.00	9006590042000
0.1673		4.25	55.00	15.63	22.00	9006590042500
0.1693	#18	4.30	58.00	17.55	24.00	9006590043000
0.1720	11/64	4.37	58.00	17.45	24.00	9006590043700
0.1728	#17	4.39	58.00	17.42	24.00	9006590043900
0.1732		4.40	58.00	17.40	24.00	9006590044000
0.1772	#16	4.50	58.00	17.25	24.00	9006590045000
0.1811		4.60	58.00	17.10	24.00	9006590046000
0.1819	#14	4.62	58.00	17.07	24.00	9006590046200
0.1850	#13	4.70	58.00	16.95	24.00	9006590047000
0.1874	3/16	4.76	62.00	18.86	26.00	9006590047600
0.1890	#12	4.80	62.00	18.80	26.00	9006590048000
0.1909	#11	4.85	62.00	18.73	26.00	9006590048500
0.1929		4.90	62.00	18.65	26.00	9006590049000
0.1937	#10	4.92	62.00	18.62	26.00	9006590049200
0.1969		5.00	62.00	18.50	26.00	9006590050000
0.1992	#8	5.06	62.00	18.41	26.00	9006590050600
0.2008		5.10	62.00	18.35	26.00	9006590051000
0.2031	13/64	5.16	62.00	18.26	26.00	9006590051600
0.2047		5.20	62.00	18.20	26.00	9006590052000
0.2055	#5	5.22	62.00	18.17	26.00	9006590052200
0.2087		5.30	62.00	18.05	26.00	9006590053000
0.2091	#4	5.31	66.00	20.04	28.00	9006590053100
0.2126		5.40	66.00	19.90	28.00	9006590054000
0.2165		5.50	66.00	19.75	28.00	9006590055000
0.2189	7/32	5.56	66.00	19.66	28.00	9006590055600
0.2205		5.60	66.00	19.60	28.00	9006590056000
0.2209	#2	5.61	66.00	19.59	28.00	9006590056100
0.2244		5.70	66.00	19.45	28.00	9006590057000
0.2283		5.80	66.00	19.30	28.00	9006590058000
0.2323		5.90	66.00	19.15	28.00	9006590059000
0.2339	A	5.94	66.00	19.09	28.00	9006590059400
0.2362		6.00	66.00	19.00	28.00	9006590060000
0.2378	B	6.04	70.00	21.94	31.00	9006590060400
0.2402		6.10	70.00	21.85	31.00	9006590061000
0.2421	C	6.15	70.00	21.78	31.00	9006590061500
0.2441		6.20	70.00	21.70	31.00	9006590062000
0.2480		6.30	70.00	21.55	31.00	9006590063000
0.2500	1/4 E	6.35	70.00	21.48	31.00	9006590063500
0.2520		6.40	70.00	21.40	31.00	9006590064000
0.2559		6.50	70.00	21.25	31.00	9006590065000
0.2571	F	6.53	70.00	21.21	31.00	9006590065300
0.2598		6.60	70.00	21.10	31.00	9006590066000
0.2638		6.70	70.00	20.95	31.00	9006590067000
0.2657	17/64 H	6.75	74.00	23.88	34.00	9006590067500
0.2677		6.80	74.00	23.80	34.00	9006590068000
0.2717	I	6.90	74.00	23.65	34.00	9006590069000
0.2756		7.00	74.00	23.50	34.00	9006590070000

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2795		7.10	74.00	23.35	34.00	9006590071000
0.2811	9/32 K	7.14	74.00	23.29	34.00	9006590071400
0.2835		7.20	74.00	23.20	34.00	9006590072000
0.2874		7.30	74.00	23.05	34.00	9006590073000
0.2902	L	7.37	74.00	22.95	34.00	9006590073700
0.2913		7.40	74.00	22.90	34.00	9006590074000
0.2953		7.50	74.00	22.75	34.00	9006590075000
0.2969	19/64	7.54	79.00	25.69	37.00	9006590075400
0.3031		7.70	79.00	25.45	37.00	9006590077000
0.3071		7.80	79.00	25.30	37.00	9006590078000
0.3126	5/16	7.94	79.00	25.09	37.00	9006590079400
0.3150		8.00	79.00	25.00	37.00	9006590080000
0.3189		8.10	79.00	24.85	37.00	9006590081000
0.3228	P	8.20	79.00	24.70	37.00	9006590082000
0.3268		8.30	79.00	24.55	37.00	9006590083000
0.3307		8.40	79.00	24.40	37.00	9006590084000
0.3346		8.50	79.00	24.25	37.00	9006590085000
0.3386		8.60	84.00	27.10	40.00	9006590086000
0.3425		8.70	84.00	26.95	40.00	9006590087000
0.3437	11/32	8.73	84.00	26.91	40.00	9006590087300
0.3465		8.80	84.00	26.80	40.00	9006590088000
0.3480	S	8.84	84.00	26.74	40.00	9006590088400
0.3543		9.00	84.00	26.50	40.00	9006590090000
0.3583		9.10	84.00	26.35	40.00	9006590091000
0.3594	23/64	9.13	84.00	26.31	40.00	9006590091300
0.3622		9.20	84.00	26.20	40.00	9006590092000
0.3661		9.30	84.00	26.05	40.00	9006590093000
0.3740		9.50	84.00	25.75	40.00	9006590095000
0.3748	3/8	9.52	89.00	28.72	43.00	9006590095200
0.3780		9.60	89.00	28.60	43.00	9006590096000
0.3819		9.70	89.00	28.45	43.00	9006590097000
0.3858	W	9.80	89.00	28.30	43.00	9006590098000
0.3898		9.90	89.00	28.15	43.00	9006590099000
0.3906	25/64	9.92	89.00	28.12	43.00	9006590099200
0.3937		10.00	89.00	28.00	43.00	9006590100000
0.4016		10.20	89.00	27.70	43.00	9006590102000
0.4035		10.25	89.00	27.63	43.00	9006590102500
0.4063	13/32	10.32	89.00	27.52	43.00	9006590103200
0.4134		10.50	89.00	27.25	43.00	9006590105000
0.4220	27/64	10.72	95.00	30.92	47.00	9006590107200
0.4291		10.90	95.00	30.65	47.00	9006590109000
0.4331		11.00	95.00	30.50	47.00	9006590110000
0.4374	7/16	11.11	95.00	30.34	47.00	9006590111100
0.4528		11.50	95.00	29.75	47.00	9006590115000
0.4724		12.00	102.00	33.00	51.00	9006590120000
0.4764		12.10	102.00	32.85	51.00	9006590121000
0.4803		12.20	102.00	32.70	51.00	9006590122000
0.4843	31/64	12.30	102.00	32.55	51.00	9006590123000
0.4921		12.50	102.00	32.25	51.00	9006590125000
0.5000	1/2	12.70	102.00	31.95	51.00	9006590127000
0.5039		12.80	102.00	31.80	51.00	9006590128000
0.5118		13.00	102.00	31.50	51.00	9006590130000
0.5236		13.30	107.00	34.05	54.00	9006590133000
0.5311	17/32	13.49	107.00	33.77	54.00	9006590134900
0.5512		14.00	107.00	33.00	54.00	9006590140000
0.5626	9/16	14.29	111.00	34.57	56.00	9006590142900
0.5709		14.50	111.00	34.25	56.00	9006590145000
0.5906		15.00	111.00	33.50	56.00	9006590150000
0.6102		15.50	115.00	34.75	58.00	9006590155000

Stub length drills

Series no. **5524**

~3xD	DIN 1897	GU 500 DZ	118°	h8		Cyl	R	GUHRING SELECT
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction	

Tool material **HSCO**

Surface ◯

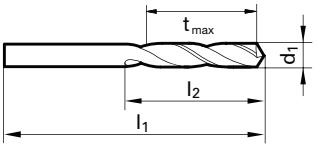
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • facet split point • Co-alloyed high speed steel • low feed force required • low torque required • for universal application

alloyed/unalloyed steels up to 800 N/mm² • cold/hot work steels • antifriction bearing steels • non-ferrous metals • cast materials • stainless steels • plastics

$t_{max} = l_2 - 1.5 \times d_1$





Speeds and feeds information on pg. 556

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	26.00	4.50	6.00	9055240010000
0.0402		1.02	26.00	4.47	6.00	9055240010200
0.0409		1.04	26.00	4.44	6.00	9055240010400
0.0421		1.07	28.00	5.40	7.00	9055240010700
0.0429		1.09	28.00	5.37	7.00	9055240010900
0.0433		1.10	28.00	5.35	7.00	9055240011000
0.0465		1.18	28.00	5.23	7.00	9055240011800
0.0469	3/64	1.19	30.00	6.22	8.00	9055240011900
0.0472		1.20	30.00	6.20	8.00	9055240012000
0.0512		1.30	30.00	6.05	8.00	9055240013000
0.0520		1.32	30.00	6.02	8.00	9055240013200
0.0551		1.40	32.00	6.90	9.00	9055240014000
0.0591		1.50	32.00	6.75	9.00	9055240015000
0.0594		1.51	34.00	7.74	10.00	9055240015100
0.0626	1/16	1.59	34.00	7.62	10.00	9055240015900
0.0630		1.60	34.00	7.60	10.00	9055240016000
0.0634		1.61	34.00	7.59	10.00	9055240016100
0.0669		1.70	34.00	7.45	10.00	9055240017000
0.0701		1.78	36.00	8.33	11.00	9055240017800
0.0709		1.80	36.00	8.30	11.00	9055240018000
0.0728		1.85	36.00	8.23	11.00	9055240018500
0.0748		1.90	36.00	8.15	11.00	9055240019000
0.0760		1.93	38.00	9.11	12.00	9055240019300
0.0780	5/64	1.98	38.00	9.03	12.00	9055240019800
0.0783		1.99	38.00	9.02	12.00	9055240019900
0.0787		2.00	38.00	9.00	12.00	9055240020000
0.0811		2.06	38.00	8.91	12.00	9055240020600
0.0819		2.08	38.00	8.88	12.00	9055240020800
0.0827		2.10	38.00	8.85	12.00	9055240021000
0.0858		2.18	40.00	9.73	13.00	9055240021800
0.0866		2.20	40.00	9.70	13.00	9055240022000
0.0890		2.26	40.00	9.61	13.00	9055240022600
0.0906		2.30	40.00	9.55	13.00	9055240023000
0.0933		2.37	43.00	10.45	14.00	9055240023700
0.0937	3/32	2.38	43.00	10.43	14.00	9055240023800
0.0945		2.40	43.00	10.40	14.00	9055240024000
0.0961		2.44	43.00	10.34	14.00	9055240024400
0.0980		2.49	43.00	10.27	14.00	9055240024900
0.0984		2.50	43.00	10.25	14.00	9055240025000
0.0996		2.53	43.00	10.21	14.00	9055240025300
0.1016		2.58	43.00	10.13	14.00	9055240025800

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1024		2.60	43.00	10.10	14.00	9055240026000
0.1039		2.64	43.00	10.04	14.00	9055240026400
0.1063		2.70	46.00	11.95	16.00	9055240027000
0.1067		2.71	46.00	11.94	16.00	9055240027100
0.1094	7/64	2.78	46.00	11.83	16.00	9055240027800
0.1098		2.79	46.00	11.82	16.00	9055240027900
0.1102		2.80	46.00	11.80	16.00	9055240028000
0.1110		2.82	46.00	11.77	16.00	9055240028200
0.1130		2.87	46.00	11.70	16.00	9055240028700
0.1142		2.90	46.00	11.65	16.00	9055240029000
0.1161		2.95	46.00	11.58	16.00	9055240029500
0.1181		3.00	46.00	11.50	16.00	9055240030000
0.1201		3.05	49.00	13.43	18.00	9055240030500
0.1220		3.10	49.00	13.35	18.00	9055240031000
0.1248	1/8	3.17	49.00	13.25	18.00	9055240031700
0.1260		3.20	49.00	13.20	18.00	9055240032000
0.1283		3.26	49.00	13.11	18.00	9055240032600
0.1299		3.30	49.00	13.05	18.00	9055240033000
0.1339		3.40	52.00	14.90	20.00	9055240034000
0.1358		3.45	52.00	14.83	20.00	9055240034500
0.1378		3.50	52.00	14.75	20.00	9055240035000
0.1406	9/64 #28	3.57	52.00	14.65	20.00	9055240035700
0.1417		3.60	52.00	14.60	20.00	9055240036000
0.1441		3.66	52.00	14.51	20.00	9055240036600
0.1457		3.70	52.00	14.45	20.00	9055240037000
0.1469		3.73	52.00	14.41	20.00	9055240037300
0.1496		3.80	55.00	16.30	22.00	9055240038000
0.1520		3.86	55.00	16.21	22.00	9055240038600
0.1535		3.90	55.00	16.15	22.00	9055240039000
0.1539		3.91	55.00	16.14	22.00	9055240039100
0.1563	5/32	3.97	55.00	16.05	22.00	9055240039700
0.1571		3.99	55.00	16.02	22.00	9055240039900
0.1575		4.00	55.00	16.00	22.00	9055240040000
0.1591		4.04	55.00	15.94	22.00	9055240040400
0.1610		4.09	55.00	15.87	22.00	9055240040900
0.1614		4.10	55.00	15.85	22.00	9055240041000
0.1654		4.20	55.00	15.70	22.00	9055240042000
0.1661		4.22	55.00	15.67	22.00	9055240042200
0.1693		4.30	58.00	17.55	24.00	9055240043000
0.1720	11/64	4.37	58.00	17.45	24.00	9055240043700
0.1728		4.39	58.00	17.42	24.00	9055240043900

Stub length drills

Series no. **5524**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1732		4.40	58.00	17.40	24.00	9055240044000
0.1772		4.50	58.00	17.25	24.00	9055240045000
0.1799		4.57	58.00	17.15	24.00	9055240045700
0.1811		4.60	58.00	17.10	24.00	9055240046000
0.1819		4.62	58.00	17.07	24.00	9055240046200
0.1850		4.70	58.00	16.95	24.00	9055240047000
0.1874	3/16	4.76	62.00	18.86	26.00	9055240047600
0.1890		4.80	62.00	18.80	26.00	9055240048000
0.1909		4.85	62.00	18.73	26.00	9055240048500
0.1929		4.90	62.00	18.65	26.00	9055240049000
0.1937		4.92	62.00	18.62	26.00	9055240049200
0.1961		4.98	62.00	18.53	26.00	9055240049800
0.1969		5.00	62.00	18.50	26.00	9055240050000
0.1992		5.06	62.00	18.41	26.00	9055240050600
0.2008		5.10	62.00	18.35	26.00	9055240051000
0.2012		5.11	62.00	18.34	26.00	9055240051100
0.2031	13/64	5.16	62.00	18.26	26.00	9055240051600
0.2039		5.18	62.00	18.23	26.00	9055240051800
0.2047		5.20	62.00	18.20	26.00	9055240052000
0.2055		5.22	62.00	18.17	26.00	9055240052200
0.2087		5.30	62.00	18.05	26.00	9055240053000
0.2091		5.31	66.00	20.04	28.00	9055240053100
0.2126		5.40	66.00	19.90	28.00	9055240054000
0.2130		5.41	66.00	19.89	28.00	9055240054100
0.2165		5.50	66.00	19.75	28.00	9055240055000
0.2189	7/32	5.56	66.00	19.66	28.00	9055240055600
0.2205		5.60	66.00	19.60	28.00	9055240056000
0.2209		5.61	66.00	19.59	28.00	9055240056100
0.2244		5.70	66.00	19.45	28.00	9055240057000
0.2280		5.79	66.00	19.32	28.00	9055240057900
0.2283		5.80	66.00	19.30	28.00	9055240058000
0.2323		5.90	66.00	19.15	28.00	9055240059000
0.2339	A	5.94	66.00	19.09	28.00	9055240059400
0.2343	15/64	5.95	66.00	19.08	28.00	9055240059500
0.2362		6.00	66.00	19.00	28.00	9055240060000
0.2378	B	6.04	70.00	21.94	31.00	9055240060400
0.2402		6.10	70.00	21.85	31.00	9055240061000
0.2421	C	6.15	70.00	21.78	31.00	9055240061500
0.2441		6.20	70.00	21.70	31.00	9055240062000
0.2461	D	6.25	70.00	21.63	31.00	9055240062500
0.2480		6.30	70.00	21.55	31.00	9055240063000
0.2500	1/4 E	6.35	70.00	21.48	31.00	9055240063500
0.2520		6.40	70.00	21.40	31.00	9055240064000
0.2559		6.50	70.00	21.25	31.00	9055240065000
0.2571	F	6.53	70.00	21.21	31.00	9055240065300
0.2598		6.60	70.00	21.10	31.00	9055240066000
0.2610	G	6.63	70.00	21.06	31.00	9055240066300
0.2638		6.70	70.00	20.95	31.00	9055240067000
0.2657	17/64 H	6.75	74.00	23.88	34.00	9055240067500
0.2677		6.80	74.00	23.80	34.00	9055240068000
0.2717	I	6.90	74.00	23.65	34.00	9055240069000
0.2756		7.00	74.00	23.50	34.00	9055240070000
0.2768	J	7.03	74.00	23.46	34.00	9055240070300
0.2795		7.10	74.00	23.35	34.00	9055240071000
0.2811	9/32 K	7.14	74.00	23.29	34.00	9055240071400
0.2835		7.20	74.00	23.20	34.00	9055240072000
0.2874		7.30	74.00	23.05	34.00	9055240073000
0.2902	L	7.37	74.00	22.95	34.00	9055240073700
0.2913		7.40	74.00	22.90	34.00	9055240074000
0.2949	M	7.49	74.00	22.77	34.00	9055240074900
0.2953		7.50	74.00	22.75	34.00	9055240075000
0.2969	19/64	7.54	79.00	25.69	37.00	9055240075400
0.2992		7.60	79.00	25.60	37.00	9055240076000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3020	N	7.67	79.00	25.50	37.00	9055240076700
0.3031		7.70	79.00	25.45	37.00	9055240077000
0.3071		7.80	79.00	25.30	37.00	9055240078000
0.3110		7.90	79.00	25.15	37.00	9055240079000
0.3126	5/16	7.94	79.00	25.09	37.00	9055240079400
0.3150		8.00	79.00	25.00	37.00	9055240080000
0.3161	O	8.03	79.00	24.96	37.00	9055240080300
0.3189		8.10	79.00	24.85	37.00	9055240081000
0.3228	P	8.20	79.00	24.70	37.00	9055240082000
0.3268		8.30	79.00	24.55	37.00	9055240083000
0.3280	21/64	8.33	79.00	24.51	37.00	9055240083300
0.3307		8.40	79.00	24.40	37.00	9055240084000
0.3319	Q	8.43	79.00	24.36	37.00	9055240084300
0.3346		8.50	79.00	24.25	37.00	9055240085000
0.3386		8.60	84.00	27.10	40.00	9055240086000
0.3390	R	8.61	84.00	27.09	40.00	9055240086100
0.3425		8.70	84.00	26.95	40.00	9055240087000
0.3437	11/32	8.73	84.00	26.91	40.00	9055240087300
0.3465		8.80	84.00	26.80	40.00	9055240088000
0.3480	S	8.84	84.00	26.74	40.00	9055240088400
0.3504		8.90	84.00	26.65	40.00	9055240089000
0.3543		9.00	84.00	26.50	40.00	9055240090000
0.3579	T	9.09	84.00	26.37	40.00	9055240090900
0.3583		9.10	84.00	26.35	40.00	9055240091000
0.3594	23/64	9.13	84.00	26.31	40.00	9055240091300
0.3622		9.20	84.00	26.20	40.00	9055240092000
0.3661		9.30	84.00	26.05	40.00	9055240093000
0.3677	U	9.34	84.00	25.99	40.00	9055240093400
0.3701		9.40	84.00	25.90	40.00	9055240094000
0.3740		9.50	84.00	25.75	40.00	9055240095000
0.3748	3/8	9.52	89.00	28.72	43.00	9055240095200
0.3772	V	9.58	89.00	28.63	43.00	9055240095800
0.3780		9.60	89.00	28.60	43.00	9055240096000
0.3819		9.70	89.00	28.45	43.00	9055240097000
0.3858	W	9.80	89.00	28.30	43.00	9055240098000
0.3898		9.90	89.00	28.15	43.00	9055240099000
0.3906	25/64	9.92	89.00	28.12	43.00	9055240099200
0.3937		10.00	89.00	28.00	43.00	9055240100000
0.3969	X	10.08	89.00	27.88	43.00	9055240100800
0.3976		10.10	89.00	27.85	43.00	9055240101000
0.4016		10.20	89.00	27.70	43.00	9055240102000
0.4039	Y	10.26	89.00	27.61	43.00	9055240102600
0.4055		10.30	89.00	27.55	43.00	9055240103000
0.4063	13/32	10.32	89.00	27.52	43.00	9055240103200
0.4094		10.40	89.00	27.40	43.00	9055240104000
0.4130	Z	10.49	89.00	27.27	43.00	9055240104900
0.4134		10.50	89.00	27.25	43.00	9055240105000
0.4220	27/64	10.72	95.00	30.92	47.00	9055240107200
0.4331		11.00	95.00	30.50	47.00	9055240110000
0.4374	7/16	11.11	95.00	30.34	47.00	9055240111100
0.4528		11.50	95.00	29.75	47.00	9055240115000
0.4531	29/64	11.51	95.00	29.74	47.00	9055240115100
0.4689	15/32	11.91	102.00	33.14	51.00	9055240119100
0.4724		12.00	102.00	33.00	51.00	9055240120000
0.4843	31/64	12.30	102.00	32.55	51.00	9055240123000
0.4921		12.50	102.00	32.25	51.00	9055240125000
0.5000	1/2	12.70	102.00	31.95	51.00	9055240127000
0.5118		13.00	102.00	31.50	51.00	9055240130000
0.5157	33/64	13.10	102.00	31.35	51.00	9055240131000
0.5311	17/32	13.49	107.00	33.77	54.00	9055240134900
0.5315		13.50	107.00	33.75	54.00	9055240135000
0.5512		14.00	107.00	33.00	54.00	9055240140000
0.5626	9/16	14.29	111.00	34.57	56.00	9055240142900

Stub length drills

Series no. **5520**

Tool material **HSCO**

Surface **S**

~3xD	DIN 1897	GU 500 DZ	118°	h8		Cyl	R	GUHRING
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction	

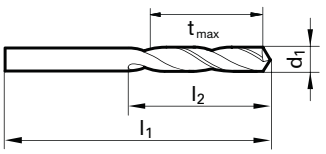
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • facet split point • Co-alloyed high speed steel • low feed force required • low torque required • for universal application

alloyed/unalloyed steels up to 800 N/mm² • cold/hot work steels • antifriction bearing steels • non-ferrous metals • cast materials • stainless steels • plastics

$t_{max} = l_2 - 1.5 \times d_1$





Speeds and feeds information on pg. 554

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	26.00	4.50	6.00	9055200010000
0.0402		1.02	26.00	4.47	6.00	9055200010200
0.0409		1.04	26.00	4.44	6.00	9055200010400
0.0421		1.07	28.00	5.40	7.00	9055200010700
0.0429		1.09	28.00	5.37	7.00	9055200010900
0.0433		1.10	28.00	5.35	7.00	9055200011000
0.0465		1.18	28.00	5.23	7.00	9055200011800
0.0469	3/64	1.19	30.00	6.22	8.00	9055200011900
0.0472		1.20	30.00	6.20	8.00	9055200012000
0.0512		1.30	30.00	6.05	8.00	9055200013000
0.0520		1.32	30.00	6.02	8.00	9055200013200
0.0551		1.40	32.00	6.90	9.00	9055200014000
0.0591		1.50	32.00	6.75	9.00	9055200015000
0.0594		1.51	34.00	7.74	10.00	9055200015100
0.0626	1/16	1.59	34.00	7.62	10.00	9055200015900
0.0630		1.60	34.00	7.60	10.00	9055200016000
0.0634		1.61	34.00	7.59	10.00	9055200016100
0.0669		1.70	34.00	7.45	10.00	9055200017000
0.0701		1.78	36.00	8.33	11.00	9055200017800
0.0709		1.80	36.00	8.30	11.00	9055200018000
0.0728		1.85	36.00	8.23	11.00	9055200018500
0.0748		1.90	36.00	8.15	11.00	9055200019000
0.0760		1.93	38.00	9.11	12.00	9055200019300
0.0780	5/64	1.98	38.00	9.03	12.00	9055200019800
0.0783		1.99	38.00	9.02	12.00	9055200019900
0.0787		2.00	38.00	9.00	12.00	9055200020000
0.0811		2.06	38.00	8.91	12.00	9055200020600
0.0819		2.08	38.00	8.88	12.00	9055200020800
0.0827		2.10	38.00	8.85	12.00	9055200021000
0.0858		2.18	40.00	9.73	13.00	9055200021800
0.0866		2.20	40.00	9.70	13.00	9055200022000
0.0890		2.26	40.00	9.61	13.00	9055200022600
0.0906		2.30	40.00	9.55	13.00	9055200023000
0.0933		2.37	43.00	10.45	14.00	9055200023700
0.0937	3/32	2.38	43.00	10.43	14.00	9055200023800
0.0945		2.40	43.00	10.40	14.00	9055200024000
0.0961		2.44	43.00	10.34	14.00	9055200024400
0.0980		2.49	43.00	10.27	14.00	9055200024900
0.0984		2.50	43.00	10.25	14.00	9055200025000
0.0996		2.53	43.00	10.21	14.00	9055200025300
0.1016		2.58	43.00	10.13	14.00	9055200025800
0.1024		2.60	43.00	10.10	14.00	9055200026000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1039		2.64	43.00	10.04	14.00	9055200026400
0.1063		2.70	46.00	11.95	16.00	9055200027000
0.1067		2.71	46.00	11.94	16.00	9055200027100
0.1094	7/64	2.78	46.00	11.83	16.00	9055200027800
0.1098		2.79	46.00	11.82	16.00	9055200027900
0.1102		2.80	46.00	11.80	16.00	9055200028000
0.1110		2.82	46.00	11.77	16.00	9055200028200
0.1130		2.87	46.00	11.70	16.00	9055200028700
0.1142		2.90	46.00	11.65	16.00	9055200029000
0.1161		2.95	46.00	11.58	16.00	9055200029500
0.1181		3.00	46.00	11.50	16.00	9055200030000
0.1201		3.05	49.00	13.43	18.00	9055200030500
0.1220		3.10	49.00	13.35	18.00	9055200031000
0.1248	1/8	3.17	49.00	13.25	18.00	9055200031700
0.1260		3.20	49.00	13.20	18.00	9055200032000
0.1283		3.26	49.00	13.11	18.00	9055200032600
0.1299		3.30	49.00	13.05	18.00	9055200033000
0.1339		3.40	52.00	14.90	20.00	9055200034000
0.1358		3.45	52.00	14.83	20.00	9055200034500
0.1378		3.50	52.00	14.75	20.00	9055200035000
0.1406	9/64 #28	3.57	52.00	14.65	20.00	9055200035700
0.1417		3.60	52.00	14.60	20.00	9055200036000
0.1441		3.66	52.00	14.51	20.00	9055200036600
0.1457		3.70	52.00	14.45	20.00	9055200037000
0.1469		3.73	52.00	14.41	20.00	9055200037300
0.1496		3.80	55.00	16.30	22.00	9055200038000
0.1520		3.86	55.00	16.21	22.00	9055200038600
0.1535		3.90	55.00	16.15	22.00	9055200039000
0.1539		3.91	55.00	16.14	22.00	9055200039100
0.1563	5/32	3.97	55.00	16.05	22.00	9055200039700
0.1571		3.99	55.00	16.02	22.00	9055200039900
0.1575		4.00	55.00	16.00	22.00	9055200040000
0.1591		4.04	55.00	15.94	22.00	9055200040400
0.1610		4.09	55.00	15.87	22.00	9055200040900
0.1614		4.10	55.00	15.85	22.00	9055200041000
0.1654		4.20	55.00	15.70	22.00	9055200042000
0.1661		4.22	55.00	15.67	22.00	9055200042200
0.1693		4.30	58.00	17.55	24.00	9055200043000
0.1720	11/64	4.37	58.00	17.45	24.00	9055200043700
0.1728		4.39	58.00	17.42	24.00	9055200043900
0.1732		4.40	58.00	17.40	24.00	9055200044000
0.1772		4.50	58.00	17.25	24.00	9055200045000

Stub length drills

Series no. **5520**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1799		4.57	58.00	17.15	24.00	9055200045700
0.1811		4.60	58.00	17.10	24.00	9055200046000
0.1819		4.62	58.00	17.07	24.00	9055200046200
0.1850		4.70	58.00	16.95	24.00	9055200047000
0.1874	3/16	4.76	62.00	18.86	26.00	9055200047600
0.1890		4.80	62.00	18.80	26.00	9055200048000
0.1909		4.85	62.00	18.73	26.00	9055200048500
0.1929		4.90	62.00	18.65	26.00	9055200049000
0.1937		4.92	62.00	18.62	26.00	9055200049200
0.1961		4.98	62.00	18.53	26.00	9055200049800
0.1969		5.00	62.00	18.50	26.00	9055200050000
0.1992		5.06	62.00	18.41	26.00	9055200050600
0.2008		5.10	62.00	18.35	26.00	9055200051000
0.2012		5.11	62.00	18.34	26.00	9055200051100
0.2031	13/64	5.16	62.00	18.26	26.00	9055200051600
0.2039		5.18	62.00	18.23	26.00	9055200051800
0.2047		5.20	62.00	18.20	26.00	9055200052000
0.2055		5.22	62.00	18.17	26.00	9055200052200
0.2087		5.30	62.00	18.05	26.00	9055200053000
0.2091		5.31	66.00	20.04	28.00	9055200053100
0.2126		5.40	66.00	19.90	28.00	9055200054000
0.2130		5.41	66.00	19.89	28.00	9055200054100
0.2165		5.50	66.00	19.75	28.00	9055200055000
0.2189	7/32	5.56	66.00	19.66	28.00	9055200055600
0.2205		5.60	66.00	19.60	28.00	9055200056000
0.2209		5.61	66.00	19.59	28.00	9055200056100
0.2244		5.70	66.00	19.45	28.00	9055200057000
0.2280		5.79	66.00	19.32	28.00	9055200057900
0.2283		5.80	66.00	19.30	28.00	9055200058000
0.2323		5.90	66.00	19.15	28.00	9055200059000
0.2339	A	5.94	66.00	19.09	28.00	9055200059400
0.2343	15/64	5.95	66.00	19.08	28.00	9055200059500
0.2362		6.00	66.00	19.00	28.00	9055200060000
0.2378	B	6.04	70.00	21.94	31.00	9055200060400
0.2402		6.10	70.00	21.85	31.00	9055200061000
0.2421	C	6.15	70.00	21.78	31.00	9055200061500
0.2441		6.20	70.00	21.70	31.00	9055200062000
0.2461	D	6.25	70.00	21.63	31.00	9055200062500
0.2480		6.30	70.00	21.55	31.00	9055200063000
0.2500	1/4 E	6.35	70.00	21.48	31.00	9055200063500
0.2520		6.40	70.00	21.40	31.00	9055200064000
0.2559		6.50	70.00	21.25	31.00	9055200065000
0.2571	F	6.53	70.00	21.21	31.00	9055200065300
0.2598		6.60	70.00	21.10	31.00	9055200066000
0.2610	G	6.63	70.00	21.06	31.00	9055200066300
0.2638		6.70	70.00	20.95	31.00	9055200067000
0.2657	17/64 H	6.75	74.00	23.88	34.00	9055200067500
0.2677		6.80	74.00	23.80	34.00	9055200068000
0.2717	I	6.90	74.00	23.65	34.00	9055200069000
0.2756		7.00	74.00	23.50	34.00	9055200070000
0.2768	J	7.03	74.00	23.46	34.00	9055200070300
0.2795		7.10	74.00	23.35	34.00	9055200071000
0.2811	9/32 K	7.14	74.00	23.29	34.00	9055200071400
0.2835		7.20	74.00	23.20	34.00	9055200072000
0.2874		7.30	74.00	23.05	34.00	9055200073000
0.2902	L	7.37	74.00	22.95	34.00	9055200073700
0.2913		7.40	74.00	22.90	34.00	9055200074000
0.2949	M	7.49	74.00	22.77	34.00	9055200074900
0.2953		7.50	74.00	22.75	34.00	9055200075000
0.2969	19/64	7.54	79.00	25.69	37.00	9055200075400
0.2992		7.60	79.00	25.60	37.00	9055200076000
0.3020	N	7.67	79.00	25.50	37.00	9055200076700

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3031		7.70	79.00	25.45	37.00	9055200077000
0.3071		7.80	79.00	25.30	37.00	9055200078000
0.3110		7.90	79.00	25.15	37.00	9055200079000
0.3126	5/16	7.94	79.00	25.09	37.00	9055200079400
0.3150		8.00	79.00	25.00	37.00	9055200080000
0.3161	O	8.03	79.00	24.96	37.00	9055200080300
0.3189		8.10	79.00	24.85	37.00	9055200081000
0.3228	P	8.20	79.00	24.70	37.00	9055200082000
0.3268		8.30	79.00	24.55	37.00	9055200083000
0.3280	21/64	8.33	79.00	24.51	37.00	9055200083300
0.3307		8.40	79.00	24.40	37.00	9055200084000
0.3319	Q	8.43	79.00	24.36	37.00	9055200084300
0.3346		8.50	79.00	24.25	37.00	9055200085000
0.3386		8.60	84.00	27.10	40.00	9055200086000
0.3390	R	8.61	84.00	27.09	40.00	9055200086100
0.3425		8.70	84.00	26.95	40.00	9055200087000
0.3437	11/32	8.73	84.00	26.91	40.00	9055200087300
0.3465		8.80	84.00	26.80	40.00	9055200088000
0.3480	S	8.84	84.00	26.74	40.00	9055200088400
0.3504		8.90	84.00	26.65	40.00	9055200089000
0.3543		9.00	84.00	26.50	40.00	9055200090000
0.3579	T	9.09	84.00	26.37	40.00	9055200090900
0.3583		9.10	84.00	26.35	40.00	9055200091000
0.3594	23/64	9.13	84.00	26.31	40.00	9055200091300
0.3622		9.20	84.00	26.20	40.00	9055200092000
0.3661		9.30	84.00	26.05	40.00	9055200093000
0.3677	U	9.34	84.00	25.99	40.00	9055200093400
0.3701		9.40	84.00	25.90	40.00	9055200094000
0.3740		9.50	84.00	25.75	40.00	9055200095000
0.3748	3/8	9.52	89.00	28.72	43.00	9055200095200
0.3772	V	9.58	89.00	28.63	43.00	9055200095800
0.3780		9.60	89.00	28.60	43.00	9055200096000
0.3819		9.70	89.00	28.45	43.00	9055200097000
0.3858	W	9.80	89.00	28.30	43.00	9055200098000
0.3898		9.90	89.00	28.15	43.00	9055200099000
0.3906	25/64	9.92	89.00	28.12	43.00	9055200099200
0.3937		10.00	89.00	28.00	43.00	9055200100000
0.3969	X	10.08	89.00	27.88	43.00	9055200100800
0.3976		10.10	89.00	27.85	43.00	9055200101000
0.4016		10.20	89.00	27.70	43.00	9055200102000
0.4039	Y	10.26	89.00	27.61	43.00	9055200102600
0.4055		10.30	89.00	27.55	43.00	9055200103000
0.4063	13/32	10.32	89.00	27.52	43.00	9055200103200
0.4094		10.40	89.00	27.40	43.00	9055200104000
0.4130	Z	10.49	89.00	27.27	43.00	9055200104900
0.4134		10.50	89.00	27.25	43.00	9055200105000
0.4220	27/64	10.72	95.00	30.92	47.00	9055200107200
0.4331		11.00	95.00	30.50	47.00	9055200110000
0.4374	7/16	11.11	95.00	30.34	47.00	9055200111100
0.4528		11.50	95.00	29.75	47.00	9055200115000
0.4531	29/64	11.51	95.00	29.74	47.00	9055200115100
0.4689	15/32	11.91	102.00	33.14	51.00	9055200119100
0.4724		12.00	102.00	33.00	51.00	9055200120000
0.4843	31/64	12.30	102.00	32.55	51.00	9055200123000
0.4921		12.50	102.00	32.25	51.00	9055200125000
0.5000	1/2	12.70	102.00	31.95	51.00	9055200127000
0.5118		13.00	102.00	31.50	51.00	9055200130000
0.5157	33/64	13.10	102.00	31.35	51.00	9055200131000
0.5311	17/32	13.49	107.00	33.77	54.00	9055200134900
0.5315		13.50	107.00	33.75	54.00	9055200135000
0.5512		14.00	107.00	33.00	54.00	9055200140000
0.5626	9/16	14.29	111.00	34.57	56.00	9055200142900

Stub length drills

Series no. **5521**

~3xD	DIN 1897	GT 500 DZ	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material **HSCO**

Surface **S**

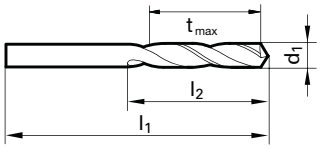
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	●
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • PM-Co-alloyed high speed steel • especially high rigidity • especially high wear resistance

high-alloyed steels • heat treatable and case hardened steels • cast iron, brass, bronze

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 554

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	26.00	4.50	6.00	9055210010000
0.0433		1.10	28.00	5.35	7.00	9055210011000
0.0472		1.20	30.00	6.20	8.00	9055210012000
0.0512		1.30	30.00	6.05	8.00	9055210013000
0.0551	#54	1.40	32.00	6.90	9.00	9055210014000
0.0591		1.50	32.00	6.75	9.00	9055210015000
0.0626	1/16	1.59	34.00	7.62	10.00	9055210015900
0.0630		1.60	34.00	7.60	10.00	9055210016000
0.0669	#51	1.70	34.00	7.45	10.00	9055210017000
0.0709		1.80	36.00	8.30	11.00	9055210018000
0.0748		1.90	36.00	8.15	11.00	9055210019000
0.0780	5/64	1.98	38.00	9.03	12.00	9055210019800
0.0787		2.00	38.00	9.00	12.00	9055210020000
0.0827		2.10	38.00	8.85	12.00	9055210021000
0.0866		2.20	40.00	9.70	13.00	9055210022000
0.0906		2.30	40.00	9.55	13.00	9055210023000
0.0937	3/32	2.38	43.00	10.43	14.00	9055210023800
0.0945		2.40	43.00	10.40	14.00	9055210024000
0.0984		2.50	43.00	10.25	14.00	9055210025000
0.1024		2.60	43.00	10.10	14.00	9055210026000
0.1063		2.70	46.00	11.95	16.00	9055210027000
0.1094	7/64	2.78	46.00	11.83	16.00	9055210027800
0.1102		2.80	46.00	11.80	16.00	9055210028000
0.1142		2.90	46.00	11.65	16.00	9055210029000
0.1181		3.00	46.00	11.50	16.00	9055210030000
0.1220		3.10	49.00	13.35	18.00	9055210031000
0.1248	1/8	3.17	49.00	13.25	18.00	9055210031700
0.1260		3.20	49.00	13.20	18.00	9055210032000
0.1299		3.30	49.00	13.05	18.00	9055210033000
0.1339		3.40	52.00	14.90	20.00	9055210034000
0.1378		3.50	52.00	14.75	20.00	9055210035000
0.1406	9/64	#28 3.57	52.00	14.65	20.00	9055210035700
0.1417		3.60	52.00	14.60	20.00	9055210036000
0.1457		3.70	52.00	14.45	20.00	9055210037000
0.1496	#25	3.80	55.00	16.30	22.00	9055210038000
0.1535		3.90	55.00	16.15	22.00	9055210039000
0.1563	5/32	3.97	55.00	16.05	22.00	9055210039700
0.1575		4.00	55.00	16.00	22.00	9055210040000
0.1614		4.10	55.00	15.85	22.00	9055210041000
0.1654		4.20	55.00	15.70	22.00	9055210042000
0.1693	#18	4.30	58.00	17.55	24.00	9055210043000

Diameter (d_1) inch	wire/ltr		mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1720	11/64		4.37	58.00	17.45	24.00	9055210043700
0.1732			4.40	58.00	17.40	24.00	9055210044000
0.1772		#16	4.50	58.00	17.25	24.00	9055210045000
0.1811			4.60	58.00	17.10	24.00	9055210046000
0.1850		#13	4.70	58.00	16.95	24.00	9055210047000
0.1874	3/16		4.76	62.00	18.86	26.00	9055210047600
0.1890		#12	4.80	62.00	18.80	26.00	9055210048000
0.1929			4.90	62.00	18.65	26.00	9055210049000
0.1969			5.00	62.00	18.50	26.00	9055210050000
0.2008			5.10	62.00	18.35	26.00	9055210051000
0.2031	13/64		5.16	62.00	18.26	26.00	9055210051600
0.2047			5.20	62.00	18.20	26.00	9055210052000
0.2087			5.30	62.00	18.05	26.00	9055210053000
0.2126			5.40	66.00	19.90	28.00	9055210054000
0.2165			5.50	66.00	19.75	28.00	9055210055000
0.2189	7/32		5.56	66.00	19.66	28.00	9055210055600
0.2205			5.60	66.00	19.60	28.00	9055210056000
0.2244			5.70	66.00	19.45	28.00	9055210057000
0.2283			5.80	66.00	19.30	28.00	9055210058000
0.2323			5.90	66.00	19.15	28.00	9055210059000
0.2343	15/64		5.95	66.00	19.08	28.00	9055210059500
0.2362			6.00	66.00	19.00	28.00	9055210060000
0.2402			6.10	70.00	21.85	31.00	9055210061000
0.2441			6.20	70.00	21.70	31.00	9055210062000
0.2480			6.30	70.00	21.55	31.00	9055210063000
0.2500	1/4	E	6.35	70.00	21.48	31.00	9055210063500
0.2520			6.40	70.00	21.40	31.00	9055210064000
0.2559			6.50	70.00	21.25	31.00	9055210065000
0.2598			6.60	70.00	21.10	31.00	9055210066000
0.2638			6.70	70.00	20.95	31.00	9055210067000
0.2657	17/64	H	6.75	74.00	23.88	34.00	9055210067500
0.2677			6.80	74.00	23.80	34.00	9055210068000
0.2717		I	6.90	74.00	23.65	34.00	9055210069000
0.2756			7.00	74.00	23.50	34.00	9055210070000
0.2795			7.10	74.00	23.35	34.00	9055210071000
0.2811	9/32	K	7.14	74.00	23.29	34.00	9055210071400
0.2835			7.20	74.00	23.20	34.00	9055210072000
0.2874			7.30	74.00	23.05	34.00	9055210073000
0.2913			7.40	74.00	22.90	34.00	9055210074000
0.2953			7.50	74.00	22.75	34.00	9055210075000
0.2969	19/64		7.54	79.00	25.69	37.00	9055210075400

Stub length drills

Series no. **5521**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2992		7.60	79.00	25.60	37.00	9055210076000
0.3031		7.70	79.00	25.45	37.00	9055210077000
0.3071		7.80	79.00	25.30	37.00	9055210078000
0.3110		7.90	79.00	25.15	37.00	9055210079000
0.3126	5/16	7.94	79.00	25.09	37.00	9055210079400
0.3150		8.00	79.00	25.00	37.00	9055210080000
0.3189		8.10	79.00	24.85	37.00	9055210081000
0.3228	P	8.20	79.00	24.70	37.00	9055210082000
0.3268		8.30	79.00	24.55	37.00	9055210083000
0.3280	21/64	8.33	79.00	24.51	37.00	9055210083300
0.3307		8.40	79.00	24.40	37.00	9055210084000
0.3346		8.50	79.00	24.25	37.00	9055210085000
0.3437	11/32	8.73	84.00	26.91	40.00	9055210087300
0.3465		8.80	84.00	26.80	40.00	9055210088000
0.3543		9.00	84.00	26.50	40.00	9055210090000
0.3594	23/64	9.13	84.00	26.31	40.00	9055210091300
0.3661		9.30	84.00	26.05	40.00	9055210093000
0.3740		9.50	84.00	25.75	40.00	9055210095000
0.3748	3/8	9.52	89.00	28.72	43.00	9055210095200

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3858	W	9.80	89.00	28.30	43.00	9055210098000
0.3906	25/64	9.92	89.00	28.12	43.00	9055210099200
0.3937		10.00	89.00	28.00	43.00	9055210100000
0.4016		10.20	89.00	27.70	43.00	9055210102000
0.4063	13/32	10.32	89.00	27.52	43.00	9055210103200
0.4134		10.50	89.00	27.25	43.00	9055210105000
0.4220	27/64	10.72	95.00	30.92	47.00	9055210107200
0.4331		11.00	95.00	30.50	47.00	9055210110000
0.4374	7/16	11.11	95.00	30.34	47.00	9055210111100
0.4528		11.50	95.00	29.75	47.00	9055210115000
0.4689	15/32	11.91	102.00	33.14	51.00	9055210119100
0.4724		12.00	102.00	33.00	51.00	9055210120000
0.4843	31/64	12.30	102.00	32.55	51.00	9055210123000
0.4921		12.50	102.00	32.25	51.00	9055210125000
0.5000	1/2	12.70	102.00	31.95	51.00	9055210127000
0.5118		13.00	102.00	31.50	51.00	9055210130000
0.5315		13.50	107.00	33.75	54.00	9055210135000
0.5512		14.00	107.00	33.00	54.00	9055210140000

Stub length drills

Series no. **515**

Tool material **HSS-E-PM**

Surface **F**

~3xD Cutting depth | DIN 1897 Standard | GT 500 DZ Type | 130° Point angle | h8 Tolerance on Ø | Web Thinning | Cyl Shank form | R Cutting direction | GUHRING SELECT

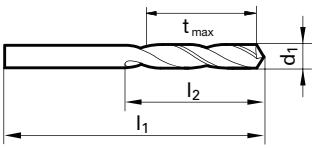
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone point geometry with special type B web thinning • PM-Co-alloyed high speed steel • especially high rigidity • especially high wear resistance

high-tensile materials, high-alloyed steels • heat treatable and case hardened steels • cast iron, brass, bronze

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 495

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	26.00	4.50	6.00	9005150010000
0.0402	#60	1.02	26.00	4.47	6.00	9005150010200
0.0409	#59	1.04	26.00	4.44	6.00	9005150010400
0.0421	#58	1.07	28.00	5.40	7.00	9005150010700
0.0429	#57	1.09	28.00	5.37	7.00	9005150010900
0.0433		1.10	28.00	5.35	7.00	9005150011000
0.0465	#56	1.18	28.00	5.23	7.00	9005150011800
0.0469	3/64	1.19	30.00	6.22	8.00	9005150011900
0.0472		1.20	30.00	6.20	8.00	9005150012000
0.0512		1.30	30.00	6.05	8.00	9005150013000
0.0520	#55	1.32	30.00	6.02	8.00	9005150013200
0.0551	#54	1.40	32.00	6.90	9.00	9005150014000
0.0591		1.50	32.00	6.75	9.00	9005150015000
0.0594	#53	1.51	34.00	7.74	10.00	9005150015100
0.0626	1/16	1.59	34.00	7.62	10.00	9005150015900
0.0630		1.60	34.00	7.60	10.00	9005150016000
0.0634	#52	1.61	34.00	7.59	10.00	9005150016100
0.0669	#51	1.70	34.00	7.45	10.00	9005150017000
0.0701	#50	1.78	36.00	8.33	11.00	9005150017800
0.0709		1.80	36.00	8.30	11.00	9005150018000
0.0728	#49	1.85	36.00	8.23	11.00	9005150018500
0.0748		1.90	36.00	8.15	11.00	9005150019000
0.0760	#48	1.93	38.00	9.11	12.00	9005150019300
0.0780	5/64	1.98	38.00	9.03	12.00	9005150019800
0.0783	#47	1.99	38.00	9.02	12.00	9005150019900
0.0787		2.00	38.00	9.00	12.00	9005150020000
0.0811	#46	2.06	38.00	8.91	12.00	9005150020600
0.0819	#45	2.08	38.00	8.88	12.00	9005150020800
0.0827		2.10	38.00	8.85	12.00	9005150021000
0.0858	#44	2.18	40.00	9.73	13.00	9005150021800
0.0866		2.20	40.00	9.70	13.00	9005150022000
0.0890	#43	2.26	40.00	9.61	13.00	9005150022600
0.0906		2.30	40.00	9.55	13.00	9005150023000
0.0933	#42	2.37	43.00	10.45	14.00	9005150023700
0.0937	3/32	2.38	43.00	10.43	14.00	9005150023800
0.0945		2.40	43.00	10.40	14.00	9005150024000
0.0961	#41	2.44	43.00	10.34	14.00	9005150024400
0.0980	#40	2.49	43.00	10.27	14.00	9005150024900
0.0984		2.50	43.00	10.25	14.00	9005150025000
0.0996	#39	2.53	43.00	10.21	14.00	9005150025300
0.1016	#38	2.58	43.00	10.13	14.00	9005150025800
0.1024		2.60	43.00	10.10	14.00	9005150026000
0.1039	#37	2.64	43.00	10.04	14.00	9005150026400

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1063		2.70	46.00	11.95	16.00	9005150027000
0.1067	#36	2.71	46.00	11.94	16.00	9005150027100
0.1094	7/64	2.78	46.00	11.83	16.00	9005150027800
0.1098	#35	2.79	46.00	11.82	16.00	9005150027900
0.1102		2.80	46.00	11.80	16.00	9005150028000
0.1110	#34	2.82	46.00	11.77	16.00	9005150028200
0.1130	#33	2.87	46.00	11.70	16.00	9005150028700
0.1142		2.90	46.00	11.65	16.00	9005150029000
0.1161	#32	2.95	46.00	11.58	16.00	9005150029500
0.1181		3.00	46.00	11.50	16.00	9005150030000
0.1201	#31	3.05	49.00	13.43	18.00	9005150030500
0.1220		3.10	49.00	13.35	18.00	9005150031000
0.1248	1/8	3.17	49.00	13.25	18.00	9005150031700
0.1260		3.20	49.00	13.20	18.00	9005150032000
0.1283	#30	3.26	49.00	13.11	18.00	9005150032600
0.1299		3.30	49.00	13.05	18.00	9005150033000
0.1339		3.40	52.00	14.90	20.00	9005150034000
0.1358	#29	3.45	52.00	14.83	20.00	9005150034500
0.1378		3.50	52.00	14.75	20.00	9005150035000
0.1406	9/64 #28	3.57	52.00	14.65	20.00	9005150035700
0.1417		3.60	52.00	14.60	20.00	9005150036000
0.1441	#27	3.66	52.00	14.51	20.00	9005150036600
0.1457		3.70	52.00	14.45	20.00	9005150037000
0.1469	#26	3.73	52.00	14.41	20.00	9005150037300
0.1496	#25	3.80	55.00	16.30	22.00	9005150038000
0.1520	#24	3.86	55.00	16.21	22.00	9005150038600
0.1535		3.90	55.00	16.15	22.00	9005150039000
0.1539	#23	3.91	55.00	16.14	22.00	9005150039100
0.1563	5/32	3.97	55.00	16.05	22.00	9005150039700
0.1571	#22	3.99	55.00	16.02	22.00	9005150039900
0.1575		4.00	55.00	16.00	22.00	9005150040000
0.1591	#21	4.04	55.00	15.94	22.00	9005150040400
0.1610	#20	4.09	55.00	15.87	22.00	9005150040900
0.1614		4.10	55.00	15.85	22.00	9005150041000
0.1654		4.20	55.00	15.70	22.00	9005150042000
0.1661	#19	4.22	55.00	15.67	22.00	9005150042200
0.1693	#18	4.30	58.00	17.55	24.00	9005150043000
0.1720	11/64	4.37	58.00	17.45	24.00	9005150043700
0.1728	#17	4.39	58.00	17.42	24.00	9005150043900
0.1732		4.40	58.00	17.40	24.00	9005150044000
0.1772	#16	4.50	58.00	17.25	24.00	9005150045000
0.1799	#15	4.57	58.00	17.15	24.00	9005150045700
0.1811		4.60	58.00	17.10	24.00	9005150046000

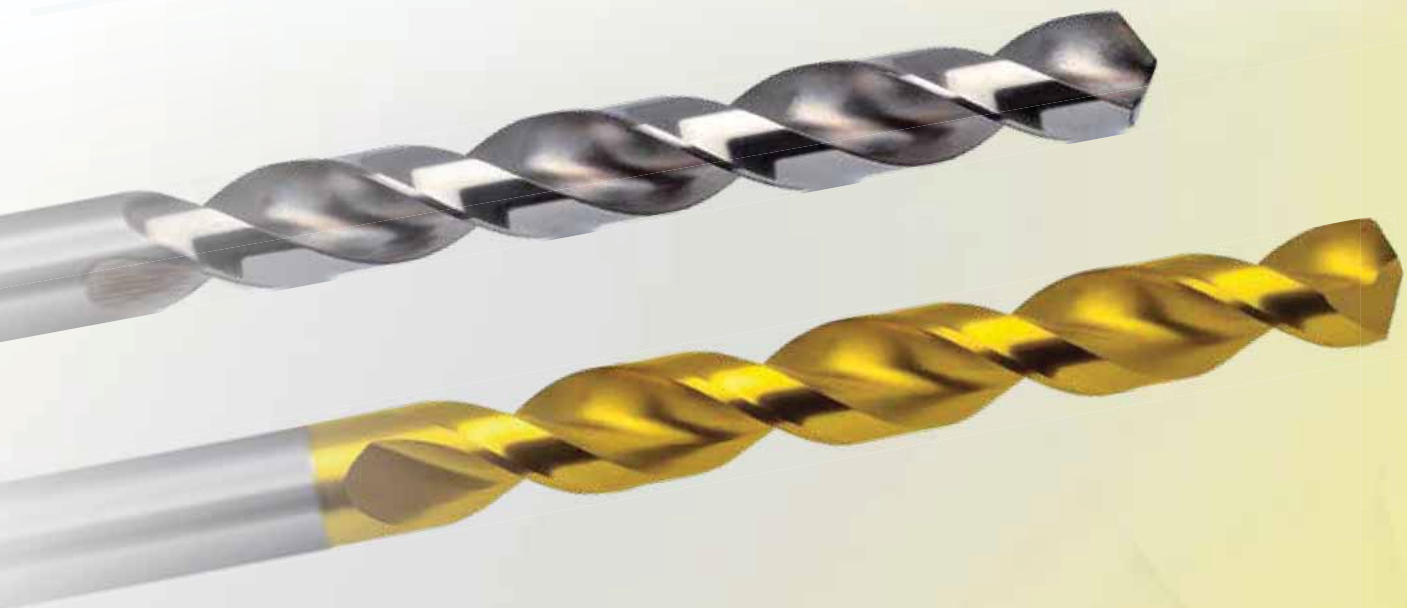
Stub length drills

Series no. **515**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1819	#14	4.62	58.00	17.07	24.00	9005150046200
0.1850	#13	4.70	58.00	16.95	24.00	9005150047000
0.1874	3/16	4.76	62.00	18.86	26.00	9005150047600
0.1890	#12	4.80	62.00	18.80	26.00	9005150048000
0.1909	#11	4.85	62.00	18.73	26.00	9005150048500
0.1929		4.90	62.00	18.65	26.00	9005150049000
0.1937	#10	4.92	62.00	18.62	26.00	9005150049200
0.1961	#9	4.98	62.00	18.53	26.00	9005150049800
0.1969		5.00	62.00	18.50	26.00	9005150050000
0.1992	#8	5.06	62.00	18.41	26.00	9005150050600
0.2008		5.10	62.00	18.35	26.00	9005150051000
0.2012	#7	5.11	62.00	18.34	26.00	9005150051100
0.2031	13/64	5.16	62.00	18.26	26.00	9005150051600
0.2039	#6	5.18	62.00	18.23	26.00	9005150051800
0.2047		5.20	62.00	18.20	26.00	9005150052000
0.2055	#5	5.22	62.00	18.17	26.00	9005150052200
0.2087		5.30	62.00	18.05	26.00	9005150053000
0.2091	#4	5.31	66.00	20.04	28.00	9005150053100
0.2126		5.40	66.00	19.90	28.00	9005150054000
0.2130	#3	5.41	66.00	19.89	28.00	9005150054100
0.2165		5.50	66.00	19.75	28.00	9005150055000
0.2185		5.55	66.00	19.68	28.00	9005150055500
0.2189	7/32	5.56	66.00	19.66	28.00	9005150055600
0.2205		5.60	66.00	19.60	28.00	9005150056000
0.2209	#2	5.61	66.00	19.59	28.00	9005150056100
0.2244		5.70	66.00	19.45	28.00	9005150057000
0.2280	#1	5.79	66.00	19.32	28.00	9005150057900
0.2283		5.80	66.00	19.30	28.00	9005150058000
0.2323		5.90	66.00	19.15	28.00	9005150059000
0.2339	A	5.94	66.00	19.09	28.00	9005150059400
0.2343	15/64	5.95	66.00	19.08	28.00	9005150059500
0.2362		6.00	66.00	19.00	28.00	9005150060000
0.2378	B	6.04	70.00	21.94	31.00	9005150060400
0.2402		6.10	70.00	21.85	31.00	9005150061000
0.2421	C	6.15	70.00	21.78	31.00	9005150061500
0.2441		6.20	70.00	21.70	31.00	9005150062000
0.2461	D	6.25	70.00	21.63	31.00	9005150062500
0.2480		6.30	70.00	21.55	31.00	9005150063000
0.2500	1/4 E	6.35	70.00	21.48	31.00	9005150063500
0.2520		6.40	70.00	21.40	31.00	9005150064000
0.2559		6.50	70.00	21.25	31.00	9005150065000
0.2571		6.53	70.00	21.21	31.00	9005150065300
0.2598		6.60	70.00	21.10	31.00	9005150066000
0.2610	G	6.63	70.00	21.06	31.00	9005150066300
0.2638		6.70	70.00	20.95	31.00	9005150067000
0.2657	17/64 H	6.75	74.00	23.88	34.00	9005150067500
0.2677		6.80	74.00	23.80	34.00	9005150068000
0.2717	I	6.90	74.00	23.65	34.00	9005150069000
0.2756		7.00	74.00	23.50	34.00	9005150070000
0.2768	J	7.03	74.00	23.46	34.00	9005150070300
0.2795		7.10	74.00	23.35	34.00	9005150071000
0.2811	9/32 K	7.14	74.00	23.29	34.00	9005150071400
0.2835		7.20	74.00	23.20	34.00	9005150072000
0.2874		7.30	74.00	23.05	34.00	9005150073000
0.2902	L	7.37	74.00	22.95	34.00	9005150073700
0.2913		7.40	74.00	22.90	34.00	9005150074000
0.2949	M	7.49	74.00	22.77	34.00	9005150074900
0.2953		7.50	74.00	22.75	34.00	9005150075000
0.2969	19/64	7.54	79.00	25.69	37.00	9005150075400
0.2992		7.60	79.00	25.60	37.00	9005150076000
0.3020	N	7.67	79.00	25.50	37.00	9005150076700

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3031		7.70	79.00	25.45	37.00	9005150077000
0.3071		7.80	79.00	25.30	37.00	9005150078000
0.3110		7.90	79.00	25.15	37.00	9005150079000
0.3126	5/16	7.94	79.00	25.09	37.00	9005150079400
0.3150		8.00	79.00	25.00	37.00	9005150080000
0.3161	O	8.03	79.00	24.96	37.00	9005150080300
0.3189		8.10	79.00	24.85	37.00	9005150081000
0.3228	P	8.20	79.00	24.70	37.00	9005150082000
0.3268		8.30	79.00	24.55	37.00	9005150083000
0.3280	21/64	8.33	79.00	24.51	37.00	9005150083300
0.3307		8.40	79.00	24.40	37.00	9005150084000
0.3319	Q	8.43	79.00	24.36	37.00	9005150084300
0.3346		8.50	79.00	24.25	37.00	9005150085000
0.3386		8.60	84.00	27.10	40.00	9005150086000
0.3390	R	8.61	84.00	27.09	40.00	9005150086100
0.3425		8.70	84.00	26.95	40.00	9005150087000
0.3437	11/32	8.73	84.00	26.91	40.00	9005150087300
0.3465		8.80	84.00	26.80	40.00	9005150088000
0.3480	S	8.84	84.00	26.74	40.00	9005150088400
0.3504		8.90	84.00	26.65	40.00	9005150089000
0.3543		9.00	84.00	26.50	40.00	9005150090000
0.3579	T	9.09	84.00	26.37	40.00	9005150090900
0.3583		9.10	84.00	26.35	40.00	9005150091000
0.3594	23/64	9.13	84.00	26.31	40.00	9005150091300
0.3622		9.20	84.00	26.20	40.00	9005150092000
0.3661		9.30	84.00	26.05	40.00	9005150093000
0.3677	U	9.34	84.00	25.99	40.00	9005150093400
0.3681		9.35	84.00	25.98	40.00	9005150093500
0.3701		9.40	84.00	25.90	40.00	9005150094000
0.3740		9.50	84.00	25.75	40.00	9005150095000
0.3748	3/8	9.52	89.00	28.72	43.00	9005150095200
0.3772	V	9.58	89.00	28.63	43.00	9005150095800
0.3780		9.60	89.00	28.60	43.00	9005150096000
0.3819		9.70	89.00	28.45	43.00	9005150097000
0.3858	W	9.80	89.00	28.30	43.00	9005150098000
0.3898		9.90	89.00	28.15	43.00	9005150099000
0.3906	25/64	9.92	89.00	28.12	43.00	9005150099200
0.3937		10.00	89.00	28.00	43.00	9005150100000
0.3969	X	10.08	89.00	27.88	43.00	9005150100800
0.4016		10.20	89.00	27.70	43.00	9005150102000
0.4039	Y	10.26	89.00	27.61	43.00	9005150102600
0.4063	13/32	10.32	89.00	27.52	43.00	9005150103200
0.4130	Z	10.49	89.00	27.27	43.00	9005150104900
0.4134		10.50	89.00	27.25	43.00	9005150105000
0.4220	27/64	10.72	95.00	30.92	47.00	9005150107200
0.4331		11.00	95.00	30.50	47.00	9005150110000
0.4374	7/16	11.11	95.00	30.34	47.00	9005150111100
0.4528		11.50	95.00	29.75	47.00	9005150115000
0.4531	29/64	11.51	95.00	29.74	47.00	9005150115100
0.4646		11.80	95.00	29.30	47.00	9005150118000
0.4689	15/32	11.91	102.00	33.14	51.00	9005150119100
0.4724		12.00	102.00	33.00	51.00	9005150120000
0.4843	31/64	12.30	102.00	32.55	51.00	9005150123000
0.4921		12.50	102.00	32.25	51.00	9005150125000
0.5000	1/2	12.70	102.00	31.95	51.00	9005150127000
0.5118		13.00	102.00	31.50	51.00	9005150130000
0.5157	33/64	13.10	102.00	31.35	51.00	9005150131000
0.5311	17/32	13.49	107.00	33.77	54.00	9005150134900
0.5315		13.50	107.00	33.75	54.00	9005150135000
0.5512		14.00	107.00	33.00	54.00	9005150140000
0.5626	9/16	14.29	111.00	34.57	56.00	9005150142900

JOBBER LENGTH HSS, HSCO, HSS-E-PM DRILLS



Jobber length drills

Series no. **205**

~5xD	DIN 338	N	118°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface: >Ø 2.36

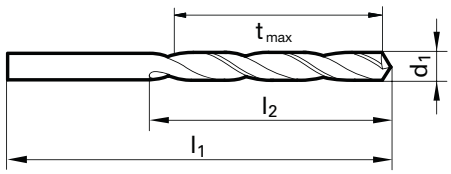
P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone

alloyed/unalloyed steel and cast steel • grey cast iron, malleable and spheroidal iron • sintered powder metal, German silver and graphite

$t_{max} = l_2 - 1.5 \times d_1$





Speeds and feeds information on pg. 476

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0079	#92	0.200	19.00	2.20	2.50	9002050002000
0.0083	#91	0.210	19.00	2.19	2.50	9002050002100
0.0087	#90	0.220	19.00	2.17	2.50	9002050002200
0.0091	#89	0.230	19.00	2.16	2.50	9002050002300
0.0094	#88	0.240	19.00	2.14	2.50	9002050002400
0.0098	#87	0.250	19.00	2.63	3.00	9002050002500
0.0102		0.260	19.00	2.61	3.00	9002050002600
0.0106	#86	0.270	19.00	2.60	3.00	9002050002700
0.0110	#85	0.280	19.00	2.58	3.00	9002050002800
0.0114	#84	0.290	19.00	2.57	3.00	9002050002900
0.0118		0.300	19.00	2.55	3.00	9002050003000
0.0122	#83	0.310	19.00	3.54	4.00	9002050003100
0.0126	#82	0.320	19.00	3.52	4.00	9002050003200
0.0130	#81	0.330	19.00	3.51	4.00	9002050003300
0.0134	#80	0.340	19.00	3.49	4.00	9002050003400
0.0138		0.350	19.00	3.48	4.00	9002050003500
0.0142		0.360	19.00	3.46	4.00	9002050003600
0.0146	#79	0.370	19.00	3.45	4.00	9002050003700
0.0150		0.380	19.00	3.43	4.00	9002050003800
0.0154		0.390	20.00	4.42	5.00	9002050003900
0.0157	1/64	0.400	20.00	4.40	5.00	9002050004000
0.0161	#78	0.410	20.00	4.39	5.00	9002050004100
0.0165		0.420	20.00	4.37	5.00	9002050004200
0.0169		0.430	20.00	4.36	5.00	9002050004300
0.0173		0.440	20.00	4.34	5.00	9002050004400
0.0177		0.450	20.00	4.33	5.00	9002050004500
0.0181	#77	0.460	20.00	4.31	5.00	9002050004600
0.0185		0.470	20.00	4.30	5.00	9002050004700
0.0189		0.480	20.00	4.28	5.00	9002050004800
0.0193		0.490	22.00	5.27	6.00	9002050004900
0.0197		0.500	22.00	5.25	6.00	9002050005000
0.0201	#76	0.510	22.00	5.24	6.00	9002050005100
0.0205		0.520	22.00	5.22	6.00	9002050005200
0.0209	#75	0.530	22.00	5.21	6.00	9002050005300
0.0213		0.540	24.00	6.19	7.00	9002050005400
0.0217		0.550	24.00	6.18	7.00	9002050005500
0.0220		0.560	24.00	6.16	7.00	9002050005600
0.0224	#74	0.570	24.00	6.15	7.00	9002050005700
0.0228		0.580	24.00	6.13	7.00	9002050005800
0.0232		0.590	24.00	6.12	7.00	9002050005900
0.0236		0.600	24.00	6.10	7.00	9002050006000
0.0240	#73	0.610	26.00	7.09	8.00	9002050006100
0.0244		0.620	26.00	7.07	8.00	9002050006200
0.0248		0.630	26.00	7.06	8.00	9002050006300

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0252	#72	0.640	26.00	7.04	8.00	9002050006400
0.0256		0.650	26.00	7.03	8.00	9002050006500
0.0260	#71	0.660	26.00	7.01	8.00	9002050006600
0.0264		0.670	26.00	7.00	8.00	9002050006700
0.0268		0.680	28.00	7.98	9.00	9002050006800
0.0272		0.690	28.00	7.97	9.00	9002050006900
0.0276		0.700	28.00	7.95	9.00	9002050007000
0.0280	#70	0.710	28.00	7.94	9.00	9002050007100
0.0283		0.720	28.00	7.92	9.00	9002050007200
0.0287		0.730	28.00	7.91	9.00	9002050007300
0.0291	#69	0.740	28.00	7.89	9.00	9002050007400
0.0295		0.750	28.00	7.88	9.00	9002050007500
0.0299		0.760	30.00	8.86	10.00	9002050007600
0.0303		0.770	30.00	8.85	10.00	9002050007700
0.0307		0.780	30.00	8.83	10.00	9002050007800
0.0311	1/32 #68	0.790	30.00	8.82	10.00	9002050007900
0.0315		0.800	30.00	8.80	10.00	9002050008000
0.0319	#67	0.810	30.00	8.79	10.00	9002050008100
0.0323		0.820	30.00	8.77	10.00	9002050008200
0.0327		0.830	30.00	8.76	10.00	9002050008300
0.0331	#66	0.840	30.00	8.74	10.00	9002050008400
0.0335		0.850	30.00	8.73	10.00	9002050008500
0.0339		0.860	32.00	9.71	11.00	9002050008600
0.0343		0.870	32.00	9.70	11.00	9002050008700
0.0346		0.880	32.00	9.68	11.00	9002050008800
0.0350	#65	0.890	32.00	9.67	11.00	9002050008900
0.0354		0.900	32.00	9.65	11.00	9002050009000
0.0358	#64	0.910	32.00	9.64	11.00	9002050009100
0.0362		0.920	32.00	9.62	11.00	9002050009200
0.0366		0.930	32.00	9.61	11.00	9002050009300
0.0370	#63	0.940	32.00	9.59	11.00	9002050009400
0.0374		0.950	32.00	9.58	11.00	9002050009500
0.0378		0.960	34.00	10.56	12.00	9002050009600
0.0382	#62	0.970	34.00	10.55	12.00	9002050009700
0.0386		0.980	34.00	10.53	12.00	9002050009800
0.0390	#61	0.990	34.00	10.52	12.00	9002050009900
0.0394		1.000	34.00	10.50	12.00	9002050010000
0.0398		1.010	34.00	10.49	12.00	9002050010100
0.0402	#60	1.020	34.00	10.47	12.00	9002050010200
0.0406		1.030	34.00	10.46	12.00	9002050010300
0.0409	#59	1.040	34.00	10.44	12.00	9002050010400
0.0413		1.050	34.00	10.43	12.00	9002050010500
0.0417		1.060	34.00	10.41	12.00	9002050010600
0.0421	#58	1.070	36.00	12.40	14.00	9002050010700

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0425		1.080	36.00	12.38	14.00	9002050010800
0.0429	#57	1.090	36.00	12.37	14.00	9002050010900
0.0433		1.100	36.00	12.35	14.00	9002050011000
0.0437		1.110	36.00	12.34	14.00	9002050011100
0.0441		1.120	36.00	12.32	14.00	9002050011200
0.0445		1.130	36.00	12.31	14.00	9002050011300
0.0449		1.140	36.00	12.29	14.00	9002050011400
0.0453		1.150	36.00	12.28	14.00	9002050011500
0.0457		1.160	36.00	12.26	14.00	9002050011600
0.0461		1.170	36.00	12.25	14.00	9002050011700
0.0465	#56	1.180	36.00	12.23	14.00	9002050011800
0.0469	3/64	1.190	38.00	14.22	16.00	9002050011900
0.0472		1.200	38.00	14.20	16.00	9002050012000
0.0476		1.210	38.00	14.19	16.00	9002050012100
0.0480		1.220	38.00	14.17	16.00	9002050012200
0.0484		1.230	38.00	14.16	16.00	9002050012300
0.0488		1.240	38.00	14.14	16.00	9002050012400
0.0492		1.250	38.00	14.13	16.00	9002050012500
0.0496		1.260	38.00	14.11	16.00	9002050012600
0.0500		1.270	38.00	14.10	16.00	9002050012700
0.0504		1.280	38.00	14.08	16.00	9002050012800
0.0508		1.290	38.00	14.07	16.00	9002050012900
0.0512		1.300	38.00	14.05	16.00	9002050013000
0.0516		1.310	38.00	14.04	16.00	9002050013100
0.0520	#55	1.320	38.00	14.02	16.00	9002050013200
0.0524		1.330	40.00	16.01	18.00	9002050013300
0.0528		1.340	40.00	15.99	18.00	9002050013400
0.0531		1.350	40.00	15.98	18.00	9002050013500
0.0535		1.360	40.00	15.96	18.00	9002050013600
0.0539		1.370	40.00	15.95	18.00	9002050013700
0.0543		1.380	40.00	15.93	18.00	9002050013800
0.0547		1.390	40.00	15.92	18.00	9002050013900
0.0551	#54	1.400	40.00	15.90	18.00	9002050014000
0.0555		1.410	40.00	15.89	18.00	9002050014100
0.0559		1.420	40.00	15.87	18.00	9002050014200
0.0563		1.430	40.00	15.86	18.00	9002050014300
0.0567		1.440	40.00	15.84	18.00	9002050014400
0.0571		1.450	40.00	15.83	18.00	9002050014500
0.0575		1.460	40.00	15.81	18.00	9002050014600
0.0579		1.470	40.00	15.80	18.00	9002050014700
0.0583		1.480	40.00	15.78	18.00	9002050014800
0.0587		1.490	40.00	15.77	18.00	9002050014900
0.0591		1.500	40.00	15.75	18.00	9002050015000
0.0594	#53	1.510	43.00	17.74	20.00	9002050015100
0.0598		1.520	43.00	17.72	20.00	9002050015200
0.0602		1.530	43.00	17.71	20.00	9002050015300
0.0606		1.540	43.00	17.69	20.00	9002050015400
0.0610		1.550	43.00	17.68	20.00	9002050015500
0.0614		1.560	43.00	17.66	20.00	9002050015600
0.0618		1.570	43.00	17.65	20.00	9002050015700
0.0622		1.580	43.00	17.63	20.00	9002050015800
0.0626	1/16	1.590	43.00	17.62	20.00	9002050015900
0.0630		1.600	43.00	17.60	20.00	9002050016000
0.0634	#52	1.610	43.00	17.59	20.00	9002050016100
0.0638		1.620	43.00	17.57	20.00	9002050016200
0.0642		1.630	43.00	17.56	20.00	9002050016300
0.0646		1.640	43.00	17.54	20.00	9002050016400
0.0650		1.650	43.00	17.53	20.00	9002050016500
0.0654		1.660	43.00	17.51	20.00	9002050016600
0.0657		1.670	43.00	17.50	20.00	9002050016700
0.0661		1.680	43.00	17.48	20.00	9002050016800
0.0665		1.690	43.00	17.47	20.00	9002050016900
0.0669	#51	1.700	43.00	17.45	20.00	9002050017000
0.0673		1.710	46.00	19.44	22.00	9002050017100

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0677		1.720	46.00	19.42	22.00	9002050017200
0.0681		1.730	46.00	19.41	22.00	9002050017300
0.0685		1.740	46.00	19.39	22.00	9002050017400
0.0689		1.750	46.00	19.38	22.00	9002050017500
0.0693		1.760	46.00	19.36	22.00	9002050017600
0.0697		1.770	46.00	19.35	22.00	9002050017700
0.0701	#50	1.780	46.00	19.33	22.00	9002050017800
0.0705		1.790	46.00	19.32	22.00	9002050017900
0.0709		1.800	46.00	19.30	22.00	9002050018000
0.0713		1.810	46.00	19.29	22.00	9002050018100
0.0717		1.820	46.00	19.27	22.00	9002050018200
0.0720		1.830	46.00	19.26	22.00	9002050018300
0.0724		1.840	46.00	19.24	22.00	9002050018400
0.0728	#49	1.850	46.00	19.23	22.00	9002050018500
0.0732		1.860	46.00	19.21	22.00	9002050018600
0.0736		1.870	46.00	19.20	22.00	9002050018700
0.0740		1.880	46.00	19.18	22.00	9002050018800
0.0744		1.890	46.00	19.17	22.00	9002050018900
0.0748		1.900	46.00	19.15	22.00	9002050019000
0.0752		1.910	49.00	21.14	24.00	9002050019100
0.0756		1.920	49.00	21.12	24.00	9002050019200
0.0760	#48	1.930	49.00	21.11	24.00	9002050019300
0.0764		1.940	49.00	21.09	24.00	9002050019400
0.0768		1.950	49.00	21.08	24.00	9002050019500
0.0772		1.960	49.00	21.06	24.00	9002050019600
0.0776		1.970	49.00	21.05	24.00	9002050019700
0.0780	5/64	1.980	49.00	21.03	24.00	9002050019800
0.0783	#47	1.990	49.00	21.02	24.00	9002050019900
0.0787		2.000	49.00	21.00	24.00	9002050020000
0.0795		2.020	49.00	20.97	24.00	9002050020200
0.0799		2.030	49.00	20.96	24.00	9002050020300
0.0807		2.050	49.00	20.93	24.00	9002050020500
0.0811	#46	2.060	49.00	20.91	24.00	9002050020600
0.0815		2.070	49.00	20.90	24.00	9002050020700
0.0819	#45	2.080	49.00	20.88	24.00	9002050020800
0.0823		2.090	49.00	20.87	24.00	9002050020900
0.0827		2.100	49.00	20.85	24.00	9002050021000
0.0831		2.110	49.00	20.84	24.00	9002050021100
0.0839		2.130	53.00	23.81	27.00	9002050021300
0.0843		2.140	53.00	23.79	27.00	9002050021400
0.0846		2.150	53.00	23.78	27.00	9002050021500
0.0854		2.170	53.00	23.75	27.00	9002050021700
0.0858	#44	2.180	53.00	23.73	27.00	9002050021800
0.0866		2.200	53.00	23.70	27.00	9002050022000
0.0882		2.240	53.00	23.64	27.00	9002050022400
0.0886		2.250	53.00	23.63	27.00	9002050022500
0.0890	#43	2.260	53.00	23.61	27.00	9002050022600
0.0894		2.270	53.00	23.60	27.00	9002050022700
0.0902		2.290	53.00	23.57	27.00	9002050022900
0.0906		2.300	53.00	23.55	27.00	9002050023000
0.0913		2.320	53.00	23.52	27.00	9002050023200
0.0921		2.340	53.00	23.49	27.00	9002050023400
0.0925		2.350	53.00	23.48	27.00	9002050023500
0.0929		2.360	53.00	23.46	27.00	9002050023600
0.0933	#42	2.370	57.00	26.45	30.00	9002050023700
0.0937	3/32	2.380	57.00	26.43	30.00	9002050023800
0.0941		2.390	57.00	26.42	30.00	9002050023900
0.0945		2.400	57.00	26.40	30.00	9002050024000
0.0953		2.420	57.00	26.37	30.00	9002050024200
0.0957		2.430	57.00	26.36	30.00	9002050024300
0.0961	#41	2.440	57.00	26.34	30.00	9002050024400
0.0965		2.450	57.00	26.33	30.00	9002050024500
0.0969		2.460	57.00	26.31	30.00	9002050024600
0.0972		2.470	57.00	26.30	30.00	9002050024700

Jobber length drills

Series no. 205

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0976		2.480	57.00	26.28	30.00	9002050024800
0.0980	#40	2.490	57.00	26.27	30.00	9002050024900
0.0984		2.500	57.00	26.25	30.00	9002050025000
0.0988		2.510	57.00	26.24	30.00	9002050025100
0.0992		2.520	57.00	26.22	30.00	9002050025200
0.0996	#39	2.530	57.00	26.21	30.00	9002050025300
0.1000		2.540	57.00	26.19	30.00	9002050025400
0.1004		2.550	57.00	26.18	30.00	9002050025500
0.1012		2.570	57.00	26.15	30.00	9002050025700
0.1016	#38	2.580	57.00	26.13	30.00	9002050025800
0.1024		2.600	57.00	26.10	30.00	9002050026000
0.1031		2.620	57.00	26.07	30.00	9002050026200
0.1039	#37	2.640	57.00	26.04	30.00	9002050026400
0.1043		2.650	57.00	26.03	30.00	9002050026500
0.1051		2.670	61.00	29.00	33.00	9002050026700
0.1055		2.680	61.00	28.98	33.00	9002050026800
0.1063		2.700	61.00	28.95	33.00	9002050027000
0.1067	#36	2.710	61.00	28.94	33.00	9002050027100
0.1071		2.720	61.00	28.92	33.00	9002050027200
0.1075		2.730	61.00	28.91	33.00	9002050027300
0.1083		2.750	61.00	28.88	33.00	9002050027500
0.1087		2.760	61.00	28.86	33.00	9002050027600
0.1094	7/64	2.780	61.00	28.83	33.00	9002050027800
0.1098	#35	2.790	61.00	28.82	33.00	9002050027900
0.1102		2.800	61.00	28.80	33.00	9002050028000
0.1110	#34	2.820	61.00	28.77	33.00	9002050028200
0.1122		2.850	61.00	28.73	33.00	9002050028500
0.1130	#33	2.870	61.00	28.70	33.00	9002050028700
0.1134		2.880	61.00	28.68	33.00	9002050028800
0.1142		2.900	61.00	28.65	33.00	9002050029000
0.1146		2.910	61.00	28.64	33.00	9002050029100
0.1154		2.930	61.00	28.61	33.00	9002050029300
0.1161	#32	2.950	61.00	28.58	33.00	9002050029500
0.1165		2.960	61.00	28.56	33.00	9002050029600
0.1173		2.980	61.00	28.53	33.00	9002050029800
0.1177		2.990	61.00	28.52	33.00	9002050029900
0.1181		3.000	61.00	28.50	33.00	9002050030000
0.1185		3.010	65.00	31.49	36.00	9002050030100
0.1197		3.040	65.00	31.44	36.00	9002050030400
0.1201	#31	3.050	65.00	31.43	36.00	9002050030500
0.1209		3.070	65.00	31.40	36.00	9002050030700
0.1213		3.080	65.00	31.38	36.00	9002050030800
0.1220		3.100	65.00	31.35	36.00	9002050031000
0.1228		3.120	65.00	31.32	36.00	9002050031200
0.1232		3.130	65.00	31.31	36.00	9002050031300
0.1240		3.150	65.00	31.28	36.00	9002050031500
0.1244		3.160	65.00	31.26	36.00	9002050031600
0.1248	1/8	3.170	65.00	31.25	36.00	9002050031700
0.1252		3.180	65.00	31.23	36.00	9002050031800
0.1260		3.200	65.00	31.20	36.00	9002050032000
0.1268		3.220	65.00	31.17	36.00	9002050032200
0.1272		3.230	65.00	31.16	36.00	9002050032300
0.1280		3.250	65.00	31.13	36.00	9002050032500
0.1283	#30	3.260	65.00	31.11	36.00	9002050032600
0.1299		3.300	65.00	31.05	36.00	9002050033000
0.1307		3.320	65.00	31.02	36.00	9002050033200
0.1319		3.350	65.00	30.98	36.00	9002050033500
0.1339		3.400	70.00	33.90	39.00	9002050034000
0.1346		3.420	70.00	33.87	39.00	9002050034200
0.1358	#29	3.450	70.00	33.83	39.00	9002050034500
0.1378		3.500	70.00	33.75	39.00	9002050035000
0.1386		3.520	70.00	33.72	39.00	9002050035200
0.1398		3.550	70.00	33.68	39.00	9002050035500

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1406	9/64	3.570	70.00	33.65	39.00	9002050035700
0.1417		3.600	70.00	33.60	39.00	9002050036000
0.1421		3.610	70.00	33.59	39.00	9002050036100
0.1425		3.620	70.00	33.57	39.00	9002050036200
0.1437		3.650	70.00	33.53	39.00	9002050036500
0.1441	#27	3.660	70.00	33.51	39.00	9002050036600
0.1449		3.680	70.00	33.48	39.00	9002050036800
0.1457		3.700	70.00	33.45	39.00	9002050037000
0.1469	#26	3.730	70.00	33.41	39.00	9002050037300
0.1476		3.750	70.00	33.38	39.00	9002050037500
0.1496	#25	3.800	75.00	37.30	43.00	9002050038000
0.1504		3.820	75.00	37.27	43.00	9002050038200
0.1516		3.850	75.00	37.23	43.00	9002050038500
0.1520	#24	3.860	75.00	37.21	43.00	9002050038600
0.1535		3.900	75.00	37.15	43.00	9002050039000
0.1539	#23	3.910	75.00	37.14	43.00	9002050039100
0.1547		3.930	75.00	37.11	43.00	9002050039300
0.1555		3.950	75.00	37.08	43.00	9002050039500
0.1563	5/32	3.970	75.00	37.05	43.00	9002050039700
0.1571	#22	3.990	75.00	37.02	43.00	9002050039900
0.1575		4.000	75.00	37.00	43.00	9002050040000
0.1579		4.010	75.00	36.99	43.00	9002050040100
0.1591	#21	4.040	75.00	36.94	43.00	9002050040400
0.1594		4.050	75.00	36.93	43.00	9002050040500
0.1598		4.060	75.00	36.91	43.00	9002050040600
0.1610	#20	4.090	75.00	36.87	43.00	9002050040900
0.1614		4.100	75.00	36.85	43.00	9002050041000
0.1634		4.150	75.00	36.78	43.00	9002050041500
0.1654		4.200	75.00	36.70	43.00	9002050042000
0.1661	#19	4.220	75.00	36.67	43.00	9002050042200
0.1673		4.250	75.00	36.63	43.00	9002050042500
0.1681		4.270	80.00	40.60	47.00	9002050042700
0.1693	#18	4.300	80.00	40.55	47.00	9002050043000
0.1701		4.320	80.00	40.52	47.00	9002050043200
0.1713		4.350	80.00	40.48	47.00	9002050043500
0.1720	11/64	4.370	80.00	40.45	47.00	9002050043700
0.1728	#17	4.390	80.00	40.42	47.00	9002050043900
0.1732		4.400	80.00	40.40	47.00	9002050044000
0.1740		4.420	80.00	40.37	47.00	9002050044200
0.1752		4.450	80.00	40.33	47.00	9002050044500
0.1772	#16	4.500	80.00	40.25	47.00	9002050045000
0.1780		4.520	80.00	40.22	47.00	9002050045200
0.1783		4.530	80.00	40.21	47.00	9002050045300
0.1791		4.550	80.00	40.18	47.00	9002050045500
0.1799	#15	4.570	80.00	40.15	47.00	9002050045700
0.1811		4.600	80.00	40.10	47.00	9002050046000
0.1819	#14	4.620	80.00	40.07	47.00	9002050046200
0.1831		4.650	80.00	40.03	47.00	9002050046500
0.1850	#13	4.700	80.00	39.95	47.00	9002050047000
0.1870		4.750	80.00	39.88	47.00	9002050047500
0.1874	3/16	4.760	86.00	44.86	52.00	9002050047600
0.1890	#12	4.800	86.00	44.80	52.00	9002050048000
0.1902		4.830	86.00	44.76	52.00	9002050048300
0.1909	#11	4.850	86.00	44.73	52.00	9002050048500
0.1913		4.860	86.00	44.71	52.00	9002050048600
0.1929		4.900	86.00	44.65	52.00	9002050049000
0.1937	#10	4.920	86.00	44.62	52.00	9002050049200
0.1949		4.950	86.00	44.58	52.00	9002050049500
0.1961	#9	4.980	86.00	44.53	52.00	9002050049800
0.1969		5.000	86.00	44.50	52.00	9002050050000
0.1980		5.030	86.00	44.46	52.00	9002050050300
0.1988		5.050	86.00	44.43	52.00	9002050050500
0.1992	#8	5.060	86.00	44.41	52.00	9002050050600

Jobber length drills

Series no. **205**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2008		5.100	86.00	44.35	52.00	9002050051000
0.2012	#7	5.110	86.00	44.34	52.00	9002050051100
0.2028		5.150	86.00	44.28	52.00	9002050051500
0.2031	13/64	5.160	86.00	44.26	52.00	9002050051600
0.2039	#6	5.180	86.00	44.23	52.00	9002050051800
0.2047		5.200	86.00	44.20	52.00	9002050052000
0.2055	#5	5.220	86.00	44.17	52.00	9002050052200
0.2067		5.250	86.00	44.13	52.00	9002050052500
0.2087		5.300	86.00	44.05	52.00	9002050053000
0.2091	#4	5.310	93.00	49.04	57.00	9002050053100
0.2106		5.350	93.00	48.98	57.00	9002050053500
0.2126		5.400	93.00	48.90	57.00	9002050054000
0.2130	#3	5.410	93.00	48.89	57.00	9002050054100
0.2146		5.450	93.00	48.83	57.00	9002050054500
0.2165		5.500	93.00	48.75	57.00	9002050055000
0.2185		5.550	93.00	48.68	57.00	9002050055500
0.2189	7/32	5.560	93.00	48.66	57.00	9002050055600
0.2205		5.600	93.00	48.60	57.00	9002050056000
0.2209	#2	5.610	93.00	48.59	57.00	9002050056100
0.2224		5.650	93.00	48.53	57.00	9002050056500
0.2244		5.700	93.00	48.45	57.00	9002050057000
0.2264		5.750	93.00	48.38	57.00	9002050057500
0.2280	#1	5.790	93.00	48.32	57.00	9002050057900
0.2283		5.800	93.00	48.30	57.00	9002050058000
0.2303		5.850	93.00	48.23	57.00	9002050058500
0.2323		5.900	93.00	48.15	57.00	9002050059000
0.2339	A	5.940	93.00	48.09	57.00	9002050059400
0.2343	15/64	5.950	93.00	48.08	57.00	9002050059500
0.2350		5.970	93.00	48.05	57.00	9002050059700
0.2354		5.980	93.00	48.03	57.00	9002050059800
0.2362		6.000	93.00	48.00	57.00	9002050060000
0.2374		6.030	101.00	53.96	63.00	9002050060300
0.2378	B	6.040	101.00	53.94	63.00	9002050060400
0.2382		6.050	101.00	53.93	63.00	9002050060500
0.2402		6.100	101.00	53.85	63.00	9002050061000
0.2421	C	6.150	101.00	53.78	63.00	9002050061500
0.2441		6.200	101.00	53.70	63.00	9002050062000
0.2449		6.220	101.00	53.67	63.00	9002050062200
0.2461	D	6.250	101.00	53.63	63.00	9002050062500
0.2480		6.300	101.00	53.55	63.00	9002050063000
0.2500	1/4 E	6.350	101.00	53.48	63.00	9002050063500
0.2520		6.400	101.00	53.40	63.00	9002050064000
0.2539		6.450	101.00	53.33	63.00	9002050064500
0.2559		6.500	101.00	53.25	63.00	9002050065000
0.2571		6.530	101.00	53.21	63.00	9002050065300
0.2579		6.550	101.00	53.18	63.00	9002050065500
0.2598		6.600	101.00	53.10	63.00	9002050066000
0.2610	G	6.630	101.00	53.06	63.00	9002050066300
0.2618		6.650	101.00	53.03	63.00	9002050066500
0.2638		6.700	101.00	52.95	63.00	9002050067000
0.2657	17/64 H	6.750	109.00	58.88	69.00	9002050067500
0.2661		6.760	109.00	58.86	69.00	9002050067600
0.2677		6.800	109.00	58.80	69.00	9002050068000
0.2697		6.850	109.00	58.73	69.00	9002050068500
0.2717	I	6.900	109.00	58.65	69.00	9002050069000
0.2736		6.950	109.00	58.58	69.00	9002050069500
0.2756		7.000	109.00	58.50	69.00	9002050070000
0.2768	J	7.030	109.00	58.46	69.00	9002050070300
0.2776		7.050	109.00	58.43	69.00	9002050070500
0.2795		7.100	109.00	58.35	69.00	9002050071000
0.2811	9/32 K	7.140	109.00	58.29	69.00	9002050071400
0.2815		7.150	109.00	58.28	69.00	9002050071500
0.2835		7.200	109.00	58.20	69.00	9002050072000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2854		7.250	109.00	58.13	69.00	9002050072500
0.2874		7.300	109.00	58.05	69.00	9002050073000
0.2894		7.350	109.00	57.98	69.00	9002050073500
0.2902	L	7.370	109.00	57.95	69.00	9002050073700
0.2913		7.400	109.00	57.90	69.00	9002050074000
0.2933		7.450	109.00	57.83	69.00	9002050074500
0.2949	M	7.490	109.00	57.77	69.00	9002050074900
0.2953		7.500	109.00	57.75	69.00	9002050075000
0.2969	19/64	7.540	117.00	63.69	75.00	9002050075400
0.2972		7.550	117.00	63.68	75.00	9002050075500
0.2992		7.600	117.00	63.60	75.00	9002050076000
0.3012		7.650	117.00	63.53	75.00	9002050076500
0.3020	N	7.670	117.00	63.50	75.00	9002050076700
0.3031		7.700	117.00	63.45	75.00	9002050077000
0.3051		7.750	117.00	63.38	75.00	9002050077500
0.3071		7.800	117.00	63.30	75.00	9002050078000
0.3091		7.850	117.00	63.23	75.00	9002050078500
0.3110		7.900	117.00	63.15	75.00	9002050079000
0.3126	5/16	7.940	117.00	63.09	75.00	9002050079400
0.3130		7.950	117.00	63.08	75.00	9002050079500
0.3142		7.980	117.00	63.03	75.00	9002050079800
0.3150		8.000	117.00	63.00	75.00	9002050080000
0.3161	O	8.030	117.00	62.96	75.00	9002050080300
0.3169		8.050	117.00	62.93	75.00	9002050080500
0.3189		8.100	117.00	62.85	75.00	9002050081000
0.3201		8.130	117.00	62.81	75.00	9002050081300
0.3209		8.150	117.00	62.78	75.00	9002050081500
0.3228	P	8.200	117.00	62.70	75.00	9002050082000
0.3248		8.250	117.00	62.63	75.00	9002050082500
0.3268		8.300	117.00	62.55	75.00	9002050083000
0.3280	21/64	8.330	117.00	62.51	75.00	9002050083300
0.3287		8.350	117.00	62.48	75.00	9002050083500
0.3307		8.400	117.00	62.40	75.00	9002050084000
0.3319	Q	8.430	117.00	62.36	75.00	9002050084300
0.3327		8.450	117.00	62.33	75.00	9002050084500
0.3346		8.500	117.00	62.25	75.00	9002050085000
0.3366		8.550	125.00	68.18	81.00	9002050085500
0.3386		8.600	125.00	68.10	81.00	9002050086000
0.3390	R	8.610	125.00	68.09	81.00	9002050086100
0.3406		8.650	125.00	68.03	81.00	9002050086500
0.3425		8.700	125.00	67.95	81.00	9002050087000
0.3437	11/32	8.730	125.00	67.91	81.00	9002050087300
0.3445		8.750	125.00	67.88	81.00	9002050087500
0.3465		8.800	125.00	67.80	81.00	9002050088000
0.3480	S	8.840	125.00	67.74	81.00	9002050088400
0.3484		8.850	125.00	67.73	81.00	9002050088500
0.3504		8.900	125.00	67.65	81.00	9002050089000
0.3524		8.950	125.00	67.58	81.00	9002050089500
0.3543		9.000	125.00	67.50	81.00	9002050090000
0.3563		9.050	125.00	67.43	81.00	9002050090500
0.3579	T	9.090	125.00	67.37	81.00	9002050090900
0.3583		9.100	125.00	67.35	81.00	9002050091000
0.3594	23/64	9.130	125.00	67.31	81.00	9002050091300
0.3602		9.150	125.00	67.28	81.00	9002050091500
0.3622		9.200	125.00	67.20	81.00	9002050092000
0.3642		9.250	125.00	67.13	81.00	9002050092500
0.3661		9.300	125.00	67.05	81.00	9002050093000
0.3677	U	9.340	125.00	66.99	81.00	9002050093400
0.3681		9.350	125.00	66.98	81.00	9002050093500
0.3701		9.400	125.00	66.90	81.00	9002050094000
0.3720		9.450	125.00	66.83	81.00	9002050094500
0.3740		9.500	125.00	66.75	81.00	9002050095000
0.3748	3/8	9.520	133.00	72.72	87.00	9002050095200

Jobber length drills

Series no. 205

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3760		9.550	133.00	72.68	87.00	9002050095500
0.3772	V	9.580	133.00	72.63	87.00	9002050095800
0.3780		9.600	133.00	72.60	87.00	9002050096000
0.3799		9.650	133.00	72.53	87.00	9002050096500
0.3819		9.700	133.00	72.45	87.00	9002050097000
0.3839		9.750	133.00	72.38	87.00	9002050097500
0.3858	W	9.800	133.00	72.30	87.00	9002050098000
0.3878		9.850	133.00	72.23	87.00	9002050098500
0.3898		9.900	133.00	72.15	87.00	9002050099000
0.3906	25/64	9.920	133.00	72.12	87.00	9002050099200
0.3917		9.950	133.00	72.08	87.00	9002050099500
0.3937		10.000	133.00	72.00	87.00	9002050100000
0.3953		10.040	133.00	71.94	87.00	9002050100400
0.3969	X	10.080	133.00	71.88	87.00	9002050100800
0.3976		10.100	133.00	71.85	87.00	9002050101000
0.3996		10.150	133.00	71.78	87.00	9002050101500
0.4016		10.200	133.00	71.70	87.00	9002050102000
0.4035		10.250	133.00	71.63	87.00	9002050102500
0.4039	Y	10.260	133.00	71.61	87.00	9002050102600
0.4055		10.300	133.00	71.55	87.00	9002050103000
0.4063	13/32	10.320	133.00	71.52	87.00	9002050103200
0.4075		10.350	133.00	71.48	87.00	9002050103500
0.4094		10.400	133.00	71.40	87.00	9002050104000
0.4130	Z	10.490	133.00	71.27	87.00	9002050104900
0.4134		10.500	133.00	71.25	87.00	9002050105000
0.4173		10.600	133.00	71.10	87.00	9002050106000
0.4213		10.700	142.00	77.95	94.00	9002050107000
0.4220	27/64	10.720	142.00	77.92	94.00	9002050107200
0.4232		10.750	142.00	77.88	94.00	9002050107500
0.4252		10.800	142.00	77.80	94.00	9002050108000
0.4291		10.900	142.00	77.65	94.00	9002050109000
0.4331		11.000	142.00	77.50	94.00	9002050110000
0.4350		11.050	142.00	77.43	94.00	9002050110500
0.4370		11.100	142.00	77.35	94.00	9002050111000
0.4374	7/16	11.110	142.00	77.34	94.00	9002050111100
0.4390		11.150	142.00	77.28	94.00	9002050111500
0.4409		11.200	142.00	77.20	94.00	9002050112000
0.4429		11.250	142.00	77.13	94.00	9002050112500
0.4449		11.300	142.00	77.05	94.00	9002050113000
0.4469		11.350	142.00	76.98	94.00	9002050113500
0.4488		11.400	142.00	76.90	94.00	9002050114000
0.4528		11.500	142.00	76.75	94.00	9002050115000
0.4531	29/64	11.510	142.00	76.74	94.00	9002050115100
0.4567		11.600	142.00	76.60	94.00	9002050116000
0.4606		11.700	142.00	76.45	94.00	9002050117000
0.4626		11.750	142.00	76.38	94.00	9002050117500
0.4646		11.800	142.00	76.30	94.00	9002050118000
0.4685		11.900	151.00	83.15	101.00	9002050119000
0.4689	15/32	11.910	151.00	83.14	101.00	9002050119100
0.4724		12.000	151.00	83.00	101.00	9002050120000
0.4744		12.050	151.00	82.93	101.00	9002050120500
0.4764		12.100	151.00	82.85	101.00	9002050121000
0.4803		12.200	151.00	82.70	101.00	9002050122000
0.4823		12.250	151.00	82.63	101.00	9002050122500
0.4843	31/64	12.300	151.00	82.55	101.00	9002050123000
0.4882		12.400	151.00	82.40	101.00	9002050124000
0.4921		12.500	151.00	82.25	101.00	9002050125000
0.4961		12.600	151.00	82.10	101.00	9002050126000
0.4980		12.650	151.00	82.03	101.00	9002050126500
0.5000	1/2	12.700	151.00	81.95	101.00	9002050127000
0.5020		12.750	151.00	81.88	101.00	9002050127500
0.5039		12.800	151.00	81.80	101.00	9002050128000
0.5059		12.850	151.00	81.73	101.00	9002050128500
0.5079		12.900	151.00	81.65	101.00	9002050129000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.5118		13.000	151.00	81.50	101.00	9002050130000
0.5157	33/64	13.100	151.00	81.35	101.00	9002050131000
0.5197		13.200	151.00	81.20	101.00	9002050132000
0.5217		13.250	160.00	88.13	108.00	9002050132500
0.5236		13.300	160.00	88.05	108.00	9002050133000
0.5276		13.400	160.00	87.90	108.00	9002050134000
0.5311	17/32	13.490	160.00	87.77	108.00	9002050134900
0.5315		13.500	160.00	87.75	108.00	9002050135000
0.5354		13.600	160.00	87.60	108.00	9002050136000
0.5394		13.700	160.00	87.45	108.00	9002050137000
0.5413		13.750	160.00	87.38	108.00	9002050137500
0.5433		13.800	160.00	87.30	108.00	9002050138000
0.5469	35/64	13.890	160.00	87.17	108.00	9002050138900
0.5472		13.900	160.00	87.15	108.00	9002050139000
0.5512		14.000	160.00	87.00	108.00	9002050140000
0.5551		14.100	169.00	92.85	114.00	9002050141000
0.5591		14.200	169.00	92.70	114.00	9002050142000
0.5610		14.250	169.00	92.63	114.00	9002050142500
0.5626	9/16	14.290	169.00	92.57	114.00	9002050142900
0.5630		14.300	169.00	92.55	114.00	9002050143000
0.5669		14.400	169.00	92.40	114.00	9002050144000
0.5709		14.500	169.00	92.25	114.00	9002050145000
0.5748		14.600	169.00	92.10	114.00	9002050146000
0.5780	37/64	14.680	169.00	91.98	114.00	9002050146800
0.5787		14.700	169.00	91.95	114.00	9002050147000
0.5807		14.750	169.00	91.88	114.00	9002050147500
0.5827		14.800	169.00	91.80	114.00	9002050148000
0.5846		14.850	169.00	91.73	114.00	9002050148500
0.5866		14.900	169.00	91.65	114.00	9002050149000
0.5906		15.000	169.00	91.50	114.00	9002050150000
0.5937	19/32	15.080	178.00	97.38	120.00	9002050150800
0.5945		15.100	178.00	97.35	120.00	9002050151000
0.5984		15.200	178.00	97.20	120.00	9002050152000
0.6004		15.250	178.00	97.13	120.00	9002050152500
0.6024		15.300	178.00	97.05	120.00	9002050153000
0.6063		15.400	178.00	96.90	120.00	9002050154000
0.6094	39/64	15.480	178.00	96.78	120.00	9002050154800
0.6102		15.500	178.00	96.75	120.00	9002050155000
0.6142		15.600	178.00	96.60	120.00	9002050156000
0.6181		15.700	178.00	96.45	120.00	9002050157000
0.6201		15.750	178.00	96.38	120.00	9002050157500
0.6220		15.800	178.00	96.30	120.00	9002050158000
0.6248	5/8	15.870	178.00	96.20	120.00	9002050158700
0.6260		15.900	178.00	96.15	120.00	9002050159000
0.6299		16.000	178.00	96.00	120.00	9002050160000
0.6339		16.100	184.00	100.85	125.00	9002050161000
0.6378		16.200	184.00	100.70	125.00	9002050162000
0.6398		16.250	184.00	100.63	125.00	9002050162500
0.6406	41/64	16.270	184.00	100.60	125.00	9002050162700
0.6417		16.300	184.00	100.55	125.00	9002050163000
0.6457		16.400	184.00	100.40	125.00	9002050164000
0.6496		16.500	184.00	100.25	125.00	9002050165000
0.6535		16.600	184.00	100.10	125.00	9002050166000
0.6563	21/32	16.670	184.00	100.00	125.00	9002050166700
0.6575		16.700	184.00	99.95	125.00	9002050167000
0.6594		16.750	184.00	99.88	125.00	9002050167500
0.6614		16.800	184.00	99.80	125.00	9002050168000
0.6654		16.900	184.00	99.65	125.00	9002050169000
0.6693		17.000	184.00	99.50	125.00	9002050170000
0.6720	43/64	17.070	191.00	104.40	130.00	9002050170700
0.6772		17.200	191.00	104.20	130.00	9002050172000
0.6791		17.250	191.00	104.13	130.00	9002050172500
0.6811		17.300	191.00	104.05	130.00	9002050173000
0.6850		17.400	191.00	103.90	130.00	9002050174000

Jobber length drills

Series no. **205**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.6874	11/16	17.460	191.00	103.81	130.00	9002050174600
0.6890		17.500	191.00	103.75	130.00	9002050175000
0.6929		17.600	191.00	103.60	130.00	9002050176000
0.6969		17.700	191.00	103.45	130.00	9002050177000
0.6988		17.750	191.00	103.38	130.00	9002050177500
0.7008		17.800	191.00	103.30	130.00	9002050178000
0.7031	45/64	17.860	191.00	103.21	130.00	9002050178600
0.7047		17.900	191.00	103.15	130.00	9002050179000
0.7087		18.000	191.00	103.00	130.00	9002050180000
0.7126		18.100	198.00	107.85	135.00	9002050181000
0.7165		18.200	198.00	107.70	135.00	9002050182000
0.7185		18.250	198.00	107.63	135.00	9002050182500
0.7189	23/32	18.260	198.00	107.61	135.00	9002050182600
0.7205		18.300	198.00	107.55	135.00	9002050183000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.7244		18.400	198.00	107.40	135.00	9002050184000
0.7283		18.500	198.00	107.25	135.00	9002050185000
0.7343	47/64	18.650	198.00	107.03	135.00	9002050186500
0.7382		18.750	198.00	106.88	135.00	9002050187500
0.7402		18.800	198.00	106.80	135.00	9002050188000
0.7480		19.000	198.00	106.50	135.00	9002050190000
0.7500	3/4	19.050	205.00	111.43	140.00	9002050190500
0.7520		19.100	205.00	111.35	140.00	9002050191000
0.7559		19.200	205.00	111.20	140.00	9002050192000
0.7579		19.250	205.00	111.13	140.00	9002050192500
0.7677		19.500	205.00	110.75	140.00	9002050195000
0.7717		19.600	205.00	110.60	140.00	9002050196000
0.7776		19.750	205.00	110.38	140.00	9002050197500
0.7811	25/32	19.840	205.00	110.24	140.00	9002050198400

Jobber length drills

Series no. **208**

~5xD	DIN 338	N	118°	h8		Cyl	L
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material **HSS**

Surface >Ø 2.36

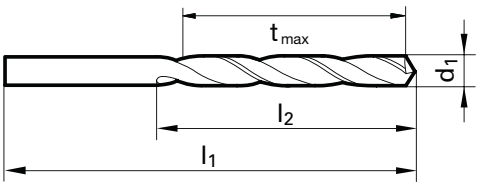
P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 14.700 • relieved cone

alloyed/unalloyed steel and cast steel • grey cast iron, malleable and spheroidal iron • sintered powder metal, German silver and graphite

$t_{max} = l_2 - 1.5 \times d_1$





Speeds and feeds information on pg. 477

Jobber Length

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0094	#88	0.24	19.00	2.14	2.50	9002080002400
0.0114	#84	0.29	19.00	2.57	3.00	9002080002900
0.0118		0.30	19.00	2.55	3.00	9002080003000
0.0134	#80	0.34	19.00	3.49	4.00	9002080003400
0.0138		0.35	19.00	3.48	4.00	9002080003500
0.0142		0.36	19.00	3.46	4.00	9002080003600
0.0146	#79	0.37	19.00	3.45	4.00	9002080003700
0.0157	1/64	0.40	20.00	4.40	5.00	9002080004000
0.0161	#78	0.41	20.00	4.39	5.00	9002080004100
0.0165		0.42	20.00	4.37	5.00	9002080004200
0.0169		0.43	20.00	4.36	5.00	9002080004300
0.0173		0.44	20.00	4.34	5.00	9002080004400
0.0177		0.45	20.00	4.33	5.00	9002080004500
0.0181	#77	0.46	20.00	4.31	5.00	9002080004600
0.0185		0.47	20.00	4.30	5.00	9002080004700
0.0189		0.48	20.00	4.28	5.00	9002080004800
0.0197		0.50	22.00	5.25	6.00	9002080005000
0.0201	#76	0.51	22.00	5.24	6.00	9002080005100
0.0205		0.52	22.00	5.22	6.00	9002080005200
0.0209	#75	0.53	22.00	5.21	6.00	9002080005300
0.0213		0.54	24.00	6.19	7.00	9002080005400
0.0217		0.55	24.00	6.18	7.00	9002080005500
0.0220		0.56	24.00	6.16	7.00	9002080005600
0.0224	#74	0.57	24.00	6.15	7.00	9002080005700
0.0228		0.58	24.00	6.13	7.00	9002080005800
0.0236		0.60	24.00	6.10	7.00	9002080006000
0.0240	#73	0.61	26.00	7.09	8.00	9002080006100
0.0244		0.62	26.00	7.07	8.00	9002080006200
0.0248		0.63	26.00	7.06	8.00	9002080006300
0.0252	#72	0.64	26.00	7.04	8.00	9002080006400
0.0256		0.65	26.00	7.03	8.00	9002080006500
0.0260	#71	0.66	26.00	7.01	8.00	9002080006600
0.0264		0.67	26.00	7.00	8.00	9002080006700
0.0268		0.68	28.00	7.98	9.00	9002080006800
0.0276		0.70	28.00	7.95	9.00	9002080007000
0.0280	#70	0.71	28.00	7.94	9.00	9002080007100
0.0283		0.72	28.00	7.92	9.00	9002080007200
0.0287		0.73	28.00	7.91	9.00	9002080007300
0.0295		0.75	28.00	7.88	9.00	9002080007500
0.0303		0.77	30.00	8.85	10.00	9002080007700
0.0307		0.78	30.00	8.83	10.00	9002080007800
0.0311	1/32 #68	0.79	30.00	8.82	10.00	9002080007900
0.0315		0.80	30.00	8.80	10.00	9002080008000
0.0319	#67	0.81	30.00	8.79	10.00	9002080008100

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0323		0.82	30.00	8.77	10.00	9002080008200
0.0327		0.83	30.00	8.76	10.00	9002080008300
0.0331	#66	0.84	30.00	8.74	10.00	9002080008400
0.0335		0.85	30.00	8.73	10.00	9002080008500
0.0339		0.86	32.00	9.71	11.00	9002080008600
0.0343		0.87	32.00	9.70	11.00	9002080008700
0.0346		0.88	32.00	9.68	11.00	9002080008800
0.0350	#65	0.89	32.00	9.67	11.00	9002080008900
0.0354		0.90	32.00	9.65	11.00	9002080009000
0.0358	#64	0.91	32.00	9.64	11.00	9002080009100
0.0362		0.92	32.00	9.62	11.00	9002080009200
0.0366		0.93	32.00	9.61	11.00	9002080009300
0.0374		0.95	32.00	9.58	11.00	9002080009500
0.0378		0.96	34.00	10.56	12.00	9002080009600
0.0382	#62	0.97	34.00	10.55	12.00	9002080009700
0.0386		0.98	34.00	10.53	12.00	9002080009800
0.0390	#61	0.99	34.00	10.52	12.00	9002080009900
0.0394		1.00	34.00	10.50	12.00	9002080010000
0.0402	#60	1.02	34.00	10.47	12.00	9002080010200
0.0409	#59	1.04	34.00	10.44	12.00	9002080010400
0.0413		1.05	34.00	10.43	12.00	9002080010500
0.0421	#58	1.07	36.00	12.40	14.00	9002080010700
0.0425		1.08	36.00	12.38	14.00	9002080010800
0.0429	#57	1.09	36.00	12.37	14.00	9002080010900
0.0433		1.10	36.00	12.35	14.00	9002080011000
0.0441		1.12	36.00	12.32	14.00	9002080011200
0.0445		1.13	36.00	12.31	14.00	9002080011300
0.0453		1.15	36.00	12.28	14.00	9002080011500
0.0461		1.17	36.00	12.25	14.00	9002080011700
0.0465	#56	1.18	36.00	12.23	14.00	9002080011800
0.0469	3/64	1.19	38.00	14.22	16.00	9002080011900
0.0472		1.20	38.00	14.20	16.00	9002080012000
0.0476		1.21	38.00	14.19	16.00	9002080012100
0.0480		1.22	38.00	14.17	16.00	9002080012200
0.0488		1.24	38.00	14.14	16.00	9002080012400
0.0492		1.25	38.00	14.13	16.00	9002080012500
0.0500		1.27	38.00	14.10	16.00	9002080012700
0.0512		1.30	38.00	14.05	16.00	9002080013000
0.0520	#55	1.32	38.00	14.02	16.00	9002080013200
0.0531		1.35	40.00	15.98	18.00	9002080013500
0.0543		1.38	40.00	15.93	18.00	9002080013800
0.0547		1.39	40.00	15.92	18.00	9002080013900
0.0551	#54	1.40	40.00	15.90	18.00	9002080014000
0.0559		1.42	40.00	15.87	18.00	9002080014200

Jobber length drills

Series no. 208

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0571		1.45	40.00	15.83	18.00	9002080014500
0.0579		1.47	40.00	15.80	18.00	9002080014700
0.0591		1.50	40.00	15.75	18.00	9002080015000
0.0594	#53	1.51	43.00	17.74	20.00	9002080015100
0.0602		1.53	43.00	17.71	20.00	9002080015300
0.0610		1.55	43.00	17.68	20.00	9002080015500
0.0614		1.56	43.00	17.66	20.00	9002080015600
0.0626	1/16	1.59	43.00	17.62	20.00	9002080015900
0.0630		1.60	43.00	17.60	20.00	9002080016000
0.0634	#52	1.61	43.00	17.59	20.00	9002080016100
0.0638		1.62	43.00	17.57	20.00	9002080016200
0.0642		1.63	43.00	17.56	20.00	9002080016300
0.0650		1.65	43.00	17.53	20.00	9002080016500
0.0654		1.66	43.00	17.51	20.00	9002080016600
0.0661		1.68	43.00	17.48	20.00	9002080016800
0.0669	#51	1.70	43.00	17.45	20.00	9002080017000
0.0677		1.72	46.00	19.42	22.00	9002080017200
0.0681		1.73	46.00	19.41	22.00	9002080017300
0.0689		1.75	46.00	19.38	22.00	9002080017500
0.0693		1.76	46.00	19.36	22.00	9002080017600
0.0709		1.80	46.00	19.30	22.00	9002080018000
0.0717		1.82	46.00	19.27	22.00	9002080018200
0.0720		1.83	46.00	19.26	22.00	9002080018300
0.0724		1.84	46.00	19.24	22.00	9002080018400
0.0728	#49	1.85	46.00	19.23	22.00	9002080018500
0.0748		1.90	46.00	19.15	22.00	9002080019000
0.0760	#48	1.93	49.00	21.11	24.00	9002080019300
0.0764		1.94	49.00	21.09	24.00	9002080019400
0.0768		1.95	49.00	21.08	24.00	9002080019500
0.0776		1.97	49.00	21.05	24.00	9002080019700
0.0780	5/64	1.98	49.00	21.03	24.00	9002080019800
0.0787		2.00	49.00	21.00	24.00	9002080020000
0.0803		2.04	49.00	20.94	24.00	9002080020400
0.0807		2.05	49.00	20.93	24.00	9002080020500
0.0811	#46	2.06	49.00	20.91	24.00	9002080020600
0.0819	#45	2.08	49.00	20.88	24.00	9002080020800
0.0827		2.10	49.00	20.85	24.00	9002080021000
0.0835		2.12	49.00	20.82	24.00	9002080021200
0.0846		2.15	53.00	23.78	27.00	9002080021500
0.0858	#44	2.18	53.00	23.73	27.00	9002080021800
0.0866		2.20	53.00	23.70	27.00	9002080022000
0.0886		2.25	53.00	23.63	27.00	9002080022500
0.0890	#43	2.26	53.00	23.61	27.00	9002080022600
0.0898		2.28	53.00	23.58	27.00	9002080022800
0.0906		2.30	53.00	23.55	27.00	9002080023000
0.0913		2.32	53.00	23.52	27.00	9002080023200
0.0925		2.35	53.00	23.48	27.00	9002080023500
0.0933	#42	2.37	57.00	26.45	30.00	9002080023700
0.0937	3/32	2.38	57.00	26.43	30.00	9002080023800
0.0945		2.40	57.00	26.40	30.00	9002080024000
0.0961	#41	2.44	57.00	26.34	30.00	9002080024400
0.0965		2.45	57.00	26.33	30.00	9002080024500
0.0980	#40	2.49	57.00	26.27	30.00	9002080024900
0.0984		2.50	57.00	26.25	30.00	9002080025000
0.0996	#39	2.53	57.00	26.21	30.00	9002080025300
0.1004		2.55	57.00	26.18	30.00	9002080025500
0.1016	#38	2.58	57.00	26.13	30.00	9002080025800
0.1024		2.60	57.00	26.10	30.00	9002080026000
0.1039	#37	2.64	57.00	26.04	30.00	9002080026400
0.1043		2.65	57.00	26.03	30.00	9002080026500
0.1063		2.70	61.00	28.95	33.00	9002080027000
0.1075		2.73	61.00	28.91	33.00	9002080027300
0.1083		2.75	61.00	28.88	33.00	9002080027500
0.1094	7/64	2.78	61.00	28.83	33.00	9002080027800

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1102		2.80	61.00	28.80	33.00	9002080028000
0.1110	#34	2.82	61.00	28.77	33.00	9002080028200
0.1122		2.85	61.00	28.73	33.00	9002080028500
0.1130	#33	2.87	61.00	28.70	33.00	9002080028700
0.1142		2.90	61.00	28.65	33.00	9002080029000
0.1161	#32	2.95	61.00	28.58	33.00	9002080029500
0.1169		2.97	61.00	28.55	33.00	9002080029700
0.1181		3.00	61.00	28.50	33.00	9002080030000
0.1201	#31	3.05	65.00	31.43	36.00	9002080030500
0.1209		3.07	65.00	31.40	36.00	9002080030700
0.1220		3.10	65.00	31.35	36.00	9002080031000
0.1240		3.15	65.00	31.28	36.00	9002080031500
0.1248	1/8	3.17	65.00	31.25	36.00	9002080031700
0.1260		3.20	65.00	31.20	36.00	9002080032000
0.1268		3.22	65.00	31.17	36.00	9002080032200
0.1280		3.25	65.00	31.13	36.00	9002080032500
0.1283	#30	3.26	65.00	31.11	36.00	9002080032600
0.1299		3.30	65.00	31.05	36.00	9002080033000
0.1319		3.35	65.00	30.98	36.00	9002080033500
0.1327		3.37	70.00	33.95	39.00	9002080033700
0.1339		3.40	70.00	33.90	39.00	9002080034000
0.1358	#29	3.45	70.00	33.83	39.00	9002080034500
0.1378		3.50	70.00	33.75	39.00	9002080035000
0.1398		3.55	70.00	33.68	39.00	9002080035500
0.1406	9/64 #28	3.57	70.00	33.65	39.00	9002080035700
0.1417		3.60	70.00	33.60	39.00	9002080036000
0.1437		3.65	70.00	33.53	39.00	9002080036500
0.1457		3.70	70.00	33.45	39.00	9002080037000
0.1476		3.75	70.00	33.38	39.00	9002080037500
0.1496	#25	3.80	75.00	37.30	43.00	9002080038000
0.1516		3.85	75.00	37.23	43.00	9002080038500
0.1535		3.90	75.00	37.15	43.00	9002080039000
0.1539	#23	3.91	75.00	37.14	43.00	9002080039100
0.1555		3.95	75.00	37.08	43.00	9002080039500
0.1563	5/32	3.97	75.00	37.05	43.00	9002080039700
0.1575		4.00	75.00	37.00	43.00	9002080040000
0.1594		4.05	75.00	36.93	43.00	9002080040500
0.1614		4.10	75.00	36.85	43.00	9002080041000
0.1626		4.13	75.00	36.81	43.00	9002080041300
0.1634		4.15	75.00	36.78	43.00	9002080041500
0.1654		4.20	75.00	36.70	43.00	9002080042000
0.1673		4.25	75.00	36.63	43.00	9002080042500
0.1693	#18	4.30	80.00	40.55	47.00	9002080043000
0.1713		4.35	80.00	40.48	47.00	9002080043500
0.1720	11/64	4.37	80.00	40.45	47.00	9002080043700
0.1728	#17	4.39	80.00	40.42	47.00	9002080043900
0.1732		4.40	80.00	40.40	47.00	9002080044000
0.1752		4.45	80.00	40.33	47.00	9002080044500
0.1772	#16	4.50	80.00	40.25	47.00	9002080045000
0.1791		4.55	80.00	40.18	47.00	9002080045500
0.1799	#15	4.57	80.00	40.15	47.00	9002080045700
0.1811		4.60	80.00	40.10	47.00	9002080046000
0.1831		4.65	80.00	40.03	47.00	9002080046500
0.1850	#13	4.70	80.00	39.95	47.00	9002080047000
0.1870		4.75	80.00	39.88	47.00	9002080047500
0.1874	3/16	4.76	86.00	44.86	52.00	9002080047600
0.1890	#12	4.80	86.00	44.80	52.00	9002080048000
0.1909	#11	4.85	86.00	44.73	52.00	9002080048500
0.1929		4.90	86.00	44.65	52.00	9002080049000
0.1937	#10	4.92	86.00	44.62	52.00	9002080049200
0.1949		4.95	86.00	44.58	52.00	9002080049500
0.1961	#9	4.98	86.00	44.53	52.00	9002080049800
0.1969		5.00	86.00	44.50	52.00	9002080050000
0.1992	#8	5.06	86.00	44.41	52.00	9002080050600

Jobber length drills

Series no. 208

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2008		5.10	86.00	44.35	52.00	9002080051000
0.2012	#7	5.11	86.00	44.34	52.00	9002080051100
0.2031	13/64	5.16	86.00	44.26	52.00	9002080051600
0.2039	#6	5.18	86.00	44.23	52.00	9002080051800
0.2047		5.20	86.00	44.20	52.00	9002080052000
0.2055	#5	5.22	86.00	44.17	52.00	9002080052200
0.2067		5.25	86.00	44.13	52.00	9002080052500
0.2087		5.30	86.00	44.05	52.00	9002080053000
0.2126		5.40	93.00	48.90	57.00	9002080054000
0.2165		5.50	93.00	48.75	57.00	9002080055000
0.2189	7/32	5.56	93.00	48.66	57.00	9002080055600
0.2205		5.60	93.00	48.60	57.00	9002080056000
0.2209	#2	5.61	93.00	48.59	57.00	9002080056100
0.2244		5.70	93.00	48.45	57.00	9002080057000
0.2264		5.75	93.00	48.38	57.00	9002080057500
0.2283		5.80	93.00	48.30	57.00	9002080058000
0.2303		5.85	93.00	48.23	57.00	9002080058500
0.2323		5.90	93.00	48.15	57.00	9002080059000
0.2339	A	5.94	93.00	48.09	57.00	9002080059400
0.2343	15/64	5.95	93.00	48.08	57.00	9002080059500
0.2362		6.00	93.00	48.00	57.00	9002080060000
0.2382		6.05	101.00	53.93	63.00	9002080060500
0.2402		6.10	101.00	53.85	63.00	9002080061000
0.2441		6.20	101.00	53.70	63.00	9002080062000
0.2461	D	6.25	101.00	53.63	63.00	9002080062500
0.2480		6.30	101.00	53.55	63.00	9002080063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9002080063500
0.2520		6.40	101.00	53.40	63.00	9002080064000
0.2559		6.50	101.00	53.25	63.00	9002080065000
0.2598		6.60	101.00	53.10	63.00	9002080066000
0.2638		6.70	101.00	52.95	63.00	9002080067000
0.2657	17/64 H	6.75	109.00	58.88	69.00	9002080067500
0.2677		6.80	109.00	58.80	69.00	9002080068000
0.2717	I	6.90	109.00	58.65	69.00	9002080069000
0.2756		7.00	109.00	58.50	69.00	9002080070000
0.2768	J	7.03	109.00	58.46	69.00	9002080070300
0.2795		7.10	109.00	58.35	69.00	9002080071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9002080071400
0.2835		7.20	109.00	58.20	69.00	9002080072000
0.2874		7.30	109.00	58.05	69.00	9002080073000
0.2913		7.40	109.00	57.90	69.00	9002080074000
0.2953		7.50	109.00	57.75	69.00	9002080075000
0.2969	19/64	7.54	117.00	63.69	75.00	9002080075400
0.2992		7.60	117.00	63.60	75.00	9002080076000
0.3031		7.70	117.00	63.45	75.00	9002080077000
0.3051		7.75	117.00	63.38	75.00	9002080077500
0.3071		7.80	117.00	63.30	75.00	9002080078000
0.3091		7.85	117.00	63.23	75.00	9002080078500
0.3110		7.90	117.00	63.15	75.00	9002080079000
0.3126	5/16	7.94	117.00	63.09	75.00	9002080079400
0.3150		8.00	117.00	63.00	75.00	9002080080000
0.3189		8.10	117.00	62.85	75.00	9002080081000
0.3228	P	8.20	117.00	62.70	75.00	9002080082000
0.3268		8.30	117.00	62.55	75.00	9002080083000
0.3280	21/64	8.33	117.00	62.51	75.00	9002080083300
0.3307		8.40	117.00	62.40	75.00	9002080084000
0.3319	Q	8.43	117.00	62.36	75.00	9002080084300
0.3346		8.50	117.00	62.25	75.00	9002080085000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3386		8.60	125.00	68.10	81.00	9002080086000
0.3425		8.70	125.00	67.95	81.00	9002080087000
0.3465		8.80	125.00	67.80	81.00	9002080088000
0.3504		8.90	125.00	67.65	81.00	9002080089000
0.3543		9.00	125.00	67.50	81.00	9002080090000
0.3583		9.10	125.00	67.35	81.00	9002080091000
0.3622		9.20	125.00	67.20	81.00	9002080092000
0.3661		9.30	125.00	67.05	81.00	9002080093000
0.3701		9.40	125.00	66.90	81.00	9002080094000
0.3740		9.50	125.00	66.75	81.00	9002080095000
0.3748	3/8	9.52	133.00	72.72	87.00	9002080095200
0.3780		9.60	133.00	72.60	87.00	9002080096000
0.3819		9.70	133.00	72.45	87.00	9002080097000
0.3839		9.75	133.00	72.38	87.00	9002080097500
0.3858	W	9.80	133.00	72.30	87.00	9002080098000
0.3898		9.90	133.00	72.15	87.00	9002080099000
0.3906	25/64	9.92	133.00	72.12	87.00	9002080099200
0.3937		10.00	133.00	72.00	87.00	9002080100000
0.3976		10.10	133.00	71.85	87.00	9002080101000
0.4016		10.20	133.00	71.70	87.00	9002080102000
0.4035		10.25	133.00	71.63	87.00	9002080102500
0.4055		10.30	133.00	71.55	87.00	9002080103000
0.4063	13/32	10.32	133.00	71.52	87.00	9002080103200
0.4094		10.40	133.00	71.40	87.00	9002080104000
0.4134		10.50	133.00	71.25	87.00	9002080105000
0.4173		10.60	133.00	71.10	87.00	9002080106000
0.4213		10.70	142.00	77.95	94.00	9002080107000
0.4220	27/64	10.72	142.00	77.92	94.00	9002080107200
0.4232		10.75	142.00	77.88	94.00	9002080107500
0.4331		11.00	142.00	77.50	94.00	9002080110000
0.4374	7/16	11.11	142.00	77.34	94.00	9002080111100
0.4409		11.20	142.00	77.20	94.00	9002080112000
0.4449		11.30	142.00	77.05	94.00	9002080113000
0.4528		11.50	142.00	76.75	94.00	9002080115000
0.4531	29/64	11.51	142.00	76.74	94.00	9002080115100
0.4646		11.80	142.00	76.30	94.00	9002080118000
0.4685		11.90	151.00	83.15	101.00	9002080119000
0.4689	15/32	11.91	151.00	83.14	101.00	9002080119100
0.4724		12.00	151.00	83.00	101.00	9002080120000
0.4764		12.10	151.00	82.85	101.00	9002080121000
0.4803		12.20	151.00	82.70	101.00	9002080122000
0.4823		12.25	151.00	82.63	101.00	9002080122500
0.4843	31/64	12.30	151.00	82.55	101.00	9002080123000
0.4882		12.40	151.00	82.40	101.00	9002080124000
0.4921		12.50	151.00	82.25	101.00	9002080125000
0.4961		12.60	151.00	82.10	101.00	9002080126000
0.5000	1/2	12.70	151.00	81.95	101.00	9002080127000
0.5118		13.00	151.00	81.50	101.00	9002080130000
0.5217		13.25	160.00	88.13	108.00	9002080132500
0.5276		13.40	160.00	87.90	108.00	9002080134000
0.5669		14.40	169.00	92.40	114.00	9002080144000
0.5787		14.70	169.00	91.95	114.00	9002080147000
0.5827		14.80	169.00	91.80	114.00	9002080148000
0.6004		15.25	178.00	97.13	120.00	9002080152500
0.6102		15.50	178.00	96.75	120.00	9002080155000
0.6248	5/8	15.87	178.00	96.20	120.00	9002080158700
0.6299		16.00	178.00	96.00	120.00	9002080160000

Jobber length drills

Series no. **651**

~5xD	DIN 338	N	118°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface: **S**

P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

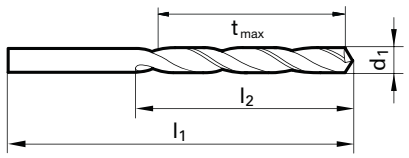
●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone

alloyed/unalloyed steel and cast steel • grey cast iron, malleable and spheroidal iron • sintered powder metal, German silver and graphite



$t_{max} = l_2\text{-}1.5 \times d_1$



Speeds and feeds information on pg. 515

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0079	#92	0.20	19.00	2.20	2.50	9006510002000
0.0098	#87	0.25	19.00	2.63	3.00	9006510002500
0.0110	#85	0.28	19.00	2.58	3.00	9006510002800
0.0118		0.30	19.00	2.55	3.00	9006510003000
0.0122	#83	0.31	19.00	3.54	4.00	9006510003100
0.0130	#81	0.33	19.00	3.51	4.00	9006510003300
0.0134	#80	0.34	19.00	3.49	4.00	9006510003400
0.0142		0.36	19.00	3.46	4.00	9006510003600
0.0146	#79	0.37	19.00	3.45	4.00	9006510003700
0.0150		0.38	19.00	3.43	4.00	9006510003800
0.0154		0.39	20.00	4.42	5.00	9006510003900
0.0157	1/64	0.40	20.00	4.40	5.00	9006510004000
0.0161	#78	0.41	20.00	4.39	5.00	9006510004100
0.0165		0.42	20.00	4.37	5.00	9006510004200
0.0169		0.43	20.00	4.36	5.00	9006510004300
0.0173		0.44	20.00	4.34	5.00	9006510004400
0.0177		0.45	20.00	4.33	5.00	9006510004500
0.0181	#77	0.46	20.00	4.31	5.00	9006510004600
0.0185		0.47	20.00	4.30	5.00	9006510004700
0.0189		0.48	20.00	4.28	5.00	9006510004800
0.0193		0.49	22.00	5.27	6.00	9006510004900
0.0197		0.50	22.00	5.25	6.00	9006510005000
0.0201	#76	0.51	22.00	5.24	6.00	9006510005100
0.0205		0.52	22.00	5.22	6.00	9006510005200
0.0209	#75	0.53	22.00	5.21	6.00	9006510005300
0.0213		0.54	24.00	6.19	7.00	9006510005400
0.0217		0.55	24.00	6.18	7.00	9006510005500
0.0224	#74	0.57	24.00	6.15	7.00	9006510005700
0.0228		0.58	24.00	6.13	7.00	9006510005800
0.0232		0.59	24.00	6.12	7.00	9006510005900
0.0236		0.60	24.00	6.10	7.00	9006510006000
0.0240	#73	0.61	26.00	7.09	8.00	9006510006100
0.0248		0.63	26.00	7.06	8.00	9006510006300
0.0252	#72	0.64	26.00	7.04	8.00	9006510006400
0.0256		0.65	26.00	7.03	8.00	9006510006500
0.0260	#71	0.66	26.00	7.01	8.00	9006510006600
0.0268		0.68	28.00	7.98	9.00	9006510006800
0.0272		0.69	28.00	7.97	9.00	9006510006900
0.0276		0.70	28.00	7.95	9.00	9006510007000
0.0280	#70	0.71	28.00	7.94	9.00	9006510007100
0.0283		0.72	28.00	7.92	9.00	9006510007200
0.0291	#69	0.74	28.00	7.89	9.00	9006510007400

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0295		0.75	28.00	7.88	9.00	9006510007500
0.0303		0.77	30.00	8.85	10.00	9006510007700
0.0307		0.78	30.00	8.83	10.00	9006510007800
0.0311	1/32	0.79	30.00	8.82	10.00	9006510007900
0.0315		0.80	30.00	8.80	10.00	9006510008000
0.0319	#67	0.81	30.00	8.79	10.00	9006510008100
0.0323		0.82	30.00	8.77	10.00	9006510008200
0.0327		0.83	30.00	8.76	10.00	9006510008300
0.0331	#66	0.84	30.00	8.74	10.00	9006510008400
0.0335		0.85	30.00	8.73	10.00	9006510008500
0.0339		0.86	32.00	9.71	11.00	9006510008600
0.0346		0.88	32.00	9.68	11.00	9006510008800
0.0350	#65	0.89	32.00	9.67	11.00	9006510008900
0.0354		0.90	32.00	9.65	11.00	9006510009000
0.0358	#64	0.91	32.00	9.64	11.00	9006510009100
0.0362		0.92	32.00	9.62	11.00	9006510009200
0.0366		0.93	32.00	9.61	11.00	9006510009300
0.0370	#63	0.94	32.00	9.59	11.00	9006510009400
0.0374		0.95	32.00	9.58	11.00	9006510009500
0.0378		0.96	34.00	10.56	12.00	9006510009600
0.0382	#62	0.97	34.00	10.55	12.00	9006510009700
0.0386		0.98	34.00	10.53	12.00	9006510009800
0.0390	#61	0.99	34.00	10.52	12.00	9006510009900
0.0394		1.00	34.00	10.50	12.00	9006510010000
0.0402	#60	1.02	34.00	10.47	12.00	9006510010200
0.0406		1.03	34.00	10.46	12.00	9006510010300
0.0409	#59	1.04	34.00	10.44	12.00	9006510010400
0.0413		1.05	34.00	10.43	12.00	9006510010500
0.0421	#58	1.07	36.00	12.40	14.00	9006510010700
0.0425		1.08	36.00	12.38	14.00	9006510010800
0.0429	#57	1.09	36.00	12.37	14.00	9006510010900
0.0433		1.10	36.00	12.35	14.00	9006510011000
0.0437		1.11	36.00	12.34	14.00	9006510011100
0.0441		1.12	36.00	12.32	14.00	9006510011200
0.0445		1.13	36.00	12.31	14.00	9006510011300
0.0449		1.14	36.00	12.29	14.00	9006510011400
0.0453		1.15	36.00	12.28	14.00	9006510011500
0.0457		1.16	36.00	12.26	14.00	9006510011600
0.0461		1.17	36.00	12.25	14.00	9006510011700
0.0465	#56	1.18	36.00	12.23	14.00	9006510011800
0.0469	3/64	1.19	38.00	14.22	16.00	9006510011900
0.0472		1.20	38.00	14.20	16.00	9006510012000

Jobber length drills

Series no. **651**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0476		1.21	38.00	14.19	16.00	9006510012100
0.0480		1.22	38.00	14.17	16.00	9006510012200
0.0488		1.24	38.00	14.14	16.00	9006510012400
0.0492		1.25	38.00	14.13	16.00	9006510012500
0.0496		1.26	38.00	14.11	16.00	9006510012600
0.0500		1.27	38.00	14.10	16.00	9006510012700
0.0504		1.28	38.00	14.08	16.00	9006510012800
0.0512		1.30	38.00	14.05	16.00	9006510013000
0.0516		1.31	38.00	14.04	16.00	9006510013100
0.0520	#55	1.32	38.00	14.02	16.00	9006510013200
0.0528		1.34	40.00	15.99	18.00	9006510013400
0.0531		1.35	40.00	15.98	18.00	9006510013500
0.0551	#54	1.40	40.00	15.90	18.00	9006510014000
0.0559		1.42	40.00	15.87	18.00	9006510014200
0.0563		1.43	40.00	15.86	18.00	9006510014300
0.0571		1.45	40.00	15.83	18.00	9006510014500
0.0575		1.46	40.00	15.81	18.00	9006510014600
0.0579		1.47	40.00	15.80	18.00	9006510014700
0.0583		1.48	40.00	15.78	18.00	9006510014800
0.0591		1.50	40.00	15.75	18.00	9006510015000
0.0594	#53	1.51	43.00	17.74	20.00	9006510015100
0.0598		1.52	43.00	17.72	20.00	9006510015200
0.0602		1.53	43.00	17.71	20.00	9006510015300
0.0606		1.54	43.00	17.69	20.00	9006510015400
0.0610		1.55	43.00	17.68	20.00	9006510015500
0.0618		1.57	43.00	17.65	20.00	9006510015700
0.0626	1/16	1.59	43.00	17.62	20.00	9006510015900
0.0630		1.60	43.00	17.60	20.00	9006510016000
0.0634	#52	1.61	43.00	17.59	20.00	9006510016100
0.0638		1.62	43.00	17.57	20.00	9006510016200
0.0646		1.64	43.00	17.54	20.00	9006510016400
0.0650		1.65	43.00	17.53	20.00	9006510016500
0.0661		1.68	43.00	17.48	20.00	9006510016800
0.0669	#51	1.70	43.00	17.45	20.00	9006510017000
0.0673		1.71	46.00	19.44	22.00	9006510017100
0.0681		1.73	46.00	19.41	22.00	9006510017300
0.0689		1.75	46.00	19.38	22.00	9006510017500
0.0697		1.77	46.00	19.35	22.00	9006510017700
0.0701	#50	1.78	46.00	19.33	22.00	9006510017800
0.0709		1.80	46.00	19.30	22.00	9006510018000
0.0717		1.82	46.00	19.27	22.00	9006510018200
0.0720		1.83	46.00	19.26	22.00	9006510018300
0.0724		1.84	46.00	19.24	22.00	9006510018400
0.0728	#49	1.85	46.00	19.23	22.00	9006510018500
0.0736		1.87	46.00	19.20	22.00	9006510018700
0.0748		1.90	46.00	19.15	22.00	9006510019000
0.0760	#48	1.93	49.00	21.11	24.00	9006510019300
0.0768		1.95	49.00	21.08	24.00	9006510019500
0.0772		1.96	49.00	21.06	24.00	9006510019600
0.0776		1.97	49.00	21.05	24.00	9006510019700
0.0780	5/64	1.98	49.00	21.03	24.00	9006510019800
0.0783	#47	1.99	49.00	21.02	24.00	9006510019900
0.0787		2.00	49.00	21.00	24.00	9006510020000
0.0795		2.02	49.00	20.97	24.00	9006510020200
0.0799		2.03	49.00	20.96	24.00	9006510020300
0.0807		2.05	49.00	20.93	24.00	9006510020500
0.0811	#46	2.06	49.00	20.91	24.00	9006510020600
0.0819	#45	2.08	49.00	20.88	24.00	9006510020800
0.0827		2.10	49.00	20.85	24.00	9006510021000
0.0846		2.15	53.00	23.78	27.00	9006510021500
0.0858	#44	2.18	53.00	23.73	27.00	9006510021800
0.0866		2.20	53.00	23.70	27.00	9006510022000
0.0886		2.25	53.00	23.63	27.00	9006510022500
0.0890	#43	2.26	53.00	23.61	27.00	9006510022600
0.0906		2.30	53.00	23.55	27.00	9006510023000
0.0925		2.35	53.00	23.48	27.00	9006510023500
0.0933	#42	2.37	57.00	26.45	30.00	9006510023700
0.0937	3/32	2.38	57.00	26.43	30.00	9006510023800
0.0945		2.40	57.00	26.40	30.00	9006510024000
0.0961	#41	2.44	57.00	26.34	30.00	9006510024400
0.0965		2.45	57.00	26.33	30.00	9006510024500
0.0980	#40	2.49	57.00	26.27	30.00	9006510024900
0.0984		2.50	57.00	26.25	30.00	9006510025000
0.0996	#39	2.53	57.00	26.21	30.00	9006510025300
0.1004		2.55	57.00	26.18	30.00	9006510025500
0.1016	#38	2.58	57.00	26.13	30.00	9006510025800
0.1024		2.60	57.00	26.10	30.00	9006510026000
0.1039	#37	2.64	57.00	26.04	30.00	9006510026400
0.1043		2.65	57.00	26.03	30.00	9006510026500
0.1063		2.70	61.00	28.95	33.00	9006510027000
0.1067	#36	2.71	61.00	28.94	33.00	9006510027100
0.1083		2.75	61.00	28.88	33.00	9006510027500
0.1094	7/64	2.78	61.00	28.83	33.00	9006510027800
0.1098	#35	2.79	61.00	28.82	33.00	9006510027900
0.1102		2.80	61.00	28.80	33.00	9006510028000
0.1110	#34	2.82	61.00	28.77	33.00	9006510028200
0.1122		2.85	61.00	28.73	33.00	9006510028500
0.1130	#33	2.87	61.00	28.70	33.00	9006510028700
0.1142		2.90	61.00	28.65	33.00	9006510029000
0.1161	#32	2.95	61.00	28.58	33.00	9006510029500
0.1181		3.00	61.00	28.50	33.00	9006510030000
0.1201	#31	3.05	65.00	31.43	36.00	9006510030500
0.1220		3.10	65.00	31.35	36.00	9006510031000
0.1240		3.15	65.00	31.28	36.00	9006510031500
0.1248	1/8	3.17	65.00	31.25	36.00	9006510031700
0.1260		3.20	65.00	31.20	36.00	9006510032000
0.1280		3.25	65.00	31.13	36.00	9006510032500
0.1283	#30	3.26	65.00	31.11	36.00	9006510032600
0.1299		3.30	65.00	31.05	36.00	9006510033000
0.1319		3.35	65.00	30.98	36.00	9006510033500
0.1339		3.40	70.00	33.90	39.00	9006510034000
0.1358	#29	3.45	70.00	33.83	39.00	9006510034500
0.1378		3.50	70.00	33.75	39.00	9006510035000
0.1398		3.55	70.00	33.68	39.00	9006510035500
0.1406	9/64 #28	3.57	70.00	33.65	39.00	9006510035700
0.1417		3.60	70.00	33.60	39.00	9006510036000
0.1437		3.65	70.00	33.53	39.00	9006510036500
0.1441	#27	3.66	70.00	33.51	39.00	9006510036600
0.1457		3.70	70.00	33.45	39.00	9006510037000
0.1469	#26	3.73	70.00	33.41	39.00	9006510037300
0.1476		3.75	70.00	33.38	39.00	9006510037500
0.1496	#25	3.80	75.00	37.30	43.00	9006510038000
0.1516		3.85	75.00	37.23	43.00	9006510038500
0.1520	#24	3.86	75.00	37.21	43.00	9006510038600
0.1535		3.90	75.00	37.15	43.00	9006510039000
0.1539	#23	3.91	75.00	37.14	43.00	9006510039100
0.1555		3.95	75.00	37.08	43.00	9006510039500
0.1563	5/32	3.97	75.00	37.05	43.00	9006510039700
0.1571	#22	3.99	75.00	37.02	43.00	9006510039900
0.1575		4.00	75.00	37.00	43.00	9006510040000
0.1591	#21	4.04	75.00	36.94	43.00	9006510040400
0.1594		4.05	75.00	36.93	43.00	9006510040500
0.1610	#20	4.09	75.00	36.87	43.00	9006510040900
0.1614		4.10	75.00	36.85	43.00	9006510041000
0.1634		4.15	75.00	36.78	43.00	9006510041500
0.1654		4.20	75.00	36.70	43.00	9006510042000
0.1661	#19	4.22	75.00	36.67	43.00	9006510042200
0.1673		4.25	75.00	36.63	43.00	9006510042500
0.1693	#18	4.30	80.00	40.55	47.00	9006510043000
0.1713		4.35	80.00	40.48	47.00	9006510043500
0.1720	11/64	4.37	80.00	40.45	47.00	9006510043700
0.1728	#17	4.39	80.00	40.42	47.00	9006510043900

Jobber length drills

Series no. **651**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1732		4.40	80.00	40.40	47.00	9006510044000
0.1752		4.45	80.00	40.33	47.00	9006510044500
0.1772	#16	4.50	80.00	40.25	47.00	9006510045000
0.1799	#15	4.57	80.00	40.15	47.00	9006510045700
0.1811		4.60	80.00	40.10	47.00	9006510046000
0.1819	#14	4.62	80.00	40.07	47.00	9006510046200
0.1831		4.65	80.00	40.03	47.00	9006510046500
0.1850	#13	4.70	80.00	39.95	47.00	9006510047000
0.1870		4.75	80.00	39.88	47.00	9006510047500
0.1874	3/16	4.76	86.00	44.86	52.00	9006510047600
0.1890	#12	4.80	86.00	44.80	52.00	9006510048000
0.1909	#11	4.85	86.00	44.73	52.00	9006510048500
0.1929		4.90	86.00	44.65	52.00	9006510049000
0.1937	#10	4.92	86.00	44.62	52.00	9006510049200
0.1949		4.95	86.00	44.58	52.00	9006510049500
0.1961	#9	4.98	86.00	44.53	52.00	9006510049800
0.1969		5.00	86.00	44.50	52.00	9006510050000
0.1988		5.05	86.00	44.43	52.00	9006510050500
0.1992	#8	5.06	86.00	44.41	52.00	9006510050600
0.2008		5.10	86.00	44.35	52.00	9006510051000
0.2012	#7	5.11	86.00	44.34	52.00	9006510051100
0.2031	13/64	5.16	86.00	44.26	52.00	9006510051600
0.2039	#6	5.18	86.00	44.23	52.00	9006510051800
0.2047		5.20	86.00	44.20	52.00	9006510052000
0.2055	#5	5.22	86.00	44.17	52.00	9006510052200
0.2067		5.25	86.00	44.13	52.00	9006510052500
0.2087		5.30	86.00	44.05	52.00	9006510053000
0.2091	#4	5.31	93.00	49.04	57.00	9006510053100
0.2126		5.40	93.00	48.90	57.00	9006510054000
0.2130	#3	5.41	93.00	48.89	57.00	9006510054100
0.2146		5.45	93.00	48.83	57.00	9006510054500
0.2165		5.50	93.00	48.75	57.00	9006510055000
0.2189	7/32	5.56	93.00	48.66	57.00	9006510055600
0.2205		5.60	93.00	48.60	57.00	9006510056000
0.2209	#2	5.61	93.00	48.59	57.00	9006510056100
0.2224		5.65	93.00	48.53	57.00	9006510056500
0.2244		5.70	93.00	48.45	57.00	9006510057000
0.2264		5.75	93.00	48.38	57.00	9006510057500
0.2280	#1	5.79	93.00	48.32	57.00	9006510057900
0.2283		5.80	93.00	48.30	57.00	9006510058000
0.2323		5.90	93.00	48.15	57.00	9006510059000
0.2339	A	5.94	93.00	48.09	57.00	9006510059400
0.2343	15/64	5.95	93.00	48.08	57.00	9006510059500
0.2362		6.00	93.00	48.00	57.00	9006510060000
0.2378	B	6.04	101.00	53.94	63.00	9006510060400
0.2382		6.05	101.00	53.93	63.00	9006510060500
0.2402		6.10	101.00	53.85	63.00	9006510061000
0.2421	C	6.15	101.00	53.78	63.00	9006510061500
0.2441		6.20	101.00	53.70	63.00	9006510062000
0.2461	D	6.25	101.00	53.63	63.00	9006510062500
0.2480		6.30	101.00	53.55	63.00	9006510063000
0.2500	1/4	E	6.35	101.00	53.48	63.00	9006510063500
0.2520		6.40	101.00	53.40	63.00	9006510064000
0.2559		6.50	101.00	53.25	63.00	9006510065000
0.2571	F	6.53	101.00	53.21	63.00	9006510065300
0.2598		6.60	101.00	53.10	63.00	9006510066000
0.2610	G	6.63	101.00	53.06	63.00	9006510066300
0.2638		6.70	101.00	52.95	63.00	9006510067000
0.2657	17/64	H	6.75	109.00	58.88	69.00	9006510067500
0.2677		6.80	109.00	58.80	69.00	9006510068000
0.2697		6.85	109.00	58.73	69.00	9006510068500
0.2717	I	6.90	109.00	58.65	69.00	9006510069000
0.2756		7.00	109.00	58.50	69.00	9006510070000
0.2768	J	7.03	109.00	58.46	69.00	9006510070300
0.2795		7.10	109.00	58.35	69.00	9006510071000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2811	9/32	K	7.14	109.00	58.29	69.00	9006510071400
0.2835		7.20	109.00	58.20	69.00	9006510072000
0.2854		7.25	109.00	58.13	69.00	9006510072500
0.2874		7.30	109.00	58.05	69.00	9006510073000
0.2902	L	7.37	109.00	57.95	69.00	9006510073700
0.2913		7.40	109.00	57.90	69.00	9006510074000
0.2933		7.45	109.00	57.83	69.00	9006510074500
0.2949	M	7.49	109.00	57.77	69.00	9006510074900
0.2953		7.50	109.00	57.75	69.00	9006510075000
0.2969	19/64	7.54	117.00	63.69	75.00	9006510075400
0.2992		7.60	117.00	63.60	75.00	9006510076000
0.3020	N	7.67	117.00	63.50	75.00	9006510076700
0.3031		7.70	117.00	63.45	75.00	9006510077000
0.3051		7.75	117.00	63.38	75.00	9006510077500
0.3071		7.80	117.00	63.30	75.00	9006510078000
0.3110		7.90	117.00	63.15	75.00	9006510079000
0.3126	5/16	7.94	117.00	63.09	75.00	9006510079400
0.3150		8.00	117.00	63.00	75.00	9006510080000
0.3161	O	8.03	117.00	62.96	75.00	9006510080300
0.3189		8.10	117.00	62.85	75.00	9006510081000
0.3228	P	8.20	117.00	62.70	75.00	9006510082000
0.3248		8.25	117.00	62.63	75.00	9006510082500
0.3268		8.30	117.00	62.55	75.00	9006510083000
0.3280	21/64	8.33	117.00	62.51	75.00	9006510083300
0.3307		8.40	117.00	62.40	75.00	9006510084000
0.3319	Q	8.43	117.00	62.36	75.00	9006510084300
0.3346		8.50	117.00	62.25	75.00	9006510085000
0.3386		8.60	125.00	68.10	81.00	9006510086000
0.3390	R	8.61	125.00	68.09	81.00	9006510086100
0.3425		8.70	125.00	67.95	81.00	9006510087000
0.3437	11/32	8.73	125.00	67.91	81.00	9006510087300
0.3445		8.75	125.00	67.88	81.00	9006510087500
0.3465		8.80	125.00	67.80	81.00	9006510088000
0.3480	S	8.84	125.00	67.74	81.00	9006510088400
0.3484		8.85	125.00	67.73	81.00	9006510088500
0.3504		8.90	125.00	67.65	81.00	9006510089000
0.3543		9.00	125.00	67.50	81.00	9006510090000
0.3579	T	9.09	125.00	67.37	81.00	9006510090900
0.3583		9.10	125.00	67.35	81.00	9006510091000
0.3594	23/64	9.13	125.00	67.31	81.00	9006510091300
0.3622		9.20	125.00	67.20	81.00	9006510092000
0.3642		9.25	125.00	67.13	81.00	9006510092500
0.3661		9.30	125.00	67.05	81.00	9006510093000
0.3677	U	9.34	125.00	66.99	81.00	9006510093400
0.3701		9.40	125.00	66.90	81.00	9006510094000
0.3740		9.50	125.00	66.75	81.00	9006510095000
0.3748	3/8	9.52	133.00	72.72	87.00	9006510095200
0.3760		9.55	133.00	72.68	87.00	9006510095500
0.3772	V	9.58	133.00	72.63	87.00	9006510095800
0.3780		9.60	133.00	72.60	87.00	9006510096000
0.3819		9.70	133.00	72.45	87.00	9006510097000
0.3839		9.75	133.00	72.38	87.00	9006510097500
0.3858	W	9.80	133.00	72.30	87.00	9006510098000
0.3898		9.90	133.00	72.15	87.00	9006510099000
0.3906	25/64	9.92	133.00	72.12	87.00	9006510099200
0.3937		10.00	133.00	72.00	87.00	9006510100000
0.3961		10.06	133.00	71.91	87.00	9006510100600
0.3969	X	10.08	133.00	71.88	87.00	9006510100800
0.3976		10.10	133.00	71.85	87.00	9006510101000
0.4016		10.20	133.00	71.70	87.00	9006510102000
0.4035		10.25	133.00	71.63	87.00	9006510102500
0.4039	Y	10.26	133.00	71.61	87.00	9006510102600
0.4055		10.30	133.00	71.55	87.00	9006510103000
0.4063	13/32	10.32	133.00	71.52	87.00	9006510103200
0.4094		10.40	133.00	71.40	87.00	9006510104000

Jobber length drills

Series no. **651**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4130	Z	10.49	133.00	71.27	87.00	9006510104900
0.4134		10.50	133.00	71.25	87.00	9006510105000
0.4154		10.55	133.00	71.18	87.00	9006510105500
0.4173		10.60	133.00	71.10	87.00	9006510106000
0.4213		10.70	142.00	77.95	94.00	9006510107000
0.4220	27/64	10.72	142.00	77.92	94.00	9006510107200
0.4232		10.75	142.00	77.88	94.00	9006510107500
0.4252		10.80	142.00	77.80	94.00	9006510108000
0.4291		10.90	142.00	77.65	94.00	9006510109000
0.4331		11.00	142.00	77.50	94.00	9006510110000
0.4370		11.10	142.00	77.35	94.00	9006510111000
0.4374	7/16	11.11	142.00	77.34	94.00	9006510111100
0.4409		11.20	142.00	77.20	94.00	9006510112000
0.4429		11.25	142.00	77.13	94.00	9006510112500
0.4449		11.30	142.00	77.05	94.00	9006510113000
0.4488		11.40	142.00	76.90	94.00	9006510114000
0.4528		11.50	142.00	76.75	94.00	9006510115000
0.4531	29/64	11.51	142.00	76.74	94.00	9006510115100
0.4587		11.65	142.00	76.53	94.00	9006510116500
0.4606		11.70	142.00	76.45	94.00	9006510117000
0.4646		11.80	142.00	76.30	94.00	9006510118000
0.4689	15/32	11.91	151.00	83.14	101.00	9006510119100
0.4724		12.00	151.00	83.00	101.00	9006510120000
0.4764		12.10	151.00	82.85	101.00	9006510121000
0.4803		12.20	151.00	82.70	101.00	9006510122000
0.4843	31/64	12.30	151.00	82.55	101.00	9006510123000
0.4882		12.40	151.00	82.40	101.00	9006510124000
0.4921		12.50	151.00	82.25	101.00	9006510125000
0.4961		12.60	151.00	82.10	101.00	9006510126000
0.5000	1/2	12.70	151.00	81.95	101.00	9006510127000
0.5039		12.80	151.00	81.80	101.00	9006510128000
0.5079		12.90	151.00	81.65	101.00	9006510129000
0.5118		13.00	151.00	81.50	101.00	9006510130000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.5157	33/64	13.10	151.00	81.35	101.00	9006510131000
0.5197		13.20	151.00	81.20	101.00	9006510132000
0.5217		13.25	160.00	88.13	108.00	9006510132500
0.5311	17/32	13.49	160.00	87.77	108.00	9006510134900
0.5315		13.50	160.00	87.75	108.00	9006510135000
0.5394		13.70	160.00	87.45	108.00	9006510137000
0.5433		13.80	160.00	87.30	108.00	9006510138000
0.5469	35/64	13.89	160.00	87.17	108.00	9006510138900
0.5472		13.90	160.00	87.15	108.00	9006510139000
0.5512		14.00	160.00	87.00	108.00	9006510140000
0.5591		14.20	169.00	92.70	114.00	9006510142000
0.5610		14.25	169.00	92.63	114.00	9006510142500
0.5626	9/16	14.29	169.00	92.57	114.00	9006510142900
0.5709		14.50	169.00	92.25	114.00	9006510145000
0.5748		14.60	169.00	92.10	114.00	9006510146000
0.5780	37/64	14.68	169.00	91.98	114.00	9006510146800
0.5807		14.75	169.00	91.88	114.00	9006510147500
0.5827		14.80	169.00	91.80	114.00	9006510148000
0.5906		15.00	169.00	91.50	114.00	9006510150000
0.5937	19/32	15.08	178.00	97.38	120.00	9006510150800
0.6004		15.25	178.00	97.13	120.00	9006510152500
0.6094	39/64	15.48	178.00	96.78	120.00	9006510154800
0.6102		15.50	178.00	96.75	120.00	9006510155000
0.6201		15.75	178.00	96.38	120.00	9006510157500
0.6220		15.80	178.00	96.30	120.00	9006510158000
0.6248	5/8	15.87	178.00	96.20	120.00	9006510158700
0.6299		16.00	178.00	96.00	120.00	9006510160000
0.6594		16.75	184.00	99.88	125.00	9006510167500
0.6693		17.00	184.00	99.50	125.00	9006510170000
0.6890		17.50	191.00	103.75	130.00	9006510175000
0.7087		18.00	191.00	103.00	130.00	9006510180000
0.7283		18.50	198.00	107.25	135.00	9006510185000
0.7480		19.00	198.00	106.50	135.00	9006510190000

Jobber length drills

Series no. **664**

~5xD	DIN 338	N	118°	h8		Cyl	L
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

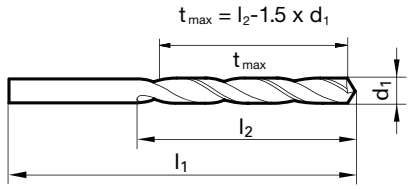
Surface: **S**

P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.380 • relieved cone

alloyed/unalloyed steel and cast steel • grey cast iron, malleable and spheroidal iron • sintered powder metal, German silver and graphite





Speeds and feeds information on pg. 519

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0157	1/64	0.40	20.00	4.40	5.00	9006640004000
0.0165		0.42	20.00	4.37	5.00	9006640004200
0.0169		0.43	20.00	4.36	5.00	9006640004300
0.0177		0.45	20.00	4.33	5.00	9006640004500
0.0236		0.60	24.00	6.10	7.00	9006640006000
0.0264		0.67	26.00	7.00	8.00	9006640006700
0.0295		0.75	28.00	7.88	9.00	9006640007500
0.0303		0.77	30.00	8.85	10.00	9006640007700
0.0315		0.80	30.00	8.80	10.00	9006640008000
0.0354		0.90	32.00	9.65	11.00	9006640009000
0.0366		0.93	32.00	9.61	11.00	9006640009300
0.0374		0.95	32.00	9.58	11.00	9006640009500
0.0382	#62	0.97	34.00	10.55	12.00	9006640009700
0.0394		1.00	34.00	10.50	12.00	9006640010000
0.0413		1.05	34.00	10.43	12.00	9006640010500
0.0421	#58	1.07	36.00	12.40	14.00	9006640010700
0.0429	#57	1.09	36.00	12.37	14.00	9006640010900
0.0433		1.10	36.00	12.35	14.00	9006640011000
0.0453		1.15	36.00	12.28	14.00	9006640011500
0.0465	#56	1.18	36.00	12.23	14.00	9006640011800
0.0469	3/64	1.19	38.00	14.22	16.00	9006640011900
0.0472		1.20	38.00	14.20	16.00	9006640012000
0.0492		1.25	38.00	14.13	16.00	9006640012500
0.0512		1.30	38.00	14.05	16.00	9006640013000
0.0520	#55	1.32	38.00	14.02	16.00	9006640013200
0.0531		1.35	40.00	15.98	18.00	9006640013500
0.0551	#54	1.40	40.00	15.90	18.00	9006640014000
0.0559		1.42	40.00	15.87	18.00	9006640014200
0.0571		1.45	40.00	15.83	18.00	9006640014500
0.0591		1.50	40.00	15.75	18.00	9006640015000
0.0610		1.55	43.00	17.68	20.00	9006640015500
0.0626	1/16	1.59	43.00	17.62	20.00	9006640015900
0.0630		1.60	43.00	17.60	20.00	9006640016000
0.0650		1.65	43.00	17.53	20.00	9006640016500
0.0669	#51	1.70	43.00	17.45	20.00	9006640017000
0.0689		1.75	46.00	19.38	22.00	9006640017500
0.0709		1.80	46.00	19.30	22.00	9006640018000
0.0717		1.82	46.00	19.27	22.00	9006640018200
0.0728	#49	1.85	46.00	19.23	22.00	9006640018500
0.0748		1.90	46.00	19.15	22.00	9006640019000
0.0787		2.00	49.00	21.00	24.00	9006640020000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0807		2.05	49.00	20.93	24.00	9006640020500
0.0827		2.10	49.00	20.85	24.00	9006640021000
0.0846		2.15	53.00	23.78	27.00	9006640021500
0.0866		2.20	53.00	23.70	27.00	9006640022000
0.0906		2.30	53.00	23.55	27.00	9006640023000
0.0937	3/32	2.38	57.00	26.43	30.00	9006640023800
0.0945		2.40	57.00	26.40	30.00	9006640024000
0.0965		2.45	57.00	26.33	30.00	9006640024500
0.0984		2.50	57.00	26.25	30.00	9006640025000
0.0996	#39	2.53	57.00	26.21	30.00	9006640025300
0.1016	#38	2.58	57.00	26.13	30.00	9006640025800
0.1024		2.60	57.00	26.10	30.00	9006640026000
0.1063		2.70	61.00	28.95	33.00	9006640027000
0.1067	#36	2.71	61.00	28.94	33.00	9006640027100
0.1083		2.75	61.00	28.88	33.00	9006640027500
0.1094	7/64	2.78	61.00	28.83	33.00	9006640027800
0.1102		2.80	61.00	28.80	33.00	9006640028000
0.1142		2.90	61.00	28.65	33.00	9006640029000
0.1161	#32	2.95	61.00	28.58	33.00	9006640029500
0.1181		3.00	61.00	28.50	33.00	9006640030000
0.1201	#31	3.05	65.00	31.43	36.00	9006640030500
0.1220		3.10	65.00	31.35	36.00	9006640031000
0.1248	1/8	3.17	65.00	31.25	36.00	9006640031700
0.1260		3.20	65.00	31.20	36.00	9006640032000
0.1299		3.30	65.00	31.05	36.00	9006640033000
0.1339		3.40	70.00	33.90	39.00	9006640034000
0.1358	#29	3.45	70.00	33.83	39.00	9006640034500
0.1378		3.50	70.00	33.75	39.00	9006640035000
0.1406	9/64 #28	3.57	70.00	33.65	39.00	9006640035700
0.1417		3.60	70.00	33.60	39.00	9006640036000
0.1457		3.70	70.00	33.45	39.00	9006640037000
0.1496	#25	3.80	75.00	37.30	43.00	9006640038000
0.1535		3.90	75.00	37.15	43.00	9006640039000
0.1563	5/32	3.97	75.00	37.05	43.00	9006640039700
0.1575		4.00	75.00	37.00	43.00	9006640040000
0.1614		4.10	75.00	36.85	43.00	9006640041000
0.1654		4.20	75.00	36.70	43.00	9006640042000
0.1693	#18	4.30	80.00	40.55	47.00	9006640043000
0.1720	11/64	4.37	80.00	40.45	47.00	9006640043700
0.1732		4.40	80.00	40.40	47.00	9006640044000

Jobber length drills

Series no. **664**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1772	#16	4.50	80.00	40.25	47.00	9006640045000
0.1811		4.60	80.00	40.10	47.00	9006640046000
0.1850	#13	4.70	80.00	39.95	47.00	9006640047000
0.1874	3/16	4.76	86.00	44.86	52.00	9006640047600
0.1890	#12	4.80	86.00	44.80	52.00	9006640048000
0.1929		4.90	86.00	44.65	52.00	9006640049000
0.1969		5.00	86.00	44.50	52.00	9006640050000
0.1992	#8	5.06	86.00	44.41	52.00	9006640050600
0.2008		5.10	86.00	44.35	52.00	9006640051000
0.2031	13/64	5.16	86.00	44.26	52.00	9006640051600
0.2047		5.20	86.00	44.20	52.00	9006640052000
0.2087		5.30	86.00	44.05	52.00	9006640053000
0.2126		5.40	93.00	48.90	57.00	9006640054000
0.2165		5.50	93.00	48.75	57.00	9006640055000
0.2189	7/32	5.56	93.00	48.66	57.00	9006640055600

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2205		5.60	93.00	48.60	57.00	9006640056000
0.2244		5.70	93.00	48.45	57.00	9006640057000
0.2283		5.80	93.00	48.30	57.00	9006640058000
0.2323		5.90	93.00	48.15	57.00	9006640059000
0.2362		6.00	93.00	48.00	57.00	9006640060000
0.2402		6.10	101.00	53.85	63.00	9006640061000
0.2441		6.20	101.00	53.70	63.00	9006640062000
0.2480		6.30	101.00	53.55	63.00	9006640063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9006640063500
0.2559		6.50	101.00	53.25	63.00	9006640065000
0.2969	19/64	7.54	117.00	63.69	75.00	9006640075400
0.3071		7.80	117.00	63.30	75.00	9006640078000
0.3437	11/32	8.73	125.00	67.91	81.00	9006640087300
0.3594	23/64	9.13	125.00	67.31	81.00	9006640091300
0.4016		10.20	133.00	71.70	87.00	9006640102000

Jobber length drills

Series no. **206**

~5xD	DIN 338	H	118°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface: ◯

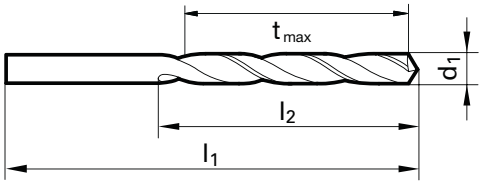
P	Steel	
M	Stainless steel	
K	Cast iron	
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 14.500 • relieved cone

hard and crumbly materials • brass, magnesium alloys • bronze, phosphor bronze • slate, mica, pertinax

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 476

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0079	#92	0.20	19.00	2.20	2.50	9002060002000
0.0094	#88	0.24	19.00	2.14	2.50	9002060002400
0.0098	#87	0.25	19.00	2.63	3.00	9002060002500
0.0118		0.30	19.00	2.55	3.00	9002060003000
0.0134	#80	0.34	19.00	3.49	4.00	9002060003400
0.0138		0.35	19.00	3.48	4.00	9002060003500
0.0157	1/64	0.40	20.00	4.40	5.00	9002060004000
0.0161	#78	0.41	20.00	4.39	5.00	9002060004100
0.0177		0.45	20.00	4.33	5.00	9002060004500
0.0181	#77	0.46	20.00	4.31	5.00	9002060004600
0.0197		0.50	22.00	5.25	6.00	9002060005000
0.0201	#76	0.51	22.00	5.24	6.00	9002060005100
0.0209	#75	0.53	22.00	5.21	6.00	9002060005300
0.0217		0.55	24.00	6.18	7.00	9002060005500
0.0224	#74	0.57	24.00	6.15	7.00	9002060005700
0.0236		0.60	24.00	6.10	7.00	9002060006000
0.0244		0.62	26.00	7.07	8.00	9002060006200
0.0256		0.65	26.00	7.03	8.00	9002060006500
0.0260	#71	0.66	26.00	7.01	8.00	9002060006600
0.0276		0.70	28.00	7.95	9.00	9002060007000
0.0283		0.72	28.00	7.92	9.00	9002060007200
0.0287		0.73	28.00	7.91	9.00	9002060007300
0.0291	#69	0.74	28.00	7.89	9.00	9002060007400
0.0295		0.75	28.00	7.88	9.00	9002060007500
0.0299		0.76	30.00	8.86	10.00	9002060007600
0.0303		0.77	30.00	8.85	10.00	9002060007700
0.0311	1/32 #68	0.79	30.00	8.82	10.00	9002060007900
0.0315		0.80	30.00	8.80	10.00	9002060008000
0.0319	#67	0.81	30.00	8.79	10.00	9002060008100
0.0327		0.83	30.00	8.76	10.00	9002060008300
0.0331	#66	0.84	30.00	8.74	10.00	9002060008400
0.0335		0.85	30.00	8.73	10.00	9002060008500
0.0339		0.86	32.00	9.71	11.00	9002060008600
0.0343		0.87	32.00	9.70	11.00	9002060008700
0.0346		0.88	32.00	9.68	11.00	9002060008800
0.0350	#65	0.89	32.00	9.67	11.00	9002060008900
0.0354		0.90	32.00	9.65	11.00	9002060009000
0.0358	#64	0.91	32.00	9.64	11.00	9002060009100
0.0366		0.93	32.00	9.61	11.00	9002060009300
0.0374		0.95	32.00	9.58	11.00	9002060009500
0.0378		0.96	34.00	10.56	12.00	9002060009600
0.0382	#62	0.97	34.00	10.55	12.00	9002060009700
0.0390	#61	0.99	34.00	10.52	12.00	9002060009900
0.0394		1.00	34.00	10.50	12.00	9002060010000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0402	#60	1.02	34.00	10.47	12.00	9002060010200
0.0409	#59	1.04	34.00	10.44	12.00	9002060010400
0.0413		1.05	34.00	10.43	12.00	9002060010500
0.0433		1.10	36.00	12.35	14.00	9002060011000
0.0453		1.15	36.00	12.28	14.00	9002060011500
0.0465	#56	1.18	36.00	12.23	14.00	9002060011800
0.0469	3/64	1.19	38.00	14.22	16.00	9002060011900
0.0472		1.20	38.00	14.20	16.00	9002060012000
0.0480		1.22	38.00	14.17	16.00	9002060012200
0.0492		1.25	38.00	14.13	16.00	9002060012500
0.0500		1.27	38.00	14.10	16.00	9002060012700
0.0504		1.28	38.00	14.08	16.00	9002060012800
0.0512		1.30	38.00	14.05	16.00	9002060013000
0.0520	#55	1.32	38.00	14.02	16.00	9002060013200
0.0524		1.33	40.00	16.01	18.00	9002060013300
0.0531		1.35	40.00	15.98	18.00	9002060013500
0.0539		1.37	40.00	15.95	18.00	9002060013700
0.0551	#54	1.40	40.00	15.90	18.00	9002060014000
0.0563		1.43	40.00	15.86	18.00	9002060014300
0.0567		1.44	40.00	15.84	18.00	9002060014400
0.0571		1.45	40.00	15.83	18.00	9002060014500
0.0579		1.47	40.00	15.80	18.00	9002060014700
0.0591		1.50	40.00	15.75	18.00	9002060015000
0.0602		1.53	43.00	17.71	20.00	9002060015300
0.0606		1.54	43.00	17.69	20.00	9002060015400
0.0610		1.55	43.00	17.68	20.00	9002060015500
0.0626	1/16	1.59	43.00	17.62	20.00	9002060015900
0.0630		1.60	43.00	17.60	20.00	9002060016000
0.0638		1.62	43.00	17.57	20.00	9002060016200
0.0650		1.65	43.00	17.53	20.00	9002060016500
0.0657		1.67	43.00	17.50	20.00	9002060016700
0.0669	#51	1.70	43.00	17.45	20.00	9002060017000
0.0677		1.72	46.00	19.42	22.00	9002060017200
0.0681		1.73	46.00	19.41	22.00	9002060017300
0.0689		1.75	46.00	19.38	22.00	9002060017500
0.0701	#50	1.78	46.00	19.33	22.00	9002060017800
0.0709		1.80	46.00	19.30	22.00	9002060018000
0.0728	#49	1.85	46.00	19.23	22.00	9002060018500
0.0748		1.90	46.00	19.15	22.00	9002060019000
0.0756		1.92	49.00	21.12	24.00	9002060019200
0.0768		1.95	49.00	21.08	24.00	9002060019500
0.0780	5/64	1.98	49.00	21.03	24.00	9002060019800
0.0787		2.00	49.00	21.00	24.00	9002060020000
0.0795		2.02	49.00	20.97	24.00	9002060020200

Jobber length drills

Series no. 206

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0807		2.05	49.00	20.93	24.00	9002060020500
0.0811	#46	2.06	49.00	20.91	24.00	9002060020600
0.0815		2.07	49.00	20.90	24.00	9002060020700
0.0827		2.10	49.00	20.85	24.00	9002060021000
0.0846		2.15	53.00	23.78	27.00	9002060021500
0.0858	#44	2.18	53.00	23.73	27.00	9002060021800
0.0866		2.20	53.00	23.70	27.00	9002060022000
0.0886		2.25	53.00	23.63	27.00	9002060022500
0.0894		2.27	53.00	23.60	27.00	9002060022700
0.0906		2.30	53.00	23.55	27.00	9002060023000
0.0925		2.35	53.00	23.48	27.00	9002060023500
0.0937	3/32	2.38	57.00	26.43	30.00	9002060023800
0.0945		2.40	57.00	26.40	30.00	9002060024000
0.0965		2.45	57.00	26.33	30.00	9002060024500
0.0972		2.47	57.00	26.30	30.00	9002060024700
0.0984		2.50	57.00	26.25	30.00	9002060025000
0.0996	#39	2.53	57.00	26.21	30.00	9002060025300
0.1004		2.55	57.00	26.18	30.00	9002060025500
0.1012		2.57	57.00	26.15	30.00	9002060025700
0.1024		2.60	57.00	26.10	30.00	9002060026000
0.1035		2.63	57.00	26.06	30.00	9002060026300
0.1039	#37	2.64	57.00	26.04	30.00	9002060026400
0.1043		2.65	57.00	26.03	30.00	9002060026500
0.1063		2.70	61.00	28.95	33.00	9002060027000
0.1067	#36	2.71	61.00	28.94	33.00	9002060027100
0.1083		2.75	61.00	28.88	33.00	9002060027500
0.1094	7/64	2.78	61.00	28.83	33.00	9002060027800
0.1102		2.80	61.00	28.80	33.00	9002060028000
0.1110	#34	2.82	61.00	28.77	33.00	9002060028200
0.1122		2.85	61.00	28.73	33.00	9002060028500
0.1142		2.90	61.00	28.65	33.00	9002060029000
0.1150		2.92	61.00	28.62	33.00	9002060029200
0.1161	#32	2.95	61.00	28.58	33.00	9002060029500
0.1181		3.00	61.00	28.50	33.00	9002060030000
0.1201	#31	3.05	65.00	31.43	36.00	9002060030500
0.1220		3.10	65.00	31.35	36.00	9002060031000
0.1240		3.15	65.00	31.28	36.00	9002060031500
0.1248	1/8	3.17	65.00	31.25	36.00	9002060031700
0.1260		3.20	65.00	31.20	36.00	9002060032000
0.1268		3.22	65.00	31.17	36.00	9002060032200
0.1280		3.25	65.00	31.13	36.00	9002060032500
0.1299		3.30	65.00	31.05	36.00	9002060033000
0.1319		3.35	65.00	30.98	36.00	9002060033500
0.1339		3.40	70.00	33.90	39.00	9002060034000
0.1358	#29	3.45	70.00	33.83	39.00	9002060034500
0.1378		3.50	70.00	33.75	39.00	9002060035000
0.1398		3.55	70.00	33.68	39.00	9002060035500
0.1406	9/64 #28	3.57	70.00	33.65	39.00	9002060035700
0.1417		3.60	70.00	33.60	39.00	9002060036000
0.1437		3.65	70.00	33.53	39.00	9002060036500
0.1457		3.70	70.00	33.45	39.00	9002060037000
0.1476		3.75	70.00	33.38	39.00	9002060037500
0.1496	#25	3.80	75.00	37.30	43.00	9002060038000
0.1508		3.83	75.00	37.26	43.00	9002060038300
0.1516		3.85	75.00	37.23	43.00	9002060038500
0.1524		3.87	75.00	37.20	43.00	9002060038700
0.1535		3.90	75.00	37.15	43.00	9002060039000
0.1539	#23	3.91	75.00	37.14	43.00	9002060039100
0.1555		3.95	75.00	37.08	43.00	9002060039500
0.1563	5/32	3.97	75.00	37.05	43.00	9002060039700
0.1575		4.00	75.00	37.00	43.00	9002060040000
0.1583		4.02	75.00	36.97	43.00	9002060040200
0.1591	#21	4.04	75.00	36.94	43.00	9002060040400
0.1594		4.05	75.00	36.93	43.00	9002060040500
0.1614		4.10	75.00	36.85	43.00	9002060041000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1634		4.15	75.00	36.78	43.00	9002060041500
0.1654		4.20	75.00	36.70	43.00	9002060042000
0.1661	#19	4.22	75.00	36.67	43.00	9002060042200
0.1673		4.25	75.00	36.63	43.00	9002060042500
0.1693	#18	4.30	80.00	40.55	47.00	9002060043000
0.1720	11/64	4.37	80.00	40.45	47.00	9002060043700
0.1732		4.40	80.00	40.40	47.00	9002060044000
0.1752		4.45	80.00	40.33	47.00	9002060044500
0.1772	#16	4.50	80.00	40.25	47.00	9002060045000
0.1811		4.60	80.00	40.10	47.00	9002060046000
0.1831		4.65	80.00	40.03	47.00	9002060046500
0.1850	#13	4.70	80.00	39.95	47.00	9002060047000
0.1870		4.75	80.00	39.88	47.00	9002060047500
0.1874	3/16	4.76	86.00	44.86	52.00	9002060047600
0.1890	#12	4.80	86.00	44.80	52.00	9002060048000
0.1909	#11	4.85	86.00	44.73	52.00	9002060048500
0.1929		4.90	86.00	44.65	52.00	9002060049000
0.1949		4.95	86.00	44.58	52.00	9002060049500
0.1969		5.00	86.00	44.50	52.00	9002060050000
0.1988		5.05	86.00	44.43	52.00	9002060050500
0.2008		5.10	86.00	44.35	52.00	9002060051000
0.2031	13/64	5.16	86.00	44.26	52.00	9002060051600
0.2047		5.20	86.00	44.20	52.00	9002060052000
0.2067		5.25	86.00	44.13	52.00	9002060052500
0.2087		5.30	86.00	44.05	52.00	9002060053000
0.2091	#4	5.31	93.00	49.04	57.00	9002060053100
0.2126		5.40	93.00	48.90	57.00	9002060054000
0.2165		5.50	93.00	48.75	57.00	9002060055000
0.2189	7/32	5.56	93.00	48.66	57.00	9002060055600
0.2205		5.60	93.00	48.60	57.00	9002060056000
0.2244		5.70	93.00	48.45	57.00	9002060057000
0.2264		5.75	93.00	48.38	57.00	9002060057500
0.2283		5.80	93.00	48.30	57.00	9002060058000
0.2323		5.90	93.00	48.15	57.00	9002060059000
0.2343	15/64	5.95	93.00	48.08	57.00	9002060059500
0.2362		6.00	93.00	48.00	57.00	9002060060000
0.2382		6.05	101.00	53.93	63.00	9002060060500
0.2402		6.10	101.00	53.85	63.00	9002060061000
0.2421	C	6.15	101.00	53.78	63.00	9002060061500
0.2441		6.20	101.00	53.70	63.00	9002060062000
0.2461	D	6.25	101.00	53.63	63.00	9002060062500
0.2480		6.30	101.00	53.55	63.00	9002060063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9002060063500
0.2520		6.40	101.00	53.40	63.00	9002060064000
0.2539		6.45	101.00	53.33	63.00	9002060064500
0.2559		6.50	101.00	53.25	63.00	9002060065000
0.2571		6.53	101.00	53.21	63.00	9002060065300
0.2579		6.55	101.00	53.18	63.00	9002060065500
0.2598		6.60	101.00	53.10	63.00	9002060066000
0.2638		6.70	101.00	52.95	63.00	9002060067000
0.2657	17/64 H	6.75	109.00	58.88	69.00	9002060067500
0.2677		6.80	109.00	58.80	69.00	9002060068000
0.2717	I	6.90	109.00	58.65	69.00	9002060069000
0.2756		7.00	109.00	58.50	69.00	9002060070000
0.2795		7.10	109.00	58.35	69.00	9002060071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9002060071400
0.2835		7.20	109.00	58.20	69.00	9002060072000
0.2854		7.25	109.00	58.13	69.00	9002060072500
0.2874		7.30	109.00	58.05	69.00	9002060073000
0.2894		7.35	109.00	57.98	69.00	9002060073500
0.2913		7.40	109.00	57.90	69.00	9002060074000
0.2953		7.50	109.00	57.75	69.00	9002060075000
0.2969	19/64	7.54	117.00	63.69	75.00	9002060075400
0.2992		7.60	117.00	63.60	75.00	9002060076000
0.3031		7.70	117.00	63.45	75.00	9002060077000

Jobber length drills

Series no. **206**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3051		7.75	117.00	63.38	75.00	9002060077500
0.3071		7.80	117.00	63.30	75.00	9002060078000
0.3110		7.90	117.00	63.15	75.00	9002060079000
0.3126	5/16	7.94	117.00	63.09	75.00	9002060079400
0.3150		8.00	117.00	63.00	75.00	9002060080000
0.3169		8.05	117.00	62.93	75.00	9002060080500
0.3189		8.10	117.00	62.85	75.00	9002060081000
0.3228	P	8.20	117.00	62.70	75.00	9002060082000
0.3248		8.25	117.00	62.63	75.00	9002060082500
0.3268		8.30	117.00	62.55	75.00	9002060083000
0.3280	21/64	8.33	117.00	62.51	75.00	9002060083300
0.3307		8.40	117.00	62.40	75.00	9002060084000
0.3319	Q	8.43	117.00	62.36	75.00	9002060084300
0.3346		8.50	117.00	62.25	75.00	9002060085000
0.3386		8.60	125.00	68.10	81.00	9002060086000
0.3425		8.70	125.00	67.95	81.00	9002060087000
0.3437	11/32	8.73	125.00	67.91	81.00	9002060087300
0.3465		8.80	125.00	67.80	81.00	9002060088000
0.3504		8.90	125.00	67.65	81.00	9002060089000
0.3543		9.00	125.00	67.50	81.00	9002060090000
0.3583		9.10	125.00	67.35	81.00	9002060091000
0.3594	23/64	9.13	125.00	67.31	81.00	9002060091300
0.3622		9.20	125.00	67.20	81.00	9002060092000
0.3642		9.25	125.00	67.13	81.00	9002060092500
0.3661		9.30	125.00	67.05	81.00	9002060093000
0.3701		9.40	125.00	66.90	81.00	9002060094000
0.3740		9.50	125.00	66.75	81.00	9002060095000
0.3748	3/8	9.52	133.00	72.72	87.00	9002060095200
0.3780		9.60	133.00	72.60	87.00	9002060096000
0.3819		9.70	133.00	72.45	87.00	9002060097000
0.3839		9.75	133.00	72.38	87.00	9002060097500
0.3858	W	9.80	133.00	72.30	87.00	9002060098000
0.3898		9.90	133.00	72.15	87.00	9002060099000
0.3906	25/64	9.92	133.00	72.12	87.00	9002060099200
0.3937		10.00	133.00	72.00	87.00	9002060100000
0.3976		10.10	133.00	71.85	87.00	9002060101000
0.4016		10.20	133.00	71.70	87.00	9002060102000
0.4035		10.25	133.00	71.63	87.00	9002060102500

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4055		10.30	133.00	71.55	87.00	9002060103000
0.4063	13/32	10.32	133.00	71.52	87.00	9002060103200
0.4134		10.50	133.00	71.25	87.00	9002060105000
0.4173		10.60	133.00	71.10	87.00	9002060106000
0.4220	27/64	10.72	142.00	77.92	94.00	9002060107200
0.4252		10.80	142.00	77.80	94.00	9002060108000
0.4291		10.90	142.00	77.65	94.00	9002060109000
0.4331		11.00	142.00	77.50	94.00	9002060110000
0.4370		11.10	142.00	77.35	94.00	9002060111000
0.4374	7/16	11.11	142.00	77.34	94.00	9002060111100
0.4409		11.20	142.00	77.20	94.00	9002060112000
0.4449		11.30	142.00	77.05	94.00	9002060113000
0.4488		11.40	142.00	76.90	94.00	9002060114000
0.4528		11.50	142.00	76.75	94.00	9002060115000
0.4531	29/64	11.51	142.00	76.74	94.00	9002060115100
0.4567		11.60	142.00	76.60	94.00	9002060116000
0.4606		11.70	142.00	76.45	94.00	9002060117000
0.4646		11.80	142.00	76.30	94.00	9002060118000
0.4685		11.90	151.00	83.15	101.00	9002060119000
0.4689	15/32	11.91	151.00	83.14	101.00	9002060119100
0.4724		12.00	151.00	83.00	101.00	9002060120000
0.4764		12.10	151.00	82.85	101.00	9002060121000
0.4803		12.20	151.00	82.70	101.00	9002060122000
0.4843	31/64	12.30	151.00	82.55	101.00	9002060123000
0.4921		12.50	151.00	82.25	101.00	9002060125000
0.5000	1/2	12.70	151.00	81.95	101.00	9002060127000
0.5039		12.80	151.00	81.80	101.00	9002060128000
0.5118		13.00	151.00	81.50	101.00	9002060130000
0.5197		13.20	151.00	81.20	101.00	9002060132000
0.5315		13.50	160.00	87.75	108.00	9002060135000
0.5512		14.00	160.00	87.00	108.00	9002060140000
0.5709		14.50	169.00	92.25	114.00	9002060145000
0.5906		15.00	169.00	91.50	114.00	9002060150000
0.6299		16.00	178.00	96.00	120.00	9002060160000
0.6693		17.00	184.00	99.50	125.00	9002060170000
0.7087		18.00	191.00	103.00	130.00	9002060180000
0.7480		19.00	198.00	106.50	135.00	9002060190000
0.7874		20.00	205.00	110.00	140.00	9002060200000

Jobber length drills

Series no. **207**

~5xD	DIN 338	W	130°	h8		R	Cyl
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Cutting direction	Shank form

Tool material: **HSS**

Surface: ◯

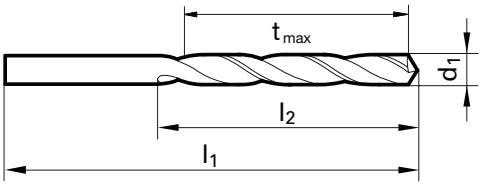
P	Steel	
M	Stainless steel	
K	Cast iron	
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 14.500 • relieved cone

soft, long chipping materials • aluminum, Al-alloys (long-chipping) • zinc, refined copper, silumin, Elektron • soft plastics • wood

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 477

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0079	#92	0.20	19.00	2.20	2.50	9002070002000
0.0118		0.30	19.00	2.55	3.00	9002070003000
0.0138		0.35	19.00	3.48	4.00	9002070003500
0.0157	1/64	0.40	20.00	4.40	5.00	9002070004000
0.0177		0.45	20.00	4.33	5.00	9002070004500
0.0181	#77	0.46	20.00	4.31	5.00	9002070004600
0.0197		0.50	22.00	5.25	6.00	9002070005000
0.0201	#76	0.51	22.00	5.24	6.00	9002070005100
0.0217		0.55	24.00	6.18	7.00	9002070005500
0.0224	#74	0.57	24.00	6.15	7.00	9002070005700
0.0236		0.60	24.00	6.10	7.00	9002070006000
0.0240	#73	0.61	26.00	7.09	8.00	9002070006100
0.0244		0.62	26.00	7.07	8.00	9002070006200
0.0252	#72	0.64	26.00	7.04	8.00	9002070006400
0.0256		0.65	26.00	7.03	8.00	9002070006500
0.0260	#71	0.66	26.00	7.01	8.00	9002070006600
0.0276		0.70	28.00	7.95	9.00	9002070007000
0.0295		0.75	28.00	7.88	9.00	9002070007500
0.0307		0.78	30.00	8.83	10.00	9002070007800
0.0311	1/32 #68	0.79	30.00	8.82	10.00	9002070007900
0.0315		0.80	30.00	8.80	10.00	9002070008000
0.0319	#67	0.81	30.00	8.79	10.00	9002070008100
0.0331	#66	0.84	30.00	8.74	10.00	9002070008400
0.0335		0.85	30.00	8.73	10.00	9002070008500
0.0339		0.86	32.00	9.71	11.00	9002070008600
0.0343		0.87	32.00	9.70	11.00	9002070008700
0.0354		0.90	32.00	9.65	11.00	9002070009000
0.0374		0.95	32.00	9.58	11.00	9002070009500
0.0382	#62	0.97	34.00	10.55	12.00	9002070009700
0.0386		0.98	34.00	10.53	12.00	9002070009800
0.0390	#61	0.99	34.00	10.52	12.00	9002070009900
0.0394		1.00	34.00	10.50	12.00	9002070010000
0.0398		1.01	34.00	10.49	12.00	9002070010100
0.0402	#60	1.02	34.00	10.47	12.00	9002070010200
0.0413		1.05	34.00	10.43	12.00	9002070010500
0.0421	#58	1.07	36.00	12.40	14.00	9002070010700
0.0425		1.08	36.00	12.38	14.00	9002070010800
0.0433		1.10	36.00	12.35	14.00	9002070011000
0.0441		1.12	36.00	12.32	14.00	9002070011200
0.0453		1.15	36.00	12.28	14.00	9002070011500
0.0465	#56	1.18	36.00	12.23	14.00	9002070011800
0.0469	3/64	1.19	38.00	14.22	16.00	9002070011900
0.0472		1.20	38.00	14.20	16.00	9002070012000
0.0480		1.22	38.00	14.17	16.00	9002070012200
0.0492		1.25	38.00	14.13	16.00	9002070012500

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0500		1.27	38.00	14.10	16.00	9002070012700
0.0512		1.30	38.00	14.05	16.00	9002070013000
0.0516		1.31	38.00	14.04	16.00	9002070013100
0.0524		1.33	40.00	16.01	18.00	9002070013300
0.0531		1.35	40.00	15.98	18.00	9002070013500
0.0543		1.38	40.00	15.93	18.00	9002070013800
0.0551	#54	1.40	40.00	15.90	18.00	9002070014000
0.0559		1.42	40.00	15.87	18.00	9002070014200
0.0563		1.43	40.00	15.86	18.00	9002070014300
0.0571		1.45	40.00	15.83	18.00	9002070014500
0.0579		1.47	40.00	15.80	18.00	9002070014700
0.0591		1.50	40.00	15.75	18.00	9002070015000
0.0594	#53	1.51	43.00	17.74	20.00	9002070015100
0.0610		1.55	43.00	17.68	20.00	9002070015500
0.0622		1.58	43.00	17.63	20.00	9002070015800
0.0626	1/16	1.59	43.00	17.62	20.00	9002070015900
0.0630		1.60	43.00	17.60	20.00	9002070016000
0.0634	#52	1.61	43.00	17.59	20.00	9002070016100
0.0650		1.65	43.00	17.53	20.00	9002070016500
0.0669	#51	1.70	43.00	17.45	20.00	9002070017000
0.0689		1.75	46.00	19.38	22.00	9002070017500
0.0693		1.76	46.00	19.36	22.00	9002070017600
0.0697		1.77	46.00	19.35	22.00	9002070017700
0.0701	#50	1.78	46.00	19.33	22.00	9002070017800
0.0709		1.80	46.00	19.30	22.00	9002070018000
0.0728	#49	1.85	46.00	19.23	22.00	9002070018500
0.0748		1.90	46.00	19.15	22.00	9002070019000
0.0760	#48	1.93	49.00	21.11	24.00	9002070019300
0.0768		1.95	49.00	21.08	24.00	9002070019500
0.0780	5/64	1.98	49.00	21.03	24.00	9002070019800
0.0787		2.00	49.00	21.00	24.00	9002070020000
0.0795		2.02	49.00	20.97	24.00	9002070020200
0.0807		2.05	49.00	20.93	24.00	9002070020500
0.0811	#46	2.06	49.00	20.91	24.00	9002070020600
0.0819	#45	2.08	49.00	20.88	24.00	9002070020800
0.0827		2.10	49.00	20.85	24.00	9002070021000
0.0846		2.15	53.00	23.78	27.00	9002070021500
0.0866		2.20	53.00	23.70	27.00	9002070022000
0.0874		2.22	53.00	23.67	27.00	9002070022200
0.0886		2.25	53.00	23.63	27.00	9002070022500
0.0906		2.30	53.00	23.55	27.00	9002070023000
0.0913		2.32	53.00	23.52	27.00	9002070023200
0.0925		2.35	53.00	23.48	27.00	9002070023500
0.0937	3/32	2.38	57.00	26.43	30.00	9002070023800
0.0945		2.40	57.00	26.40	30.00	9002070024000

Jobber length drills

Series no. 207

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0965		2.45	57.00	26.33	30.00	9002070024500
0.0980	#40	2.49	57.00	26.27	30.00	9002070024900
0.0984		2.50	57.00	26.25	30.00	9002070025000
0.0996	#39	2.53	57.00	26.21	30.00	9002070025300
0.1004		2.55	57.00	26.18	30.00	9002070025500
0.1016	#38	2.58	57.00	26.13	30.00	9002070025800
0.1024		2.60	57.00	26.10	30.00	9002070026000
0.1043		2.65	57.00	26.03	30.00	9002070026500
0.1063		2.70	61.00	28.95	33.00	9002070027000
0.1071		2.72	61.00	28.92	33.00	9002070027200
0.1075		2.73	61.00	28.91	33.00	9002070027300
0.1083		2.75	61.00	28.88	33.00	9002070027500
0.1094	7/64	2.78	61.00	28.83	33.00	9002070027800
0.1102		2.80	61.00	28.80	33.00	9002070028000
0.1110	#34	2.82	61.00	28.77	33.00	9002070028200
0.1122		2.85	61.00	28.73	33.00	9002070028500
0.1142		2.90	61.00	28.65	33.00	9002070029000
0.1161	#32	2.95	61.00	28.58	33.00	9002070029500
0.1181		3.00	61.00	28.50	33.00	9002070030000
0.1193		3.03	65.00	31.46	36.00	9002070030300
0.1201	#31	3.05	65.00	31.43	36.00	9002070030500
0.1205		3.06	65.00	31.41	36.00	9002070030600
0.1220		3.10	65.00	31.35	36.00	9002070031000
0.1240		3.15	65.00	31.28	36.00	9002070031500
0.1248	1/8	3.17	65.00	31.25	36.00	9002070031700
0.1260		3.20	65.00	31.20	36.00	9002070032000
0.1280		3.25	65.00	31.13	36.00	9002070032500
0.1283	#30	3.26	65.00	31.11	36.00	9002070032600
0.1299		3.30	65.00	31.05	36.00	9002070033000
0.1319		3.35	65.00	30.98	36.00	9002070033500
0.1339		3.40	70.00	33.90	39.00	9002070034000
0.1358	#29	3.45	70.00	33.83	39.00	9002070034500
0.1378		3.50	70.00	33.75	39.00	9002070035000
0.1390		3.53	70.00	33.71	39.00	9002070035300
0.1398		3.55	70.00	33.68	39.00	9002070035500
0.1406	9/64 #28	3.57	70.00	33.65	39.00	9002070035700
0.1417		3.60	70.00	33.60	39.00	9002070036000
0.1437		3.65	70.00	33.53	39.00	9002070036500
0.1457		3.70	70.00	33.45	39.00	9002070037000
0.1469	#26	3.73	70.00	33.41	39.00	9002070037300
0.1476		3.75	70.00	33.38	39.00	9002070037500
0.1496	#25	3.80	75.00	37.30	43.00	9002070038000
0.1516		3.85	75.00	37.23	43.00	9002070038500
0.1535		3.90	75.00	37.15	43.00	9002070039000
0.1555		3.95	75.00	37.08	43.00	9002070039500
0.1563	5/32	3.97	75.00	37.05	43.00	9002070039700
0.1575		4.00	75.00	37.00	43.00	9002070040000
0.1591	#21	4.04	75.00	36.94	43.00	9002070040400
0.1594		4.05	75.00	36.93	43.00	9002070040500
0.1614		4.10	75.00	36.85	43.00	9002070041000
0.1634		4.15	75.00	36.78	43.00	9002070041500
0.1654		4.20	75.00	36.70	43.00	9002070042000
0.1661	#19	4.22	75.00	36.67	43.00	9002070042200
0.1673		4.25	75.00	36.63	43.00	9002070042500
0.1693	#18	4.30	80.00	40.55	47.00	9002070043000
0.1713		4.35	80.00	40.48	47.00	9002070043500
0.1732		4.40	80.00	40.40	47.00	9002070044000
0.1772	#16	4.50	80.00	40.25	47.00	9002070045000
0.1811		4.60	80.00	40.10	47.00	9002070046000
0.1831		4.65	80.00	40.03	47.00	9002070046500
0.1850	#13	4.70	80.00	39.95	47.00	9002070047000
0.1870		4.75	80.00	39.88	47.00	9002070047500
0.1874	3/16	4.76	86.00	44.86	52.00	9002070047600
0.1890	#12	4.80	86.00	44.80	52.00	9002070048000
0.1909	#11	4.85	86.00	44.73	52.00	9002070048500
0.1929		4.90	86.00	44.65	52.00	9002070049000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1949		4.95	86.00	44.58	52.00	9002070049500
0.1969		5.00	86.00	44.50	52.00	9002070050000
0.1988		5.05	86.00	44.43	52.00	9002070050500
0.2008		5.10	86.00	44.35	52.00	9002070051000
0.2031	13/64	5.16	86.00	44.26	52.00	9002070051600
0.2047		5.20	86.00	44.20	52.00	9002070052000
0.2067		5.25	86.00	44.13	52.00	9002070052500
0.2087		5.30	86.00	44.05	52.00	9002070053000
0.2126		5.40	93.00	48.90	57.00	9002070054000
0.2146		5.45	93.00	48.83	57.00	9002070054500
0.2165		5.50	93.00	48.75	57.00	9002070055000
0.2189	7/32	5.56	93.00	48.66	57.00	9002070055600
0.2205		5.60	93.00	48.60	57.00	9002070056000
0.2244		5.70	93.00	48.45	57.00	9002070057000
0.2264		5.75	93.00	48.38	57.00	9002070057500
0.2283		5.80	93.00	48.30	57.00	9002070058000
0.2303		5.85	93.00	48.23	57.00	9002070058500
0.2323		5.90	93.00	48.15	57.00	9002070059000
0.2343	15/64	5.95	93.00	48.08	57.00	9002070059500
0.2362		6.00	93.00	48.00	57.00	9002070060000
0.2402		6.10	101.00	53.85	63.00	9002070061000
0.2421	C	6.15	101.00	53.78	63.00	9002070061500
0.2441		6.20	101.00	53.70	63.00	9002070062000
0.2461	D	6.25	101.00	53.63	63.00	9002070062500
0.2480		6.30	101.00	53.55	63.00	9002070063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9002070063500
0.2520		6.40	101.00	53.40	63.00	9002070064000
0.2559		6.50	101.00	53.25	63.00	9002070065000
0.2571		6.53	101.00	53.21	63.00	9002070065300
0.2598		6.60	101.00	53.10	63.00	9002070066000
0.2618		6.65	101.00	53.03	63.00	9002070066500
0.2638		6.70	101.00	52.95	63.00	9002070067000
0.2657	17/64 H	6.75	109.00	58.88	69.00	9002070067500
0.2677		6.80	109.00	58.80	69.00	9002070068000
0.2697		6.85	109.00	58.73	69.00	9002070068500
0.2717	I	6.90	109.00	58.65	69.00	9002070069000
0.2736		6.95	109.00	58.58	69.00	9002070069500
0.2756		7.00	109.00	58.50	69.00	9002070070000
0.2776		7.05	109.00	58.43	69.00	9002070070500
0.2795		7.10	109.00	58.35	69.00	9002070071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9002070071400
0.2835		7.20	109.00	58.20	69.00	9002070072000
0.2854		7.25	109.00	58.13	69.00	9002070072500
0.2874		7.30	109.00	58.05	69.00	9002070073000
0.2913		7.40	109.00	57.90	69.00	9002070074000
0.2953		7.50	109.00	57.75	69.00	9002070075000
0.2969	19/64	7.54	117.00	63.69	75.00	9002070075400
0.2992		7.60	117.00	63.60	75.00	9002070076000
0.3031		7.70	117.00	63.45	75.00	9002070077000
0.3051		7.75	117.00	63.38	75.00	9002070077500
0.3071		7.80	117.00	63.30	75.00	9002070078000
0.3110		7.90	117.00	63.15	75.00	9002070079000
0.3125	5/16	7.94	117.00	63.09	75.00	9002070079400
0.3150		8.00	117.00	63.00	75.00	9002070080000
0.3161	O	8.03	117.00	62.96	75.00	9002070080300
0.3189		8.10	117.00	62.85	75.00	9002070081000
0.3209		8.15	117.00	62.78	75.00	9002070081500
0.3228	P	8.20	117.00	62.70	75.00	9002070082000
0.3248		8.25	117.00	62.63	75.00	9002070082500
0.3268		8.30	117.00	62.55	75.00	9002070083000
0.3307		8.40	117.00	62.40	75.00	9002070084000
0.3346		8.50	117.00	62.25	75.00	9002070085000
0.3386		8.60	125.00	68.10	81.00	9002070086000
0.3425		8.70	125.00	67.95	81.00	9002070087000
0.3437	11/32	8.73	125.00	67.91	81.00	9002070087300
0.3445		8.75	125.00	67.88	81.00	9002070087500

Jobber length drills

Series no. **207**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3465		8.80	125.00	67.80	81.00	9002070088000
0.3480	S	8.84	125.00	67.74	81.00	9002070088400
0.3504		8.90	125.00	67.65	81.00	9002070089000
0.3543		9.00	125.00	67.50	81.00	9002070090000
0.3579	T	9.09	125.00	67.37	81.00	9002070090900
0.3583		9.10	125.00	67.35	81.00	9002070091000
0.3594	23/64	9.13	125.00	67.31	81.00	9002070091300
0.3622		9.20	125.00	67.20	81.00	9002070092000
0.3661		9.30	125.00	67.05	81.00	9002070093000
0.3677	U	9.34	125.00	66.99	81.00	9002070093400
0.3701		9.40	125.00	66.90	81.00	9002070094000
0.3740		9.50	125.00	66.75	81.00	9002070095000
0.3750	3/8	9.52	133.00	72.72	87.00	9002070095200
0.3780		9.60	133.00	72.60	87.00	9002070096000
0.3819		9.70	133.00	72.45	87.00	9002070097000
0.3858	W	9.80	133.00	72.30	87.00	9002070098000
0.3898		9.90	133.00	72.15	87.00	9002070099000
0.3906	25/64	9.92	133.00	72.12	87.00	9002070099200
0.3937		10.00	133.00	72.00	87.00	9002070100000
0.3969	X	10.08	133.00	71.88	87.00	9002070100800
0.3976		10.10	133.00	71.85	87.00	9002070101000
0.4016		10.20	133.00	71.70	87.00	9002070102000
0.4035		10.25	133.00	71.63	87.00	9002070102500
0.4039	Y	10.26	133.00	71.61	87.00	9002070102600
0.4055		10.30	133.00	71.55	87.00	9002070103000
0.4063	13/32	10.32	133.00	71.52	87.00	9002070103200
0.4094		10.40	133.00	71.40	87.00	9002070104000
0.4134		10.50	133.00	71.25	87.00	9002070105000
0.4173		10.60	133.00	71.10	87.00	9002070106000
0.4213		10.70	142.00	77.95	94.00	9002070107000
0.4232		10.75	142.00	77.88	94.00	9002070107500
0.4252		10.80	142.00	77.80	94.00	9002070108000
0.4291		10.90	142.00	77.65	94.00	9002070109000
0.4331		11.00	142.00	77.50	94.00	9002070110000
0.4370		11.10	142.00	77.35	94.00	9002070111000
0.4374	7/16	11.11	142.00	77.34	94.00	9002070111100
0.4409		11.20	142.00	77.20	94.00	9002070112000
0.4429		11.25	142.00	77.13	94.00	9002070112500
0.4449		11.30	142.00	77.05	94.00	9002070113000
0.4488		11.40	142.00	76.90	94.00	9002070114000
0.4528		11.50	142.00	76.75	94.00	9002070115000
0.4531	29/64	11.51	142.00	76.74	94.00	9002070115100
0.4567		11.60	142.00	76.60	94.00	9002070116000
0.4606		11.70	142.00	76.45	94.00	9002070117000
0.4626		11.75	142.00	76.38	94.00	9002070117500
0.4646		11.80	142.00	76.30	94.00	9002070118000
0.4685		11.90	151.00	83.15	101.00	9002070119000
0.4724		12.00	151.00	83.00	101.00	9002070120000
0.4764		12.10	151.00	82.85	101.00	9002070121000
0.4843	31/64	12.30	151.00	82.55	101.00	9002070123000
0.4921		12.50	151.00	82.25	101.00	9002070125000
0.4961		12.60	151.00	82.10	101.00	9002070126000
0.5000	1/2	12.70	151.00	81.95	101.00	9002070127000
0.5039		12.80	151.00	81.80	101.00	9002070128000
0.5079		12.90	151.00	81.65	101.00	9002070129000
0.5118		13.00	151.00	81.50	101.00	9002070130000
0.5157	33/64	13.10	151.00	81.35	101.00	9002070131000
0.5197		13.20	151.00	81.20	101.00	9002070132000
0.5315		13.50	160.00	87.75	108.00	9002070135000
0.5433		13.80	160.00	87.30	108.00	9002070138000
0.5512		14.00	160.00	87.00	108.00	9002070140000
0.5709		14.50	169.00	92.25	114.00	9002070145000
0.5787		14.70	169.00	91.95	114.00	9002070147000
0.5827		14.80	169.00	91.80	114.00	9002070148000
0.5906		15.00	169.00	91.50	114.00	9002070150000
0.5984		15.20	178.00	97.20	120.00	9002070152000
0.6102		15.50	178.00	96.75	120.00	9002070155000
0.6299		16.00	178.00	96.00	120.00	9002070160000
0.6496		16.50	184.00	100.25	125.00	9002070165000
0.6693		17.00	184.00	99.50	125.00	9002070170000
0.7087		18.00	191.00	103.00	130.00	9002070180000
0.7185		18.25	198.00	107.63	135.00	9002070182500
0.7480		19.00	198.00	106.50	135.00	9002070190000
0.7874		20.00	205.00	110.00	140.00	9002070200000

Jobber length drills

Series no. **549**

~5xD	DIN 338	GT 100	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface: >Ø 2.36

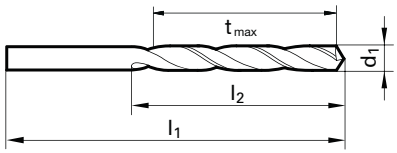
P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 0.970 • relieved cone • wide flutes • especially for drilling depths > 3xD

grey cast iron • steels up to 1000 N/mm² • Not recommended for: CrNi steels, stainless steels

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 499

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0236		0.60	24.00	6.10	7.00	9005490006000
0.0276		0.70	28.00	7.95	9.00	9005490007000
0.0280	#70	0.71	28.00	7.94	9.00	9005490007100
0.0311	1/32 #68	0.79	30.00	8.82	10.00	9005490007900
0.0315		0.80	30.00	8.80	10.00	9005490008000
0.0350	#65	0.89	32.00	9.67	11.00	9005490008900
0.0374		0.95	32.00	9.58	11.00	9005490009500
0.0382	#62	0.97	34.00	10.55	12.00	9005490009700
0.0390	#61	0.99	34.00	10.52	12.00	9005490009900
0.0394		1.00	34.00	10.50	12.00	9005490010000
0.0402	#60	1.02	34.00	10.47	12.00	9005490010200
0.0409	#59	1.04	34.00	10.44	12.00	9005490010400
0.0413		1.05	34.00	10.43	12.00	9005490010500
0.0421	#58	1.07	36.00	12.40	14.00	9005490010700
0.0429	#57	1.09	36.00	12.37	14.00	9005490010900
0.0433		1.10	36.00	12.35	14.00	9005490011000
0.0453		1.15	36.00	12.28	14.00	9005490011500
0.0465	#56	1.18	36.00	12.23	14.00	9005490011800
0.0469	3/64	1.19	38.00	14.22	16.00	9005490011900
0.0472		1.20	38.00	14.20	16.00	9005490012000
0.0480		1.22	38.00	14.17	16.00	9005490012200
0.0488		1.24	38.00	14.14	16.00	9005490012400
0.0492		1.25	38.00	14.13	16.00	9005490012500
0.0512		1.30	38.00	14.05	16.00	9005490013000
0.0520	#55	1.32	38.00	14.02	16.00	9005490013200
0.0531		1.35	40.00	15.98	18.00	9005490013500
0.0551	#54	1.40	40.00	15.90	18.00	9005490014000
0.0571		1.45	40.00	15.83	18.00	9005490014500
0.0575		1.46	40.00	15.81	18.00	9005490014600
0.0591		1.50	40.00	15.75	18.00	9005490015000
0.0594	#53	1.51	43.00	17.74	20.00	9005490015100
0.0610		1.55	43.00	17.68	20.00	9005490015500
0.0614		1.56	43.00	17.66	20.00	9005490015600
0.0618		1.57	43.00	17.65	20.00	9005490015700
0.0622		1.58	43.00	17.63	20.00	9005490015800
0.0626	1/16	1.59	43.00	17.62	20.00	9005490015900
0.0630		1.60	43.00	17.60	20.00	9005490016000
0.0634	#52	1.61	43.00	17.59	20.00	9005490016100
0.0638		1.62	43.00	17.57	20.00	9005490016200
0.0650		1.65	43.00	17.53	20.00	9005490016500
0.0654		1.66	43.00	17.51	20.00	9005490016600

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0657		1.67	43.00	17.50	20.00	9005490016700
0.0661		1.68	43.00	17.48	20.00	9005490016800
0.0665		1.69	43.00	17.47	20.00	9005490016900
0.0669	#51	1.70	43.00	17.45	20.00	9005490017000
0.0689		1.75	46.00	19.38	22.00	9005490017500
0.0701	#50	1.78	46.00	19.33	22.00	9005490017800
0.0709		1.80	46.00	19.30	22.00	9005490018000
0.0728	#49	1.85	46.00	19.23	22.00	9005490018500
0.0732		1.86	46.00	19.21	22.00	9005490018600
0.0748		1.90	46.00	19.15	22.00	9005490019000
0.0760	#48	1.93	49.00	21.11	24.00	9005490019300
0.0768		1.95	49.00	21.08	24.00	9005490019500
0.0780	5/64	1.98	49.00	21.03	24.00	9005490019800
0.0783	#47	1.99	49.00	21.02	24.00	9005490019900
0.0787		2.00	49.00	21.00	24.00	9005490020000
0.0795		2.02	49.00	20.97	24.00	9005490020200
0.0807		2.05	49.00	20.93	24.00	9005490020500
0.0811	#46	2.06	49.00	20.91	24.00	9005490020600
0.0819	#45	2.08	49.00	20.88	24.00	9005490020800
0.0827		2.10	49.00	20.85	24.00	9005490021000
0.0846		2.15	53.00	23.78	27.00	9005490021500
0.0858	#44	2.18	53.00	23.73	27.00	9005490021800
0.0866		2.20	53.00	23.70	27.00	9005490022000
0.0886		2.25	53.00	23.63	27.00	9005490022500
0.0890	#43	2.26	53.00	23.61	27.00	9005490022600
0.0906		2.30	53.00	23.55	27.00	9005490023000
0.0917		2.33	53.00	23.51	27.00	9005490023300
0.0925		2.35	53.00	23.48	27.00	9005490023500
0.0933	#42	2.37	57.00	26.45	30.00	9005490023700
0.0937	3/32	2.38	57.00	26.43	30.00	9005490023800
0.0945		2.40	57.00	26.40	30.00	9005490024000
0.0953		2.42	57.00	26.37	30.00	9005490024200
0.0961	#41	2.44	57.00	26.34	30.00	9005490024400
0.0965		2.45	57.00	26.33	30.00	9005490024500
0.0976		2.48	57.00	26.28	30.00	9005490024800
0.0980	#40	2.49	57.00	26.27	30.00	9005490024900
0.0984		2.50	57.00	26.25	30.00	9005490025000
0.0996	#39	2.53	57.00	26.21	30.00	9005490025300
0.1004		2.55	57.00	26.18	30.00	9005490025500
0.1016	#38	2.58	57.00	26.13	30.00	9005490025800
0.1024		2.60	57.00	26.10	30.00	9005490026000

Jobber length drills

Series no. 549

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1039	#37	2.64	57.00	26.04	30.00	9005490026400
0.1043		2.65	57.00	26.03	30.00	9005490026500
0.1063		2.70	61.00	28.95	33.00	9005490027000
0.1067	#36	2.71	61.00	28.94	33.00	9005490027100
0.1083		2.75	61.00	28.88	33.00	9005490027500
0.1094	7/64	2.78	61.00	28.83	33.00	9005490027800
0.1098	#35	2.79	61.00	28.82	33.00	9005490027900
0.1102		2.80	61.00	28.80	33.00	9005490028000
0.1110	#34	2.82	61.00	28.77	33.00	9005490028200
0.1122		2.85	61.00	28.73	33.00	9005490028500
0.1130	#33	2.87	61.00	28.70	33.00	9005490028700
0.1142		2.90	61.00	28.65	33.00	9005490029000
0.1161	#32	2.95	61.00	28.58	33.00	9005490029500
0.1173		2.98	61.00	28.53	33.00	9005490029800
0.1181		3.00	61.00	28.50	33.00	9005490030000
0.1201	#31	3.05	65.00	31.43	36.00	9005490030500
0.1213		3.08	65.00	31.38	36.00	9005490030800
0.1220		3.10	65.00	31.35	36.00	9005490031000
0.1240		3.15	65.00	31.28	36.00	9005490031500
0.1248	1/8	3.17	65.00	31.25	36.00	9005490031700
0.1260		3.20	65.00	31.20	36.00	9005490032000
0.1268		3.22	65.00	31.17	36.00	9005490032200
0.1272		3.23	65.00	31.16	36.00	9005490032300
0.1280		3.25	65.00	31.13	36.00	9005490032500
0.1283	#30	3.26	65.00	31.11	36.00	9005490032600
0.1299		3.30	65.00	31.05	36.00	9005490033000
0.1319		3.35	65.00	30.98	36.00	9005490033500
0.1339		3.40	70.00	33.90	39.00	9005490034000
0.1358	#29	3.45	70.00	33.83	39.00	9005490034500
0.1378		3.50	70.00	33.75	39.00	9005490035000
0.1398		3.55	70.00	33.68	39.00	9005490035500
0.1406	9/64 #28	3.57	70.00	33.65	39.00	9005490035700
0.1409		3.58	70.00	33.63	39.00	9005490035800
0.1417		3.60	70.00	33.60	39.00	9005490036000
0.1441	#27	3.66	70.00	33.51	39.00	9005490036600
0.1449		3.68	70.00	33.48	39.00	9005490036800
0.1457		3.70	70.00	33.45	39.00	9005490037000
0.1469	#26	3.73	70.00	33.41	39.00	9005490037300
0.1476		3.75	70.00	33.38	39.00	9005490037500
0.1496	#25	3.80	75.00	37.30	43.00	9005490038000
0.1520	#24	3.86	75.00	37.21	43.00	9005490038600
0.1524		3.87	75.00	37.20	43.00	9005490038700
0.1535		3.90	75.00	37.15	43.00	9005490039000
0.1539	#23	3.91	75.00	37.14	43.00	9005490039100
0.1555		3.95	75.00	37.08	43.00	9005490039500
0.1563	5/32	3.97	75.00	37.05	43.00	9005490039700
0.1571	#22	3.99	75.00	37.02	43.00	9005490039900
0.1575		4.00	75.00	37.00	43.00	9005490040000
0.1591	#21	4.04	75.00	36.94	43.00	9005490040400
0.1610	#20	4.09	75.00	36.87	43.00	9005490040900
0.1614		4.10	75.00	36.85	43.00	9005490041000
0.1634		4.15	75.00	36.78	43.00	9005490041500
0.1654		4.20	75.00	36.70	43.00	9005490042000
0.1661	#19	4.22	75.00	36.67	43.00	9005490042200
0.1673		4.25	75.00	36.63	43.00	9005490042500
0.1693	#18	4.30	80.00	40.55	47.00	9005490043000
0.1720	11/64	4.37	80.00	40.45	47.00	9005490043700
0.1728	#17	4.39	80.00	40.42	47.00	9005490043900
0.1732		4.40	80.00	40.40	47.00	9005490044000
0.1752		4.45	80.00	40.33	47.00	9005490044500
0.1772	#16	4.50	80.00	40.25	47.00	9005490045000
0.1791		4.55	80.00	40.18	47.00	9005490045500
0.1799	#15	4.57	80.00	40.15	47.00	9005490045700
0.1811		4.60	80.00	40.10	47.00	9005490046000
0.1819	#14	4.62	80.00	40.07	47.00	9005490046200

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1831		4.65	80.00	40.03	47.00	9005490046500
0.1850	#13	4.70	80.00	39.95	47.00	9005490047000
0.1870		4.75	80.00	39.88	47.00	9005490047500
0.1874	3/16	4.76	86.00	44.86	52.00	9005490047600
0.1890	#12	4.80	86.00	44.80	52.00	9005490048000
0.1909	#11	4.85	86.00	44.73	52.00	9005490048500
0.1929		4.90	86.00	44.65	52.00	9005490049000
0.1937	#10	4.92	86.00	44.62	52.00	9005490049200
0.1949		4.95	86.00	44.58	52.00	9005490049500
0.1961	#9	4.98	86.00	44.53	52.00	9005490049800
0.1969		5.00	86.00	44.50	52.00	9005490050000
0.1988		5.05	86.00	44.43	52.00	9005490050500
0.1992	#8	5.06	86.00	44.41	52.00	9005490050600
0.2008		5.10	86.00	44.35	52.00	9005490051000
0.2012	#7	5.11	86.00	44.34	52.00	9005490051100
0.2028		5.15	86.00	44.28	52.00	9005490051500
0.2031	13/64	5.16	86.00	44.26	52.00	9005490051600
0.2039	#6	5.18	86.00	44.23	52.00	9005490051800
0.2047		5.20	86.00	44.20	52.00	9005490052000
0.2055	#5	5.22	86.00	44.17	52.00	9005490052200
0.2067		5.25	86.00	44.13	52.00	9005490052500
0.2087		5.30	86.00	44.05	52.00	9005490053000
0.2091	#4	5.31	93.00	49.04	57.00	9005490053100
0.2106		5.35	93.00	48.98	57.00	9005490053500
0.2126		5.40	93.00	48.90	57.00	9005490054000
0.2130	#3	5.41	93.00	48.89	57.00	9005490054100
0.2146		5.45	93.00	48.83	57.00	9005490054500
0.2165		5.50	93.00	48.75	57.00	9005490055000
0.2189	7/32	5.56	93.00	48.66	57.00	9005490055600
0.2205		5.60	93.00	48.60	57.00	9005490056000
0.2209	#2	5.61	93.00	48.59	57.00	9005490056100
0.2224		5.65	93.00	48.53	57.00	9005490056500
0.2244		5.70	93.00	48.45	57.00	9005490057000
0.2264		5.75	93.00	48.38	57.00	9005490057500
0.2280	#1	5.79	93.00	48.32	57.00	9005490057900
0.2283		5.80	93.00	48.30	57.00	9005490058000
0.2303		5.85	93.00	48.23	57.00	9005490058500
0.2323		5.90	93.00	48.15	57.00	9005490059000
0.2339	A	5.94	93.00	48.09	57.00	9005490059400
0.2343	15/64	5.95	93.00	48.08	57.00	9005490059500
0.2362		6.00	93.00	48.00	57.00	9005490060000
0.2378	B	6.04	101.00	53.94	63.00	9005490060400
0.2402		6.10	101.00	53.85	63.00	9005490061000
0.2421	C	6.15	101.00	53.78	63.00	9005490061500
0.2441		6.20	101.00	53.70	63.00	9005490062000
0.2461	D	6.25	101.00	53.63	63.00	9005490062500
0.2480		6.30	101.00	53.55	63.00	9005490063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9005490063500
0.2520		6.40	101.00	53.40	63.00	9005490064000
0.2559		6.50	101.00	53.25	63.00	9005490065000
0.2571		6.53	101.00	53.21	63.00	9005490065300
0.2598		6.60	101.00	53.10	63.00	9005490066000
0.2610	G	6.63	101.00	53.06	63.00	9005490066300
0.2638		6.70	101.00	52.95	63.00	9005490067000
0.2657	17/64 H	6.75	109.00	58.88	69.00	9005490067500
0.2677		6.80	109.00	58.80	69.00	9005490068000
0.2689		6.83	109.00	58.76	69.00	9005490068300
0.2717	I	6.90	109.00	58.65	69.00	9005490069000
0.2756		7.00	109.00	58.50	69.00	9005490070000
0.2768	J	7.03	109.00	58.46	69.00	9005490070300
0.2772		7.04	109.00	58.44	69.00	9005490070400
0.2776		7.05	109.00	58.43	69.00	9005490070500
0.2795		7.10	109.00	58.35	69.00	9005490071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9005490071400
0.2835		7.20	109.00	58.20	69.00	9005490072000

Jobber length drills

Series no. **549**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2854		7.25	109.00	58.13	69.00	9005490072500
0.2874		7.30	109.00	58.05	69.00	9005490073000
0.2902	L	7.37	109.00	57.95	69.00	9005490073700
0.2913		7.40	109.00	57.90	69.00	9005490074000
0.2949	M	7.49	109.00	57.77	69.00	9005490074900
0.2953		7.50	109.00	57.75	69.00	9005490075000
0.2969	19/64	7.54	117.00	63.69	75.00	9005490075400
0.2992		7.60	117.00	63.60	75.00	9005490076000
0.3020	N	7.67	117.00	63.50	75.00	9005490076700
0.3031		7.70	117.00	63.45	75.00	9005490077000
0.3051		7.75	117.00	63.38	75.00	9005490077500
0.3071		7.80	117.00	63.30	75.00	9005490078000
0.3110		7.90	117.00	63.15	75.00	9005490079000
0.3126	5/16	7.94	117.00	63.09	75.00	9005490079400
0.3150		8.00	117.00	63.00	75.00	9005490080000
0.3161	O	8.03	117.00	62.96	75.00	9005490080300
0.3189		8.10	117.00	62.85	75.00	9005490081000
0.3228	P	8.20	117.00	62.70	75.00	9005490082000
0.3248		8.25	117.00	62.63	75.00	9005490082500
0.3268		8.30	117.00	62.55	75.00	9005490083000
0.3280	21/64	8.33	117.00	62.51	75.00	9005490083300
0.3307		8.40	117.00	62.40	75.00	9005490084000
0.3319	Q	8.43	117.00	62.36	75.00	9005490084300
0.3346		8.50	117.00	62.25	75.00	9005490085000
0.3386		8.60	125.00	68.10	81.00	9005490086000
0.3390	R	8.61	125.00	68.09	81.00	9005490086100
0.3425		8.70	125.00	67.95	81.00	9005490087000
0.3437	11/32	8.73	125.00	67.91	81.00	9005490087300
0.3445		8.75	125.00	67.88	81.00	9005490087500
0.3465		8.80	125.00	67.80	81.00	9005490088000
0.3480	S	8.84	125.00	67.74	81.00	9005490088400
0.3504		8.90	125.00	67.65	81.00	9005490089000
0.3543		9.00	125.00	67.50	81.00	9005490090000
0.3579	T	9.09	125.00	67.37	81.00	9005490090900
0.3583		9.10	125.00	67.35	81.00	9005490091000
0.3594	23/64	9.13	125.00	67.31	81.00	9005490091300
0.3622		9.20	125.00	67.20	81.00	9005490092000
0.3642		9.25	125.00	67.13	81.00	9005490092500
0.3661		9.30	125.00	67.05	81.00	9005490093000
0.3677	U	9.34	125.00	66.99	81.00	9005490093400
0.3681		9.35	125.00	66.98	81.00	9005490093500
0.3701		9.40	125.00	66.90	81.00	9005490094000
0.3740		9.50	125.00	66.75	81.00	9005490095000
0.3748	3/8	9.52	133.00	72.72	87.00	9005490095200
0.3772	V	9.58	133.00	72.63	87.00	9005490095800
0.3780		9.60	133.00	72.60	87.00	9005490096000
0.3819		9.70	133.00	72.45	87.00	9005490097000
0.3839		9.75	133.00	72.38	87.00	9005490097500
0.3858	W	9.80	133.00	72.30	87.00	9005490098000
0.3898		9.90	133.00	72.15	87.00	9005490099000
0.3906	25/64	9.92	133.00	72.12	87.00	9005490099200
0.3937		10.00	133.00	72.00	87.00	9005490100000
0.3969	X	10.08	133.00	71.88	87.00	9005490100800
0.3976		10.10	133.00	71.85	87.00	9005490101000
0.4016		10.20	133.00	71.70	87.00	9005490102000
0.4039	Y	10.26	133.00	71.61	87.00	9005490102600

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4055		10.30	133.00	71.55	87.00	9005490103000
0.4063	13/32	10.32	133.00	71.52	87.00	9005490103200
0.4094		10.40	133.00	71.40	87.00	9005490104000
0.4130	Z	10.49	133.00	71.27	87.00	9005490104900
0.4134		10.50	133.00	71.25	87.00	9005490105000
0.4173		10.60	133.00	71.10	87.00	9005490106000
0.4213		10.70	142.00	77.95	94.00	9005490107000
0.4220	27/64	10.72	142.00	77.92	94.00	9005490107200
0.4232		10.75	142.00	77.88	94.00	9005490107500
0.4252		10.80	142.00	77.80	94.00	9005490108000
0.4291		10.90	142.00	77.65	94.00	9005490109000
0.4331		11.00	142.00	77.50	94.00	9005490110000
0.4370		11.10	142.00	77.35	94.00	9005490111000
0.4374	7/16	11.11	142.00	77.34	94.00	9005490111100
0.4409		11.20	142.00	77.20	94.00	9005490112000
0.4449		11.30	142.00	77.05	94.00	9005490113000
0.4488		11.40	142.00	76.90	94.00	9005490114000
0.4528		11.50	142.00	76.75	94.00	9005490115000
0.4531	29/64	11.51	142.00	76.74	94.00	9005490115100
0.4567		11.60	142.00	76.60	94.00	9005490116000
0.4606		11.70	142.00	76.45	94.00	9005490117000
0.4626		11.75	142.00	76.38	94.00	9005490117500
0.4646		11.80	142.00	76.30	94.00	9005490118000
0.4685		11.90	151.00	83.15	101.00	9005490119000
0.4689	15/32	11.91	151.00	83.14	101.00	9005490119100
0.4724		12.00	151.00	83.00	101.00	9005490120000
0.4764		12.10	151.00	82.85	101.00	9005490121000
0.4783		12.15	151.00	82.78	101.00	9005490121500
0.4803		12.20	151.00	82.70	101.00	9005490122000
0.4843	31/64	12.30	151.00	82.55	101.00	9005490123000
0.4921		12.50	151.00	82.25	101.00	9005490125000
0.5000	1/2	12.70	151.00	81.95	101.00	9005490127000
0.5020		12.75	151.00	81.88	101.00	9005490127500
0.5039		12.80	151.00	81.80	101.00	9005490128000
0.5079		12.90	151.00	81.65	101.00	9005490129000
0.5118		13.00	151.00	81.50	101.00	9005490130000
0.5157	33/64	13.10	151.00	81.35	101.00	9005490131000
0.5197		13.20	151.00	81.20	101.00	9005490132000
0.5311	17/32	13.49	160.00	87.77	108.00	9005490134900
0.5315		13.50	160.00	87.75	108.00	9005490135000
0.5354		13.60	160.00	87.60	108.00	9005490136000
0.5394		13.70	160.00	87.45	108.00	9005490137000
0.5469	35/64	13.89	160.00	87.17	108.00	9005490138900
0.5512		14.00	160.00	87.00	108.00	9005490140000
0.5626	9/16	14.29	169.00	92.57	114.00	9005490142900
0.5669		14.40	169.00	92.40	114.00	9005490144000
0.5709		14.50	169.00	92.25	114.00	9005490145000
0.5780	37/64	14.68	169.00	91.98	114.00	9005490146800
0.5906		15.00	169.00	91.50	114.00	9005490150000
0.5937	19/32	15.08	178.00	97.38	120.00	9005490150800
0.6094	39/64	15.48	178.00	96.78	120.00	9005490154800
0.6102		15.50	178.00	96.75	120.00	9005490155000
0.6201		15.75	178.00	96.38	120.00	9005490157500
0.6248	5/8	15.87	178.00	96.20	120.00	9005490158700
0.6299		16.00	178.00	96.00	120.00	9005490160000

Jobber length drills

Series no. **550**

~5xD Cutting depth | DIN 338 Standard | GT 100 Type | 130° Point angle | h8 Tolerance on Ø | Web Thinning | Cyl Shank form | L Cutting direction

Tool material **HSS**

Surface >Ø 2.36

P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

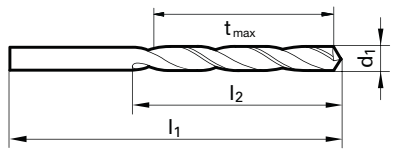
●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • wide flutes • especially for drilling depths > 3xD

grey cast iron • steels up to 1000 N/mm² • Not recommended for: CrNi steels, stainless steels



$t_{max} = l_2\text{-}1.5 \times d_1$



Speeds and feeds information on pg. 499

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	34.00	10.50	12.00	9005500010000
0.0512		1.30	38.00	14.05	16.00	9005500013000
0.0520	#55	1.32	38.00	14.02	16.00	9005500013200
0.0531		1.35	40.00	15.98	18.00	9005500013500
0.0551	#54	1.40	40.00	15.90	18.00	9005500014000
0.0571		1.45	40.00	15.83	18.00	9005500014500
0.0587		1.49	40.00	15.77	18.00	9005500014900
0.0591		1.50	40.00	15.75	18.00	9005500015000
0.0594	#53	1.51	43.00	17.74	20.00	9005500015100
0.0610		1.55	43.00	17.68	20.00	9005500015500
0.0622		1.58	43.00	17.63	20.00	9005500015800
0.0626	1/16	1.59	43.00	17.62	20.00	9005500015900
0.0630		1.60	43.00	17.60	20.00	9005500016000
0.0650		1.65	43.00	17.53	20.00	9005500016500
0.0657		1.67	43.00	17.50	20.00	9005500016700
0.0669	#51	1.70	43.00	17.45	20.00	9005500017000
0.0689		1.75	46.00	19.38	22.00	9005500017500
0.0701	#50	1.78	46.00	19.33	22.00	9005500017800
0.0709		1.80	46.00	19.30	22.00	9005500018000
0.0728	#49	1.85	46.00	19.23	22.00	9005500018500
0.0748		1.90	46.00	19.15	22.00	9005500019000
0.0768		1.95	49.00	21.08	24.00	9005500019500
0.0780	5/64	1.98	49.00	21.03	24.00	9005500019800
0.0783	#47	1.99	49.00	21.02	24.00	9005500019900
0.0787		2.00	49.00	21.00	24.00	9005500020000
0.0807		2.05	49.00	20.93	24.00	9005500020500
0.0819	#45	2.08	49.00	20.88	24.00	9005500020800
0.0827		2.10	49.00	20.85	24.00	9005500021000
0.0846		2.15	53.00	23.78	27.00	9005500021500
0.0866		2.20	53.00	23.70	27.00	9005500022000
0.0886		2.25	53.00	23.63	27.00	9005500022500
0.0890	#43	2.26	53.00	23.61	27.00	9005500022600
0.0906		2.30	53.00	23.55	27.00	9005500023000
0.0917		2.33	53.00	23.51	27.00	9005500023300
0.0925		2.35	53.00	23.48	27.00	9005500023500
0.0933	#42	2.37	57.00	26.45	30.00	9005500023700
0.0937	3/32	2.38	57.00	26.43	30.00	9005500023800
0.0945		2.40	57.00	26.40	30.00	9005500024000
0.0980	#40	2.49	57.00	26.27	30.00	9005500024900
0.0984		2.50	57.00	26.25	30.00	9005500025000
0.0996	#39	2.53	57.00	26.21	30.00	9005500025300

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1004		2.55	57.00	26.18	30.00	9005500025500
0.1016	#38	2.58	57.00	26.13	30.00	9005500025800
0.1024		2.60	57.00	26.10	30.00	9005500026000
0.1039	#37	2.64	57.00	26.04	30.00	9005500026400
0.1043		2.65	57.00	26.03	30.00	9005500026500
0.1051		2.67	61.00	29.00	33.00	9005500026700
0.1063		2.70	61.00	28.95	33.00	9005500027000
0.1083		2.75	61.00	28.88	33.00	9005500027500
0.1094	7/64	2.78	61.00	28.83	33.00	9005500027800
0.1098	#35	2.79	61.00	28.82	33.00	9005500027900
0.1102		2.80	61.00	28.80	33.00	9005500028000
0.1110	#34	2.82	61.00	28.77	33.00	9005500028200
0.1130	#33	2.87	61.00	28.70	33.00	9005500028700
0.1142		2.90	61.00	28.65	33.00	9005500029000
0.1161	#32	2.95	61.00	28.58	33.00	9005500029500
0.1181		3.00	61.00	28.50	33.00	9005500030000
0.1189		3.02	65.00	31.47	36.00	9005500030200
0.1201	#31	3.05	65.00	31.43	36.00	9005500030500
0.1220		3.10	65.00	31.35	36.00	9005500031000
0.1240		3.15	65.00	31.28	36.00	9005500031500
0.1248	1/8	3.17	65.00	31.25	36.00	9005500031700
0.1260		3.20	65.00	31.20	36.00	9005500032000
0.1280		3.25	65.00	31.13	36.00	9005500032500
0.1283	#30	3.26	65.00	31.11	36.00	9005500032600
0.1299		3.30	65.00	31.05	36.00	9005500033000
0.1319		3.35	65.00	30.98	36.00	9005500033500
0.1339		3.40	70.00	33.90	39.00	9005500034000
0.1358	#29	3.45	70.00	33.83	39.00	9005500034500
0.1378		3.50	70.00	33.75	39.00	9005500035000
0.1406	9/64 #28	3.57	70.00	33.65	39.00	9005500035700
0.1417		3.60	70.00	33.60	39.00	9005500036000
0.1441	#27	3.66	70.00	33.51	39.00	9005500036600
0.1457		3.70	70.00	33.45	39.00	9005500037000
0.1476		3.75	70.00	33.38	39.00	9005500037500
0.1496	#25	3.80	75.00	37.30	43.00	9005500038000
0.1516		3.85	75.00	37.23	43.00	9005500038500
0.1520	#24	3.86	75.00	37.21	43.00	9005500038600
0.1535		3.90	75.00	37.15	43.00	9005500039000
0.1563	5/32	3.97	75.00	37.05	43.00	9005500039700
0.1571	#22	3.99	75.00	37.02	43.00	9005500039900
0.1575		4.00	75.00	37.00	43.00	9005500040000

Jobber length drills

Series no. **550**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1591	#21	4.04	75.00	36.94	43.00	9005500040400
0.1614		4.10	75.00	36.85	43.00	9005500041000
0.1654		4.20	75.00	36.70	43.00	9005500042000
0.1693	#18	4.30	80.00	40.55	47.00	9005500043000
0.1713		4.35	80.00	40.48	47.00	9005500043500
0.1720	11/64	4.37	80.00	40.45	47.00	9005500043700
0.1732		4.40	80.00	40.40	47.00	9005500044000
0.1752		4.45	80.00	40.33	47.00	9005500044500
0.1772	#16	4.50	80.00	40.25	47.00	9005500045000
0.1811		4.60	80.00	40.10	47.00	9005500046000
0.1819	#14	4.62	80.00	40.07	47.00	9005500046200
0.1850	#13	4.70	80.00	39.95	47.00	9005500047000
0.1874	3/16	4.76	86.00	44.86	52.00	9005500047600
0.1890	#12	4.80	86.00	44.80	52.00	9005500048000
0.1909	#11	4.85	86.00	44.73	52.00	9005500048500
0.1929		4.90	86.00	44.65	52.00	9005500049000
0.1961	#9	4.98	86.00	44.53	52.00	9005500049800
0.1969		5.00	86.00	44.50	52.00	9005500050000
0.1992	#8	5.06	86.00	44.41	52.00	9005500050600
0.2008		5.10	86.00	44.35	52.00	9005500051000
0.2031	13/64	5.16	86.00	44.26	52.00	9005500051600
0.2047		5.20	86.00	44.20	52.00	9005500052000
0.2087		5.30	86.00	44.05	52.00	9005500053000
0.2126		5.40	93.00	48.90	57.00	9005500054000
0.2165		5.50	93.00	48.75	57.00	9005500055000
0.2189	7/32	5.56	93.00	48.66	57.00	9005500055600
0.2205		5.60	93.00	48.60	57.00	9005500056000
0.2244		5.70	93.00	48.45	57.00	9005500057000
0.2264		5.75	93.00	48.38	57.00	9005500057500
0.2280	#1	5.79	93.00	48.32	57.00	9005500057900
0.2283		5.80	93.00	48.30	57.00	9005500058000
0.2323		5.90	93.00	48.15	57.00	9005500059000
0.2343	15/64	5.95	93.00	48.08	57.00	9005500059500
0.2362		6.00	93.00	48.00	57.00	9005500060000
0.2382		6.05	101.00	53.93	63.00	9005500060500
0.2402		6.10	101.00	53.85	63.00	9005500061000
0.2441		6.20	101.00	53.70	63.00	9005500062000
0.2461	D	6.25	101.00	53.63	63.00	9005500062500
0.2480		6.30	101.00	53.55	63.00	9005500063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9005500063500
0.2520		6.40	101.00	53.40	63.00	9005500064000
0.2559		6.50	101.00	53.25	63.00	9005500065000
0.2598		6.60	101.00	53.10	63.00	9005500066000
0.2638		6.70	101.00	52.95	63.00	9005500067000
0.2657	17/64 H	6.75	109.00	58.88	69.00	9005500067500
0.2677		6.80	109.00	58.80	69.00	9005500068000
0.2717	I	6.90	109.00	58.65	69.00	9005500069000
0.2756		7.00	109.00	58.50	69.00	9005500070000
0.2795		7.10	109.00	58.35	69.00	9005500071000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2811	9/32 K	7.14	109.00	58.29	69.00	9005500071400
0.2835		7.20	109.00	58.20	69.00	9005500072000
0.2874		7.30	109.00	58.05	69.00	9005500073000
0.2913		7.40	109.00	57.90	69.00	9005500074000
0.2953		7.50	109.00	57.75	69.00	9005500075000
0.2969	19/64	7.54	117.00	63.69	75.00	9005500075400
0.2992		7.60	117.00	63.60	75.00	9005500076000
0.3031		7.70	117.00	63.45	75.00	9005500077000
0.3071		7.80	117.00	63.30	75.00	9005500078000
0.3110		7.90	117.00	63.15	75.00	9005500079000
0.3126	5/16	7.94	117.00	63.09	75.00	9005500079400
0.3150		8.00	117.00	63.00	75.00	9005500080000
0.3189		8.10	117.00	62.85	75.00	9005500081000
0.3228	P	8.20	117.00	62.70	75.00	9005500082000
0.3268		8.30	117.00	62.55	75.00	9005500083000
0.3280	21/64	8.33	117.00	62.51	75.00	9005500083300
0.3307		8.40	117.00	62.40	75.00	9005500084000
0.3346		8.50	117.00	62.25	75.00	9005500085000
0.3386		8.60	125.00	68.10	81.00	9005500086000
0.3425		8.70	125.00	67.95	81.00	9005500087000
0.3437	11/32	8.73	125.00	67.91	81.00	9005500087300
0.3465		8.80	125.00	67.80	81.00	9005500088000
0.3504		8.90	125.00	67.65	81.00	9005500089000
0.3543		9.00	125.00	67.50	81.00	9005500090000
0.3594	23/64	9.13	125.00	67.31	81.00	9005500091300
0.3622		9.20	125.00	67.20	81.00	9005500092000
0.3661		9.30	125.00	67.05	81.00	9005500093000
0.3701		9.40	125.00	66.90	81.00	9005500094000
0.3740		9.50	125.00	66.75	81.00	9005500095000
0.3748	3/8	9.52	133.00	72.72	87.00	9005500095200
0.3780		9.60	133.00	72.60	87.00	9005500096000
0.3819		9.70	133.00	72.45	87.00	9005500097000
0.3858	W	9.80	133.00	72.30	87.00	9005500098000
0.3898		9.90	133.00	72.15	87.00	9005500099000
0.3937		10.00	133.00	72.00	87.00	9005500100000
0.3976		10.10	133.00	71.85	87.00	9005500101000
0.4016		10.20	133.00	71.70	87.00	9005500102000
0.4055		10.30	133.00	71.55	87.00	9005500103000
0.4134		10.50	133.00	71.25	87.00	9005500105000
0.4252		10.80	142.00	77.80	94.00	9005500108000
0.4331		11.00	142.00	77.50	94.00	9005500110000
0.4370		11.10	142.00	77.35	94.00	9005500111000
0.4374	7/16	11.11	142.00	77.34	94.00	9005500111100
0.4528		11.50	142.00	76.75	94.00	9005500115000
0.4606		11.70	142.00	76.45	94.00	9005500117000
0.4724		12.00	151.00	83.00	101.00	9005500120000
0.4921		12.50	151.00	82.25	101.00	9005500125000
0.5000	1/2	12.70	151.00	81.95	101.00	9005500127000

Jobber length drills 652

~5xD	DIN 338	GT 100	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: HSS

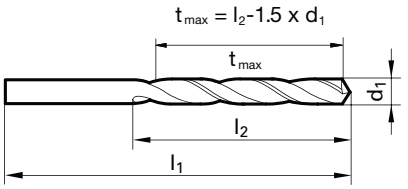
Surface: S

P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • wide flutes • especially for drilling depths > 3xD

grey cast iron • steels up to 1000 N/mm² • Not recommended for: CrNi steels, stainless steels





Speeds and feeds information on pg. 515

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	34.00	10.50	12.00	9006520010000
0.0402	#60	1.02	34.00	10.47	12.00	9006520010200
0.0409	#59	1.04	34.00	10.44	12.00	9006520010400
0.0421	#58	1.07	36.00	12.40	14.00	9006520010700
0.0429	#57	1.09	36.00	12.37	14.00	9006520010900
0.0433		1.10	36.00	12.35	14.00	9006520011000
0.0465	#56	1.18	36.00	12.23	14.00	9006520011800
0.0469	3/64	1.19	38.00	14.22	16.00	9006520011900
0.0472		1.20	38.00	14.20	16.00	9006520012000
0.0480		1.22	38.00	14.17	16.00	9006520012200
0.0492		1.25	38.00	14.13	16.00	9006520012500
0.0512		1.30	38.00	14.05	16.00	9006520013000
0.0520	#55	1.32	38.00	14.02	16.00	9006520013200
0.0531		1.35	40.00	15.98	18.00	9006520013500
0.0551	#54	1.40	40.00	15.90	18.00	9006520014000
0.0571		1.45	40.00	15.83	18.00	9006520014500
0.0591		1.50	40.00	15.75	18.00	9006520015000
0.0594	#53	1.51	43.00	17.74	20.00	9006520015100
0.0602		1.53	43.00	17.71	20.00	9006520015300
0.0610		1.55	43.00	17.68	20.00	9006520015500
0.0626	1/16	1.59	43.00	17.62	20.00	9006520015900
0.0630		1.60	43.00	17.60	20.00	9006520016000
0.0634	#52	1.61	43.00	17.59	20.00	9006520016100
0.0650		1.65	43.00	17.53	20.00	9006520016500
0.0669	#51	1.70	43.00	17.45	20.00	9006520017000
0.0677		1.72	46.00	19.42	22.00	9006520017200
0.0689		1.75	46.00	19.38	22.00	9006520017500
0.0701	#50	1.78	46.00	19.33	22.00	9006520017800
0.0709		1.80	46.00	19.30	22.00	9006520018000
0.0728	#49	1.85	46.00	19.23	22.00	9006520018500
0.0748		1.90	46.00	19.15	22.00	9006520019000
0.0760	#48	1.93	49.00	21.11	24.00	9006520019300
0.0768		1.95	49.00	21.08	24.00	9006520019500
0.0780	5/64	1.98	49.00	21.03	24.00	9006520019800
0.0783	#47	1.99	49.00	21.02	24.00	9006520019900
0.0787		2.00	49.00	21.00	24.00	9006520020000
0.0811	#46	2.06	49.00	20.91	24.00	9006520020600
0.0819	#45	2.08	49.00	20.88	24.00	9006520020800
0.0827		2.10	49.00	20.85	24.00	9006520021000
0.0846		2.15	53.00	23.78	27.00	9006520021500
0.0858	#44	2.18	53.00	23.73	27.00	9006520021800
0.0866		2.20	53.00	23.70	27.00	9006520022000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0890	#43	2.26	53.00	23.61	27.00	9006520022600
0.0906		2.30	53.00	23.55	27.00	9006520023000
0.0925		2.35	53.00	23.48	27.00	9006520023500
0.0933	#42	2.37	57.00	26.45	30.00	9006520023700
0.0937	3/32	2.38	57.00	26.43	30.00	9006520023800
0.0945		2.40	57.00	26.40	30.00	9006520024000
0.0961	#41	2.44	57.00	26.34	30.00	9006520024400
0.0965		2.45	57.00	26.33	30.00	9006520024500
0.0980	#40	2.49	57.00	26.27	30.00	9006520024900
0.0984		2.50	57.00	26.25	30.00	9006520025000
0.0996	#39	2.53	57.00	26.21	30.00	9006520025300
0.1004		2.55	57.00	26.18	30.00	9006520025500
0.1016	#38	2.58	57.00	26.13	30.00	9006520025800
0.1024		2.60	57.00	26.10	30.00	9006520026000
0.1039	#37	2.64	57.00	26.04	30.00	9006520026400
0.1043		2.65	57.00	26.03	30.00	9006520026500
0.1063		2.70	61.00	28.95	33.00	9006520027000
0.1067	#36	2.71	61.00	28.94	33.00	9006520027100
0.1083		2.75	61.00	28.88	33.00	9006520027500
0.1094	7/64	2.78	61.00	28.83	33.00	9006520027800
0.1098	#35	2.79	61.00	28.82	33.00	9006520027900
0.1102		2.80	61.00	28.80	33.00	9006520028000
0.1110	#34	2.82	61.00	28.77	33.00	9006520028200
0.1122		2.85	61.00	28.73	33.00	9006520028500
0.1130	#33	2.87	61.00	28.70	33.00	9006520028700
0.1142		2.90	61.00	28.65	33.00	9006520029000
0.1161	#32	2.95	61.00	28.58	33.00	9006520029500
0.1181		3.00	61.00	28.50	33.00	9006520030000
0.1201	#31	3.05	65.00	31.43	36.00	9006520030500
0.1220		3.10	65.00	31.35	36.00	9006520031000
0.1248	1/8	3.17	65.00	31.25	36.00	9006520031700
0.1260		3.20	65.00	31.20	36.00	9006520032000
0.1280		3.25	65.00	31.13	36.00	9006520032500
0.1283	#30	3.26	65.00	31.11	36.00	9006520032600
0.1299		3.30	65.00	31.05	36.00	9006520033000
0.1339		3.40	70.00	33.90	39.00	9006520034000
0.1358	#29	3.45	70.00	33.83	39.00	9006520034500
0.1378		3.50	70.00	33.75	39.00	9006520035000
0.1406	9/64 #28	3.57	70.00	33.65	39.00	9006520035700
0.1417		3.60	70.00	33.60	39.00	9006520036000
0.1441	#27	3.66	70.00	33.51	39.00	9006520036600
0.1457		3.70	70.00	33.45	39.00	9006520037000

Jobber length drills

Series no. **652**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1469	#26	3.73	70.00	33.41	39.00	9006520037300
0.1476		3.75	70.00	33.38	39.00	9006520037500
0.1496	#25	3.80	75.00	37.30	43.00	9006520038000
0.1520	#24	3.86	75.00	37.21	43.00	9006520038600
0.1535		3.90	75.00	37.15	43.00	9006520039000
0.1539	#23	3.91	75.00	37.14	43.00	9006520039100
0.1563	5/32	3.97	75.00	37.05	43.00	9006520039700
0.1571	#22	3.99	75.00	37.02	43.00	9006520039900
0.1575		4.00	75.00	37.00	43.00	9006520040000
0.1591	#21	4.04	75.00	36.94	43.00	9006520040400
0.1594		4.05	75.00	36.93	43.00	9006520040500
0.1610	#20	4.09	75.00	36.87	43.00	9006520040900
0.1614		4.10	75.00	36.85	43.00	9006520041000
0.1654		4.20	75.00	36.70	43.00	9006520042000
0.1661	#19	4.22	75.00	36.67	43.00	9006520042200
0.1673		4.25	75.00	36.63	43.00	9006520042500
0.1693	#18	4.30	80.00	40.55	47.00	9006520043000
0.1720	11/64	4.37	80.00	40.45	47.00	9006520043700
0.1728	#17	4.39	80.00	40.42	47.00	9006520043900
0.1732		4.40	80.00	40.40	47.00	9006520044000
0.1752		4.45	80.00	40.33	47.00	9006520044500
0.1772	#16	4.50	80.00	40.25	47.00	9006520045000
0.1799	#15	4.57	80.00	40.15	47.00	9006520045700
0.1811		4.60	80.00	40.10	47.00	9006520046000
0.1819	#14	4.62	80.00	40.07	47.00	9006520046200
0.1850	#13	4.70	80.00	39.95	47.00	9006520047000
0.1874	3/16	4.76	86.00	44.86	52.00	9006520047600
0.1890	#12	4.80	86.00	44.80	52.00	9006520048000
0.1909	#11	4.85	86.00	44.73	52.00	9006520048500
0.1929		4.90	86.00	44.65	52.00	9006520049000
0.1937	#10	4.92	86.00	44.62	52.00	9006520049200
0.1961	#9	4.98	86.00	44.53	52.00	9006520049800
0.1969		5.00	86.00	44.50	52.00	9006520050000
0.1992	#8	5.06	86.00	44.41	52.00	9006520050600
0.2008		5.10	86.00	44.35	52.00	9006520051000
0.2012	#7	5.11	86.00	44.34	52.00	9006520051100
0.2031	13/64	5.16	86.00	44.26	52.00	9006520051600
0.2039	#6	5.18	86.00	44.23	52.00	9006520051800
0.2047		5.20	86.00	44.20	52.00	9006520052000
0.2055	#5	5.22	86.00	44.17	52.00	9006520052200
0.2087		5.30	86.00	44.05	52.00	9006520053000
0.2091	#4	5.31	93.00	49.04	57.00	9006520053100
0.2126		5.40	93.00	48.90	57.00	9006520054000
0.2130	#3	5.41	93.00	48.89	57.00	9006520054100
0.2165		5.50	93.00	48.75	57.00	9006520055000
0.2189	7/32	5.56	93.00	48.66	57.00	9006520055600
0.2205		5.60	93.00	48.60	57.00	9006520056000
0.2209	#2	5.61	93.00	48.59	57.00	9006520056100
0.2244		5.70	93.00	48.45	57.00	9006520057000
0.2264		5.75	93.00	48.38	57.00	9006520057500
0.2280	#1	5.79	93.00	48.32	57.00	9006520057900
0.2283		5.80	93.00	48.30	57.00	9006520058000
0.2323		5.90	93.00	48.15	57.00	9006520059000
0.2339	A	5.94	93.00	48.09	57.00	9006520059400
0.2343	15/64	5.95	93.00	48.08	57.00	9006520059500
0.2362		6.00	93.00	48.00	57.00	9006520060000
0.2378	B	6.04	101.00	53.94	63.00	9006520060400
0.2402		6.10	101.00	53.85	63.00	9006520061000
0.2421	C	6.15	101.00	53.78	63.00	9006520061500
0.2441		6.20	101.00	53.70	63.00	9006520062000
0.2461	D	6.25	101.00	53.63	63.00	9006520062500
0.2480		6.30	101.00	53.55	63.00	9006520063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9006520063500
0.2520		6.40	101.00	53.40	63.00	9006520064000
0.2559		6.50	101.00	53.25	63.00	9006520065000
0.2571	F	6.53	101.00	53.21	63.00	9006520065300

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2598		6.60	101.00	53.10	63.00	9006520066000
0.2610	G	6.63	101.00	53.06	63.00	9006520066300
0.2638		6.70	101.00	52.95	63.00	9006520067000
0.2657	17/64 H	6.75	109.00	58.88	69.00	9006520067500
0.2677		6.80	109.00	58.80	69.00	9006520068000
0.2717	I	6.90	109.00	58.65	69.00	9006520069000
0.2756		7.00	109.00	58.50	69.00	9006520070000
0.2768	J	7.03	109.00	58.46	69.00	9006520070300
0.2795		7.10	109.00	58.35	69.00	9006520071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9006520071400
0.2835		7.20	109.00	58.20	69.00	9006520072000
0.2874		7.30	109.00	58.05	69.00	9006520073000
0.2902	L	7.37	109.00	57.95	69.00	9006520073700
0.2913		7.40	109.00	57.90	69.00	9006520074000
0.2949	M	7.49	109.00	57.77	69.00	9006520074900
0.2953		7.50	109.00	57.75	69.00	9006520075000
0.2969	19/64	7.54	117.00	63.69	75.00	9006520075400
0.2992		7.60	117.00	63.60	75.00	9006520076000
0.3020	N	7.67	117.00	63.50	75.00	9006520076700
0.3031		7.70	117.00	63.45	75.00	9006520077000
0.3071		7.80	117.00	63.30	75.00	9006520078000
0.3110		7.90	117.00	63.15	75.00	9006520079000
0.3126	5/16	7.94	117.00	63.09	75.00	9006520079400
0.3150		8.00	117.00	63.00	75.00	9006520080000
0.3161	O	8.03	117.00	62.96	75.00	9006520080300
0.3189		8.10	117.00	62.85	75.00	9006520081000
0.3228	P	8.20	117.00	62.70	75.00	9006520082000
0.3280	21/64	8.33	117.00	62.51	75.00	9006520083300
0.3307		8.40	117.00	62.40	75.00	9006520084000
0.3319	Q	8.43	117.00	62.36	75.00	9006520084300
0.3346		8.50	117.00	62.25	75.00	9006520085000
0.3386		8.60	125.00	68.10	81.00	9006520086000
0.3390	R	8.61	125.00	68.09	81.00	9006520086100
0.3425		8.70	125.00	67.95	81.00	9006520087000
0.3437	11/32	8.73	125.00	67.91	81.00	9006520087300
0.3465		8.80	125.00	67.80	81.00	9006520088000
0.3480	S	8.84	125.00	67.74	81.00	9006520088400
0.3504		8.90	125.00	67.65	81.00	9006520089000
0.3543		9.00	125.00	67.50	81.00	9006520090000
0.3583		9.10	125.00	67.35	81.00	9006520091000
0.3594	23/64	9.13	125.00	67.31	81.00	9006520091300
0.3622		9.20	125.00	67.20	81.00	9006520092000
0.3661		9.30	125.00	67.05	81.00	9006520093000
0.3677	U	9.34	125.00	66.99	81.00	9006520093400
0.3701		9.40	125.00	66.90	81.00	9006520094000
0.3740		9.50	125.00	66.75	81.00	9006520095000
0.3748	3/8	9.52	133.00	72.72	87.00	9006520095200
0.3780		9.60	133.00	72.60	87.00	9006520096000
0.3819		9.70	133.00	72.45	87.00	9006520097000
0.3858	W	9.80	133.00	72.30	87.00	9006520098000
0.3898		9.90	133.00	72.15	87.00	9006520099000
0.3906	25/64	9.92	133.00	72.12	87.00	9006520099200
0.3937		10.00	133.00	72.00	87.00	9006520100000
0.4016		10.20	133.00	71.70	87.00	9006520102000
0.4063	13/32	10.32	133.00	71.52	87.00	9006520103200
0.4130	Z	10.49	133.00	71.27	87.00	9006520104900
0.4134		10.50	133.00	71.25	87.00	9006520105000
0.4213		10.70	142.00	77.95	94.00	9006520107000
0.4220	27/64	10.72	142.00	77.92	94.00	9006520107200
0.4331		11.00	142.00	77.50	94.00	9006520110000
0.4374	7/16	11.11	142.00	77.34	94.00	9006520111100
0.4409		11.20	142.00	77.20	94.00	9006520112000
0.4528		11.50	142.00	76.75	94.00	9006520115000
0.4531	29/64	11.51	142.00	76.74	94.00	9006520115100
0.4606		11.70	142.00	76.45	94.00	9006520117000
0.4689	15/32	11.91	151.00	83.14	101.00	9006520119100

Jobber length drills

Series no. **652**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4724		12.00	151.00	83.00	101.00	9006520120000
0.4764		12.10	151.00	82.85	101.00	9006520121000
0.4843	31/64	12.30	151.00	82.55	101.00	9006520123000
0.4921		12.50	151.00	82.25	101.00	9006520125000
0.5000	1/2	12.70	151.00	81.95	101.00	9006520127000
0.5039		12.80	151.00	81.80	101.00	9006520128000
0.5118		13.00	151.00	81.50	101.00	9006520130000
0.5157	33/64	13.10	151.00	81.35	101.00	9006520131000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.5311	17/32	13.49	160.00	87.77	108.00	9006520134900
0.5315		13.50	160.00	87.75	108.00	9006520135000
0.5469	35/64	13.89	160.00	87.17	108.00	9006520138900
0.5512		14.00	160.00	87.00	108.00	9006520140000
0.5626	9/16	14.29	169.00	92.57	114.00	9006520142900
0.5906		15.00	169.00	91.50	114.00	9006520150000
0.6299		16.00	178.00	96.00	120.00	9006520160000

Jobber length drills

Series no. **305**

~5xD	DIN 338	N	118°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSCO**

Surface: >Ø 2.36

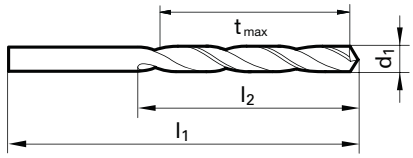
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • Co-alloyed high speed steel • increased wear resistance

alloyed/unalloyed steel and cast steel • cast materials over 800 N/mm² • hot and cold rolled steels • antifriction bearing steels • high-alloyed S steels • heat treatable and case hardened steels

$t_{max} = l_2 - 1.5 \times d_1$





Speeds and feeds information on pg. 489

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0079	#92	0.20	19.00	2.20	2.50	9003050002000
0.0083	#91	0.21	19.00	2.19	2.50	9003050002100
0.0087	#90	0.22	19.00	2.17	2.50	9003050002200
0.0091	#89	0.23	19.00	2.16	2.50	9003050002300
0.0098	#87	0.25	19.00	2.63	3.00	9003050002500
0.0102		0.26	19.00	2.61	3.00	9003050002600
0.0106	#86	0.27	19.00	2.60	3.00	9003050002700
0.0110	#85	0.28	19.00	2.58	3.00	9003050002800
0.0118		0.30	19.00	2.55	3.00	9003050003000
0.0122	#83	0.31	19.00	3.54	4.00	9003050003100
0.0126	#82	0.32	19.00	3.52	4.00	9003050003200
0.0130	#81	0.33	19.00	3.51	4.00	9003050003300
0.0134	#80	0.34	19.00	3.49	4.00	9003050003400
0.0138		0.35	19.00	3.48	4.00	9003050003500
0.0146	#79	0.37	19.00	3.45	4.00	9003050003700
0.0150		0.38	19.00	3.43	4.00	9003050003800
0.0157	1/64	0.40	20.00	4.40	5.00	9003050004000
0.0161	#78	0.41	20.00	4.39	5.00	9003050004100
0.0165		0.42	20.00	4.37	5.00	9003050004200
0.0169		0.43	20.00	4.36	5.00	9003050004300
0.0173		0.44	20.00	4.34	5.00	9003050004400
0.0177		0.45	20.00	4.33	5.00	9003050004500
0.0181	#77	0.46	20.00	4.31	5.00	9003050004600
0.0185		0.47	20.00	4.30	5.00	9003050004700
0.0189		0.48	20.00	4.28	5.00	9003050004800
0.0193		0.49	22.00	5.27	6.00	9003050004900
0.0197		0.50	22.00	5.25	6.00	9003050005000
0.0201	#76	0.51	22.00	5.24	6.00	9003050005100
0.0205		0.52	22.00	5.22	6.00	9003050005200
0.0209	#75	0.53	22.00	5.21	6.00	9003050005300
0.0213		0.54	24.00	6.19	7.00	9003050005400
0.0217		0.55	24.00	6.18	7.00	9003050005500
0.0220		0.56	24.00	6.16	7.00	9003050005600
0.0224	#74	0.57	24.00	6.15	7.00	9003050005700
0.0232		0.59	24.00	6.12	7.00	9003050005900
0.0236		0.60	24.00	6.10	7.00	9003050006000
0.0240	#73	0.61	26.00	7.09	8.00	9003050006100
0.0244		0.62	26.00	7.07	8.00	9003050006200
0.0252	#72	0.64	26.00	7.04	8.00	9003050006400
0.0256		0.65	26.00	7.03	8.00	9003050006500
0.0260	#71	0.66	26.00	7.01	8.00	9003050006600
0.0264		0.67	26.00	7.00	8.00	9003050006700
0.0268		0.68	28.00	7.98	9.00	9003050006800
0.0276		0.70	28.00	7.95	9.00	9003050007000
0.0280	#70	0.71	28.00	7.94	9.00	9003050007100

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0283		0.72	28.00	7.92	9.00	9003050007200
0.0291	#69	0.74	28.00	7.89	9.00	9003050007400
0.0295		0.75	28.00	7.88	9.00	9003050007500
0.0299		0.76	30.00	8.86	10.00	9003050007600
0.0303		0.77	30.00	8.85	10.00	9003050007700
0.0307		0.78	30.00	8.83	10.00	9003050007800
0.0311	1/32 #68	0.79	30.00	8.82	10.00	9003050007900
0.0315		0.80	30.00	8.80	10.00	9003050008000
0.0319	#67	0.81	30.00	8.79	10.00	9003050008100
0.0323		0.82	30.00	8.77	10.00	9003050008200
0.0331	#66	0.84	30.00	8.74	10.00	9003050008400
0.0335		0.85	30.00	8.73	10.00	9003050008500
0.0339		0.86	32.00	9.71	11.00	9003050008600
0.0343		0.87	32.00	9.70	11.00	9003050008700
0.0346		0.88	32.00	9.68	11.00	9003050008800
0.0350	#65	0.89	32.00	9.67	11.00	9003050008900
0.0354		0.90	32.00	9.65	11.00	9003050009000
0.0358	#64	0.91	32.00	9.64	11.00	9003050009100
0.0362		0.92	32.00	9.62	11.00	9003050009200
0.0370	#63	0.94	32.00	9.59	11.00	9003050009400
0.0374		0.95	32.00	9.58	11.00	9003050009500
0.0378		0.96	34.00	10.56	12.00	9003050009600
0.0382	#62	0.97	34.00	10.55	12.00	9003050009700
0.0390	#61	0.99	34.00	10.52	12.00	9003050009900
0.0394		1.00	34.00	10.50	12.00	9003050010000
0.0398		1.01	34.00	10.49	12.00	9003050010100
0.0402	#60	1.02	34.00	10.47	12.00	9003050010200
0.0406		1.03	34.00	10.46	12.00	9003050010300
0.0409	#59	1.04	34.00	10.44	12.00	9003050010400
0.0413		1.05	34.00	10.43	12.00	9003050010500
0.0421	#58	1.07	36.00	12.40	14.00	9003050010700
0.0425		1.08	36.00	12.38	14.00	9003050010800
0.0429	#57	1.09	36.00	12.37	14.00	9003050010900
0.0433		1.10	36.00	12.35	14.00	9003050011000
0.0449		1.14	36.00	12.29	14.00	9003050011400
0.0453		1.15	36.00	12.28	14.00	9003050011500
0.0457		1.16	36.00	12.26	14.00	9003050011600
0.0461		1.17	36.00	12.25	14.00	9003050011700
0.0465	#56	1.18	36.00	12.23	14.00	9003050011800
0.0469	3/64	1.19	38.00	14.22	16.00	9003050011900
0.0472		1.20	38.00	14.20	16.00	9003050012000
0.0480		1.22	38.00	14.17	16.00	9003050012200
0.0484		1.23	38.00	14.16	16.00	9003050012300
0.0492		1.25	38.00	14.13	16.00	9003050012500
0.0508		1.29	38.00	14.07	16.00	9003050012900

Jobber length drills

Series no. 305

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0512		1.30	38.00	14.05	16.00	9003050013000
0.0520	#55	1.32	38.00	14.02	16.00	9003050013200
0.0524		1.33	40.00	16.01	18.00	9003050013300
0.0531		1.35	40.00	15.98	18.00	9003050013500
0.0535		1.36	40.00	15.96	18.00	9003050013600
0.0539		1.37	40.00	15.95	18.00	9003050013700
0.0543		1.38	40.00	15.93	18.00	9003050013800
0.0551	#54	1.40	40.00	15.90	18.00	9003050014000
0.0555		1.41	40.00	15.89	18.00	9003050014100
0.0559		1.42	40.00	15.87	18.00	9003050014200
0.0563		1.43	40.00	15.86	18.00	9003050014300
0.0567		1.44	40.00	15.84	18.00	9003050014400
0.0571		1.45	40.00	15.83	18.00	9003050014500
0.0583		1.48	40.00	15.78	18.00	9003050014800
0.0591		1.50	40.00	15.75	18.00	9003050015000
0.0594	#53	1.51	43.00	17.74	20.00	9003050015100
0.0598		1.52	43.00	17.72	20.00	9003050015200
0.0602		1.53	43.00	17.71	20.00	9003050015300
0.0610		1.55	43.00	17.68	20.00	9003050015500
0.0614		1.56	43.00	17.66	20.00	9003050015600
0.0618		1.57	43.00	17.65	20.00	9003050015700
0.0622		1.58	43.00	17.63	20.00	9003050015800
0.0626	1/16	1.59	43.00	17.62	20.00	9003050015900
0.0630		1.60	43.00	17.60	20.00	9003050016000
0.0634	#52	1.61	43.00	17.59	20.00	9003050016100
0.0638		1.62	43.00	17.57	20.00	9003050016200
0.0646		1.64	43.00	17.54	20.00	9003050016400
0.0650		1.65	43.00	17.53	20.00	9003050016500
0.0654		1.66	43.00	17.51	20.00	9003050016600
0.0657		1.67	43.00	17.50	20.00	9003050016700
0.0661		1.68	43.00	17.48	20.00	9003050016800
0.0669	#51	1.70	43.00	17.45	20.00	9003050017000
0.0673		1.71	46.00	19.44	22.00	9003050017100
0.0677		1.72	46.00	19.42	22.00	9003050017200
0.0681		1.73	46.00	19.41	22.00	9003050017300
0.0689		1.75	46.00	19.38	22.00	9003050017500
0.0693		1.76	46.00	19.36	22.00	9003050017600
0.0701	#50	1.78	46.00	19.33	22.00	9003050017800
0.0705		1.79	46.00	19.32	22.00	9003050017900
0.0709		1.80	46.00	19.30	22.00	9003050018000
0.0713		1.81	46.00	19.29	22.00	9003050018100
0.0717		1.82	46.00	19.27	22.00	9003050018200
0.0720		1.83	46.00	19.26	22.00	9003050018300
0.0724		1.84	46.00	19.24	22.00	9003050018400
0.0728	#49	1.85	46.00	19.23	22.00	9003050018500
0.0732		1.86	46.00	19.21	22.00	9003050018600
0.0748		1.90	46.00	19.15	22.00	9003050019000
0.0760	#48	1.93	49.00	21.11	24.00	9003050019300
0.0768		1.95	49.00	21.08	24.00	9003050019500
0.0776		1.97	49.00	21.05	24.00	9003050019700
0.0780	5/64	1.98	49.00	21.03	24.00	9003050019800
0.0783	#47	1.99	49.00	21.02	24.00	9003050019900
0.0787		2.00	49.00	21.00	24.00	9003050020000
0.0791		2.01	49.00	20.99	24.00	9003050020100
0.0795		2.02	49.00	20.97	24.00	9003050020200
0.0799		2.03	49.00	20.96	24.00	9003050020300
0.0803		2.04	49.00	20.94	24.00	9003050020400
0.0807		2.05	49.00	20.93	24.00	9003050020500
0.0811	#46	2.06	49.00	20.91	24.00	9003050020600
0.0819	#45	2.08	49.00	20.88	24.00	9003050020800
0.0827		2.10	49.00	20.85	24.00	9003050021000
0.0846		2.15	53.00	23.78	27.00	9003050021500
0.0858	#44	2.18	53.00	23.73	27.00	9003050021800
0.0866		2.20	53.00	23.70	27.00	9003050022000
0.0878		2.23	53.00	23.66	27.00	9003050022300
0.0886		2.25	53.00	23.63	27.00	9003050022500
0.0890	#43	2.26	53.00	23.61	27.00	9003050022600
0.0906		2.30	53.00	23.55	27.00	9003050023000
0.0925		2.35	53.00	23.48	27.00	9003050023500
0.0933	#42	2.37	57.00	26.45	30.00	9003050023700
0.0937	3/32	2.38	57.00	26.43	30.00	9003050023800
0.0945		2.40	57.00	26.40	30.00	9003050024000
0.0961	#41	2.44	57.00	26.34	30.00	9003050024400
0.0965		2.45	57.00	26.33	30.00	9003050024500
0.0972		2.47	57.00	26.30	30.00	9003050024700
0.0980	#40	2.49	57.00	26.27	30.00	9003050024900
0.0984		2.50	57.00	26.25	30.00	9003050025000
0.0992		2.52	57.00	26.22	30.00	9003050025200
0.0996	#39	2.53	57.00	26.21	30.00	9003050025300
0.1004		2.55	57.00	26.18	30.00	9003050025500
0.1016	#38	2.58	57.00	26.13	30.00	9003050025800
0.1024		2.60	57.00	26.10	30.00	9003050026000
0.1039	#37	2.64	57.00	26.04	30.00	9003050026400
0.1043		2.65	57.00	26.03	30.00	9003050026500
0.1063		2.70	61.00	28.95	33.00	9003050027000
0.1067	#36	2.71	61.00	28.94	33.00	9003050027100
0.1083		2.75	61.00	28.88	33.00	9003050027500
0.1094	7/64	2.78	61.00	28.83	33.00	9003050027800
0.1098	#35	2.79	61.00	28.82	33.00	9003050027900
0.1102		2.80	61.00	28.80	33.00	9003050028000
0.1110	#34	2.82	61.00	28.77	33.00	9003050028200
0.1122		2.85	61.00	28.73	33.00	9003050028500
0.1130	#33	2.87	61.00	28.70	33.00	9003050028700
0.1142		2.90	61.00	28.65	33.00	9003050029000
0.1150		2.92	61.00	28.62	33.00	9003050029200
0.1161	#32	2.95	61.00	28.58	33.00	9003050029500
0.1169		2.97	61.00	28.55	33.00	9003050029700
0.1181		3.00	61.00	28.50	33.00	9003050030000
0.1193		3.03	65.00	31.46	36.00	9003050030300
0.1201	#31	3.05	65.00	31.43	36.00	9003050030500
0.1220		3.10	65.00	31.35	36.00	9003050031000
0.1240		3.15	65.00	31.28	36.00	9003050031500
0.1248	1/8	3.17	65.00	31.25	36.00	9003050031700
0.1260		3.20	65.00	31.20	36.00	9003050032000
0.1280		3.25	65.00	31.13	36.00	9003050032500
0.1283	#30	3.26	65.00	31.11	36.00	9003050032600
0.1299		3.30	65.00	31.05	36.00	9003050033000
0.1311		3.33	65.00	31.01	36.00	9003050033300
0.1319		3.35	65.00	30.98	36.00	9003050033500
0.1339		3.40	70.00	33.90	39.00	9003050034000
0.1358	#29	3.45	70.00	33.83	39.00	9003050034500
0.1378		3.50	70.00	33.75	39.00	9003050035000
0.1406	9/64	#28	3.57	70.00	33.65	39.00	9003050035700
0.1417		3.60	70.00	33.60	39.00	9003050036000
0.1441	#27	3.66	70.00	33.51	39.00	9003050036600
0.1457		3.70	70.00	33.45	39.00	9003050037000
0.1469	#26	3.73	70.00	33.41	39.00	9003050037300
0.1476		3.75	70.00	33.38	39.00	9003050037500
0.1496	#25	3.80	75.00	37.30	43.00	9003050038000
0.1516		3.85	75.00	37.23	43.00	9003050038500
0.1520	#24	3.86	75.00	37.21	43.00	9003050038600
0.1535		3.90	75.00	37.15	43.00	9003050039000
0.1539	#23	3.91	75.00	37.14	43.00	9003050039100
0.1563	5/32	3.97	75.00	37.05	43.00	9003050039700
0.1571	#22	3.99	75.00	37.02	43.00	9003050039900
0.1575		4.00	75.00	37.00	43.00	9003050040000
0.1591	#21	4.04	75.00	36.94	43.00	9003050040400
0.1610	#20	4.09	75.00	36.87	43.00	9003050040900
0.1614		4.10	75.00	36.85	43.00	9003050041000
0.1622		4.12	75.00	36.82	43.00	9003050041200
0.1634		4.15	75.00	36.78	43.00	9003050041500
0.1642		4.17	75.00	36.75	43.00	9003050041700

Jobber length drills

Series no. 305

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1654		4.20	75.00	36.70	43.00	9003050042000
0.1661	#19	4.22	75.00	36.67	43.00	9003050042200
0.1673		4.25	75.00	36.63	43.00	9003050042500
0.1693	#18	4.30	80.00	40.55	47.00	9003050043000
0.1720	11/64	4.37	80.00	40.45	47.00	9003050043700
0.1728	#17	4.39	80.00	40.42	47.00	9003050043900
0.1732		4.40	80.00	40.40	47.00	9003050044000
0.1752		4.45	80.00	40.33	47.00	9003050044500
0.1772	#16	4.50	80.00	40.25	47.00	9003050045000
0.1799	#15	4.57	80.00	40.15	47.00	9003050045700
0.1811		4.60	80.00	40.10	47.00	9003050046000
0.1819	#14	4.62	80.00	40.07	47.00	9003050046200
0.1831		4.65	80.00	40.03	47.00	9003050046500
0.1850	#13	4.70	80.00	39.95	47.00	9003050047000
0.1870		4.75	80.00	39.88	47.00	9003050047500
0.1874	3/16	4.76	86.00	44.86	52.00	9003050047600
0.1890	#12	4.80	86.00	44.80	52.00	9003050048000
0.1909	#11	4.85	86.00	44.73	52.00	9003050048500
0.1929		4.90	86.00	44.65	52.00	9003050049000
0.1937	#10	4.92	86.00	44.62	52.00	9003050049200
0.1961	#9	4.98	86.00	44.53	52.00	9003050049800
0.1969		5.00	86.00	44.50	52.00	9003050050000
0.1992	#8	5.06	86.00	44.41	52.00	9003050050600
0.2008		5.10	86.00	44.35	52.00	9003050051000
0.2012	#7	5.11	86.00	44.34	52.00	9003050051100
0.2031	13/64	5.16	86.00	44.26	52.00	9003050051600
0.2039	#6	5.18	86.00	44.23	52.00	9003050051800
0.2047		5.20	86.00	44.20	52.00	9003050052000
0.2055	#5	5.22	86.00	44.17	52.00	9003050052200
0.2067		5.25	86.00	44.13	52.00	9003050052500
0.2087		5.30	86.00	44.05	52.00	9003050053000
0.2091	#4	5.31	93.00	49.04	57.00	9003050053100
0.2126		5.40	93.00	48.90	57.00	9003050054000
0.2130	#3	5.41	93.00	48.89	57.00	9003050054100
0.2165		5.50	93.00	48.75	57.00	9003050055000
0.2189	7/32	5.56	93.00	48.66	57.00	9003050055600
0.2205		5.60	93.00	48.60	57.00	9003050056000
0.2209	#2	5.61	93.00	48.59	57.00	9003050056100
0.2224		5.65	93.00	48.53	57.00	9003050056500
0.2244		5.70	93.00	48.45	57.00	9003050057000
0.2264		5.75	93.00	48.38	57.00	9003050057500
0.2280	#1	5.79	93.00	48.32	57.00	9003050057900
0.2283		5.80	93.00	48.30	57.00	9003050058000
0.2303		5.85	93.00	48.23	57.00	9003050058500
0.2323		5.90	93.00	48.15	57.00	9003050059000
0.2339	A	5.94	93.00	48.09	57.00	9003050059400
0.2343	15/64	5.95	93.00	48.08	57.00	9003050059500
0.2362		6.00	93.00	48.00	57.00	9003050060000
0.2378	B	6.04	101.00	53.94	63.00	9003050060400
0.2402		6.10	101.00	53.85	63.00	9003050061000
0.2421	C	6.15	101.00	53.78	63.00	9003050061500
0.2441		6.20	101.00	53.70	63.00	9003050062000
0.2461	D	6.25	101.00	53.63	63.00	9003050062500
0.2480		6.30	101.00	53.55	63.00	9003050063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9003050063500
0.2520		6.40	101.00	53.40	63.00	9003050064000
0.2539		6.45	101.00	53.33	63.00	9003050064500
0.2559		6.50	101.00	53.25	63.00	9003050065000
0.2571		6.53	101.00	53.21	63.00	9003050065300
0.2598		6.60	101.00	53.10	63.00	9003050066000
0.2610	G	6.63	101.00	53.06	63.00	9003050066300
0.2638		6.70	101.00	52.95	63.00	9003050067000
0.2657	17/64 H	6.75	109.00	58.88	69.00	9003050067500
0.2677		6.80	109.00	58.80	69.00	9003050068000
0.2717	I	6.90	109.00	58.65	69.00	9003050069000
0.2736		6.95	109.00	58.58	69.00	9003050069500

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2756		7.00	109.00	58.50	69.00	9003050070000
0.2768	J	7.03	109.00	58.46	69.00	9003050070300
0.2776		7.05	109.00	58.43	69.00	9003050070500
0.2795		7.10	109.00	58.35	69.00	9003050071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9003050071400
0.2835		7.20	109.00	58.20	69.00	9003050072000
0.2854		7.25	109.00	58.13	69.00	9003050072500
0.2874		7.30	109.00	58.05	69.00	9003050073000
0.2902	L	7.37	109.00	57.95	69.00	9003050073700
0.2913		7.40	109.00	57.90	69.00	9003050074000
0.2949	M	7.49	109.00	57.77	69.00	9003050074900
0.2953		7.50	109.00	57.75	69.00	9003050075000
0.2969	19/64	7.54	117.00	63.69	75.00	9003050075400
0.2992		7.60	117.00	63.60	75.00	9003050076000
0.3020	N	7.67	117.00	63.50	75.00	9003050076700
0.3031		7.70	117.00	63.45	75.00	9003050077000
0.3051		7.75	117.00	63.38	75.00	9003050077500
0.3071		7.80	117.00	63.30	75.00	9003050078000
0.3110		7.90	117.00	63.15	75.00	9003050079000
0.3126	5/16	7.94	117.00	63.09	75.00	9003050079400
0.3150		8.00	117.00	63.00	75.00	9003050080000
0.3161	O	8.03	117.00	62.96	75.00	9003050080300
0.3189		8.10	117.00	62.85	75.00	9003050081000
0.3228	P	8.20	117.00	62.70	75.00	9003050082000
0.3248		8.25	117.00	62.63	75.00	9003050082500
0.3268		8.30	117.00	62.55	75.00	9003050083000
0.3280	21/64	8.33	117.00	62.51	75.00	9003050083300
0.3307		8.40	117.00	62.40	75.00	9003050084000
0.3319	Q	8.43	117.00	62.36	75.00	9003050084300
0.3346		8.50	117.00	62.25	75.00	9003050085000
0.3386		8.60	125.00	68.10	81.00	9003050086000
0.3390	R	8.61	125.00	68.09	81.00	9003050086100
0.3425		8.70	125.00	67.95	81.00	9003050087000
0.3437	11/32	8.73	125.00	67.91	81.00	9003050087300
0.3445		8.75	125.00	67.88	81.00	9003050087500
0.3465		8.80	125.00	67.80	81.00	9003050088000
0.3480	S	8.84	125.00	67.74	81.00	9003050088400
0.3504		8.90	125.00	67.65	81.00	9003050089000
0.3543		9.00	125.00	67.50	81.00	9003050090000
0.3579	T	9.09	125.00	67.37	81.00	9003050090900
0.3583		9.10	125.00	67.35	81.00	9003050091000
0.3594	23/64	9.13	125.00	67.31	81.00	9003050091300
0.3622		9.20	125.00	67.20	81.00	9003050092000
0.3642		9.25	125.00	67.13	81.00	9003050092500
0.3661		9.30	125.00	67.05	81.00	9003050093000
0.3677	U	9.34	125.00	66.99	81.00	9003050093400
0.3701		9.40	125.00	66.90	81.00	9003050094000
0.3740		9.50	125.00	66.75	81.00	9003050095000
0.3748	3/8	9.52	133.00	72.72	87.00	9003050095200
0.3772	V	9.58	133.00	72.63	87.00	9003050095800
0.3780		9.60	133.00	72.60	87.00	9003050096000
0.3799		9.65	133.00	72.53	87.00	9003050096500
0.3819		9.70	133.00	72.45	87.00	9003050097000
0.3839		9.75	133.00	72.38	87.00	9003050097500
0.3858	W	9.80	133.00	72.30	87.00	9003050098000
0.3878		9.85	133.00	72.23	87.00	9003050098500
0.3898		9.90	133.00	72.15	87.00	9003050099000
0.3906	25/64	9.92	133.00	72.12	87.00	9003050099200
0.3937		10.00	133.00	72.00	87.00	9003050100000
0.3969	X	10.08	133.00	71.88	87.00	9003050100800
0.3976		10.10	133.00	71.85	87.00	9003050101000
0.4016		10.20	133.00	71.70	87.00	9003050102000
0.4039	Y	10.26	133.00	71.61	87.00	9003050102600
0.4055		10.30	133.00	71.55	87.00	9003050103000
0.4063	13/32	10.32	133.00	71.52	87.00	9003050103200
0.4094		10.40	133.00	71.40	87.00	9003050104000

Jobber length drills

Series no. **305**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4130	Z	10.49	133.00	71.27	87.00	9003050104900
0.4134		10.50	133.00	71.25	87.00	9003050105000
0.4173		10.60	133.00	71.10	87.00	9003050106000
0.4213		10.70	142.00	77.95	94.00	9003050107000
0.4220	27/64	10.72	142.00	77.92	94.00	9003050107200
0.4232		10.75	142.00	77.88	94.00	9003050107500
0.4252		10.80	142.00	77.80	94.00	9003050108000
0.4291		10.90	142.00	77.65	94.00	9003050109000
0.4331		11.00	142.00	77.50	94.00	9003050110000
0.4374	7/16	11.11	142.00	77.34	94.00	9003050111100
0.4409		11.20	142.00	77.20	94.00	9003050112000
0.4429		11.25	142.00	77.13	94.00	9003050112500
0.4449		11.30	142.00	77.05	94.00	9003050113000
0.4488		11.40	142.00	76.90	94.00	9003050114000
0.4528		11.50	142.00	76.75	94.00	9003050115000
0.4531	29/64	11.51	142.00	76.74	94.00	9003050115100
0.4567		11.60	142.00	76.60	94.00	9003050116000
0.4626		11.75	142.00	76.38	94.00	9003050117500
0.4646		11.80	142.00	76.30	94.00	9003050118000
0.4685		11.90	151.00	83.15	101.00	9003050119000
0.4689	15/32	11.91	151.00	83.14	101.00	9003050119100
0.4724		12.00	151.00	83.00	101.00	9003050120000
0.4764		12.10	151.00	82.85	101.00	9003050121000
0.4803		12.20	151.00	82.70	101.00	9003050122000
0.4843	31/64	12.30	151.00	82.55	101.00	9003050123000
0.4882		12.40	151.00	82.40	101.00	9003050124000
0.4921		12.50	151.00	82.25	101.00	9003050125000
0.4961		12.60	151.00	82.10	101.00	9003050126000
0.5000	1/2	12.70	151.00	81.95	101.00	9003050127000
0.5039		12.80	151.00	81.80	101.00	9003050128000
0.5079		12.90	151.00	81.65	101.00	9003050129000
0.5118		13.00	151.00	81.50	101.00	9003050130000
0.5157	33/64	13.10	151.00	81.35	101.00	9003050131000
0.5197		13.20	151.00	81.20	101.00	9003050132000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.5236		13.30	160.00	88.05	108.00	9003050133000
0.5311	17/32	13.49	160.00	87.77	108.00	9003050134900
0.5315		13.50	160.00	87.75	108.00	9003050135000
0.5354		13.60	160.00	87.60	108.00	9003050136000
0.5413		13.75	160.00	87.38	108.00	9003050137500
0.5433		13.80	160.00	87.30	108.00	9003050138000
0.5469	35/64	13.89	160.00	87.17	108.00	9003050138900
0.5512		14.00	160.00	87.00	108.00	9003050140000
0.5591		14.20	169.00	92.70	114.00	9003050142000
0.5626	9/16	14.29	169.00	92.57	114.00	9003050142900
0.5669		14.40	169.00	92.40	114.00	9003050144000
0.5709		14.50	169.00	92.25	114.00	9003050145000
0.5780	37/64	14.68	169.00	91.98	114.00	9003050146800
0.5807		14.75	169.00	91.88	114.00	9003050147500
0.5906		15.00	169.00	91.50	114.00	9003050150000
0.5945		15.10	178.00	97.35	120.00	9003050151000
0.6004		15.25	178.00	97.13	120.00	9003050152500
0.6024		15.30	178.00	97.05	120.00	9003050153000
0.6094	39/64	15.48	178.00	96.78	120.00	9003050154800
0.6102		15.50	178.00	96.75	120.00	9003050155000
0.6201		15.75	178.00	96.38	120.00	9003050157500
0.6248	5/8	15.87	178.00	96.20	120.00	9003050158700
0.6299		16.00	178.00	96.00	120.00	9003050160000
0.6496		16.50	184.00	100.25	125.00	9003050165000
0.6563	21/32	16.67	184.00	100.00	125.00	9003050166700
0.6693		17.00	184.00	99.50	125.00	9003050170000
0.6874	11/16	17.46	191.00	103.81	130.00	9003050174600
0.6890		17.50	191.00	103.75	130.00	9003050175000
0.7087		18.00	191.00	103.00	130.00	9003050180000
0.7283		18.50	198.00	107.25	135.00	9003050185000
0.7480		19.00	198.00	106.50	135.00	9003050190000
0.7677		19.50	205.00	110.75	140.00	9003050195000
0.7811	25/32	19.84	205.00	110.24	140.00	9003050198400
0.7874		20.00	205.00	110.00	140.00	9003050200000

Jobber length drills

Series no. **308**

~5xD	DIN 338	N	118°	h8		Cyl	L
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSCO**

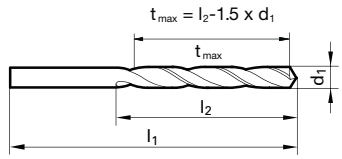
Surface: >Ø 2.36

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.370 • relieved cone • Co-alloyed high speed steel • increased wear resistance

alloyed and unalloyed steel • castings over 800 N/mm² • hot and cold rolled steels • antifriction bearing steels • high-alloyed steels • heat S treatable and case hardened steels





Speeds and feeds information on pg. 490

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0189		0.48	20.00	4.28	5.00	9003080004800
0.0197		0.50	22.00	5.25	6.00	9003080005000
0.0295		0.75	28.00	7.88	9.00	9003080007500
0.0307		0.78	30.00	8.83	10.00	9003080007800
0.0315		0.80	30.00	8.80	10.00	9003080008000
0.0354		0.90	32.00	9.65	11.00	9003080009000
0.0358	#64	0.91	32.00	9.64	11.00	9003080009100
0.0366		0.93	32.00	9.61	11.00	9003080009300
0.0386		0.98	34.00	10.53	12.00	9003080009800
0.0394		1.00	34.00	10.50	12.00	9003080010000
0.0402	#60	1.02	34.00	10.47	12.00	9003080010200
0.0425		1.08	36.00	12.38	14.00	9003080010800
0.0433		1.10	36.00	12.35	14.00	9003080011000
0.0453		1.15	36.00	12.28	14.00	9003080011500
0.0465	#56	1.18	36.00	12.23	14.00	9003080011800
0.0469	3/64	1.19	38.00	14.22	16.00	9003080011900
0.0472		1.20	38.00	14.20	16.00	9003080012000
0.0492		1.25	38.00	14.13	16.00	9003080012500
0.0512		1.30	38.00	14.05	16.00	9003080013000
0.0520	#55	1.32	38.00	14.02	16.00	9003080013200
0.0531		1.35	40.00	15.98	18.00	9003080013500
0.0551	#54	1.40	40.00	15.90	18.00	9003080014000
0.0563		1.43	40.00	15.86	18.00	9003080014300
0.0571		1.45	40.00	15.83	18.00	9003080014500
0.0579		1.47	40.00	15.80	18.00	9003080014700
0.0587		1.49	40.00	15.77	18.00	9003080014900
0.0591		1.50	40.00	15.75	18.00	9003080015000
0.0594	#53	1.51	43.00	17.74	20.00	9003080015100
0.0610		1.55	43.00	17.68	20.00	9003080015500
0.0626	1/16	1.59	43.00	17.62	20.00	9003080015900
0.0630		1.60	43.00	17.60	20.00	9003080016000
0.0661		1.68	43.00	17.48	20.00	9003080016800
0.0669	#51	1.70	43.00	17.45	20.00	9003080017000
0.0677		1.72	46.00	19.42	22.00	9003080017200
0.0689		1.75	46.00	19.38	22.00	9003080017500
0.0701	#50	1.78	46.00	19.33	22.00	9003080017800
0.0709		1.80	46.00	19.30	22.00	9003080018000
0.0728	#49	1.85	46.00	19.23	22.00	9003080018500
0.0748		1.90	46.00	19.15	22.00	9003080019000
0.0760	#48	1.93	49.00	21.11	24.00	9003080019300
0.0768		1.95	49.00	21.08	24.00	9003080019500
0.0780	5/64	1.98	49.00	21.03	24.00	9003080019800
0.0787		2.00	49.00	21.00	24.00	9003080020000
0.0811	#46	2.06	49.00	20.91	24.00	9003080020600

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0819	#45	2.08	49.00	20.88	24.00	9003080020800
0.0827		2.10	49.00	20.85	24.00	9003080021000
0.0858	#44	2.18	53.00	23.73	27.00	9003080021800
0.0866		2.20	53.00	23.70	27.00	9003080022000
0.0886		2.25	53.00	23.63	27.00	9003080022500
0.0890	#43	2.26	53.00	23.61	27.00	9003080022600
0.0906		2.30	53.00	23.55	27.00	9003080023000
0.0925		2.35	53.00	23.48	27.00	9003080023500
0.0933	#42	2.37	57.00	26.45	30.00	9003080023700
0.0937	3/32	2.38	57.00	26.43	30.00	9003080023800
0.0945		2.40	57.00	26.40	30.00	9003080024000
0.0980	#40	2.49	57.00	26.27	30.00	9003080024900
0.0984		2.50	57.00	26.25	30.00	9003080025000
0.0996	#39	2.53	57.00	26.21	30.00	9003080025300
0.1024		2.60	57.00	26.10	30.00	9003080026000
0.1039	#37	2.64	57.00	26.04	30.00	9003080026400
0.1063		2.70	61.00	28.95	33.00	9003080027000
0.1083		2.75	61.00	28.88	33.00	9003080027500
0.1094	7/64	2.78	61.00	28.83	33.00	9003080027800
0.1098	#35	2.79	61.00	28.82	33.00	9003080027900
0.1102		2.80	61.00	28.80	33.00	9003080028000
0.1110	#34	2.82	61.00	28.77	33.00	9003080028200
0.1142		2.90	61.00	28.65	33.00	9003080029000
0.1161	#32	2.95	61.00	28.58	33.00	9003080029500
0.1181		3.00	61.00	28.50	33.00	9003080030000
0.1201	#31	3.05	65.00	31.43	36.00	9003080030500
0.1220		3.10	65.00	31.35	36.00	9003080031000
0.1248	1/8	3.17	65.00	31.25	36.00	9003080031700
0.1260		3.20	65.00	31.20	36.00	9003080032000
0.1299		3.30	65.00	31.05	36.00	9003080033000
0.1339		3.40	70.00	33.90	39.00	9003080034000
0.1358	#29	3.45	70.00	33.83	39.00	9003080034500
0.1378		3.50	70.00	33.75	39.00	9003080035000
0.1417		3.60	70.00	33.60	39.00	9003080036000
0.1437		3.65	70.00	33.53	39.00	9003080036500
0.1441	#27	3.66	70.00	33.51	39.00	9003080036600
0.1457		3.70	70.00	33.45	39.00	9003080037000
0.1469	#26	3.73	70.00	33.41	39.00	9003080037300
0.1496	#25	3.80	75.00	37.30	43.00	9003080038000
0.1520	#24	3.86	75.00	37.21	43.00	9003080038600
0.1535		3.90	75.00	37.15	43.00	9003080039000
0.1539	#23	3.91	75.00	37.14	43.00	9003080039100
0.1563	5/32	3.97	75.00	37.05	43.00	9003080039700
0.1571	#22	3.99	75.00	37.02	43.00	9003080039900

Jobber length drills

Series no. 308

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1575		4.00	75.00	37.00	43.00	9003080040000
0.1591	#21	4.04	75.00	36.94	43.00	9003080040400
0.1594		4.05	75.00	36.93	43.00	9003080040500
0.1610	#20	4.09	75.00	36.87	43.00	9003080040900
0.1614		4.10	75.00	36.85	43.00	9003080041000
0.1634		4.15	75.00	36.78	43.00	9003080041500
0.1654		4.20	75.00	36.70	43.00	9003080042000
0.1661	#19	4.22	75.00	36.67	43.00	9003080042200
0.1693	#18	4.30	80.00	40.55	47.00	9003080043000
0.1720	11/64	4.37	80.00	40.45	47.00	9003080043700
0.1728	#17	4.39	80.00	40.42	47.00	9003080043900
0.1732		4.40	80.00	40.40	47.00	9003080044000
0.1772	#16	4.50	80.00	40.25	47.00	9003080045000
0.1811		4.60	80.00	40.10	47.00	9003080046000
0.1819	#14	4.62	80.00	40.07	47.00	9003080046200
0.1850	#13	4.70	80.00	39.95	47.00	9003080047000
0.1874	3/16	4.76	86.00	44.86	52.00	9003080047600
0.1890	#12	4.80	86.00	44.80	52.00	9003080048000
0.1929		4.90	86.00	44.65	52.00	9003080049000
0.1961	#9	4.98	86.00	44.53	52.00	9003080049800
0.1969		5.00	86.00	44.50	52.00	9003080050000
0.1992	#8	5.06	86.00	44.41	52.00	9003080050600
0.2008		5.10	86.00	44.35	52.00	9003080051000
0.2012	#7	5.11	86.00	44.34	52.00	9003080051100
0.2031	13/64	5.16	86.00	44.26	52.00	9003080051600
0.2039	#6	5.18	86.00	44.23	52.00	9003080051800
0.2047		5.20	86.00	44.20	52.00	9003080052000
0.2055	#5	5.22	86.00	44.17	52.00	9003080052200
0.2087		5.30	86.00	44.05	52.00	9003080053000
0.2091	#4	5.31	93.00	49.04	57.00	9003080053100
0.2126		5.40	93.00	48.90	57.00	9003080054000
0.2130	#3	5.41	93.00	48.89	57.00	9003080054100
0.2165		5.50	93.00	48.75	57.00	9003080055000
0.2189	7/32	5.56	93.00	48.66	57.00	9003080055600
0.2205		5.60	93.00	48.60	57.00	9003080056000
0.2209	#2	5.61	93.00	48.59	57.00	9003080056100
0.2244		5.70	93.00	48.45	57.00	9003080057000
0.2283		5.80	93.00	48.30	57.00	9003080058000
0.2339	A	5.94	93.00	48.09	57.00	9003080059400
0.2343	15/64	5.95	93.00	48.08	57.00	9003080059500
0.2362		6.00	93.00	48.00	57.00	9003080060000
0.2402		6.10	101.00	53.85	63.00	9003080061000
0.2421	C	6.15	101.00	53.78	63.00	9003080061500
0.2441		6.20	101.00	53.70	63.00	9003080062000
0.2461	D	6.25	101.00	53.63	63.00	9003080062500
0.2480		6.30	101.00	53.55	63.00	9003080063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9003080063500
0.2559		6.50	101.00	53.25	63.00	9003080065000
0.2598		6.60	101.00	53.10	63.00	9003080066000
0.2638		6.70	101.00	52.95	63.00	9003080067000
0.2657	17/64 H	6.75	109.00	58.88	69.00	9003080067500
0.2677		6.80	109.00	58.80	69.00	9003080068000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2756		7.00	109.00	58.50	69.00	9003080070000
0.2902	L	7.37	109.00	57.95	69.00	9003080073700
0.2913		7.40	109.00	57.90	69.00	9003080074000
0.2953		7.50	109.00	57.75	69.00	9003080075000
0.2969	19/64	7.54	117.00	63.69	75.00	9003080075400
0.2992		7.60	117.00	63.60	75.00	9003080076000
0.3031		7.70	117.00	63.45	75.00	9003080077000
0.3110		7.90	117.00	63.15	75.00	9003080079000
0.3150		8.00	117.00	63.00	75.00	9003080080000
0.3161	O	8.03	117.00	62.96	75.00	9003080080300
0.3189		8.10	117.00	62.85	75.00	9003080081000
0.3228	P	8.20	117.00	62.70	75.00	9003080082000
0.3268		8.30	117.00	62.55	75.00	9003080083000
0.3280	21/64	8.33	117.00	62.51	75.00	9003080083300
0.3346		8.50	117.00	62.25	75.00	9003080085000
0.3386		8.60	125.00	68.10	81.00	9003080086000
0.3390	R	8.61	125.00	68.09	81.00	9003080086100
0.3425		8.70	125.00	67.95	81.00	9003080087000
0.3437	11/32	8.73	125.00	67.91	81.00	9003080087300
0.3465		8.80	125.00	67.80	81.00	9003080088000
0.3480	S	8.84	125.00	67.74	81.00	9003080088400
0.3504		8.90	125.00	67.65	81.00	9003080089000
0.3543		9.00	125.00	67.50	81.00	9003080090000
0.3579	T	9.09	125.00	67.37	81.00	9003080090900
0.3583		9.10	125.00	67.35	81.00	9003080091000
0.3594	23/64	9.13	125.00	67.31	81.00	9003080091300
0.3622		9.20	125.00	67.20	81.00	9003080092000
0.3661		9.30	125.00	67.05	81.00	9003080093000
0.3677	U	9.34	125.00	66.99	81.00	9003080093400
0.3701		9.40	125.00	66.90	81.00	9003080094000
0.3740		9.50	125.00	66.75	81.00	9003080095000
0.3748	3/8	9.52	133.00	72.72	87.00	9003080095200
0.3772	V	9.58	133.00	72.63	87.00	9003080095800
0.3780		9.60	133.00	72.60	87.00	9003080096000
0.3819		9.70	133.00	72.45	87.00	9003080097000
0.3858	W	9.80	133.00	72.30	87.00	9003080098000
0.3898		9.90	133.00	72.15	87.00	9003080099000
0.3906	25/64	9.92	133.00	72.12	87.00	9003080099200
0.3937		10.00	133.00	72.00	87.00	9003080100000
0.4039	Y	10.26	133.00	71.61	87.00	9003080102600
0.4063	13/32	10.32	133.00	71.52	87.00	9003080103200
0.4130	Z	10.49	133.00	71.27	87.00	9003080104900
0.4134		10.50	133.00	71.25	87.00	9003080105000
0.4331		11.00	142.00	77.50	94.00	9003080110000
0.4374	7/16	11.11	142.00	77.34	94.00	9003080111100
0.4528		11.50	142.00	76.75	94.00	9003080115000
0.4531	29/64	11.51	142.00	76.74	94.00	9003080115100
0.4689	15/32	11.91	151.00	83.14	101.00	9003080119100
0.4744		12.05	151.00	82.93	101.00	9003080120500
0.4921		12.50	151.00	82.25	101.00	9003080125000
0.5000	1/2	12.70	151.00	81.95	101.00	9003080127000

Jobber length drills 605

~5xD	DIN 338	Ti	130°	h8		Cyl	R	GUHRING SELECT
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction	

Tool material: HSCO

Surface: ◯

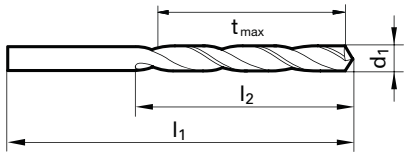
P	Steel	○
M	Stainless steel	●
K	Cast iron	
N	Aluminum	
S	Titanium alloys	●
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 0.970 • relieved cone split point • Co-alloyed high speed steel • increased wear resistance

Titanium and Titanium alloys • stainless/acid-/heat-resistant austenitic steels • high tensile/short chipping steels over 900 N/mm² • Hastelloy, Inconel, Nimonic

$t_{max} = l_2 - 1.5 \times d_1$





Speeds and feeds information on pg. 511

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0118		0.30	19.00	2.55	3.00	9006050003000
0.0157	1/64	0.40	20.00	4.40	5.00	9006050004000
0.0173		0.44	20.00	4.34	5.00	9006050004400
0.0177		0.45	20.00	4.33	5.00	9006050004500
0.0197		0.50	22.00	5.25	6.00	9006050005000
0.0201	#76	0.51	22.00	5.24	6.00	9006050005100
0.0209	#75	0.53	22.00	5.21	6.00	9006050005300
0.0217		0.55	24.00	6.18	7.00	9006050005500
0.0224	#74	0.57	24.00	6.15	7.00	9006050005700
0.0228		0.58	24.00	6.13	7.00	9006050005800
0.0236		0.60	24.00	6.10	7.00	9006050006000
0.0240	#73	0.61	26.00	7.09	8.00	9006050006100
0.0252	#72	0.64	26.00	7.04	8.00	9006050006400
0.0256		0.65	26.00	7.03	8.00	9006050006500
0.0276		0.70	28.00	7.95	9.00	9006050007000
0.0280	#70	0.71	28.00	7.94	9.00	9006050007100
0.0283		0.72	28.00	7.92	9.00	9006050007200
0.0295		0.75	28.00	7.88	9.00	9006050007500
0.0299		0.76	30.00	8.86	10.00	9006050007600
0.0311	1/32 #68	0.79	30.00	8.82	10.00	9006050007900
0.0315		0.80	30.00	8.80	10.00	9006050008000
0.0319	#67	0.81	30.00	8.79	10.00	9006050008100
0.0323		0.82	30.00	8.77	10.00	9006050008200
0.0327		0.83	30.00	8.76	10.00	9006050008300
0.0331	#66	0.84	30.00	8.74	10.00	9006050008400
0.0335		0.85	30.00	8.73	10.00	9006050008500
0.0339		0.86	32.00	9.71	11.00	9006050008600
0.0343		0.87	32.00	9.70	11.00	9006050008700
0.0346		0.88	32.00	9.68	11.00	9006050008800
0.0350	#65	0.89	32.00	9.67	11.00	9006050008900
0.0354		0.90	32.00	9.65	11.00	9006050009000
0.0358	#64	0.91	32.00	9.64	11.00	9006050009100
0.0362		0.92	32.00	9.62	11.00	9006050009200
0.0370	#63	0.94	32.00	9.59	11.00	9006050009400
0.0374		0.95	32.00	9.58	11.00	9006050009500
0.0386		0.98	34.00	10.53	12.00	9006050009800
0.0390	#61	0.99	34.00	10.52	12.00	9006050009900
0.0394		1.00	34.00	10.50	12.00	9006050010000
0.0402	#60	1.02	34.00	10.47	12.00	9006050010200
0.0409	#59	1.04	34.00	10.44	12.00	9006050010400
0.0413		1.05	34.00	10.43	12.00	9006050010500
0.0421	#58	1.07	36.00	12.40	14.00	9006050010700

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0425		1.08	36.00	12.38	14.00	9006050010800
0.0429	#57	1.09	36.00	12.37	14.00	9006050010900
0.0433		1.10	36.00	12.35	14.00	9006050011000
0.0449		1.14	36.00	12.29	14.00	9006050011400
0.0453		1.15	36.00	12.28	14.00	9006050011500
0.0457		1.16	36.00	12.26	14.00	9006050011600
0.0465	#56	1.18	36.00	12.23	14.00	9006050011800
0.0469	3/64	1.19	38.00	14.22	16.00	9006050011900
0.0472		1.20	38.00	14.20	16.00	9006050012000
0.0476		1.21	38.00	14.19	16.00	9006050012100
0.0480		1.22	38.00	14.17	16.00	9006050012200
0.0484		1.23	38.00	14.16	16.00	9006050012300
0.0492		1.25	38.00	14.13	16.00	9006050012500
0.0508		1.29	38.00	14.07	16.00	9006050012900
0.0512		1.30	38.00	14.05	16.00	9006050013000
0.0520	#55	1.32	38.00	14.02	16.00	9006050013200
0.0531		1.35	40.00	15.98	18.00	9006050013500
0.0551	#54	1.40	40.00	15.90	18.00	9006050014000
0.0571		1.45	40.00	15.83	18.00	9006050014500
0.0575		1.46	40.00	15.81	18.00	9006050014600
0.0591		1.50	40.00	15.75	18.00	9006050015000
0.0594	#53	1.51	43.00	17.74	20.00	9006050015100
0.0598		1.52	43.00	17.72	20.00	9006050015200
0.0602		1.53	43.00	17.71	20.00	9006050015300
0.0610		1.55	43.00	17.68	20.00	9006050015500
0.0626	1/16	1.59	43.00	17.62	20.00	9006050015900
0.0630		1.60	43.00	17.60	20.00	9006050016000
0.0634	#52	1.61	43.00	17.59	20.00	9006050016100
0.0638		1.62	43.00	17.57	20.00	9006050016200
0.0650		1.65	43.00	17.53	20.00	9006050016500
0.0661		1.68	43.00	17.48	20.00	9006050016800
0.0669	#51	1.70	43.00	17.45	20.00	9006050017000
0.0681		1.73	46.00	19.41	22.00	9006050017300
0.0689		1.75	46.00	19.38	22.00	9006050017500
0.0701	#50	1.78	46.00	19.33	22.00	9006050017800
0.0709		1.80	46.00	19.30	22.00	9006050018000
0.0717		1.82	46.00	19.27	22.00	9006050018200
0.0728	#49	1.85	46.00	19.23	22.00	9006050018500
0.0748		1.90	46.00	19.15	22.00	9006050019000
0.0760	#48	1.93	49.00	21.11	24.00	9006050019300
0.0768		1.95	49.00	21.08	24.00	9006050019500
0.0776		1.97	49.00	21.05	24.00	9006050019700

Jobber length drills

Series no. 605

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0780	5/64	1.98	49.00	21.03	24.00	9006050019800
0.0783	#47	1.99	49.00	21.02	24.00	9006050019900
0.0787		2.00	49.00	21.00	24.00	9006050020000
0.0795		2.02	49.00	20.97	24.00	9006050020200
0.0799		2.03	49.00	20.96	24.00	9006050020300
0.0807		2.05	49.00	20.93	24.00	9006050020500
0.0819	#45	2.08	49.00	20.88	24.00	9006050020800
0.0827		2.10	49.00	20.85	24.00	9006050021000
0.0835		2.12	49.00	20.82	24.00	9006050021200
0.0846		2.15	53.00	23.78	27.00	9006050021500
0.0858	#44	2.18	53.00	23.73	27.00	9006050021800
0.0866		2.20	53.00	23.70	27.00	9006050022000
0.0886		2.25	53.00	23.63	27.00	9006050022500
0.0890	#43	2.26	53.00	23.61	27.00	9006050022600
0.0906		2.30	53.00	23.55	27.00	9006050023000
0.0913		2.32	53.00	23.52	27.00	9006050023200
0.0925		2.35	53.00	23.48	27.00	9006050023500
0.0933	#42	2.37	57.00	26.45	30.00	9006050023700
0.0937	3/32	2.38	57.00	26.43	30.00	9006050023800
0.0945		2.40	57.00	26.40	30.00	9006050024000
0.0965		2.45	57.00	26.33	30.00	9006050024500
0.0980	#40	2.49	57.00	26.27	30.00	9006050024900
0.0984		2.50	57.00	26.25	30.00	9006050025000
0.0996	#39	2.53	57.00	26.21	30.00	9006050025300
0.1004		2.55	57.00	26.18	30.00	9006050025500
0.1024		2.60	57.00	26.10	30.00	9006050026000
0.1043		2.65	57.00	26.03	30.00	9006050026500
0.1063		2.70	61.00	28.95	33.00	9006050027000
0.1067	#36	2.71	61.00	28.94	33.00	9006050027100
0.1083		2.75	61.00	28.88	33.00	9006050027500
0.1094	7/64	2.78	61.00	28.83	33.00	9006050027800
0.1098	#35	2.79	61.00	28.82	33.00	9006050027900
0.1102		2.80	61.00	28.80	33.00	9006050028000
0.1106		2.81	61.00	28.79	33.00	9006050028100
0.1110	#34	2.82	61.00	28.77	33.00	9006050028200
0.1122		2.85	61.00	28.73	33.00	9006050028500
0.1130	#33	2.87	61.00	28.70	33.00	9006050028700
0.1142		2.90	61.00	28.65	33.00	9006050029000
0.1161	#32	2.95	61.00	28.58	33.00	9006050029500
0.1181		3.00	61.00	28.50	33.00	9006050030000
0.1193		3.03	65.00	31.46	36.00	9006050030300
0.1201	#31	3.05	65.00	31.43	36.00	9006050030500
0.1220		3.10	65.00	31.35	36.00	9006050031000
0.1240		3.15	65.00	31.28	36.00	9006050031500
0.1248	1/8	3.17	65.00	31.25	36.00	9006050031700
0.1260		3.20	65.00	31.20	36.00	9006050032000
0.1280		3.25	65.00	31.13	36.00	9006050032500
0.1283	#30	3.26	65.00	31.11	36.00	9006050032600
0.1299		3.30	65.00	31.05	36.00	9006050033000
0.1319		3.35	65.00	30.98	36.00	9006050033500
0.1339		3.40	70.00	33.90	39.00	9006050034000
0.1358	#29	3.45	70.00	33.83	39.00	9006050034500
0.1378		3.50	70.00	33.75	39.00	9006050035000
0.1398		3.55	70.00	33.68	39.00	9006050035500
0.1406	9/64	#28	3.57	70.00	33.65	39.00	9006050035700
0.1417		3.60	70.00	33.60	39.00	9006050036000
0.1437		3.65	70.00	33.53	39.00	9006050036500
0.1457		3.70	70.00	33.45	39.00	9006050037000
0.1476		3.75	70.00	33.38	39.00	9006050037500
0.1496	#25	3.80	75.00	37.30	43.00	9006050038000
0.1535		3.90	75.00	37.15	43.00	9006050039000
0.1555		3.95	75.00	37.08	43.00	9006050039500
0.1563	5/32	3.97	75.00	37.05	43.00	9006050039700
0.1575		4.00	75.00	37.00	43.00	9006050040000
0.1591	#21	4.04	75.00	36.94	43.00	9006050040400
0.1594		4.05	75.00	36.93	43.00	9006050040500

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1614		4.10	75.00	36.85	43.00	9006050041000
0.1634		4.15	75.00	36.78	43.00	9006050041500
0.1654		4.20	75.00	36.70	43.00	9006050042000
0.1661	#19	4.22	75.00	36.67	43.00	9006050042200
0.1673		4.25	75.00	36.63	43.00	9006050042500
0.1693	#18	4.30	80.00	40.55	47.00	9006050043000
0.1713		4.35	80.00	40.48	47.00	9006050043500
0.1720	11/64	4.37	80.00	40.45	47.00	9006050043700
0.1732		4.40	80.00	40.40	47.00	9006050044000
0.1772	#16	4.50	80.00	40.25	47.00	9006050045000
0.1799	#15	4.57	80.00	40.15	47.00	9006050045700
0.1811		4.60	80.00	40.10	47.00	9006050046000
0.1850	#13	4.70	80.00	39.95	47.00	9006050047000
0.1870		4.75	80.00	39.88	47.00	9006050047500
0.1874	3/16	4.76	86.00	44.86	52.00	9006050047600
0.1890	#12	4.80	86.00	44.80	52.00	9006050048000
0.1909	#11	4.85	86.00	44.73	52.00	9006050048500
0.1929		4.90	86.00	44.65	52.00	9006050049000
0.1969		5.00	86.00	44.50	52.00	9006050050000
0.1988		5.05	86.00	44.43	52.00	9006050050500
0.2008		5.10	86.00	44.35	52.00	9006050051000
0.2012	#7	5.11	86.00	44.34	52.00	9006050051100
0.2031	13/64	5.16	86.00	44.26	52.00	9006050051600
0.2047		5.20	86.00	44.20	52.00	9006050052000
0.2087		5.30	86.00	44.05	52.00	9006050053000
0.2126		5.40	93.00	48.90	57.00	9006050054000
0.2130	#3	5.41	93.00	48.89	57.00	9006050054100
0.2165		5.50	93.00	48.75	57.00	9006050055000
0.2185		5.55	93.00	48.68	57.00	9006050055500
0.2189	7/32	5.56	93.00	48.66	57.00	9006050055600
0.2209	#2	5.61	93.00	48.59	57.00	9006050056100
0.2244		5.70	93.00	48.45	57.00	9006050057000
0.2264		5.75	93.00	48.38	57.00	9006050057500
0.2283		5.80	93.00	48.30	57.00	9006050058000
0.2323		5.90	93.00	48.15	57.00	9006050059000
0.2343	15/64	5.95	93.00	48.08	57.00	9006050059500
0.2362		6.00	93.00	48.00	57.00	9006050060000
0.2382		6.05	101.00	53.93	63.00	9006050060500
0.2394		6.08	101.00	53.88	63.00	9006050060800
0.2402		6.10	101.00	53.85	63.00	9006050061000
0.2441		6.20	101.00	53.70	63.00	9006050062000
0.2480		6.30	101.00	53.55	63.00	9006050063000
0.2500	1/4	E	6.35	101.00	53.48	63.00	9006050063500
0.2520		6.40	101.00	53.40	63.00	9006050064000
0.2559		6.50	101.00	53.25	63.00	9006050065000
0.2598		6.60	101.00	53.10	63.00	9006050066000
0.2638		6.70	101.00	52.95	63.00	9006050067000
0.2657	17/64	H	6.75	109.00	58.88	69.00	9006050067500
0.2677		6.80	109.00	58.80	69.00	9006050068000
0.2717	I	6.90	109.00	58.65	69.00	9006050069000
0.2756		7.00	109.00	58.50	69.00	9006050070000
0.2795		7.10	109.00	58.35	69.00	9006050071000
0.2811	9/32	K	7.14	109.00	58.29	69.00	9006050071400
0.2835		7.20	109.00	58.20	69.00	9006050072000
0.2874		7.30	109.00	58.05	69.00	9006050073000
0.2913		7.40	109.00	57.90	69.00	9006050074000
0.2953		7.50	109.00	57.75	69.00	9006050075000
0.2969	19/64	7.54	117.00	63.69	75.00	9006050075400
0.2992		7.60	117.00	63.60	75.00	9006050076000
0.3031		7.70	117.00	63.45	75.00	9006050077000
0.3071		7.80	117.00	63.30	75.00	9006050078000
0.3110		7.90	117.00	63.15	75.00	9006050079000
0.3126	5/16	7.94	117.00	63.09	75.00	9006050079400
0.3150		8.00	117.00	63.00	75.00	9006050080000
0.3189		8.10	117.00	62.85	75.00	9006050081000
0.3228	P	8.20	117.00	62.70	75.00	9006050082000

Jobber length drills

Series no. **605**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3268		8.30	117.00	62.55	75.00	9006050083000
0.3280	21/64	8.33	117.00	62.51	75.00	9006050083300
0.3307		8.40	117.00	62.40	75.00	9006050084000
0.3346		8.50	117.00	62.25	75.00	9006050085000
0.3386		8.60	125.00	68.10	81.00	9006050086000
0.3425		8.70	125.00	67.95	81.00	9006050087000
0.3437	11/32	8.73	125.00	67.91	81.00	9006050087300
0.3465		8.80	125.00	67.80	81.00	9006050088000
0.3504		8.90	125.00	67.65	81.00	9006050089000
0.3543		9.00	125.00	67.50	81.00	9006050090000
0.3583		9.10	125.00	67.35	81.00	9006050091000
0.3594	23/64	9.13	125.00	67.31	81.00	9006050091300
0.3622		9.20	125.00	67.20	81.00	9006050092000
0.3661		9.30	125.00	67.05	81.00	9006050093000
0.3701		9.40	125.00	66.90	81.00	9006050094000
0.3740		9.50	125.00	66.75	81.00	9006050095000
0.3748	3/8	9.52	133.00	72.72	87.00	9006050095200
0.3780		9.60	133.00	72.60	87.00	9006050096000
0.3819		9.70	133.00	72.45	87.00	9006050097000
0.3858	W	9.80	133.00	72.30	87.00	9006050098000
0.3898		9.90	133.00	72.15	87.00	9006050099000
0.3906	25/64	9.92	133.00	72.12	87.00	9006050099200
0.3937		10.00	133.00	72.00	87.00	9006050100000
0.4016		10.20	133.00	71.70	87.00	9006050102000
0.4055		10.30	133.00	71.55	87.00	9006050103000
0.4063	13/32	10.32	133.00	71.52	87.00	9006050103200
0.4134		10.50	133.00	71.25	87.00	9006050105000
0.4173		10.60	133.00	71.10	87.00	9006050106000
0.4220	27/64	10.72	142.00	77.92	94.00	9006050107200

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4252		10.80	142.00	77.80	94.00	9006050108000
0.4331		11.00	142.00	77.50	94.00	9006050110000
0.4374	7/16	11.11	142.00	77.34	94.00	9006050111100
0.4449		11.30	142.00	77.05	94.00	9006050113000
0.4528		11.50	142.00	76.75	94.00	9006050115000
0.4531	29/64	11.51	142.00	76.74	94.00	9006050115100
0.4606		11.70	142.00	76.45	94.00	9006050117000
0.4689	15/32	11.91	151.00	83.14	101.00	9006050119100
0.4724		12.00	151.00	83.00	101.00	9006050120000
0.4803		12.20	151.00	82.70	101.00	9006050122000
0.4843	31/64	12.30	151.00	82.55	101.00	9006050123000
0.4921		12.50	151.00	82.25	101.00	9006050125000
0.5000	1/2	12.70	151.00	81.95	101.00	9006050127000
0.5118		13.00	151.00	81.50	101.00	9006050130000
0.5157	33/64	13.10	151.00	81.35	101.00	9006050131000
0.5469	35/64	13.89	160.00	87.17	108.00	9006050138900
0.5512		14.00	160.00	87.00	108.00	9006050140000
0.5626	9/16	14.29	169.00	92.57	114.00	9006050142900
0.5709		14.50	169.00	92.25	114.00	9006050145000
0.5780	37/64	14.68	169.00	91.98	114.00	9006050146800
0.5906		15.00	169.00	91.50	114.00	9006050150000
0.6102		15.50	178.00	96.75	120.00	9006050155000
0.6299		16.00	178.00	96.00	120.00	9006050160000
0.6496		16.50	184.00	100.25	125.00	9006050165000
0.6693		17.00	184.00	99.50	125.00	9006050170000
0.6890		17.50	191.00	103.75	130.00	9006050175000
0.7087		18.00	191.00	103.00	130.00	9006050180000
0.7480		19.00	198.00	106.50	135.00	9006050190000

Jobber length drills

Series no. **657**

Tool material **HSCO**

Surface **S**

~5xD Cutting depth | DIN 338 Standard | Ti Type | 130° Point angle | h8 Tolerance on Ø | Web Thinning | Cyl Shank form | R Cutting direction

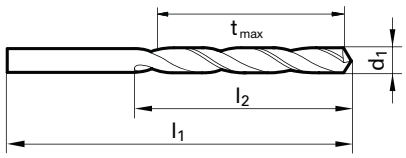
P	Steel	○
M	Stainless steel	●
K	Cast iron	
N	Aluminum	
S	Titanium alloys	●
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone split point • Co-alloyed high speed steel • increased wear resistance

Titanium and Titanium alloys • stainless/acid-/heat-resistant austenitic steels • high tensile/short chipping steels over 900 N/mm² • Hastelloy, Inconel, Nimonic

$t_{max} = l_2\text{-}1.5 \times d_1$





Jobber Length

Speeds and feeds information on pg. 517

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0197		0.50	22.00	5.25	6.00	9006570005000
0.0209	#75	0.53	22.00	5.21	6.00	9006570005300
0.0236		0.60	24.00	6.10	7.00	9006570006000
0.0256		0.65	26.00	7.03	8.00	9006570006500
0.0276		0.70	28.00	7.95	9.00	9006570007000
0.0295		0.75	28.00	7.88	9.00	9006570007500
0.0315		0.80	30.00	8.80	10.00	9006570008000
0.0335		0.85	30.00	8.73	10.00	9006570008500
0.0346		0.88	32.00	9.68	11.00	9006570008800
0.0354		0.90	32.00	9.65	11.00	9006570009000
0.0362		0.92	32.00	9.62	11.00	9006570009200
0.0370	#63	0.94	32.00	9.59	11.00	9006570009400
0.0374		0.95	32.00	9.58	11.00	9006570009500
0.0394		1.00	34.00	10.50	12.00	9006570010000
0.0409	#59	1.04	34.00	10.44	12.00	9006570010400
0.0413		1.05	34.00	10.43	12.00	9006570010500
0.0433		1.10	36.00	12.35	14.00	9006570011000
0.0453		1.15	36.00	12.28	14.00	9006570011500
0.0465	#56	1.18	36.00	12.23	14.00	9006570011800
0.0469	3/64	1.19	38.00	14.22	16.00	9006570011900
0.0472		1.20	38.00	14.20	16.00	9006570012000
0.0476		1.21	38.00	14.19	16.00	9006570012100
0.0492		1.25	38.00	14.13	16.00	9006570012500
0.0512		1.30	38.00	14.05	16.00	9006570013000
0.0520	#55	1.32	38.00	14.02	16.00	9006570013200
0.0531		1.35	40.00	15.98	18.00	9006570013500
0.0547		1.39	40.00	15.92	18.00	9006570013900
0.0551	#54	1.40	40.00	15.90	18.00	9006570014000
0.0571		1.45	40.00	15.83	18.00	9006570014500
0.0591		1.50	40.00	15.75	18.00	9006570015000
0.0594	#53	1.51	43.00	17.74	20.00	9006570015100
0.0610		1.55	43.00	17.68	20.00	9006570015500
0.0626	1/16	1.59	43.00	17.62	20.00	9006570015900
0.0630		1.60	43.00	17.60	20.00	9006570016000
0.0634	#52	1.61	43.00	17.59	20.00	9006570016100
0.0650		1.65	43.00	17.53	20.00	9006570016500
0.0669	#51	1.70	43.00	17.45	20.00	9006570017000
0.0689		1.75	46.00	19.38	22.00	9006570017500
0.0701	#50	1.78	46.00	19.33	22.00	9006570017800
0.0709		1.80	46.00	19.30	22.00	9006570018000
0.0728	#49	1.85	46.00	19.23	22.00	9006570018500
0.0748		1.90	46.00	19.15	22.00	9006570019000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0768		1.95	49.00	21.08	24.00	9006570019500
0.0780	5/64	1.98	49.00	21.03	24.00	9006570019800
0.0787		2.00	49.00	21.00	24.00	9006570020000
0.0807		2.05	49.00	20.93	24.00	9006570020500
0.0827		2.10	49.00	20.85	24.00	9006570021000
0.0846		2.15	53.00	23.78	27.00	9006570021500
0.0866		2.20	53.00	23.70	27.00	9006570022000
0.0890	#43	2.26	53.00	23.61	27.00	9006570022600
0.0906		2.30	53.00	23.55	27.00	9006570023000
0.0925		2.35	53.00	23.48	27.00	9006570023500
0.0937	3/32	2.38	57.00	26.43	30.00	9006570023800
0.0945		2.40	57.00	26.40	30.00	9006570024000
0.0961	#41	2.44	57.00	26.34	30.00	9006570024400
0.0984		2.50	57.00	26.25	30.00	9006570025000
0.0996	#39	2.53	57.00	26.21	30.00	9006570025300
0.1004		2.55	57.00	26.18	30.00	9006570025500
0.1024		2.60	57.00	26.10	30.00	9006570026000
0.1063		2.70	61.00	28.95	33.00	9006570027000
0.1094	7/64	2.78	61.00	28.83	33.00	9006570027800
0.1102		2.80	61.00	28.80	33.00	9006570028000
0.1110	#34	2.82	61.00	28.77	33.00	9006570028200
0.1142		2.90	61.00	28.65	33.00	9006570029000
0.1161	#32	2.95	61.00	28.58	33.00	9006570029500
0.1181		3.00	61.00	28.50	33.00	9006570030000
0.1201	#31	3.05	65.00	31.43	36.00	9006570030500
0.1220		3.10	65.00	31.35	36.00	9006570031000
0.1248	1/8	3.17	65.00	31.25	36.00	9006570031700
0.1260		3.20	65.00	31.20	36.00	9006570032000
0.1283	#30	3.26	65.00	31.11	36.00	9006570032600
0.1299		3.30	65.00	31.05	36.00	9006570033000
0.1339		3.40	70.00	33.90	39.00	9006570034000
0.1378		3.50	70.00	33.75	39.00	9006570035000
0.1406	9/64	#28	3.57	70.00	33.65	39.00	9006570035700
0.1417		3.60	70.00	33.60	39.00	9006570036000
0.1457		3.70	70.00	33.45	39.00	9006570037000
0.1496	#25	3.80	75.00	37.30	43.00	9006570038000
0.1535		3.90	75.00	37.15	43.00	9006570039000
0.1563	5/32	3.97	75.00	37.05	43.00	9006570039700
0.1575		4.00	75.00	37.00	43.00	9006570040000
0.1614		4.10	75.00	36.85	43.00	9006570041000
0.1654		4.20	75.00	36.70	43.00	9006570042000
0.1673		4.25	75.00	36.63	43.00	9006570042500

Jobber length drills

Series no. **657**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1693	#18	4.30	80.00	40.55	47.00	9006570043000
0.1713		4.35	80.00	40.48	47.00	9006570043500
0.1720	11/64	4.37	80.00	40.45	47.00	9006570043700
0.1732		4.40	80.00	40.40	47.00	9006570044000
0.1772	#16	4.50	80.00	40.25	47.00	9006570045000
0.1811		4.60	80.00	40.10	47.00	9006570046000
0.1850	#13	4.70	80.00	39.95	47.00	9006570047000
0.1874	3/16	4.76	86.00	44.86	52.00	9006570047600
0.1890	#12	4.80	86.00	44.80	52.00	9006570048000
0.1929		4.90	86.00	44.65	52.00	9006570049000
0.1969		5.00	86.00	44.50	52.00	9006570050000
0.2008		5.10	86.00	44.35	52.00	9006570051000
0.2012	#7	5.11	86.00	44.34	52.00	9006570051100
0.2031	13/64	5.16	86.00	44.26	52.00	9006570051600
0.2047		5.20	86.00	44.20	52.00	9006570052000
0.2087		5.30	86.00	44.05	52.00	9006570053000
0.2126		5.40	93.00	48.90	57.00	9006570054000
0.2165		5.50	93.00	48.75	57.00	9006570055000
0.2189	7/32	5.56	93.00	48.66	57.00	9006570055600
0.2205		5.60	93.00	48.60	57.00	9006570056000
0.2209	#2	5.61	93.00	48.59	57.00	9006570056100
0.2244		5.70	93.00	48.45	57.00	9006570057000
0.2283		5.80	93.00	48.30	57.00	9006570058000
0.2323		5.90	93.00	48.15	57.00	9006570059000
0.2343	15/64	5.95	93.00	48.08	57.00	9006570059500
0.2362		6.00	93.00	48.00	57.00	9006570060000
0.2402		6.10	101.00	53.85	63.00	9006570061000
0.2441		6.20	101.00	53.70	63.00	9006570062000
0.2480		6.30	101.00	53.55	63.00	9006570063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9006570063500
0.2520		6.40	101.00	53.40	63.00	9006570064000
0.2559		6.50	101.00	53.25	63.00	9006570065000
0.2598		6.60	101.00	53.10	63.00	9006570066000
0.2638		6.70	101.00	52.95	63.00	9006570067000
0.2657	17/64 H	6.75	109.00	58.88	69.00	9006570067500
0.2677		6.80	109.00	58.80	69.00	9006570068000
0.2717	I	6.90	109.00	58.65	69.00	9006570069000
0.2756		7.00	109.00	58.50	69.00	9006570070000
0.2795		7.10	109.00	58.35	69.00	9006570071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9006570071400
0.2835		7.20	109.00	58.20	69.00	9006570072000
0.2874		7.30	109.00	58.05	69.00	9006570073000
0.2913		7.40	109.00	57.90	69.00	9006570074000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2953		7.50	109.00	57.75	69.00	9006570075000
0.2969	19/64	7.54	117.00	63.69	75.00	9006570075400
0.2992		7.60	117.00	63.60	75.00	9006570076000
0.3031		7.70	117.00	63.45	75.00	9006570077000
0.3071		7.80	117.00	63.30	75.00	9006570078000
0.3110		7.90	117.00	63.15	75.00	9006570079000
0.3126	5/16	7.94	117.00	63.09	75.00	9006570079400
0.3150		8.00	117.00	63.00	75.00	9006570080000
0.3189		8.10	117.00	62.85	75.00	9006570081000
0.3228	P	8.20	117.00	62.70	75.00	9006570082000
0.3268		8.30	117.00	62.55	75.00	9006570083000
0.3307		8.40	117.00	62.40	75.00	9006570084000
0.3346		8.50	117.00	62.25	75.00	9006570085000
0.3366		8.55	125.00	68.18	81.00	9006570085500
0.3386		8.60	125.00	68.10	81.00	9006570086000
0.3425		8.70	125.00	67.95	81.00	9006570087000
0.3437	11/32	8.73	125.00	67.91	81.00	9006570087300
0.3465		8.80	125.00	67.80	81.00	9006570088000
0.3504		8.90	125.00	67.65	81.00	9006570089000
0.3543		9.00	125.00	67.50	81.00	9006570090000
0.3583		9.10	125.00	67.35	81.00	9006570091000
0.3594	23/64	9.13	125.00	67.31	81.00	9006570091300
0.3622		9.20	125.00	67.20	81.00	9006570092000
0.3701		9.40	125.00	66.90	81.00	9006570094000
0.3740		9.50	125.00	66.75	81.00	9006570095000
0.3748	3/8	9.52	133.00	72.72	87.00	9006570095200
0.3780		9.60	133.00	72.60	87.00	9006570096000
0.3819		9.70	133.00	72.45	87.00	9006570097000
0.3858	W	9.80	133.00	72.30	87.00	9006570098000
0.3906	25/64	9.92	133.00	72.12	87.00	9006570099200
0.3937		10.00	133.00	72.00	87.00	9006570100000
0.4016		10.20	133.00	71.70	87.00	9006570102000
0.4063	13/32	10.32	133.00	71.52	87.00	9006570103200
0.4134		10.50	133.00	71.25	87.00	9006570105000
0.4252		10.80	142.00	77.80	94.00	9006570108000
0.4331		11.00	142.00	77.50	94.00	9006570110000
0.4374	7/16	11.11	142.00	77.34	94.00	9006570111100
0.4409		11.20	142.00	77.20	94.00	9006570112000
0.4528		11.50	142.00	76.75	94.00	9006570115000
0.4724		12.00	151.00	83.00	101.00	9006570120000
0.4921		12.50	151.00	82.25	101.00	9006570125000
0.5000	1/2	12.70	151.00	81.95	101.00	9006570127000
0.5118		13.00	151.00	81.50	101.00	9006570130000

Jobber length drills

Series no. **2458**

~5xD	DIN 338	Ti	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSCO**

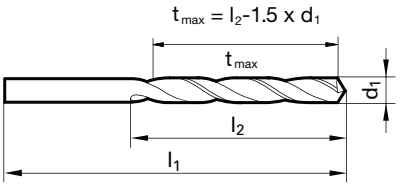
Surface: **F**

P	Steel	○
M	Stainless steel	●
K	Cast iron	
N	Aluminum	
S	Titanium alloys	●
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone split point • Co-alloyed high speed steel • increased wear resistance

Titanium and Titanium alloys • stainless/acid-/heat-resistant austenitic steels • high tensile/short chipping steels over 900 N/mm² • Hastelloy, Inconel, Nimonic





Speeds and feeds information on pg. 536

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0157	1/64	0.40	20.00	4.40	5.00	9024580004000
0.0394		1.00	34.00	10.50	12.00	9024580010000
0.0433		1.10	36.00	12.35	14.00	9024580011000
0.0469	3/64	1.19	38.00	14.22	16.00	9024580011900
0.0472		1.20	38.00	14.20	16.00	9024580012000
0.0512		1.30	38.00	14.05	16.00	9024580013000
0.0551	#54	1.40	40.00	15.90	18.00	9024580014000
0.0591		1.50	40.00	15.75	18.00	9024580015000
0.0598		1.52	43.00	17.72	20.00	9024580015200
0.0602		1.53	43.00	17.71	20.00	9024580015300
0.0626	1/16	1.59	43.00	17.62	20.00	9024580015900
0.0630		1.60	43.00	17.60	20.00	9024580016000
0.0650		1.65	43.00	17.53	20.00	9024580016500
0.0669	#51	1.70	43.00	17.45	20.00	9024580017000
0.0709		1.80	46.00	19.30	22.00	9024580018000
0.0748		1.90	46.00	19.15	22.00	9024580019000
0.0780	5/64	1.98	49.00	21.03	24.00	9024580019800
0.0787		2.00	49.00	21.00	24.00	9024580020000
0.0807		2.05	49.00	20.93	24.00	9024580020500
0.0827		2.10	49.00	20.85	24.00	9024580021000
0.0866		2.20	53.00	23.70	27.00	9024580022000
0.0906		2.30	53.00	23.55	27.00	9024580023000
0.0933	#44	2.37	57.00	26.45	30.00	9024580023700
0.0937	3/32	2.38	57.00	26.43	30.00	9024580023800
0.0945		2.40	57.00	26.40	30.00	9024580024000
0.0984		2.50	57.00	26.25	30.00	9024580025000
0.1024		2.60	57.00	26.10	30.00	9024580026000
0.1063		2.70	61.00	28.95	33.00	9024580027000
0.1083		2.75	61.00	28.88	33.00	9024580027500
0.1094	7/64	2.78	61.00	28.83	33.00	9024580027800
0.1102		2.80	61.00	28.80	33.00	9024580028000
0.1142		2.90	61.00	28.65	33.00	9024580029000
0.1181		3.00	61.00	28.50	33.00	9024580030000
0.1220		3.10	65.00	31.35	36.00	9024580031000
0.1248	1/8	3.17	65.00	31.25	36.00	9024580031700
0.1260		3.20	65.00	31.20	36.00	9024580032000
0.1280		3.25	65.00	31.13	36.00	9024580032500
0.1299		3.30	65.00	31.05	36.00	9024580033000
0.1339		3.40	70.00	33.90	39.00	9024580034000
0.1378		3.50	70.00	33.75	39.00	9024580035000
0.1406	9/64	#28 3.57	70.00	33.65	39.00	9024580035700
0.1417		3.60	70.00	33.60	39.00	9024580036000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1457		3.70	70.00	33.45	39.00	9024580037000
0.1496	#25	3.80	75.00	37.30	43.00	9024580038000
0.1535		3.90	75.00	37.15	43.00	9024580039000
0.1563	5/32	3.97	75.00	37.05	43.00	9024580039700
0.1575		4.00	75.00	37.00	43.00	9024580040000
0.1614		4.10	75.00	36.85	43.00	9024580041000
0.1634		4.15	75.00	36.78	43.00	9024580041500
0.1654		4.20	75.00	36.70	43.00	9024580042000
0.1661		4.22	75.00	36.67	43.00	9024580042200
0.1693	#18	4.30	80.00	40.55	47.00	9024580043000
0.1720	11/64	4.37	80.00	40.45	47.00	9024580043700
0.1732		4.40	80.00	40.40	47.00	9024580044000
0.1772	#16	4.50	80.00	40.25	47.00	9024580045000
0.1811		4.60	80.00	40.10	47.00	9024580046000
0.1850	#13	4.70	80.00	39.95	47.00	9024580047000
0.1874	3/16	4.76	86.00	44.86	52.00	9024580047600
0.1890	#12	4.80	86.00	44.80	52.00	9024580048000
0.1929		4.90	86.00	44.65	52.00	9024580049000
0.1969		5.00	86.00	44.50	52.00	9024580050000
0.1988		5.05	86.00	44.43	52.00	9024580050500
0.2008		5.10	86.00	44.35	52.00	9024580051000
0.2031	13/64	5.16	86.00	44.26	52.00	9024580051600
0.2047		5.20	86.00	44.20	52.00	9024580052000
0.2087		5.30	86.00	44.05	52.00	9024580053000
0.2126		5.40	93.00	48.90	57.00	9024580054000
0.2165		5.50	93.00	48.75	57.00	9024580055000
0.2189	7/32	5.56	93.00	48.66	57.00	9024580055600
0.2205		5.60	93.00	48.60	57.00	9024580056000
0.2244		5.70	93.00	48.45	57.00	9024580057000
0.2283		5.80	93.00	48.30	57.00	9024580058000
0.2323		5.90	93.00	48.15	57.00	9024580059000
0.2343	15/64	5.95	93.00	48.08	57.00	9024580059500
0.2362		6.00	93.00	48.00	57.00	9024580060000
0.2402		6.10	101.00	53.85	63.00	9024580061000
0.2441		6.20	101.00	53.70	63.00	9024580062000
0.2480		6.30	101.00	53.55	63.00	9024580063000
0.2500	1/4	E 6.35	101.00	53.48	63.00	9024580063500
0.2520		6.40	101.00	53.40	63.00	9024580064000
0.2559		6.50	101.00	53.25	63.00	9024580065000
0.2598		6.60	101.00	53.10	63.00	9024580066000
0.2638		6.70	101.00	52.95	63.00	9024580067000
0.2657	17/64	H 6.75	109.00	58.88	69.00	9024580067500

Jobber length drills

Series no. **2458**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2677		6.80	109.00	58.80	69.00	9024580068000
0.2717	I	6.90	109.00	58.65	69.00	9024580069000
0.2756		7.00	109.00	58.50	69.00	9024580070000
0.2795		7.10	109.00	58.35	69.00	9024580071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9024580071400
0.2835		7.20	109.00	58.20	69.00	9024580072000
0.2874		7.30	109.00	58.05	69.00	9024580073000
0.2913		7.40	109.00	57.90	69.00	9024580074000
0.2953		7.50	109.00	57.75	69.00	9024580075000
0.2969	19/64	7.54	117.00	63.69	75.00	9024580075400
0.2992		7.60	117.00	63.60	75.00	9024580076000
0.3031		7.70	117.00	63.45	75.00	9024580077000
0.3071		7.80	117.00	63.30	75.00	9024580078000
0.3110		7.90	117.00	63.15	75.00	9024580079000
0.3126	5/16	7.94	117.00	63.09	75.00	9024580079400
0.3150		8.00	117.00	63.00	75.00	9024580080000
0.3189		8.10	117.00	62.85	75.00	9024580081000
0.3228	P	8.20	117.00	62.70	75.00	9024580082000
0.3268		8.30	117.00	62.55	75.00	9024580083000
0.3280	21/64	8.33	117.00	62.51	75.00	9024580083300
0.3307		8.40	117.00	62.40	75.00	9024580084000
0.3346		8.50	117.00	62.25	75.00	9024580085000
0.3386		8.60	125.00	68.10	81.00	9024580086000
0.3425		8.70	125.00	67.95	81.00	9024580087000
0.3437	11/32	8.73	125.00	67.91	81.00	9024580087300
0.3465		8.80	125.00	67.80	81.00	9024580088000
0.3504		8.90	125.00	67.65	81.00	9024580089000
0.3543		9.00	125.00	67.50	81.00	9024580090000
0.3583		9.10	125.00	67.35	81.00	9024580091000
0.3594	23/64	9.13	125.00	67.31	81.00	9024580091300
0.3622		9.20	125.00	67.20	81.00	9024580092000
0.3661		9.30	125.00	67.05	81.00	9024580093000
0.3701		9.40	125.00	66.90	81.00	9024580094000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3740		9.50	125.00	66.75	81.00	9024580095000
0.3748	3/8	9.52	133.00	72.72	87.00	9024580095200
0.3780		9.60	133.00	72.60	87.00	9024580096000
0.3819		9.70	133.00	72.45	87.00	9024580097000
0.3858	W	9.80	133.00	72.30	87.00	9024580098000
0.3898		9.90	133.00	72.15	87.00	9024580099000
0.3906	25/64	9.92	133.00	72.12	87.00	9024580099200
0.3937		10.00	133.00	72.00	87.00	9024580100000
0.3976		10.10	133.00	71.85	87.00	9024580101000
0.4016		10.20	133.00	71.70	87.00	9024580102000
0.4055		10.30	133.00	71.55	87.00	9024580103000
0.4063	13/32	10.32	133.00	71.52	87.00	9024580103200
0.4094		10.40	133.00	71.40	87.00	9024580104000
0.4134		10.50	133.00	71.25	87.00	9024580105000
0.4220	27/64	10.72	142.00	77.92	94.00	9024580107200
0.4252		10.80	142.00	77.80	94.00	9024580108000
0.4331		11.00	142.00	77.50	94.00	9024580110000
0.4374	7/16	11.11	142.00	77.34	94.00	9024580111100
0.4409		11.20	142.00	77.20	94.00	9024580112000
0.4528		11.50	142.00	76.75	94.00	9024580115000
0.4531	29/64	11.51	142.00	76.74	94.00	9024580115100
0.4689	15/32	11.91	151.00	83.14	101.00	9024580119100
0.4724		12.00	151.00	83.00	101.00	9024580120000
0.4843	31/64	12.30	151.00	82.55	101.00	9024580123000
0.4921		12.50	151.00	82.25	101.00	9024580125000
0.5000	1/2	12.70	151.00	81.95	101.00	9024580127000
0.5118		13.00	151.00	81.50	101.00	9024580130000
0.5157	33/64	13.10	151.00	81.35	101.00	9024580131000
0.5311	17/32	13.49	160.00	87.77	108.00	9024580134900
0.5512		14.00	160.00	87.00	108.00	9024580140000
0.5626	9/16	14.29	169.00	92.57	114.00	9024580142900
0.5709		14.50	169.00	92.25	114.00	9024580145000
0.5906		15.00	169.00	91.50	114.00	9024580150000

Jobber length drills

Series no. **1131**

~5xD	GT 80 IK	WN	130°	h8			HE	R
Cutting depth	Type	Guhring Std.	Point angle	Tolerance on Ø	Web Thinning	Internal coolant	Shank form	Cutting direction

Tool material **HSCO**

Surface ◯

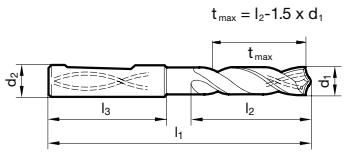
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	●
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 5.000 • relieved cone • Co-alloyed high speed steel

long chipping materials up to 1000 N/mm² • stainless steels • cast materials • non-ferrous metals





Speeds and feeds information on pg. 529

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1969		5.00	6.00	82.00	36.50	44.00	9011310050000
0.2165		5.50	6.00	82.00	35.75	44.00	9011310055000
0.2362		6.00	6.00	82.00	35.00	44.00	9011310060000
0.2500	1/4 E	6.35	8.00	91.00	43.48	53.00	9011310063500
0.2559		6.50	8.00	91.00	43.25	53.00	9011310065000
0.2677		6.80	8.00	91.00	42.80	53.00	9011310068000
0.2756		7.00	8.00	91.00	42.50	53.00	9011310070000
0.2811	9/32 K	7.14	8.00	91.00	42.29	53.00	9011310071400
0.2953		7.50	8.00	91.00	41.75	53.00	9011310075000
0.3071		7.80	8.00	91.00	41.30	53.00	9011310078000
0.3126	5/16	7.94	8.00	91.00	41.09	53.00	9011310079400
0.3150		8.00	8.00	91.00	41.00	53.00	9011310080000
0.3346		8.50	10.00	103.00	48.25	61.00	9011310085000
0.3437	11/32	8.73	10.00	103.00	47.91	61.00	9011310087300
0.3543		9.00	10.00	103.00	47.50	61.00	9011310090000
0.3740		9.50	10.00	103.00	46.75	61.00	9011310095000
0.3748	3/8	9.52	10.00	103.00	46.72	61.00	9011310095200
0.3937		10.00	10.00	103.00	46.00	61.00	9011310100000
0.4016		10.20	12.00	118.00	55.70	71.00	9011310102000
0.4063	13/32	10.32	12.00	118.00	55.52	71.00	9011310103200
0.4134		10.50	12.00	118.00	55.25	71.00	9011310105000
0.4331		11.00	12.00	118.00	54.50	71.00	9011310110000
0.4374	7/16	11.11	12.00	118.00	54.34	71.00	9011310111100
0.4528		11.50	12.00	118.00	53.75	71.00	9011310115000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4689	15/32	11.91	12.00	118.00	53.14	71.00	9011310119100
0.4724		12.00	12.00	118.00	53.00	71.00	9011310120000
0.4921		12.50	14.00	124.00	58.25	77.00	9011310125000
0.5000	1/2	12.70	14.00	124.00	57.95	77.00	9011310127000
0.5118		13.00	14.00	124.00	57.50	77.00	9011310130000
0.5311	17/32	13.49	14.00	124.00	56.77	77.00	9011310134900
0.5315		13.50	14.00	124.00	56.75	77.00	9011310135000
0.5512		14.00	14.00	124.00	56.00	77.00	9011310140000
0.5626	9/16	14.29	16.00	133.00	61.57	83.00	9011310142900
0.5709		14.50	16.00	133.00	61.25	83.00	9011310145000
0.5906		15.00	16.00	133.00	60.50	83.00	9011310150000
0.5937	19/32	15.08	16.00	133.00	60.38	83.00	9011310150800
0.6102		15.50	16.00	133.00	59.75	83.00	9011310155000
0.6248	5/8	15.87	16.00	133.00	59.20	83.00	9011310158700
0.6299		16.00	16.00	133.00	59.00	83.00	9011310160000
0.6496		16.50	18.00	143.00	68.25	93.00	9011310165000
0.6693		17.00	18.00	143.00	67.50	93.00	9011310170000
0.6890		17.50	18.00	143.00	66.75	93.00	9011310175000
0.7087		18.00	18.00	143.00	66.00	93.00	9011310180000
0.7283		18.50	20.00	153.00	73.25	101.00	9011310185000
0.7480		19.00	20.00	153.00	72.50	101.00	9011310190000
0.7677		19.50	20.00	153.00	71.75	101.00	9011310195000
0.7874		20.00	20.00	153.00	71.00	101.00	9011310200000

Jobber length drills

Series no. **1132**

~5xD	GT 80 IK	WN	130°	h8			HE	R
Cutting depth	Type	Guhring Std.	Point angle	Tolerance on Ø	Web Thinning	Internal coolant	Shank form	Cutting direction

Tool material **HSCO**

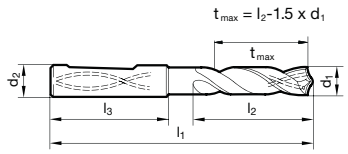
Surface **S**

P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	●
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 5.000 • relieved cone • Co-alloyed high speed steel • increased wear resistance

long chipping materials up to 1000 N/mm² • stainless steels • cast materials • non-ferrous metals





Speeds and feeds information on pg. 529

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1969		5.00	6.00	82.00	36.50	44.00	9011320050000
0.2165		5.50	6.00	82.00	35.75	44.00	9011320055000
0.2362		6.00	6.00	82.00	35.00	44.00	9011320060000
0.2500	1/4 E	6.35	8.00	91.00	43.48	53.00	9011320063500
0.2559		6.50	8.00	91.00	43.25	53.00	9011320065000
0.2677		6.80	8.00	91.00	42.80	53.00	9011320068000
0.2756		7.00	8.00	91.00	42.50	53.00	9011320070000
0.2811	9/32 K	7.14	8.00	91.00	42.29	53.00	9011320071400
0.2953		7.50	8.00	91.00	41.75	53.00	9011320075000
0.3071		7.80	8.00	91.00	41.30	53.00	9011320078000
0.3126	5/16	7.94	8.00	91.00	41.09	53.00	9011320079400
0.3150		8.00	8.00	91.00	41.00	53.00	9011320080000
0.3346		8.50	10.00	103.00	48.25	61.00	9011320085000
0.3437	11/32	8.73	10.00	103.00	47.91	61.00	9011320087300
0.3543		9.00	10.00	103.00	47.50	61.00	9011320090000
0.3740		9.50	10.00	103.00	46.75	61.00	9011320095000
0.3748	3/8	9.52	10.00	103.00	46.72	61.00	9011320095200
0.3937		10.00	10.00	103.00	46.00	61.00	9011320100000
0.4016		10.20	12.00	118.00	55.70	71.00	9011320102000
0.4063	13/32	10.32	12.00	118.00	55.52	71.00	9011320103200
0.4134		10.50	12.00	118.00	55.25	71.00	9011320105000
0.4331		11.00	12.00	118.00	54.50	71.00	9011320110000
0.4374	7/16	11.11	12.00	118.00	54.34	71.00	9011320111100
0.4528		11.50	12.00	118.00	53.75	71.00	9011320115000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4689	15/32	11.91	12.00	118.00	53.14	71.00	9011320119100
0.4724		12.00	12.00	118.00	53.00	71.00	9011320120000
0.4921		12.50	14.00	124.00	58.25	77.00	9011320125000
0.5000	1/2	12.70	14.00	124.00	57.95	77.00	9011320127000
0.5118		13.00	14.00	124.00	57.50	77.00	9011320130000
0.5311	17/32	13.49	14.00	124.00	56.77	77.00	9011320134900
0.5315		13.50	14.00	124.00	56.75	77.00	9011320135000
0.5512		14.00	14.00	124.00	56.00	77.00	9011320140000
0.5626	9/16	14.29	16.00	133.00	61.57	83.00	9011320142900
0.5709		14.50	16.00	133.00	61.25	83.00	9011320145000
0.5906		15.00	16.00	133.00	60.50	83.00	9011320150000
0.5937	19/32	15.08	16.00	133.00	60.38	83.00	9011320150800
0.6102		15.50	16.00	133.00	59.75	83.00	9011320155000
0.6248	5/8	15.87	16.00	133.00	59.20	83.00	9011320158700
0.6299		16.00	16.00	133.00	59.00	83.00	9011320160000
0.6496		16.50	18.00	143.00	68.25	93.00	9011320165000
0.6693		17.00	18.00	143.00	67.50	93.00	9011320170000
0.6890		17.50	18.00	143.00	66.75	93.00	9011320175000
0.7087		18.00	18.00	143.00	66.00	93.00	9011320180000
0.7283		18.50	20.00	153.00	73.25	101.00	9011320185000
0.7480		19.00	20.00	153.00	72.50	101.00	9011320190000
0.7677		19.50	20.00	153.00	71.75	101.00	9011320195000
0.7874		20.00	20.00	153.00	71.00	101.00	9011320200000

Jobber length drills

Series no. **622**

~5xD Cutting depth | DIN 338 Standard | GT 100 Type | 130° Point angle | h8 Tolerance on Ø | Web Thinning | Cyl Shank form | R Cutting direction

Tool material **HSCO**

Surface >Ø 2.36

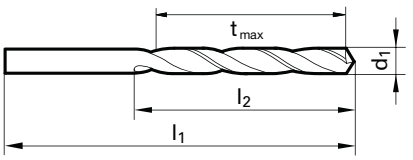
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • Co-alloyed high speed steel • wide flutes • increased wear resistance • especially for drilling depths > 3xD

alloyed/unalloyed steel • cast materials over 800 N/mm² • hot and cold rolled steels • antifriction bearing steels • high-alloyed steels • heat treatable and case hardened steels

$t_{max} = l_2\text{-}1.5 \times d_1$





Jobber Length

Speeds and feeds information on pg. 514

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	34.00	10.50	12.00	9006220010000
0.0402	#60	1.02	34.00	10.47	12.00	9006220010200
0.0409	#59	1.04	34.00	10.44	12.00	9006220010400
0.0413		1.05	34.00	10.43	12.00	9006220010500
0.0421	#58	1.07	36.00	12.40	14.00	9006220010700
0.0429	#57	1.09	36.00	12.37	14.00	9006220010900
0.0433		1.10	36.00	12.35	14.00	9006220011000
0.0453		1.15	36.00	12.28	14.00	9006220011500
0.0465	#56	1.18	36.00	12.23	14.00	9006220011800
0.0469	3/64	1.19	38.00	14.22	16.00	9006220011900
0.0472		1.20	38.00	14.20	16.00	9006220012000
0.0492		1.25	38.00	14.13	16.00	9006220012500
0.0500		1.27	38.00	14.10	16.00	9006220012700
0.0512		1.30	38.00	14.05	16.00	9006220013000
0.0520	#55	1.32	38.00	14.02	16.00	9006220013200
0.0531		1.35	40.00	15.98	18.00	9006220013500
0.0551	#54	1.40	40.00	15.90	18.00	9006220014000
0.0563		1.43	40.00	15.86	18.00	9006220014300
0.0571		1.45	40.00	15.83	18.00	9006220014500
0.0591		1.50	40.00	15.75	18.00	9006220015000
0.0594	#53	1.51	43.00	17.74	20.00	9006220015100
0.0610		1.55	43.00	17.68	20.00	9006220015500
0.0626	1/16	1.59	43.00	17.62	20.00	9006220015900
0.0630		1.60	43.00	17.60	20.00	9006220016000
0.0634	#52	1.61	43.00	17.59	20.00	9006220016100
0.0650		1.65	43.00	17.53	20.00	9006220016500
0.0669	#51	1.70	43.00	17.45	20.00	9006220017000
0.0701	#50	1.78	46.00	19.33	22.00	9006220017800
0.0709		1.80	46.00	19.30	22.00	9006220018000
0.0728	#49	1.85	46.00	19.23	22.00	9006220018500
0.0748		1.90	46.00	19.15	22.00	9006220019000
0.0756		1.92	49.00	21.12	24.00	9006220019200
0.0760	#48	1.93	49.00	21.11	24.00	9006220019300
0.0768		1.95	49.00	21.08	24.00	9006220019500
0.0780	5/64	1.98	49.00	21.03	24.00	9006220019800
0.0783	#47	1.99	49.00	21.02	24.00	9006220019900
0.0787		2.00	49.00	21.00	24.00	9006220020000
0.0807		2.05	49.00	20.93	24.00	9006220020500
0.0811	#46	2.06	49.00	20.91	24.00	9006220020600
0.0819	#45	2.08	49.00	20.88	24.00	9006220020800
0.0827		2.10	49.00	20.85	24.00	9006220021000
0.0846		2.15	53.00	23.78	27.00	9006220021500

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0858	#44	2.18	53.00	23.73	27.00	9006220021800
0.0866		2.20	53.00	23.70	27.00	9006220022000
0.0886		2.25	53.00	23.63	27.00	9006220022500
0.0890	#43	2.26	53.00	23.61	27.00	9006220022600
0.0906		2.30	53.00	23.55	27.00	9006220023000
0.0925		2.35	53.00	23.48	27.00	9006220023500
0.0933	#42	2.37	57.00	26.45	30.00	9006220023700
0.0937	3/32	2.38	57.00	26.43	30.00	9006220023800
0.0945		2.40	57.00	26.40	30.00	9006220024000
0.0953		2.42	57.00	26.37	30.00	9006220024200
0.0961	#41	2.44	57.00	26.34	30.00	9006220024400
0.0965		2.45	57.00	26.33	30.00	9006220024500
0.0980	#40	2.49	57.00	26.27	30.00	9006220024900
0.0984		2.50	57.00	26.25	30.00	9006220025000
0.0996	#39	2.53	57.00	26.21	30.00	9006220025300
0.1004		2.55	57.00	26.18	30.00	9006220025500
0.1016	#38	2.58	57.00	26.13	30.00	9006220025800
0.1024		2.60	57.00	26.10	30.00	9006220026000
0.1039	#37	2.64	57.00	26.04	30.00	9006220026400
0.1043		2.65	57.00	26.03	30.00	9006220026500
0.1063		2.70	61.00	28.95	33.00	9006220027000
0.1067	#36	2.71	61.00	28.94	33.00	9006220027100
0.1083		2.75	61.00	28.88	33.00	9006220027500
0.1094	7/64	2.78	61.00	28.83	33.00	9006220027800
0.1098	#35	2.79	61.00	28.82	33.00	9006220027900
0.1102		2.80	61.00	28.80	33.00	9006220028000
0.1110	#34	2.82	61.00	28.77	33.00	9006220028200
0.1122		2.85	61.00	28.73	33.00	9006220028500
0.1130	#33	2.87	61.00	28.70	33.00	9006220028700
0.1142		2.90	61.00	28.65	33.00	9006220029000
0.1161	#32	2.95	61.00	28.58	33.00	9006220029500
0.1181		3.00	61.00	28.50	33.00	9006220030000
0.1201	#31	3.05	65.00	31.43	36.00	9006220030500
0.1220		3.10	65.00	31.35	36.00	9006220031000
0.1248	1/8	3.17	65.00	31.25	36.00	9006220031700
0.1260		3.20	65.00	31.20	36.00	9006220032000
0.1280		3.25	65.00	31.13	36.00	9006220032500
0.1283	#30	3.26	65.00	31.11	36.00	9006220032600
0.1299		3.30	65.00	31.05	36.00	9006220033000
0.1339		3.40	70.00	33.90	39.00	9006220034000
0.1358	#29	3.45	70.00	33.83	39.00	9006220034500
0.1378		3.50	70.00	33.75	39.00	9006220035000

Jobber length drills

Series no. 622

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1406	9/64 #28	3.57	70.00	33.65	39.00	9006220035700
0.1417		3.60	70.00	33.60	39.00	9006220036000
0.1441	#27	3.66	70.00	33.51	39.00	9006220036600
0.1457		3.70	70.00	33.45	39.00	9006220037000
0.1469	#26	3.73	70.00	33.41	39.00	9006220037300
0.1496	#25	3.80	75.00	37.30	43.00	9006220038000
0.1520	#24	3.86	75.00	37.21	43.00	9006220038600
0.1535		3.90	75.00	37.15	43.00	9006220039000
0.1539	#23	3.91	75.00	37.14	43.00	9006220039100
0.1563	5/32	3.97	75.00	37.05	43.00	9006220039700
0.1571	#22	3.99	75.00	37.02	43.00	9006220039900
0.1575		4.00	75.00	37.00	43.00	9006220040000
0.1591	#21	4.04	75.00	36.94	43.00	9006220040400
0.1610	#20	4.09	75.00	36.87	43.00	9006220040900
0.1614		4.10	75.00	36.85	43.00	9006220041000
0.1634		4.15	75.00	36.78	43.00	9006220041500
0.1654		4.20	75.00	36.70	43.00	9006220042000
0.1661	#19	4.22	75.00	36.67	43.00	9006220042200
0.1673		4.25	75.00	36.63	43.00	9006220042500
0.1693	#18	4.30	80.00	40.55	47.00	9006220043000
0.1720	11/64	4.37	80.00	40.45	47.00	9006220043700
0.1728	#17	4.39	80.00	40.42	47.00	9006220043900
0.1732		4.40	80.00	40.40	47.00	9006220044000
0.1772	#16	4.50	80.00	40.25	47.00	9006220045000
0.1791		4.55	80.00	40.18	47.00	9006220045500
0.1799	#15	4.57	80.00	40.15	47.00	9006220045700
0.1811		4.60	80.00	40.10	47.00	9006220046000
0.1819	#14	4.62	80.00	40.07	47.00	9006220046200
0.1850	#13	4.70	80.00	39.95	47.00	9006220047000
0.1870		4.75	80.00	39.88	47.00	9006220047500
0.1874	3/16	4.76	86.00	44.86	52.00	9006220047600
0.1890	#12	4.80	86.00	44.80	52.00	9006220048000
0.1909	#11	4.85	86.00	44.73	52.00	9006220048500
0.1929		4.90	86.00	44.65	52.00	9006220049000
0.1937	#10	4.92	86.00	44.62	52.00	9006220049200
0.1961	#9	4.98	86.00	44.53	52.00	9006220049800
0.1969		5.00	86.00	44.50	52.00	9006220050000
0.1992	#8	5.06	86.00	44.41	52.00	9006220050600
0.2008		5.10	86.00	44.35	52.00	9006220051000
0.2012	#7	5.11	86.00	44.34	52.00	9006220051100
0.2031	13/64	5.16	86.00	44.26	52.00	9006220051600
0.2039	#6	5.18	86.00	44.23	52.00	9006220051800
0.2047		5.20	86.00	44.20	52.00	9006220052000
0.2055	#5	5.22	86.00	44.17	52.00	9006220052200
0.2067		5.25	86.00	44.13	52.00	9006220052500
0.2087		5.30	86.00	44.05	52.00	9006220053000
0.2091	#4	5.31	93.00	49.04	57.00	9006220053100
0.2126		5.40	93.00	48.90	57.00	9006220054000
0.2130	#3	5.41	93.00	48.89	57.00	9006220054100
0.2165		5.50	93.00	48.75	57.00	9006220055000
0.2189	7/32	5.56	93.00	48.66	57.00	9006220055600
0.2205		5.60	93.00	48.60	57.00	9006220056000
0.2209	#2	5.61	93.00	48.59	57.00	9006220056100
0.2244		5.70	93.00	48.45	57.00	9006220057000
0.2264		5.75	93.00	48.38	57.00	9006220057500
0.2280	#1	5.79	93.00	48.32	57.00	9006220057900
0.2283		5.80	93.00	48.30	57.00	9006220058000
0.2323		5.90	93.00	48.15	57.00	9006220059000
0.2339	A	5.94	93.00	48.09	57.00	9006220059400
0.2343	15/64	5.95	93.00	48.08	57.00	9006220059500
0.2362		6.00	93.00	48.00	57.00	9006220060000
0.2378	B	6.04	101.00	53.94	63.00	9006220060400
0.2382		6.05	101.00	53.93	63.00	9006220060500
0.2402		6.10	101.00	53.85	63.00	9006220061000
0.2421	C	6.15	101.00	53.78	63.00	9006220061500
0.2441		6.20	101.00	53.70	63.00	9006220062000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2461	D	6.25	101.00	53.63	63.00	9006220062500
0.2480		6.30	101.00	53.55	63.00	9006220063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9006220063500
0.2520		6.40	101.00	53.40	63.00	9006220064000
0.2559		6.50	101.00	53.25	63.00	9006220065000
0.2571	F	6.53	101.00	53.21	63.00	9006220065300
0.2598		6.60	101.00	53.10	63.00	9006220066000
0.2610	G	6.63	101.00	53.06	63.00	9006220066300
0.2638		6.70	101.00	52.95	63.00	9006220067000
0.2657	17/64 H	6.75	109.00	58.88	69.00	9006220067500
0.2677		6.80	109.00	58.80	69.00	9006220068000
0.2717	I	6.90	109.00	58.65	69.00	9006220069000
0.2756		7.00	109.00	58.50	69.00	9006220070000
0.2768	J	7.03	109.00	58.46	69.00	9006220070300
0.2795		7.10	109.00	58.35	69.00	9006220071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9006220071400
0.2835		7.20	109.00	58.20	69.00	9006220072000
0.2874		7.30	109.00	58.05	69.00	9006220073000
0.2902	L	7.37	109.00	57.95	69.00	9006220073700
0.2913		7.40	109.00	57.90	69.00	9006220074000
0.2949	M	7.49	109.00	57.77	69.00	9006220074900
0.2953		7.50	109.00	57.75	69.00	9006220075000
0.2969	19/64	7.54	117.00	63.69	75.00	9006220075400
0.2992		7.60	117.00	63.60	75.00	9006220076000
0.3020	N	7.67	117.00	63.50	75.00	9006220076700
0.3031		7.70	117.00	63.45	75.00	9006220077000
0.3051		7.75	117.00	63.38	75.00	9006220077500
0.3071		7.80	117.00	63.30	75.00	9006220078000
0.3110		7.90	117.00	63.15	75.00	9006220079000
0.3126	5/16	7.94	117.00	63.09	75.00	9006220079400
0.3150		8.00	117.00	63.00	75.00	9006220080000
0.3161	O	8.03	117.00	62.96	75.00	9006220080300
0.3189		8.10	117.00	62.85	75.00	9006220081000
0.3228	P	8.20	117.00	62.70	75.00	9006220082000
0.3268		8.30	117.00	62.55	75.00	9006220083000
0.3280	21/64	8.33	117.00	62.51	75.00	9006220083300
0.3307		8.40	117.00	62.40	75.00	9006220084000
0.3319	Q	8.43	117.00	62.36	75.00	9006220084300
0.3346		8.50	117.00	62.25	75.00	9006220085000
0.3386		8.60	125.00	68.10	81.00	9006220086000
0.3390	R	8.61	125.00	68.09	81.00	9006220086100
0.3425		8.70	125.00	67.95	81.00	9006220087000
0.3437	11/32	8.73	125.00	67.91	81.00	9006220087300
0.3465		8.80	125.00	67.80	81.00	9006220088000
0.3480	S	8.84	125.00	67.74	81.00	9006220088400
0.3504		8.90	125.00	67.65	81.00	9006220089000
0.3543		9.00	125.00	67.50	81.00	9006220090000
0.3579	T	9.09	125.00	67.37	81.00	9006220090900
0.3583		9.10	125.00	67.35	81.00	9006220091000
0.3594	23/64	9.13	125.00	67.31	81.00	9006220091300
0.3622		9.20	125.00	67.20	81.00	9006220092000
0.3661		9.30	125.00	67.05	81.00	9006220093000
0.3677	U	9.34	125.00	66.99	81.00	9006220093400
0.3701		9.40	125.00	66.90	81.00	9006220094000
0.3740		9.50	125.00	66.75	81.00	9006220095000
0.3748	3/8	9.52	133.00	72.72	87.00	9006220095200
0.3772	V	9.58	133.00	72.63	87.00	9006220095800
0.3780		9.60	133.00	72.60	87.00	9006220096000
0.3819		9.70	133.00	72.45	87.00	9006220097000
0.3858	W	9.80	133.00	72.30	87.00	9006220098000
0.3898		9.90	133.00	72.15	87.00	9006220099000
0.3906	25/64	9.92	133.00	72.12	87.00	9006220099200
0.3937		10.00	133.00	72.00	87.00	9006220100000
0.3969	X	10.08	133.00	71.88	87.00	9006220100800
0.3976		10.10	133.00	71.85	87.00	9006220101000
0.4016		10.20	133.00	71.70	87.00	9006220102000

Jobber length drills

Series no. 622

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4039	Y	10.26	133.00	71.61	87.00	9006220102600
0.4055		10.30	133.00	71.55	87.00	9006220103000
0.4063	13/32	10.32	133.00	71.52	87.00	9006220103200
0.4094		10.40	133.00	71.40	87.00	9006220104000
0.4134		10.50	133.00	71.25	87.00	9006220105000
0.4173		10.60	133.00	71.10	87.00	9006220106000
0.4213		10.70	142.00	77.95	94.00	9006220107000
0.4220	27/64	10.72	142.00	77.92	94.00	9006220107200
0.4252		10.80	142.00	77.80	94.00	9006220108000
0.4291		10.90	142.00	77.65	94.00	9006220109000
0.4331		11.00	142.00	77.50	94.00	9006220110000
0.4370		11.10	142.00	77.35	94.00	9006220111000
0.4374	7/16	11.11	142.00	77.34	94.00	9006220111100

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4409		11.20	142.00	77.20	94.00	9006220112000
0.4449		11.30	142.00	77.05	94.00	9006220113000
0.4488		11.40	142.00	76.90	94.00	9006220114000
0.4528		11.50	142.00	76.75	94.00	9006220115000
0.4531	29/64	11.51	142.00	76.74	94.00	9006220115100
0.4567		11.60	142.00	76.60	94.00	9006220116000
0.4606		11.70	142.00	76.45	94.00	9006220117000
0.4646		11.80	142.00	76.30	94.00	9006220118000
0.4689	15/32	11.91	151.00	83.14	101.00	9006220119100
0.4724		12.00	151.00	83.00	101.00	9006220120000
0.4921		12.50	151.00	82.25	101.00	9006220125000
0.5000	1/2	12.70	151.00	81.95	101.00	9006220127000
0.5118		13.00	151.00	81.50	101.00	9006220130000

Jobber length drills

Series no. **658**

~5xD	DIN 338	GT 100	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSCO**

Surface: **S**

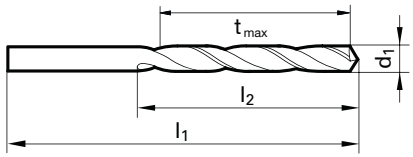
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • Co-alloyed high speed steel • wide flutes • increased wear resistance • especially for drilling depths > 3xD

alloyed and unalloyed steel • cast materials over 800 N/mm² • hot and cold rolled steels • antifriction bearing steels • high-alloyed steels • heat treatable and case hardened steels

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 517

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	34.00	10.50	12.00	9006580010000
0.0402	#60	1.02	34.00	10.47	12.00	9006580010200
0.0413		1.05	34.00	10.43	12.00	9006580010500
0.0421	#58	1.07	36.00	12.40	14.00	9006580010700
0.0433		1.10	36.00	12.35	14.00	9006580011000
0.0445		1.13	36.00	12.31	14.00	9006580011300
0.0453		1.15	36.00	12.28	14.00	9006580011500
0.0469	3/64	1.19	38.00	14.22	16.00	9006580011900
0.0472		1.20	38.00	14.20	16.00	9006580012000
0.0512		1.30	38.00	14.05	16.00	9006580013000
0.0520	#55	1.32	38.00	14.02	16.00	9006580013200
0.0531		1.35	40.00	15.98	18.00	9006580013500
0.0551	#54	1.40	40.00	15.90	18.00	9006580014000
0.0571		1.45	40.00	15.83	18.00	9006580014500
0.0591		1.50	40.00	15.75	18.00	9006580015000
0.0610		1.55	43.00	17.68	20.00	9006580015500
0.0626	1/16	1.59	43.00	17.62	20.00	9006580015900
0.0630		1.60	43.00	17.60	20.00	9006580016000
0.0634	#52	1.61	43.00	17.59	20.00	9006580016100
0.0642		1.63	43.00	17.56	20.00	9006580016300
0.0650		1.65	43.00	17.53	20.00	9006580016500
0.0669	#51	1.70	43.00	17.45	20.00	9006580017000
0.0701	#50	1.78	46.00	19.33	22.00	9006580017800
0.0709		1.80	46.00	19.30	22.00	9006580018000
0.0728	#49	1.85	46.00	19.23	22.00	9006580018500
0.0748		1.90	46.00	19.15	22.00	9006580019000
0.0760	#48	1.93	49.00	21.11	24.00	9006580019300
0.0768		1.95	49.00	21.08	24.00	9006580019500
0.0780	5/64	1.98	49.00	21.03	24.00	9006580019800
0.0783	#47	1.99	49.00	21.02	24.00	9006580019900
0.0787		2.00	49.00	21.00	24.00	9006580020000
0.0807		2.05	49.00	20.93	24.00	9006580020500
0.0811	#46	2.06	49.00	20.91	24.00	9006580020600
0.0819	#45	2.08	49.00	20.88	24.00	9006580020800
0.0827		2.10	49.00	20.85	24.00	9006580021000
0.0846		2.15	53.00	23.78	27.00	9006580021500
0.0858	#44	2.18	53.00	23.73	27.00	9006580021800
0.0866		2.20	53.00	23.70	27.00	9006580022000
0.0890	#43	2.26	53.00	23.61	27.00	9006580022600
0.0906		2.30	53.00	23.55	27.00	9006580023000
0.0925		2.35	53.00	23.48	27.00	9006580023500
0.0933	#42	2.37	57.00	26.45	30.00	9006580023700

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0937	3/32	2.38	57.00	26.43	30.00	9006580023800
0.0945		2.40	57.00	26.40	30.00	9006580024000
0.0961	#41	2.44	57.00	26.34	30.00	9006580024400
0.0965		2.45	57.00	26.33	30.00	9006580024500
0.0980	#40	2.49	57.00	26.27	30.00	9006580024900
0.0984		2.50	57.00	26.25	30.00	9006580025000
0.0996	#39	2.53	57.00	26.21	30.00	9006580025300
0.1004		2.55	57.00	26.18	30.00	9006580025500
0.1016	#38	2.58	57.00	26.13	30.00	9006580025800
0.1024		2.60	57.00	26.10	30.00	9006580026000
0.1039	#37	2.64	57.00	26.04	30.00	9006580026400
0.1043		2.65	57.00	26.03	30.00	9006580026500
0.1063		2.70	61.00	28.95	33.00	9006580027000
0.1094	7/64	2.78	61.00	28.83	33.00	9006580027800
0.1098	#35	2.79	61.00	28.82	33.00	9006580027900
0.1102		2.80	61.00	28.80	33.00	9006580028000
0.1110	#34	2.82	61.00	28.77	33.00	9006580028200
0.1130	#33	2.87	61.00	28.70	33.00	9006580028700
0.1142		2.90	61.00	28.65	33.00	9006580029000
0.1161	#32	2.95	61.00	28.58	33.00	9006580029500
0.1181		3.00	61.00	28.50	33.00	9006580030000
0.1201	#31	3.05	65.00	31.43	36.00	9006580030500
0.1220		3.10	65.00	31.35	36.00	9006580031000
0.1248	1/8	3.17	65.00	31.25	36.00	9006580031700
0.1260		3.20	65.00	31.20	36.00	9006580032000
0.1280		3.25	65.00	31.13	36.00	9006580032500
0.1283	#30	3.26	65.00	31.11	36.00	9006580032600
0.1299		3.30	65.00	31.05	36.00	9006580033000
0.1339		3.40	70.00	33.90	39.00	9006580034000
0.1358	#29	3.45	70.00	33.83	39.00	9006580034500
0.1378		3.50	70.00	33.75	39.00	9006580035000
0.1406	9/64	3.57	70.00	33.65	39.00	9006580035700
0.1417		3.60	70.00	33.60	39.00	9006580036000
0.1441	#27	3.66	70.00	33.51	39.00	9006580036600
0.1457		3.70	70.00	33.45	39.00	9006580037000
0.1469	#26	3.73	70.00	33.41	39.00	9006580037300
0.1476		3.75	70.00	33.38	39.00	9006580037500
0.1496	#25	3.80	75.00	37.30	43.00	9006580038000
0.1520	#24	3.86	75.00	37.21	43.00	9006580038600
0.1535		3.90	75.00	37.15	43.00	9006580039000
0.1563	5/32	3.97	75.00	37.05	43.00	9006580039700
0.1575		4.00	75.00	37.00	43.00	9006580040000

Jobber length drills

Series no. 658

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1591	#21	4.04	75.00	36.94	43.00	9006580040400
0.1610	#20	4.09	75.00	36.87	43.00	9006580040900
0.1614		4.10	75.00	36.85	43.00	9006580041000
0.1654		4.20	75.00	36.70	43.00	9006580042000
0.1661	#19	4.22	75.00	36.67	43.00	9006580042200
0.1673		4.25	75.00	36.63	43.00	9006580042500
0.1693	#18	4.30	80.00	40.55	47.00	9006580043000
0.1720	11/64	4.37	80.00	40.45	47.00	9006580043700
0.1732		4.40	80.00	40.40	47.00	9006580044000
0.1772	#16	4.50	80.00	40.25	47.00	9006580045000
0.1799	#15	4.57	80.00	40.15	47.00	9006580045700
0.1811		4.60	80.00	40.10	47.00	9006580046000
0.1850	#13	4.70	80.00	39.95	47.00	9006580047000
0.1874	3/16	4.76	86.00	44.86	52.00	9006580047600
0.1890	#12	4.80	86.00	44.80	52.00	9006580048000
0.1909	#11	4.85	86.00	44.73	52.00	9006580048500
0.1929		4.90	86.00	44.65	52.00	9006580049000
0.1937	#10	4.92	86.00	44.62	52.00	9006580049200
0.1961	#9	4.98	86.00	44.53	52.00	9006580049800
0.1969		5.00	86.00	44.50	52.00	9006580050000
0.2008		5.10	86.00	44.35	52.00	9006580051000
0.2031	13/64	5.16	86.00	44.26	52.00	9006580051600
0.2047		5.20	86.00	44.20	52.00	9006580052000
0.2087		5.30	86.00	44.05	52.00	9006580053000
0.2126		5.40	93.00	48.90	57.00	9006580054000
0.2165		5.50	93.00	48.75	57.00	9006580055000
0.2189	7/32	5.56	93.00	48.66	57.00	9006580055600
0.2205		5.60	93.00	48.60	57.00	9006580056000
0.2209	#2	5.61	93.00	48.59	57.00	9006580056100
0.2244		5.70	93.00	48.45	57.00	9006580057000
0.2283		5.80	93.00	48.30	57.00	9006580058000
0.2323		5.90	93.00	48.15	57.00	9006580059000
0.2343	15/64	5.95	93.00	48.08	57.00	9006580059500
0.2362		6.00	93.00	48.00	57.00	9006580060000
0.2402		6.10	101.00	53.85	63.00	9006580061000
0.2421	C	6.15	101.00	53.78	63.00	9006580061500
0.2441		6.20	101.00	53.70	63.00	9006580062000
0.2480		6.30	101.00	53.55	63.00	9006580063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9006580063500
0.2520		6.40	101.00	53.40	63.00	9006580064000
0.2559		6.50	101.00	53.25	63.00	9006580065000
0.2571	F	6.53	101.00	53.21	63.00	9006580065300
0.2598		6.60	101.00	53.10	63.00	9006580066000
0.2638		6.70	101.00	52.95	63.00	9006580067000
0.2657	17/64 H	6.75	109.00	58.88	69.00	9006580067500
0.2677		6.80	109.00	58.80	69.00	9006580068000
0.2717	I	6.90	109.00	58.65	69.00	9006580069000
0.2756		7.00	109.00	58.50	69.00	9006580070000
0.2795		7.10	109.00	58.35	69.00	9006580071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9006580071400
0.2835		7.20	109.00	58.20	69.00	9006580072000
0.2874		7.30	109.00	58.05	69.00	9006580073000
0.2913		7.40	109.00	57.90	69.00	9006580074000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2953		7.50	109.00	57.75	69.00	9006580075000
0.2992		7.60	117.00	63.60	75.00	9006580076000
0.3031		7.70	117.00	63.45	75.00	9006580077000
0.3071		7.80	117.00	63.30	75.00	9006580078000
0.3110		7.90	117.00	63.15	75.00	9006580079000
0.3126	5/16	7.94	117.00	63.09	75.00	9006580079400
0.3150		8.00	117.00	63.00	75.00	9006580080000
0.3189		8.10	117.00	62.85	75.00	9006580081000
0.3228	P	8.20	117.00	62.70	75.00	9006580082000
0.3268		8.30	117.00	62.55	75.00	9006580083000
0.3307		8.40	117.00	62.40	75.00	9006580084000
0.3346		8.50	117.00	62.25	75.00	9006580085000
0.3386		8.60	125.00	68.10	81.00	9006580086000
0.3425		8.70	125.00	67.95	81.00	9006580087000
0.3437	11/32	8.73	125.00	67.91	81.00	9006580087300
0.3445		8.75	125.00	67.88	81.00	9006580087500
0.3465		8.80	125.00	67.80	81.00	9006580088000
0.3504		8.90	125.00	67.65	81.00	9006580089000
0.3543		9.00	125.00	67.50	81.00	9006580090000
0.3594	23/64	9.13	125.00	67.31	81.00	9006580091300
0.3622		9.20	125.00	67.20	81.00	9006580092000
0.3661		9.30	125.00	67.05	81.00	9006580093000
0.3740		9.50	125.00	66.75	81.00	9006580095000
0.3748	3/8	9.52	133.00	72.72	87.00	9006580095200
0.3780		9.60	133.00	72.60	87.00	9006580096000
0.3858	W	9.80	133.00	72.30	87.00	9006580098000
0.3898		9.90	133.00	72.15	87.00	9006580099000
0.3906	25/64	9.92	133.00	72.12	87.00	9006580099200
0.3937		10.00	133.00	72.00	87.00	9006580100000
0.3976		10.10	133.00	71.85	87.00	9006580101000
0.4016		10.20	133.00	71.70	87.00	9006580102000
0.4055		10.30	133.00	71.55	87.00	9006580103000
0.4063	13/32	10.32	133.00	71.52	87.00	9006580103200
0.4134		10.50	133.00	71.25	87.00	9006580105000
0.4220	27/64	10.72	142.00	77.92	94.00	9006580107200
0.4252		10.80	142.00	77.80	94.00	9006580108000
0.4331		11.00	142.00	77.50	94.00	9006580110000
0.4374	7/16	11.11	142.00	77.34	94.00	9006580111100
0.4409		11.20	142.00	77.20	94.00	9006580112000
0.4528		11.50	142.00	76.75	94.00	9006580115000
0.4606		11.70	142.00	76.45	94.00	9006580117000
0.4689	15/32	11.91	151.00	83.14	101.00	9006580119100
0.4724		12.00	151.00	83.00	101.00	9006580120000
0.4921		12.50	151.00	82.25	101.00	9006580125000
0.5118		13.00	151.00	81.50	101.00	9006580130000
0.5315		13.50	160.00		108.00	9006580135000
0.5433		13.80	160.00		108.00	9006580138000
0.5512		14.00	160.00		108.00	9006580140000
0.5709		14.50	169.00		114.00	9006580145000
0.5827		14.80	169.00		114.00	9006580148000
0.5906		15.00	169.00		114.00	9006580150000
0.6102		15.50	178.00		120.00	9006580155000
0.6299		16.00	178.00		120.00	9006580160000

Jobber length drills

Series no. **1221**

~5xD	DIN 338	GT 100	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSCO**

Surface: **C**

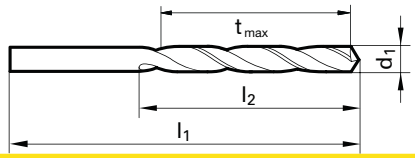
P	Steel	●
M	Stainless steel	
K	Cast iron	○
N	Aluminum	
S	Titanium alloys	
H		

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • Co-alloyed high speed steel • wide flutes • increased wear resistance • especially for drilling depths > 3xD

alloyed and unalloyed steel • cast materials over 800 N/mm² • hot and cold rolled steels • antifriction bearing steels • high-alloyed steels • heat treatable and case hardened steels

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 533

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1181		3.00	61.00	28.50	33.00	9012210030000
0.1201	#31	3.05	65.00	31.43	36.00	9012210030500
0.1220		3.10	65.00	31.35	36.00	9012210031000
0.1248	1/8	3.17	65.00	31.25	36.00	9012210031700
0.1260		3.20	65.00	31.20	36.00	9012210032000
0.1299		3.30	65.00	31.05	36.00	9012210033000
0.1339		3.40	70.00	33.90	39.00	9012210034000
0.1358	#29	3.45	70.00	33.83	39.00	9012210034500
0.1378		3.50	70.00	33.75	39.00	9012210035000
0.1406	9/64 #28	3.57	70.00	33.65	39.00	9012210035700
0.1417		3.60	70.00	33.60	39.00	9012210036000
0.1441	#27	3.66	70.00	33.51	39.00	9012210036600
0.1457		3.70	70.00	33.45	39.00	9012210037000
0.1476		3.75	70.00	33.38	39.00	9012210037500
0.1496	#25	3.80	75.00	37.30	43.00	9012210038000
0.1535		3.90	75.00	37.15	43.00	9012210039000
0.1563	5/32	3.97	75.00	37.05	43.00	9012210039700
0.1575		4.00	75.00	37.00	43.00	9012210040000
0.1587		4.03	75.00	36.96	43.00	9012210040300
0.1594		4.05	75.00	36.93	43.00	9012210040500
0.1614		4.10	75.00	36.85	43.00	9012210041000
0.1654		4.20	75.00	36.70	43.00	9012210042000
0.1693	#18	4.30	80.00	40.55	47.00	9012210043000
0.1720	11/64	4.37	80.00	40.45	47.00	9012210043700
0.1732		4.40	80.00	40.40	47.00	9012210044000
0.1772	#16	4.50	80.00	40.25	47.00	9012210045000
0.1811		4.60	80.00	40.10	47.00	9012210046000
0.1850	#13	4.70	80.00	39.95	47.00	9012210047000
0.1874	3/16	4.76	86.00	44.86	52.00	9012210047600
0.1890	#12	4.80	86.00	44.80	52.00	9012210048000
0.1929		4.90	86.00	44.65	52.00	9012210049000
0.1961	#9	4.98	86.00	44.53	52.00	9012210049800
0.1969		5.00	86.00	44.50	52.00	9012210050000
0.2008		5.10	86.00	44.35	52.00	9012210051000
0.2047		5.20	86.00	44.20	52.00	9012210052000
0.2087		5.30	86.00	44.05	52.00	9012210053000
0.2126		5.40	93.00	48.90	57.00	9012210054000
0.2165		5.50	93.00	48.75	57.00	9012210055000
0.2189	7/32	5.56	93.00	48.66	57.00	9012210055600
0.2205		5.60	93.00	48.60	57.00	9012210056000
0.2244		5.70	93.00	48.45	57.00	9012210057000
0.2283		5.80	93.00	48.30	57.00	9012210058000
0.2323		5.90	93.00	48.15	57.00	9012210059000
0.2343	15/64	5.95	93.00	48.08	57.00	9012210059500
0.2362		6.00	93.00	48.00	57.00	9012210060000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2402		6.10	101.00	53.85	63.00	9012210061000
0.2441		6.20	101.00	53.70	63.00	9012210062000
0.2480		6.30	101.00	53.55	63.00	9012210063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9012210063500
0.2520		6.40	101.00	53.40	63.00	9012210064000
0.2559		6.50	101.00	53.25	63.00	9012210065000
0.2598		6.60	101.00	53.10	63.00	9012210066000
0.2638		6.70	101.00	52.95	63.00	9012210067000
0.2677		6.80	109.00	58.80	69.00	9012210068000
0.2717	I	6.90	109.00	58.65	69.00	9012210069000
0.2756		7.00	109.00	58.50	69.00	9012210070000
0.2795		7.10	109.00	58.35	69.00	9012210071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9012210071400
0.2835		7.20	109.00	58.20	69.00	9012210072000
0.2874		7.30	109.00	58.05	69.00	9012210073000
0.2913		7.40	109.00	57.90	69.00	9012210074000
0.2953		7.50	109.00	57.75	69.00	9012210075000
0.3031		7.70	117.00	63.45	75.00	9012210077000
0.3071		7.80	117.00	63.30	75.00	9012210078000
0.3110		7.90	117.00	63.15	75.00	9012210079000
0.3150		8.00	117.00	63.00	75.00	9012210080000
0.3189		8.10	117.00	62.85	75.00	9012210081000
0.3228	P	8.20	117.00	62.70	75.00	9012210082000
0.3307		8.40	117.00	62.40	75.00	9012210084000
0.3346		8.50	117.00	62.25	75.00	9012210085000
0.3386		8.60	125.00	68.10	81.00	9012210086000
0.3425		8.70	125.00	67.95	81.00	9012210087000
0.3465		8.80	125.00	67.80	81.00	9012210088000
0.3504		8.90	125.00	67.65	81.00	9012210089000
0.3543		9.00	125.00	67.50	81.00	9012210090000
0.3594	23/64	9.13	125.00	67.31	81.00	9012210091300
0.3740		9.50	125.00	66.75	81.00	9012210095000
0.3748	3/8	9.52	133.00	72.72	87.00	9012210095200
0.3898		9.90	133.00	72.15	87.00	9012210099000
0.3906	25/64	9.92	133.00	72.12	87.00	9012210099200
0.3937		10.00	133.00	72.00	87.00	9012210100000
0.4016		10.20	133.00	71.70	87.00	9012210102000
0.4134		10.50	133.00	71.25	87.00	9012210105000
0.4213		10.70	142.00	77.95	94.00	9012210107000
0.4220	27/64	10.72	142.00	77.92	94.00	9012210107200
0.4252		10.80	142.00	77.80	94.00	9012210108000
0.4331		11.00	142.00	77.50	94.00	9012210110000
0.4528		11.50	142.00	76.75	94.00	9012210115000
0.4689	15/32	11.91	151.00	83.14	101.00	9012210119100
0.4724		12.00	151.00	83.00	101.00	9012210120000

Jobber length drills

Series no. **1223**

Tool material **HSCO**

Surface **A**

~5xD Cutting depth | DIN 338 Standard | GT 100 Type | 130° Point angle | h8 Tolerance on Ø | Web Thinning | Cyl Shank form | R Cutting direction

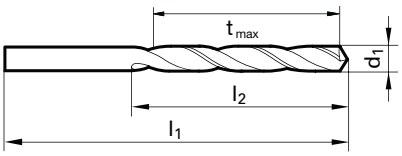
P	Steel	○
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • Co-alloyed high speed steel • wide flutes • increased wear resistance • especially for drilling depths > 3xD

alloyed and unalloyed steel • cast materials over 800 N/mm² • hot and cold rolled steels • antifriction bearing steels • high-alloyed steels • heat treatable and case hardened steels

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 533

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1181		3.00	61.00	28.50	33.00	9012230030000
0.1201	#31	3.05	65.00	31.43	36.00	9012230030500
0.1220		3.10	65.00	31.35	36.00	9012230031000
0.1248	1/8	3.17	65.00	31.25	36.00	9012230031700
0.1260		3.20	65.00	31.20	36.00	9012230032000
0.1299		3.30	65.00	31.05	36.00	9012230033000
0.1339		3.40	70.00	33.90	39.00	9012230034000
0.1358	#29	3.45	70.00	33.83	39.00	9012230034500
0.1378		3.50	70.00	33.75	39.00	9012230035000
0.1417		3.60	70.00	33.60	39.00	9012230036000
0.1457		3.70	70.00	33.45	39.00	9012230037000
0.1496	#25	3.80	75.00	37.30	43.00	9012230038000
0.1535		3.90	75.00	37.15	43.00	9012230039000
0.1563	5/32	3.97	75.00	37.05	43.00	9012230039700
0.1575		4.00	75.00	37.00	43.00	9012230040000
0.1587		4.03	75.00	36.96	43.00	9012230040300
0.1591	#21	4.04	75.00	36.94	43.00	9012230040400
0.1594		4.05	75.00	36.93	43.00	9012230040500
0.1614		4.10	75.00	36.85	43.00	9012230041000
0.1654		4.20	75.00	36.70	43.00	9012230042000
0.1693	#18	4.30	80.00	40.55	47.00	9012230043000
0.1720	11/64	4.37	80.00	40.45	47.00	9012230043700
0.1732		4.40	80.00	40.40	47.00	9012230044000
0.1772	#16	4.50	80.00	40.25	47.00	9012230045000
0.1811		4.60	80.00	40.10	47.00	9012230046000
0.1850	#13	4.70	80.00	39.95	47.00	9012230047000
0.1874	3/16	4.76	86.00	44.86	52.00	9012230047600
0.1890	#12	4.80	86.00	44.80	52.00	9012230048000
0.1929		4.90	86.00	44.65	52.00	9012230049000
0.1937	#10	4.92	86.00	44.62	52.00	9012230049200
0.1961	#9	4.98	86.00	44.53	52.00	9012230049800
0.1969		5.00	86.00	44.50	52.00	9012230050000
0.2008		5.10	86.00	44.35	52.00	9012230051000
0.2031	13/64	5.16	86.00	44.26	52.00	9012230051600
0.2047		5.20	86.00	44.20	52.00	9012230052000
0.2087		5.30	86.00	44.05	52.00	9012230053000
0.2126		5.40	93.00	48.90	57.00	9012230054000
0.2165		5.50	93.00	48.75	57.00	9012230055000
0.2189	7/32	5.56	93.00	48.66	57.00	9012230055600
0.2205		5.60	93.00	48.60	57.00	9012230056000
0.2244		5.70	93.00	48.45	57.00	9012230057000
0.2283		5.80	93.00	48.30	57.00	9012230058000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2323		5.90	93.00	48.15	57.00	9012230059000
0.2343	15/64	5.95	93.00	48.08	57.00	9012230059500
0.2362		6.00	93.00	48.00	57.00	9012230060000
0.2402		6.10	101.00	53.85	63.00	9012230061000
0.2441		6.20	101.00	53.70	63.00	9012230062000
0.2480		6.30	101.00	53.55	63.00	9012230063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9012230063500
0.2520		6.40	101.00	53.40	63.00	9012230064000
0.2559		6.50	101.00	53.25	63.00	9012230065000
0.2598		6.60	101.00	53.10	63.00	9012230066000
0.2638		6.70	101.00	52.95	63.00	9012230067000
0.2677		6.80	109.00	58.80	69.00	9012230068000
0.2717	I	6.90	109.00	58.65	69.00	9012230069000
0.2756		7.00	109.00	58.50	69.00	9012230070000
0.2795		7.10	109.00	58.35	69.00	9012230071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9012230071400
0.2835		7.20	109.00	58.20	69.00	9012230072000
0.2874		7.30	109.00	58.05	69.00	9012230073000
0.2913		7.40	109.00	57.90	69.00	9012230074000
0.2953		7.50	109.00	57.75	69.00	9012230075000
0.2992		7.60	117.00	63.60	75.00	9012230076000
0.3071		7.80	117.00	63.30	75.00	9012230078000
0.3110		7.90	117.00	63.15	75.00	9012230079000
0.3126	5/16	7.94	117.00	63.09	75.00	9012230079400
0.3150		8.00	117.00	63.00	75.00	9012230080000
0.3189		8.10	117.00	62.85	75.00	9012230081000
0.3228	P	8.20	117.00	62.70	75.00	9012230082000
0.3268		8.30	117.00	62.55	75.00	9012230083000
0.3307		8.40	117.00	62.40	75.00	9012230084000
0.3346		8.50	117.00	62.25	75.00	9012230085000
0.3386		8.60	125.00	68.10	81.00	9012230086000
0.3425		8.70	125.00	67.95	81.00	9012230087000
0.3437	11/32	8.73	125.00	67.91	81.00	9012230087300
0.3465		8.80	125.00	67.80	81.00	9012230088000
0.3504		8.90	125.00	67.65	81.00	9012230089000
0.3543		9.00	125.00	67.50	81.00	9012230090000
0.3594	23/64	9.13	125.00	67.31	81.00	9012230091300
0.3622		9.20	125.00	67.20	81.00	9012230092000
0.3740		9.50	125.00	66.75	81.00	9012230095000
0.3748	3/8	9.52	133.00	72.72	87.00	9012230095200
0.3752		9.53	133.00	72.71	87.00	9012230095300
0.3858	W	9.80	133.00	72.30	87.00	9012230098000

Jobber length drills

Series no. **1223**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3898		9.90	133.00	72.15	87.00	**9012230099000**
0.3906	25/64	9.92	133.00	72.12	87.00	**9012230099200**
0.3937		10.00	133.00	72.00	87.00	**9012230100000**
0.3976		10.10	133.00	71.85	87.00	**9012230101000**
0.4016		10.20	133.00	71.70	87.00	**9012230102000**
0.4055		10.30	133.00	71.55	87.00	**9012230103000**
0.4063	13/32	10.32	133.00	71.52	87.00	**9012230103200**
0.4134		10.50	133.00	71.25	87.00	**9012230105000**
0.4213		10.70	142.00	77.95	94.00	**9012230107000**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4220	27/64	10.72	142.00	77.92	94.00	**9012230107200**
0.4252		10.80	142.00	77.80	94.00	**9012230108000**
0.4331		11.00	142.00	77.50	94.00	**9012230110000**
0.4374	7/16	11.11	142.00	77.34	94.00	**9012230111100**
0.4409		11.20	142.00	77.20	94.00	**9012230112000**
0.4528		11.50	142.00	76.75	94.00	**9012230115000**
0.4606		11.70	142.00	76.45	94.00	**9012230117000**
0.4689	15/32	11.91	151.00	83.14	101.00	**9012230119100**
0.4724		12.00	151.00	83.00	101.00	**9012230120000**

Jobber length drills

Series no. **5523**

~5xD	DIN 338	GU 500 DZ	118°	h8		Cyl	R	GUHRING SELECT
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction	

Tool material **HSCO**

Surface ◯

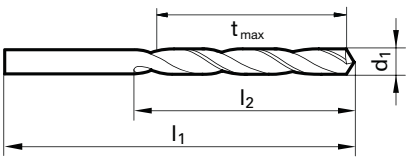
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • facet split point • Co-alloyed high speed steel • low feed force required • low torque required • for universal application

alloyed/unalloyed steels up to 800 N/mm² • cold/hot work steels • antifriction bearing steels • non-ferrous metals • cast materials • stainless steels • plastics

$t_{max} = l_2 - 1.5 \times d_1$





Jobber Length

Speeds and feeds information on pg. 555

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	34.00	10.50	12.00	9055230010000
0.0402		1.02	34.00	10.47	12.00	9055230010200
0.0409		1.04	34.00	10.44	12.00	9055230010400
0.0421		1.07	36.00	12.40	14.00	9055230010700
0.0429		1.09	36.00	12.37	14.00	9055230010900
0.0433		1.10	36.00	12.35	14.00	9055230011000
0.0465		1.18	36.00	12.23	14.00	9055230011800
0.0469	3/64	1.19	38.00	14.22	16.00	9055230011900
0.0472		1.20	38.00	14.20	16.00	9055230012000
0.0512		1.30	38.00	14.05	16.00	9055230013000
0.0520		1.32	38.00	14.02	16.00	9055230013200
0.0551		1.40	40.00	15.90	18.00	9055230014000
0.0591		1.50	40.00	15.75	18.00	9055230015000
0.0594		1.51	43.00	17.74	20.00	9055230015100
0.0626	1/16	1.59	43.00	17.62	20.00	9055230015900
0.0630		1.60	43.00	17.60	20.00	9055230016000
0.0634		1.61	43.00	17.59	20.00	9055230016100
0.0669		1.70	43.00	17.45	20.00	9055230017000
0.0701		1.78	46.00	19.33	22.00	9055230017800
0.0709		1.80	46.00	19.30	22.00	9055230018000
0.0728		1.85	46.00	19.23	22.00	9055230018500
0.0748		1.90	46.00	19.15	22.00	9055230019000
0.0760		1.93	49.00	21.11	24.00	9055230019300
0.0780	5/64	1.98	49.00	21.03	24.00	9055230019800
0.0783		1.99	49.00	21.02	24.00	9055230019900
0.0787		2.00	49.00	21.00	24.00	9055230020000
0.0811		2.06	49.00	20.91	24.00	9055230020600
0.0819		2.08	49.00	20.88	24.00	9055230020800
0.0827		2.10	49.00	20.85	24.00	9055230021000
0.0858		2.18	53.00	23.73	27.00	9055230021800
0.0866		2.20	53.00	23.70	27.00	9055230022000
0.0890		2.26	53.00	23.61	27.00	9055230022600
0.0906		2.30	53.00	23.55	27.00	9055230023000
0.0933		2.37	57.00	26.45	30.00	9055230023700
0.0937	3/32	2.38	57.00	26.43	30.00	9055230023800
0.0945		2.40	57.00	26.40	30.00	9055230024000
0.0961		2.44	57.00	26.34	30.00	9055230024400
0.0980		2.49	57.00	26.27	30.00	9055230024900
0.0984		2.50	57.00	26.25	30.00	9055230025000
0.0996		2.53	57.00	26.21	30.00	9055230025300
0.1016		2.58	57.00	26.13	30.00	9055230025800
0.1024		2.60	57.00	26.10	30.00	9055230026000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1039		2.64	57.00	26.04	30.00	9055230026400
0.1063		2.70	61.00	28.95	33.00	9055230027000
0.1067		2.71	61.00	28.94	33.00	9055230027100
0.1094	7/64	2.78	61.00	28.83	33.00	9055230027800
0.1098		2.79	61.00	28.82	33.00	9055230027900
0.1102		2.80	61.00	28.80	33.00	9055230028000
0.1110		2.82	61.00	28.77	33.00	9055230028200
0.1130		2.87	61.00	28.70	33.00	9055230028700
0.1142		2.90	61.00	28.65	33.00	9055230029000
0.1161		2.95	61.00	28.58	33.00	9055230029500
0.1181		3.00	61.00	28.50	33.00	9055230030000
0.1201		3.05	65.00	31.43	36.00	9055230030500
0.1220		3.10	65.00	31.35	36.00	9055230031000
0.1248	1/8	3.17	65.00	31.25	36.00	9055230031700
0.1260		3.20	65.00	31.20	36.00	9055230032000
0.1283		3.26	65.00	31.11	36.00	9055230032600
0.1299		3.30	65.00	31.05	36.00	9055230033000
0.1339		3.40	70.00	33.90	39.00	9055230034000
0.1358		3.45	70.00	33.83	39.00	9055230034500
0.1378		3.50	70.00	33.75	39.00	9055230035000
0.1406	9/64 #28	3.57	70.00	33.65	39.00	9055230035700
0.1417		3.60	70.00	33.60	39.00	9055230036000
0.1441		3.66	70.00	33.51	39.00	9055230036600
0.1457		3.70	70.00	33.45	39.00	9055230037000
0.1469		3.73	70.00	33.41	39.00	9055230037300
0.1496		3.80	75.00	37.30	43.00	9055230038000
0.1520		3.86	75.00	37.21	43.00	9055230038600
0.1535		3.90	75.00	37.15	43.00	9055230039000
0.1539		3.91	75.00	37.14	43.00	9055230039100
0.1563	5/32	3.97	75.00	37.05	43.00	9055230039700
0.1571		3.99	75.00	37.02	43.00	9055230039900
0.1575		4.00	75.00	37.00	43.00	9055230040000
0.1591		4.04	75.00	36.94	43.00	9055230040400
0.1610		4.09	75.00	36.87	43.00	9055230040900
0.1614		4.10	75.00	36.85	43.00	9055230041000
0.1654		4.20	75.00	36.70	43.00	9055230042000
0.1661		4.22	75.00	36.67	43.00	9055230042200
0.1693		4.30	80.00	40.55	47.00	9055230043000
0.1720	11/64	4.37	80.00	40.45	47.00	9055230043700
0.1728		4.39	80.00	40.42	47.00	9055230043900
0.1732		4.40	80.00	40.40	47.00	9055230044000
0.1772		4.50	80.00	40.25	47.00	9055230045000

Jobber length drills

Series no. **5523**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1799		4.57	80.00	40.15	47.00	9055230045700
0.1811		4.60	80.00	40.10	47.00	9055230046000
0.1819		4.62	80.00	40.07	47.00	9055230046200
0.1850		4.70	80.00	39.95	47.00	9055230047000
0.1874	3/16	4.76	86.00	44.86	52.00	9055230047600
0.1890		4.80	86.00	44.80	52.00	9055230048000
0.1909		4.85	86.00	44.73	52.00	9055230048500
0.1929		4.90	86.00	44.65	52.00	9055230049000
0.1937		4.92	86.00	44.62	52.00	9055230049200
0.1961		4.98	86.00	44.53	52.00	9055230049800
0.1969		5.00	86.00	44.50	52.00	9055230050000
0.1992		5.06	86.00	44.41	52.00	9055230050600
0.2008		5.10	86.00	44.35	52.00	9055230051000
0.2012		5.11	86.00	44.34	52.00	9055230051100
0.2031	13/64	5.16	86.00	44.26	52.00	9055230051600
0.2039		5.18	86.00	44.23	52.00	9055230051800
0.2047		5.20	86.00	44.20	52.00	9055230052000
0.2055		5.22	86.00	44.17	52.00	9055230052200
0.2087		5.30	86.00	44.05	52.00	9055230053000
0.2091		5.31	93.00	49.04	57.00	9055230053100
0.2126		5.40	93.00	48.90	57.00	9055230054000
0.2130		5.41	93.00	48.89	57.00	9055230054100
0.2165		5.50	93.00	48.75	57.00	9055230055000
0.2189	7/32	5.56	93.00	48.66	57.00	9055230055600
0.2205		5.60	93.00	48.60	57.00	9055230056000
0.2209		5.61	93.00	48.59	57.00	9055230056100
0.2244		5.70	93.00	48.45	57.00	9055230057000
0.2280		5.79	93.00	48.32	57.00	9055230057900
0.2283		5.80	93.00	48.30	57.00	9055230058000
0.2323		5.90	93.00	48.15	57.00	9055230059000
0.2339	A	5.94	93.00	48.09	57.00	9055230059400
0.2343	15/64	5.95	93.00	48.08	57.00	9055230059500
0.2362		6.00	93.00	48.00	57.00	9055230060000
0.2378	B	6.04	101.00	53.94	63.00	9055230060400
0.2402		6.10	101.00	53.85	63.00	9055230061000
0.2421	C	6.15	101.00	53.78	63.00	9055230061500
0.2441		6.20	101.00	53.70	63.00	9055230062000
0.2461	D	6.25	101.00	53.63	63.00	9055230062500
0.2480		6.30	101.00	53.55	63.00	9055230063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9055230063500
0.2520		6.40	101.00	53.40	63.00	9055230064000
0.2559		6.50	101.00	53.25	63.00	9055230065000
0.2571	F	6.53	101.00	53.21	63.00	9055230065300
0.2598		6.60	101.00	53.10	63.00	9055230066000
0.2610	G	6.63	101.00	53.06	63.00	9055230066300
0.2638		6.70	101.00	52.95	63.00	9055230067000
0.2657	17/64 H	6.75	109.00	58.88	69.00	9055230067500
0.2677		6.80	109.00	58.80	69.00	9055230068000
0.2717	I	6.90	109.00	58.65	69.00	9055230069000
0.2756		7.00	109.00	58.50	69.00	9055230070000
0.2768	J	7.03	109.00	58.46	69.00	9055230070300
0.2795		7.10	109.00	58.35	69.00	9055230071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9055230071400
0.2835		7.20	109.00	58.20	69.00	9055230072000
0.2874		7.30	109.00	58.05	69.00	9055230073000
0.2902	L	7.37	109.00	57.95	69.00	9055230073700
0.2913		7.40	109.00	57.90	69.00	9055230074000
0.2949	M	7.49	109.00	57.77	69.00	9055230074900
0.2953		7.50	109.00	57.75	69.00	9055230075000
0.2969	19/64	7.54	117.00	63.69	75.00	9055230075400
0.2992		7.60	117.00	63.60	75.00	9055230076000
0.3020	N	7.67	117.00	63.50	75.00	9055230076700

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3031		7.70	117.00	63.45	75.00	9055230077000
0.3071		7.80	117.00	63.30	75.00	9055230078000
0.3110		7.90	117.00	63.15	75.00	9055230079000
0.3126	5/16	7.94	117.00	63.09	75.00	9055230079400
0.3150		8.00	117.00	63.00	75.00	9055230080000
0.3161	O	8.03	117.00	62.96	75.00	9055230080300
0.3189		8.10	117.00	62.85	75.00	9055230081000
0.3228	P	8.20	117.00	62.70	75.00	9055230082000
0.3268		8.30	117.00	62.55	75.00	9055230083000
0.3280	21/64	8.33	117.00	62.51	75.00	9055230083300
0.3307		8.40	117.00	62.40	75.00	9055230084000
0.3319	Q	8.43	117.00	62.36	75.00	9055230084300
0.3346		8.50	117.00	62.25	75.00	9055230085000
0.3386		8.60	125.00	68.10	81.00	9055230086000
0.3390	R	8.61	125.00	68.09	81.00	9055230086100
0.3425		8.70	125.00	67.95	81.00	9055230087000
0.3437	11/32	8.73	125.00	67.91	81.00	9055230087300
0.3465		8.80	125.00	67.80	81.00	9055230088000
0.3480	S	8.84	125.00	67.74	81.00	9055230088400
0.3504		8.90	125.00	67.65	81.00	9055230089000
0.3543		9.00	125.00	67.50	81.00	9055230090000
0.3579	T	9.09	125.00	67.37	81.00	9055230090900
0.3583		9.10	125.00	67.35	81.00	9055230091000
0.3594	23/64	9.13	125.00	67.31	81.00	9055230091300
0.3622		9.20	125.00	67.20	81.00	9055230092000
0.3661		9.30	125.00	67.05	81.00	9055230093000
0.3677	U	9.34	125.00	66.99	81.00	9055230093400
0.3701		9.40	125.00	66.90	81.00	9055230094000
0.3740		9.50	125.00	66.75	81.00	9055230095000
0.3748	3/8	9.52	133.00	72.72	87.00	9055230095200
0.3772	V	9.58	133.00	72.63	87.00	9055230095800
0.3780		9.60	133.00	72.60	87.00	9055230096000
0.3819		9.70	133.00	72.45	87.00	9055230097000
0.3858	W	9.80	133.00	72.30	87.00	9055230098000
0.3898		9.90	133.00	72.15	87.00	9055230099000
0.3906	25/64	9.92	133.00	72.12	87.00	9055230099200
0.3937		10.00	133.00	72.00	87.00	9055230100000
0.3969	X	10.08	133.00	71.88	87.00	9055230100800
0.3976		10.10	133.00	71.85	87.00	9055230101000
0.4016		10.20	133.00	71.70	87.00	9055230102000
0.4039	Y	10.26	133.00	71.61	87.00	9055230102600
0.4055		10.30	133.00	71.55	87.00	9055230103000
0.4063	13/32	10.32	133.00	71.52	87.00	9055230103200
0.4094		10.40	133.00	71.40	87.00	9055230104000
0.4130	Z	10.49	133.00	71.27	87.00	9055230104900
0.4134		10.50	133.00	71.25	87.00	9055230105000
0.4220	27/64	10.72	142.00	77.92	94.00	9055230107200
0.4331		11.00	142.00	77.50	94.00	9055230110000
0.4374	7/16	11.11	142.00	77.34	94.00	9055230111100
0.4528		11.50	142.00	76.75	94.00	9055230115000
0.4531	29/64	11.51	142.00	76.74	94.00	9055230115100
0.4689	15/32	11.91	151.00	83.14	101.00	9055230119100
0.4724		12.00	151.00	83.00	101.00	9055230120000
0.4843	31/64	12.30	151.00	82.55	101.00	9055230123000
0.4921		12.50	151.00	82.25	101.00	9055230125000
0.5000	1/2	12.70	151.00	81.95	101.00	9055230127000
0.5118		13.00	151.00	81.50	101.00	9055230130000
0.5157	33/64	13.10	151.00	81.35	101.00	9055230131000
0.5311	17/32	13.49	160.00	87.77	108.00	9055230134900
0.5315		13.50	160.00	87.75	108.00	9055230135000
0.5512		14.00	160.00	87.00	108.00	9055230140000
0.5626	9/16	14.29	169.00	92.57	114.00	9055230142900

Jobber length drills

Series no. **5519**

Tool material **HSCO**

Surface **S**

~5xD Cutting depth | DIN 338 Standard | GU 500 DZ Type | 118° Point angle | h8 Tolerance on Ø | Web Thinning | Cyl Shank form | R Cutting direction | GUHRING BEST

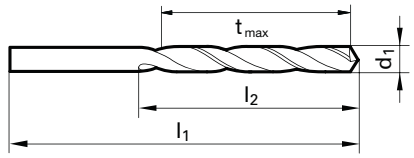
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • facet split point • Co-alloyed high speed steel • low feed force required • low torque required • for universal application

alloyed/unalloyed steels up to 800 N/mm² • cold/hot work steels • antifriction bearing steels • non-ferrous metals • cast materials • stainless steels • plastics

$t_{max} = l_2\text{-}1.5 \times d_1$





Jobber Length

Speeds and feeds information on pg. 553

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	34.00	10.50	12.00	9055190010000
0.0402		1.02	34.00	10.47	12.00	9055190010200
0.0409		1.04	34.00	10.44	12.00	9055190010400
0.0421		1.07	36.00	12.40	14.00	9055190010700
0.0429		1.09	36.00	12.37	14.00	9055190010900
0.0433		1.10	36.00	12.35	14.00	9055190011000
0.0465		1.18	36.00	12.23	14.00	9055190011800
0.0469	3/64	1.19	38.00	14.22	16.00	9055190011900
0.0472		1.20	38.00	14.20	16.00	9055190012000
0.0512		1.30	38.00	14.05	16.00	9055190013000
0.0520		1.32	38.00	14.02	16.00	9055190013200
0.0551		1.40	40.00	15.90	18.00	9055190014000
0.0591		1.50	40.00	15.75	18.00	9055190015000
0.0594		1.51	43.00	17.74	20.00	9055190015100
0.0626	1/16	1.59	43.00	17.62	20.00	9055190015900
0.0630		1.60	43.00	17.60	20.00	9055190016000
0.0634		1.61	43.00	17.59	20.00	9055190016100
0.0669		1.70	43.00	17.45	20.00	9055190017000
0.0701		1.78	46.00	19.33	22.00	9055190017800
0.0709		1.80	46.00	19.30	22.00	9055190018000
0.0728		1.85	46.00	19.23	22.00	9055190018500
0.0748		1.90	46.00	19.15	22.00	9055190019000
0.0760		1.93	49.00	21.11	24.00	9055190019300
0.0780	5/64	1.98	49.00	21.03	24.00	9055190019800
0.0783		1.99	49.00	21.02	24.00	9055190019900
0.0787		2.00	49.00	21.00	24.00	9055190020000
0.0811		2.06	49.00	20.91	24.00	9055190020600
0.0819		2.08	49.00	20.88	24.00	9055190020800
0.0827		2.10	49.00	20.85	24.00	9055190021000
0.0858		2.18	53.00	23.73	27.00	9055190021800
0.0866		2.20	53.00	23.70	27.00	9055190022000
0.0890		2.26	53.00	23.61	27.00	9055190022600
0.0906		2.30	53.00	23.55	27.00	9055190023000
0.0933		2.37	57.00	26.45	30.00	9055190023700
0.0937	3/32	2.38	57.00	26.43	30.00	9055190023800
0.0945		2.40	57.00	26.40	30.00	9055190024000
0.0961		2.44	57.00	26.34	30.00	9055190024400
0.0980		2.49	57.00	26.27	30.00	9055190024900
0.0984		2.50	57.00	26.25	30.00	9055190025000
0.0996		2.53	57.00	26.21	30.00	9055190025300
0.1016		2.58	57.00	26.13	30.00	9055190025800
0.1024		2.60	57.00	26.10	30.00	9055190026000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1039		2.64	57.00	26.04	30.00	9055190026400
0.1063		2.70	61.00	28.95	33.00	9055190027000
0.1067		2.71	61.00	28.94	33.00	9055190027100
0.1094	7/64	2.78	61.00	28.83	33.00	9055190027800
0.1098		2.79	61.00	28.82	33.00	9055190027900
0.1102		2.80	61.00	28.80	33.00	9055190028000
0.1110		2.82	61.00	28.77	33.00	9055190028200
0.1130		2.87	61.00	28.70	33.00	9055190028700
0.1142		2.90	61.00	28.65	33.00	9055190029000
0.1161		2.95	61.00	28.58	33.00	9055190029500
0.1181		3.00	61.00	28.50	33.00	9055190030000
0.1201		3.05	65.00	31.43	36.00	9055190030500
0.1220		3.10	65.00	31.35	36.00	9055190031000
0.1248	1/8	3.17	65.00	31.25	36.00	9055190031700
0.1260		3.20	65.00	31.20	36.00	9055190032000
0.1283		3.26	65.00	31.11	36.00	9055190032600
0.1299		3.30	65.00	31.05	36.00	9055190033000
0.1339		3.40	70.00	33.90	39.00	9055190034000
0.1358		3.45	70.00	33.83	39.00	9055190034500
0.1378		3.50	70.00	33.75	39.00	9055190035000
0.1406	9/64 #28	3.57	70.00	33.65	39.00	9055190035700
0.1417		3.60	70.00	33.60	39.00	9055190036000
0.1441		3.66	70.00	33.51	39.00	9055190036600
0.1457		3.70	70.00	33.45	39.00	9055190037000
0.1469		3.73	70.00	33.41	39.00	9055190037300
0.1496		3.80	75.00	37.30	43.00	9055190038000
0.1520		3.86	75.00	37.21	43.00	9055190038600
0.1535		3.90	75.00	37.15	43.00	9055190039000
0.1539		3.91	75.00	37.14	43.00	9055190039100
0.1563	5/32	3.97	75.00	37.05	43.00	9055190039700
0.1571		3.99	75.00	37.02	43.00	9055190039900
0.1575		4.00	75.00	37.00	43.00	9055190040000
0.1591		4.04	75.00	36.94	43.00	9055190040400
0.1610		4.09	75.00	36.87	43.00	9055190040900
0.1614		4.10	75.00	36.85	43.00	9055190041000
0.1654		4.20	75.00	36.70	43.00	9055190042000
0.1661		4.22	75.00	36.67	43.00	9055190042200
0.1693		4.30	80.00	40.55	47.00	9055190043000
0.1720	11/64	4.37	80.00	40.45	47.00	9055190043700
0.1728		4.39	80.00	40.42	47.00	9055190043900
0.1732		4.40	80.00	40.40	47.00	9055190044000
0.1772		4.50	80.00	40.25	47.00	9055190045000

Jobber length drills

Series no. **5519**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1799		4.57	80.00	40.15	47.00	9055190045700
0.1811		4.60	80.00	40.10	47.00	9055190046000
0.1819		4.62	80.00	40.07	47.00	9055190046200
0.1850		4.70	80.00	39.95	47.00	9055190047000
0.1874	3/16	4.76	86.00	44.86	52.00	9055190047600
0.1890		4.80	86.00	44.80	52.00	9055190048000
0.1909		4.85	86.00	44.73	52.00	9055190048500
0.1929		4.90	86.00	44.65	52.00	9055190049000
0.1937		4.92	86.00	44.62	52.00	9055190049200
0.1961		4.98	86.00	44.53	52.00	9055190049800
0.1969		5.00	86.00	44.50	52.00	9055190050000
0.1992		5.06	86.00	44.41	52.00	9055190050600
0.2008		5.10	86.00	44.35	52.00	9055190051000
0.2012		5.11	86.00	44.34	52.00	9055190051100
0.2031	13/64	5.16	86.00	44.26	52.00	9055190051600
0.2039		5.18	86.00	44.23	52.00	9055190051800
0.2047		5.20	86.00	44.20	52.00	9055190052000
0.2055		5.22	86.00	44.17	52.00	9055190052200
0.2087		5.30	86.00	44.05	52.00	9055190053000
0.2091		5.31	93.00	49.04	57.00	9055190053100
0.2126		5.40	93.00	48.90	57.00	9055190054000
0.2130		5.41	93.00	48.89	57.00	9055190054100
0.2165		5.50	93.00	48.75	57.00	9055190055000
0.2189	7/32	5.56	93.00	48.66	57.00	9055190055600
0.2205		5.60	93.00	48.60	57.00	9055190056000
0.2209		5.61	93.00	48.59	57.00	9055190056100
0.2244		5.70	93.00	48.45	57.00	9055190057000
0.2280		5.79	93.00	48.32	57.00	9055190057900
0.2283		5.80	93.00	48.30	57.00	9055190058000
0.2323		5.90	93.00	48.15	57.00	9055190059000
0.2339	A	5.94	93.00	48.09	57.00	9055190059400
0.2343	15/64	5.95	93.00	48.08	57.00	9055190059500
0.2362		6.00	93.00	48.00	57.00	9055190060000
0.2378	B	6.04	101.00	53.94	63.00	9055190060400
0.2402		6.10	101.00	53.85	63.00	9055190061000
0.2421	C	6.15	101.00	53.78	63.00	9055190061500
0.2441		6.20	101.00	53.70	63.00	9055190062000
0.2461	D	6.25	101.00	53.63	63.00	9055190062500
0.2480		6.30	101.00	53.55	63.00	9055190063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9055190063500
0.2520		6.40	101.00	53.40	63.00	9055190064000
0.2559		6.50	101.00	53.25	63.00	9055190065000
0.2571	F	6.53	101.00	53.21	63.00	9055190065300
0.2598		6.60	101.00	53.10	63.00	9055190066000
0.2610	G	6.63	101.00	53.06	63.00	9055190066300
0.2638		6.70	101.00	52.95	63.00	9055190067000
0.2657	17/64 H	6.75	109.00	58.88	69.00	9055190067500
0.2677		6.80	109.00	58.80	69.00	9055190068000
0.2717	I	6.90	109.00	58.65	69.00	9055190069000
0.2756		7.00	109.00	58.50	69.00	9055190070000
0.2768	J	7.03	109.00	58.46	69.00	9055190070300
0.2795		7.10	109.00	58.35	69.00	9055190071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9055190071400
0.2835		7.20	109.00	58.20	69.00	9055190072000
0.2874		7.30	109.00	58.05	69.00	9055190073000
0.2902	L	7.37	109.00	57.95	69.00	9055190073700
0.2913		7.40	109.00	57.90	69.00	9055190074000
0.2949	M	7.49	109.00	57.77	69.00	9055190074900
0.2953		7.50	109.00	57.75	69.00	9055190075000
0.2969	19/64	7.54	117.00	63.69	75.00	9055190075400
0.2992		7.60	117.00	63.60	75.00	9055190076000
0.3020	N	7.67	117.00	63.50	75.00	9055190076700

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3031		7.70	117.00	63.45	75.00	9055190077000
0.3071		7.80	117.00	63.30	75.00	9055190078000
0.3110		7.90	117.00	63.15	75.00	9055190079000
0.3126	5/16	7.94	117.00	63.09	75.00	9055190079400
0.3150		8.00	117.00	63.00	75.00	9055190080000
0.3161	O	8.03	117.00	62.96	75.00	9055190080300
0.3189		8.10	117.00	62.85	75.00	9055190081000
0.3228	P	8.20	117.00	62.70	75.00	9055190082000
0.3268		8.30	117.00	62.55	75.00	9055190083000
0.3280	21/64	8.33	117.00	62.51	75.00	9055190083300
0.3307		8.40	117.00	62.40	75.00	9055190084000
0.3319	Q	8.43	117.00	62.36	75.00	9055190084300
0.3346		8.50	117.00	62.25	75.00	9055190085000
0.3386		8.60	125.00	68.10	81.00	9055190086000
0.3390	R	8.61	125.00	68.09	81.00	9055190086100
0.3425		8.70	125.00	67.95	81.00	9055190087000
0.3437	11/32	8.73	125.00	67.91	81.00	9055190087300
0.3465		8.80	125.00	67.80	81.00	9055190088000
0.3480	S	8.84	125.00	67.74	81.00	9055190088400
0.3504		8.90	125.00	67.65	81.00	9055190089000
0.3543		9.00	125.00	67.50	81.00	9055190090000
0.3579	T	9.09	125.00	67.37	81.00	9055190090900
0.3583		9.10	125.00	67.35	81.00	9055190091000
0.3594	23/64	9.13	125.00	67.31	81.00	9055190091300
0.3622		9.20	125.00	67.20	81.00	9055190092000
0.3661		9.30	125.00	67.05	81.00	9055190093000
0.3677	U	9.34	125.00	66.99	81.00	9055190093400
0.3701		9.40	125.00	66.90	81.00	9055190094000
0.3740		9.50	125.00	66.75	81.00	9055190095000
0.3748	3/8	9.52	133.00	72.72	87.00	9055190095200
0.3772	V	9.58	133.00	72.63	87.00	9055190095800
0.3780		9.60	133.00	72.60	87.00	9055190096000
0.3819		9.70	133.00	72.45	87.00	9055190097000
0.3858	W	9.80	133.00	72.30	87.00	9055190098000
0.3898		9.90	133.00	72.15	87.00	9055190099000
0.3906	25/64	9.92	133.00	72.12	87.00	9055190099200
0.3937		10.00	133.00	72.00	87.00	9055190100000
0.3969	X	10.08	133.00	71.88	87.00	9055190100800
0.3976		10.10	133.00	71.85	87.00	9055190101000
0.4016		10.20	133.00	71.70	87.00	9055190102000
0.4039	Y	10.26	133.00	71.61	87.00	9055190102600
0.4055		10.30	133.00	71.55	87.00	9055190103000
0.4063	13/32	10.32	133.00	71.52	87.00	9055190103200
0.4094		10.40	133.00	71.40	87.00	9055190104000
0.4130	Z	10.49	133.00	71.27	87.00	9055190104900
0.4134		10.50	133.00	71.25	87.00	9055190105000
0.4220	27/64	10.72	142.00	77.92	94.00	9055190107200
0.4331		11.00	142.00	77.50	94.00	9055190110000
0.4374	7/16	11.11	142.00	77.34	94.00	9055190111100
0.4528		11.50	142.00	76.75	94.00	9055190115000
0.4531	29/64	11.51	142.00	76.74	94.00	9055190115100
0.4689	15/32	11.91	151.00	83.14	101.00	9055190119100
0.4724		12.00	151.00	83.00	101.00	9055190120000
0.4843	31/64	12.30	151.00	82.55	101.00	9055190123000
0.4921		12.50	151.00	82.25	101.00	9055190125000
0.5000	1/2	12.70	151.00	81.95	101.00	9055190127000
0.5118		13.00	151.00	81.50	101.00	9055190130000
0.5157	33/64	13.10	151.00	81.35	101.00	9055190131000
0.5311	17/32	13.49	160.00	87.77	108.00	9055190134900
0.5315		13.50	160.00	87.75	108.00	9055190135000
0.5512		14.00	160.00	87.00	108.00	9055190140000
0.5626	9/16	14.29	169.00	92.57	114.00	9055190142900

Jobber length drills

Series no. **1018**

~5xD Cutting depth | DIN 338 Standard | AeroX Type | 135° Point angle | h8 Tolerance on Ø | Web Thinning | Cyl Shank form | R Cutting direction | NEW

Tool material **M42**

Surface Bronze Oxide

P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	●
H	Hardened steel	○

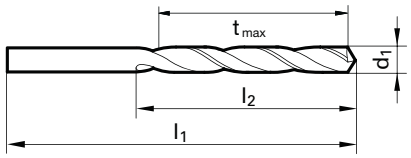
●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • optimized NAS 907 split point • 8% cobalt-alloyed HSCO high speed steel for maximum tool life, high thermal resistance and hardness

unalloyed and high-alloyed steel materials • cast materials • non-ferrous metals • Titanium and Titanium alloys



$t_{max} = l_2 - 1.5 \times d_1$



Speeds and feeds information on pg. 527

Shank diameter = cut diameter

AeroX drills are stocked in Germany

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	34.00	10.50	12.00	9010180010000
0.0433		1.10	36.00	12.35	14.00	9010180011000
0.0472		1.20	38.00	14.20	16.00	9010180012000
0.0512		1.30	38.00	14.05	16.00	9010180013000
0.0551		1.40	40.00	15.90	18.00	9010180014000
0.0591		1.50	40.00	15.75	18.00	9010180015000
0.0626	1/16	1.59	43.00	17.62	20.00	9010180015900
0.0630		1.60	43.00	17.60	20.00	9010180016000
0.0669		1.70	43.00	17.45	20.00	9010180017000
0.0709		1.80	46.00	19.30	22.00	9010180018000
0.0748		1.90	46.00	19.15	22.00	9010180019000
0.0780	5/64	1.98	49.00	21.03	24.00	9010180019800
0.0787		2.00	49.00	21.00	24.00	9010180020000
0.0827		2.10	49.00	20.85	24.00	9010180021000
0.0866		2.20	53.00	23.70	27.00	9010180022000
0.0906		2.30	53.00	23.55	27.00	9010180023000
0.0937	3/32	2.38	57.00	26.43	30.00	9010180023800
0.0945		2.40	57.00	26.40	30.00	9010180024000
0.0984		2.50	57.00	26.25	30.00	9010180025000
0.1024		2.60	57.00	26.10	30.00	9010180026000
0.1063		2.70	61.00	28.95	33.00	9010180027000
0.1094	7/64	2.78	61.00	28.83	33.00	9010180027800
0.1102		2.80	61.00	28.80	33.00	9010180028000
0.1142		2.90	61.00	28.65	33.00	9010180029000
0.1181		3.00	61.00	28.50	33.00	9010180030000
0.1220		3.10	65.00	31.35	36.00	9010180031000
0.1248	1/8	3.17	65.00	31.25	36.00	9010180031700
0.1260		3.20	65.00	31.20	36.00	9010180032000
0.1280		3.25	65.00	31.13	36.00	9010180032500
0.1299		3.30	65.00	31.05	36.00	9010180033000
0.1339		3.40	70.00	33.90	39.00	9010180034000
0.1378		3.50	70.00	33.75	39.00	9010180035000
0.1406	9/64	3.57	70.00	33.65	39.00	9010180035700
0.1417		3.60	70.00	33.60	39.00	9010180036000
0.1457		3.70	70.00	33.45	39.00	9010180037000
0.1496		3.80	75.00	37.30	43.00	9010180038000
0.1535		3.90	75.00	37.15	43.00	9010180039000
0.1563	5/32	3.97	75.00	37.05	43.00	9010180039700
0.1575		4.00	75.00	37.00	43.00	9010180040000
0.1614		4.10	75.00	36.85	43.00	9010180041000
0.1654		4.20	75.00	36.70	43.00	9010180042000
0.1693		4.30	80.00	40.55	47.00	9010180043000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1732		4.40	80.00	40.40	47.00	9010180044000
0.1772		4.50	80.00	40.25	47.00	9010180045000
0.1811		4.60	80.00	40.10	47.00	9010180046000
0.1850		4.70	80.00	39.95	47.00	9010180047000
0.1874	3/16	4.76	86.00	44.86	52.00	9010180047600
0.1890		4.80	86.00	44.80	52.00	9010180048000
0.1909		4.85	86.00	44.73	52.00	9010180048500
0.1929		4.90	86.00	44.65	52.00	9010180049000
0.1969		5.00	86.00	44.50	52.00	9010180050000
0.2008		5.10	86.00	44.35	52.00	9010180051000
0.2031	13/64	5.16	86.00	44.26	52.00	9010180051600
0.2047		5.20	86.00	44.20	52.00	9010180052000
0.2087		5.30	86.00	44.05	52.00	9010180053000
0.2126		5.40	93.00	48.90	57.00	9010180054000
0.2165		5.50	93.00	48.75	57.00	9010180055000
0.2189	7/32	5.56	93.00	48.66	57.00	9010180055600
0.2205		5.60	93.00	48.60	57.00	9010180056000
0.2244		5.70	93.00	48.45	57.00	9010180057000
0.2283		5.80	93.00	48.30	57.00	9010180058000
0.2323		5.90	93.00	48.15	57.00	9010180059000
0.2343	15/64	5.95	93.00	48.08	57.00	9010180059500
0.2362		6.00	93.00	48.00	57.00	9010180060000
0.2402		6.10	101.00	53.85	63.00	9010180061000
0.2441		6.20	101.00	53.70	63.00	9010180062000
0.2480		6.30	101.00	53.55	63.00	9010180063000
0.2500	1/4	6.35	101.00	53.48	63.00	9010180063500
0.2520		6.40	101.00	53.40	63.00	9010180064000
0.2559		6.50	101.00	53.25	63.00	9010180065000
0.2598		6.60	101.00	53.10	63.00	9010180066000
0.2638		6.70	101.00	52.95	63.00	9010180067000
0.2677		6.80	109.00	58.80	69.00	9010180068000
0.2717		6.90	109.00	58.65	69.00	9010180069000
0.2756		7.00	109.00	58.50	69.00	9010180070000
0.2795		7.10	109.00	58.35	69.00	9010180071000
0.2811	9/32	7.14	109.00	58.29	69.00	9010180071400
0.2835		7.20	109.00	58.20	69.00	9010180072000
0.2874		7.30	109.00	58.05	69.00	9010180073000
0.2913		7.40	109.00	57.90	69.00	9010180074000
0.2953		7.50	109.00	57.75	69.00	9010180075000
0.2969	19/64	7.54	117.00	63.69	75.00	9010180075400
0.2992		7.60	117.00	63.60	75.00	9010180076000
0.3031		7.70	117.00	63.45	75.00	9010180077000

Jobber length drills

Series no. **1018**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3071		7.80	117.00	63.30	75.00	9010180078000
0.3110		7.90	117.00	63.15	75.00	9010180079000
0.3125	5/16	7.94	117.00	63.09	75.00	9010180079400
0.3150		8.00	117.00	63.00	75.00	9010180080000
0.3189		8.10	117.00	62.85	75.00	9010180081000
0.3228		8.20	117.00	62.70	75.00	9010180082000
0.3268		8.30	117.00	62.55	75.00	9010180083000
0.3280	21/64	8.33	117.00	62.51	75.00	9010180083300
0.3307		8.40	117.00	62.40	75.00	9010180084000
0.3346		8.50	117.00	62.25	75.00	9010180085000
0.3386		8.60	125.00	68.10	81.00	9010180086000
0.3425		8.70	125.00	67.95	81.00	9010180087000
0.3437	11/32	8.73	125.00	67.91	81.00	9010180087300
0.3465		8.80	125.00	67.80	81.00	9010180088000
0.3504		8.90	125.00	67.65	81.00	9010180089000
0.3543		9.00	125.00	67.50	81.00	9010180090000
0.3583		9.10	125.00	67.35	81.00	9010180091000
0.3594	23/64	9.13	125.00	67.31	81.00	9010180091300
0.3622		9.20	125.00	67.20	81.00	9010180092000
0.3661		9.30	125.00	67.05	81.00	9010180093000
0.3740		9.50	125.00	66.75	81.00	9010180095000
0.3750	3/8	9.52	133.00	72.72	87.00	9010180095200
0.3780		9.60	133.00	72.60	87.00	9010180096000
0.3819		9.70	133.00	72.45	87.00	9010180097000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3858		9.80	133.00	72.30	87.00	9010180098000
0.3898		9.90	133.00	72.15	87.00	9010180099000
0.3906	25/64	9.92	133.00	72.12	87.00	9010180099200
0.3937		10.00	133.00	72.00	87.00	9010180100000
0.3976		10.10	133.00	71.85	87.00	9010180101000
0.4016		10.20	133.00	71.70	87.00	9010180102000
0.4055		10.30	133.00	71.55	87.00	9010180103000
0.4063	13/32	10.32	133.00	71.52	87.00	9010180103200
0.4134		10.50	133.00	71.25	87.00	9010180105000
0.4220	27/64	10.72	142.00	77.92	94.00	9010180107200
0.4252		10.80	142.00	77.80	94.00	9010180108000
0.4331		11.00	142.00	77.50	94.00	9010180110000
0.4374	7/16	11.11	142.00	77.34	94.00	9010180111100
0.4528		11.50	142.00	76.75	94.00	9010180115000
0.4531	29/64	11.51	142.00	76.74	94.00	9010180115100
0.4689	15/32	11.91	151.00	83.14	101.00	9010180119100
0.4724		12.00	151.00	83.00	101.00	9010180120000
0.4803		12.20	151.00	82.70	101.00	9010180122000
0.4843	31/64	12.30	151.00	82.55	101.00	9010180123000
0.4921		12.50	151.00	82.25	101.00	9010180125000
0.5000	1/2	12.70	151.00	81.95	101.00	9010180127000
0.5039		12.80	151.00	81.80	101.00	9010180128000
0.5118		13.00	151.00	81.50	101.00	9010180130000

Jobber length drills

Series no. **5522**

~5xD Cutting depth | DIN 338 Standard | GT 500 DZ Type | 130° Point angle | h8 Tolerance on Ø | Web Thinning | Cyl Shank form | R Cutting direction | GUHRING SELECT

Tool material **HSS-E-PM**

Surface **S**

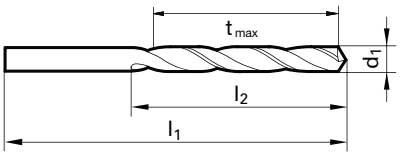
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • PM-Co-alloyed high speed steel • especially high rigidity • especially high wear resistance

high-alloyed steels • heat treatable and case hardened steels • cast iron, brass, bronze

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 555

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	34.00	10.50	12.00	9055220010000
0.0433		1.10	36.00	12.35	14.00	9055220011000
0.0472		1.20	38.00	14.20	16.00	9055220012000
0.0512		1.30	38.00	14.05	16.00	9055220013000
0.0551	#54	1.40	40.00	15.90	18.00	9055220014000
0.0591		1.50	40.00	15.75	18.00	9055220015000
0.0626	1/16	1.59	43.00	17.62	20.00	9055220015900
0.0630		1.60	43.00	17.60	20.00	9055220016000
0.0669	#51	1.70	43.00	17.45	20.00	9055220017000
0.0709		1.80	46.00	19.30	22.00	9055220018000
0.0748		1.90	46.00	19.15	22.00	9055220019000
0.0780	5/64	1.98	49.00	21.03	24.00	9055220019800
0.0787		2.00	49.00	21.00	24.00	9055220020000
0.0827		2.10	49.00	20.85	24.00	9055220021000
0.0866		2.20	53.00	23.70	27.00	9055220022000
0.0906		2.30	53.00	23.55	27.00	9055220023000
0.0937	3/32	2.38	57.00	26.43	30.00	9055220023800
0.0945		2.40	57.00	26.40	30.00	9055220024000
0.0984		2.50	57.00	26.25	30.00	9055220025000
0.1024		2.60	57.00	26.10	30.00	9055220026000
0.1063		2.70	61.00	28.95	33.00	9055220027000
0.1094	7/64	2.78	61.00	28.83	33.00	9055220027800
0.1102		2.80	61.00	28.80	33.00	9055220028000
0.1142		2.90	61.00	28.65	33.00	9055220029000
0.1181		3.00	61.00	28.50	33.00	9055220030000
0.1220		3.10	65.00	31.35	36.00	9055220031000
0.1248	1/8	3.17	65.00	31.25	36.00	9055220031700
0.1260		3.20	65.00	31.20	36.00	9055220032000
0.1299		3.30	65.00	31.05	36.00	9055220033000
0.1339		3.40	70.00	33.90	39.00	9055220034000
0.1378		3.50	70.00	33.75	39.00	9055220035000
0.1406	9/64	#28 3.57	70.00	33.65	39.00	9055220035700
0.1417		3.60	70.00	33.60	39.00	9055220036000
0.1457		3.70	70.00	33.45	39.00	9055220037000
0.1496	#25	3.80	75.00	37.30	43.00	9055220038000
0.1535		3.90	75.00	37.15	43.00	9055220039000
0.1563	5/32	3.97	75.00	37.05	43.00	9055220039700
0.1575		4.00	75.00	37.00	43.00	9055220040000
0.1614		4.10	75.00	36.85	43.00	9055220041000
0.1654		4.20	75.00	36.70	43.00	9055220042000
0.1693	#18	4.30	80.00	40.55	47.00	9055220043000
0.1720	11/64	4.37	80.00	40.45	47.00	9055220043700

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1732		4.40	80.00	40.40	47.00	9055220044000
0.1772	#16	4.50	80.00	40.25	47.00	9055220045000
0.1811		4.60	80.00	40.10	47.00	9055220046000
0.1850	#13	4.70	80.00	39.95	47.00	9055220047000
0.1874	3/16	4.76	86.00	44.86	52.00	9055220047600
0.1890	#12	4.80	86.00	44.80	52.00	9055220048000
0.1929		4.90	86.00	44.65	52.00	9055220049000
0.1969		5.00	86.00	44.50	52.00	9055220050000
0.2008		5.10	86.00	44.35	52.00	9055220051000
0.2031	13/64	5.16	86.00	44.26	52.00	9055220051600
0.2047		5.20	86.00	44.20	52.00	9055220052000
0.2087		5.30	86.00	44.05	52.00	9055220053000
0.2126		5.40	93.00	48.90	57.00	9055220054000
0.2165		5.50	93.00	48.75	57.00	9055220055000
0.2189	7/32	5.56	93.00	48.66	57.00	9055220055600
0.2205		5.60	93.00	48.60	57.00	9055220056000
0.2244		5.70	93.00	48.45	57.00	9055220057000
0.2283		5.80	93.00	48.30	57.00	9055220058000
0.2323		5.90	93.00	48.15	57.00	9055220059000
0.2343	15/64	5.95	93.00	48.08	57.00	9055220059500
0.2362		6.00	93.00	48.00	57.00	9055220060000
0.2402		6.10	101.00	53.85	63.00	9055220061000
0.2441		6.20	101.00	53.70	63.00	9055220062000
0.2480		6.30	101.00	53.55	63.00	9055220063000
0.2500	1/4	E 6.35	101.00	53.48	63.00	9055220063500
0.2520		6.40	101.00	53.40	63.00	9055220064000
0.2559		6.50	101.00	53.25	63.00	9055220065000
0.2598		6.60	101.00	53.10	63.00	9055220066000
0.2638		6.70	101.00	52.95	63.00	9055220067000
0.2657	17/64	H 6.75	109.00	58.88	69.00	9055220067500
0.2677		6.80	109.00	58.80	69.00	9055220068000
0.2717		I 6.90	109.00	58.65	69.00	9055220069000
0.2756		7.00	109.00	58.50	69.00	9055220070000
0.2795		7.10	109.00	58.35	69.00	9055220071000
0.2811	9/32	K 7.14	109.00	58.29	69.00	9055220071400
0.2835		7.20	109.00	58.20	69.00	9055220072000
0.2874		7.30	109.00	58.05	69.00	9055220073000
0.2913		7.40	109.00	57.90	69.00	9055220074000
0.2953		7.50	109.00	57.75	69.00	9055220075000
0.2969	19/64	7.54	117.00	63.69	75.00	9055220075400
0.2992		7.60	117.00	63.60	75.00	9055220076000
0.3031		7.70	117.00	63.45	75.00	9055220077000

Jobber length drills

Series no. **5522**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3071		7.80	117.00	63.30	75.00	9055220078000
0.3110		7.90	117.00	63.15	75.00	9055220079000
0.3126	5/16	7.94	117.00	63.09	75.00	9055220079400
0.3150		8.00	117.00	63.00	75.00	9055220080000
0.3189		8.10	117.00	62.85	75.00	9055220081000
0.3228	P	8.20	117.00	62.70	75.00	9055220082000
0.3268		8.30	117.00	62.55	75.00	9055220083000
0.3280	21/64	8.33	117.00	62.51	75.00	9055220083300
0.3307		8.40	117.00	62.40	75.00	9055220084000
0.3346		8.50	117.00	62.25	75.00	9055220085000
0.3437	11/32	8.73	125.00	67.91	81.00	9055220087300
0.3465		8.80	125.00	67.80	81.00	9055220088000
0.3543		9.00	125.00	67.50	81.00	9055220090000
0.3594	23/64	9.13	125.00	67.31	81.00	9055220091300
0.3661		9.30	125.00	67.05	81.00	9055220093000
0.3740		9.50	125.00	66.75	81.00	9055220095000
0.3748	3/8	9.52	133.00	72.72	87.00	9055220095200
0.3858	W	9.80	133.00	72.30	87.00	9055220098000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3906	25/64	9.92	133.00	72.12	87.00	9055220099200
0.3937		10.00	133.00	72.00	87.00	9055220100000
0.4016		10.20	133.00	71.70	87.00	9055220102000
0.4063	13/32	10.32	133.00	71.52	87.00	9055220103200
0.4134		10.50	133.00	71.25	87.00	9055220105000
0.4220	27/64	10.72	142.00	77.92	94.00	9055220107200
0.4331		11.00	142.00	77.50	94.00	9055220110000
0.4374	7/16	11.11	142.00	77.34	94.00	9055220111100
0.4528		11.50	142.00	76.75	94.00	9055220115000
0.4689	15/32	11.91	151.00	83.14	101.00	9055220119100
0.4724		12.00	151.00	83.00	101.00	9055220120000
0.4843	31/64	12.30	151.00	82.55	101.00	9055220123000
0.4921		12.50	151.00	82.25	101.00	9055220125000
0.5000	1/2	12.70	151.00	81.95	101.00	9055220127000
0.5118		13.00	151.00	81.50	101.00	9055220130000
0.5315		13.50	160.00	87.75	108.00	9055220135000
0.5512		14.00	160.00	87.00	108.00	9055220140000

Jobber length drills

Series no. **530**

~5xD	DIN 338	GT 500 DZ	130°	h8		Cyl	R	GUHRING SELECT
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction	

Tool material **HSS-E-PM**

Surface **F**

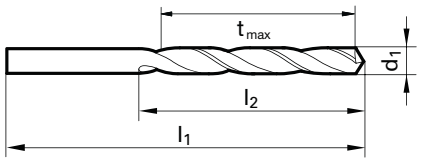
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone point geometry with special type B web thinning • PM-Co-alloyed high speed steel • especially high rigidity • especially high wear resistance

high-tensile materials, high-alloyed steels • heat treatable and case hardened steels • cast iron, brass, bronze

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 497

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	34.00	10.50	12.00	9005300010000
0.0402	#60	1.02	34.00	10.47	12.00	9005300010200
0.0409	#59	1.04	34.00	10.44	12.00	9005300010400
0.0421	#58	1.07	36.00	12.40	14.00	9005300010700
0.0429	#57	1.09	36.00	12.37	14.00	9005300010900
0.0433		1.10	36.00	12.35	14.00	9005300011000
0.0465	#56	1.18	36.00	12.23	14.00	9005300011800
0.0469	3/64	1.19	38.00	14.22	16.00	9005300011900
0.0472		1.20	38.00	14.20	16.00	9005300012000
0.0512		1.30	38.00	14.05	16.00	9005300013000
0.0520	#55	1.32	38.00	14.02	16.00	9005300013200
0.0551	#54	1.40	40.00	15.90	18.00	9005300014000
0.0591		1.50	40.00	15.75	18.00	9005300015000
0.0594	#53	1.51	43.00	17.74	20.00	9005300015100
0.0626	1/16	1.59	43.00	17.62	20.00	9005300015900
0.0630		1.60	43.00	17.60	20.00	9005300016000
0.0634	#52	1.61	43.00	17.59	20.00	9005300016100
0.0669	#51	1.70	43.00	17.45	20.00	9005300017000
0.0701	#50	1.78	46.00	19.33	22.00	9005300017800
0.0709		1.80	46.00	19.30	22.00	9005300018000
0.0728	#49	1.85	46.00	19.23	22.00	9005300018500
0.0748		1.90	46.00	19.15	22.00	9005300019000
0.0760	#48	1.93	49.00	21.11	24.00	9005300019300
0.0780	5/64	1.98	49.00	21.03	24.00	9005300019800
0.0783	#47	1.99	49.00	21.02	24.00	9005300019900
0.0787		2.00	49.00	21.00	24.00	9005300020000
0.0811	#46	2.06	49.00	20.91	24.00	9005300020600
0.0819	#45	2.08	49.00	20.88	24.00	9005300020800
0.0827		2.10	49.00	20.85	24.00	9005300021000
0.0858	#44	2.18	53.00	23.73	27.00	9005300021800
0.0866		2.20	53.00	23.70	27.00	9005300022000
0.0890	#43	2.26	53.00	23.61	27.00	9005300022600
0.0906		2.30	53.00	23.55	27.00	9005300023000
0.0933	#42	2.37	57.00	26.45	30.00	9005300023700
0.0937	3/32	2.38	57.00	26.43	30.00	9005300023800
0.0945		2.40	57.00	26.40	30.00	9005300024000
0.0961	#41	2.44	57.00	26.34	30.00	9005300024400
0.0980	#40	2.49	57.00	26.27	30.00	9005300024900
0.0984		2.50	57.00	26.25	30.00	9005300025000
0.0996	#39	2.53	57.00	26.21	30.00	9005300025300
0.1016	#38	2.58	57.00	26.13	30.00	9005300025800
0.1024		2.60	57.00	26.10	30.00	9005300026000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1039	#37	2.64	57.00	26.04	30.00	9005300026400
0.1063		2.70	61.00	28.95	33.00	9005300027000
0.1067	#36	2.71	61.00	28.94	33.00	9005300027100
0.1094	7/64	2.78	61.00	28.83	33.00	9005300027800
0.1098	#35	2.79	61.00	28.82	33.00	9005300027900
0.1102		2.80	61.00	28.80	33.00	9005300028000
0.1110	#34	2.82	61.00	28.77	33.00	9005300028200
0.1130	#33	2.87	61.00	28.70	33.00	9005300028700
0.1142		2.90	61.00	28.65	33.00	9005300029000
0.1161	#32	2.95	61.00	28.58	33.00	9005300029500
0.1181		3.00	61.00	28.50	33.00	9005300030000
0.1201	#31	3.05	65.00	31.43	36.00	9005300030500
0.1220		3.10	65.00	31.35	36.00	9005300031000
0.1248	1/8	3.17	65.00	31.25	36.00	9005300031700
0.1260		3.20	65.00	31.20	36.00	9005300032000
0.1283	#30	3.26	65.00	31.11	36.00	9005300032600
0.1299		3.30	65.00	31.05	36.00	9005300033000
0.1339		3.40	70.00	33.90	39.00	9005300034000
0.1358	#29	3.45	70.00	33.83	39.00	9005300034500
0.1378		3.50	70.00	33.75	39.00	9005300035000
0.1406	9/64 #28	3.57	70.00	33.65	39.00	9005300035700
0.1417		3.60	70.00	33.60	39.00	9005300036000
0.1441	#27	3.66	70.00	33.51	39.00	9005300036600
0.1457		3.70	70.00	33.45	39.00	9005300037000
0.1469	#26	3.73	70.00	33.41	39.00	9005300037300
0.1496	#25	3.80	75.00	37.30	43.00	9005300038000
0.1520	#24	3.86	75.00	37.21	43.00	9005300038600
0.1535		3.90	75.00	37.15	43.00	9005300039000
0.1539	#23	3.91	75.00	37.14	43.00	9005300039100
0.1563	5/32	3.97	75.00	37.05	43.00	9005300039700
0.1571	#22	3.99	75.00	37.02	43.00	9005300039900
0.1575		4.00	75.00	37.00	43.00	9005300040000
0.1591	#21	4.04	75.00	36.94	43.00	9005300040400
0.1610	#22	4.09	75.00	36.87	43.00	9005300040900
0.1614		4.10	75.00	36.85	43.00	9005300041000
0.1654		4.20	75.00	36.70	43.00	9005300042000
0.1661	#19	4.22	75.00	36.67	43.00	9005300042200
0.1693	#18	4.30	80.00	40.55	47.00	9005300043000
0.1720	11/64	4.37	80.00	40.45	47.00	9005300043700
0.1728	#17	4.39	80.00	40.42	47.00	9005300043900
0.1732		4.40	80.00	40.40	47.00	9005300044000
0.1772	#16	4.50	80.00	40.25	47.00	9005300045000

Jobber length drills

Series no. **530**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1799	#15	4.57	80.00	40.15	47.00	9005300045700
0.1811		4.60	80.00	40.10	47.00	9005300046000
0.1819	#14	4.62	80.00	40.07	47.00	9005300046200
0.1850	#13	4.70	80.00	39.95	47.00	9005300047000
0.1874	3/16	4.76	86.00	44.86	52.00	9005300047600
0.1890	#12	4.80	86.00	44.80	52.00	9005300048000
0.1909	#11	4.85	86.00	44.73	52.00	9005300048500
0.1929		4.90	86.00	44.65	52.00	9005300049000
0.1937	#10	4.92	86.00	44.62	52.00	9005300049200
0.1961	#9	4.98	86.00	44.53	52.00	9005300049800
0.1969		5.00	86.00	44.50	52.00	9005300050000
0.1992	#8	5.06	86.00	44.41	52.00	9005300050600
0.2008		5.10	86.00	44.35	52.00	9005300051000
0.2012	#7	5.11	86.00	44.34	52.00	9005300051100
0.2031	13/64	5.16	86.00	44.26	52.00	9005300051600
0.2039	#6	5.18	86.00	44.23	52.00	9005300051800
0.2047		5.20	86.00	44.20	52.00	9005300052000
0.2055	#5	5.22	86.00	44.17	52.00	9005300052200
0.2087		5.30	86.00	44.05	52.00	9005300053000
0.2091	#4	5.31	93.00	49.04	57.00	9005300053100
0.2126		5.40	93.00	48.90	57.00	9005300054000
0.2130	#3	5.41	93.00	48.89	57.00	9005300054100
0.2165		5.50	93.00	48.75	57.00	9005300055000
0.2189	7/32	5.56	93.00	48.66	57.00	9005300055600
0.2205		5.60	93.00	48.60	57.00	9005300056000
0.2209	#2	5.61	93.00	48.59	57.00	9005300056100
0.2244		5.70	93.00	48.45	57.00	9005300057000
0.2280	#1	5.79	93.00	48.32	57.00	9005300057900
0.2283		5.80	93.00	48.30	57.00	9005300058000
0.2323		5.90	93.00	48.15	57.00	9005300059000
0.2339	A	5.94	93.00	48.09	57.00	9005300059400
0.2343	15/64	5.95	93.00	48.08	57.00	9005300059500
0.2362		6.00	93.00	48.00	57.00	9005300060000
0.2378	B	6.04	101.00	53.94	63.00	9005300060400
0.2402		6.10	101.00	53.85	63.00	9005300061000
0.2421	C	6.15	101.00	53.78	63.00	9005300061500
0.2441		6.20	101.00	53.70	63.00	9005300062000
0.2461	D	6.25	101.00	53.63	63.00	9005300062500
0.2480		6.30	101.00	53.55	63.00	9005300063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9005300063500
0.2520		6.40	101.00	53.40	63.00	9005300064000
0.2559		6.50	101.00	53.25	63.00	9005300065000
0.2571		6.53	101.00	53.21	63.00	9005300065300
0.2598		6.60	101.00	53.10	63.00	9005300066000
0.2610	G	6.63	101.00	53.06	63.00	9005300066300
0.2638		6.70	101.00	52.95	63.00	9005300067000
0.2657	17/64 H	6.75	109.00	58.88	69.00	9005300067500
0.2677		6.80	109.00	58.80	69.00	9005300068000
0.2717	I	6.90	109.00	58.65	69.00	9005300069000
0.2756		7.00	109.00	58.50	69.00	9005300070000
0.2768	J	7.03	109.00	58.46	69.00	9005300070300
0.2795		7.10	109.00	58.35	69.00	9005300071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9005300071400
0.2835		7.20	109.00	58.20	69.00	9005300072000
0.2874		7.30	109.00	58.05	69.00	9005300073000
0.2902	L	7.37	109.00	57.95	69.00	9005300073700
0.2913		7.40	109.00	57.90	69.00	9005300074000
0.2949	M	7.49	109.00	57.77	69.00	9005300074900
0.2953		7.50	109.00	57.75	69.00	9005300075000
0.2969	19/64	7.54	117.00	63.69	75.00	9005300075400

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2992		7.60	117.00	63.60	75.00	9005300076000
0.3020	N	7.67	117.00	63.50	75.00	9005300076700
0.3031		7.70	117.00	63.45	75.00	9005300077000
0.3071		7.80	117.00	63.30	75.00	9005300078000
0.3110		7.90	117.00	63.15	75.00	9005300079000
0.3126	5/16	7.94	117.00	63.09	75.00	9005300079400
0.3150		8.00	117.00	63.00	75.00	9005300080000
0.3161	O	8.03	117.00	62.96	75.00	9005300080300
0.3189		8.10	117.00	62.85	75.00	9005300081000
0.3228	P	8.20	117.00	62.70	75.00	9005300082000
0.3268		8.30	117.00	62.55	75.00	9005300083000
0.3280	21/64	8.33	117.00	62.51	75.00	9005300083300
0.3307		8.40	117.00	62.40	75.00	9005300084000
0.3319	Q	8.43	117.00	62.36	75.00	9005300084300
0.3346		8.50	117.00	62.25	75.00	9005300085000
0.3390	R	8.61	125.00	68.09	81.00	9005300086100
0.3437	11/32	8.73	125.00	67.91	81.00	9005300087300
0.3465		8.80	125.00	67.80	81.00	9005300088000
0.3480	S	8.84	125.00	67.74	81.00	9005300088400
0.3504		8.90	125.00	67.65	81.00	9005300089000
0.3543		9.00	125.00	67.50	81.00	9005300090000
0.3579	T	9.09	125.00	67.37	81.00	9005300090900
0.3583		9.10	125.00	67.35	81.00	9005300091000
0.3594	23/64	9.13	125.00	67.31	81.00	9005300091300
0.3622		9.20	125.00	67.20	81.00	9005300092000
0.3661		9.30	125.00	67.05	81.00	9005300093000
0.3677	U	9.34	125.00	66.99	81.00	9005300093400
0.3701		9.40	125.00	66.90	81.00	9005300094000
0.3740		9.50	125.00	66.75	81.00	9005300095000
0.3748	3/8	9.52	133.00	72.72	87.00	9005300095200
0.3772	V	9.58	133.00	72.63	87.00	9005300095800
0.3780		9.60	133.00	72.60	87.00	9005300096000
0.3819		9.70	133.00	72.45	87.00	9005300097000
0.3858	W	9.80	133.00	72.30	87.00	9005300098000
0.3898		9.90	133.00	72.15	87.00	9005300099000
0.3906	25/64	9.92	133.00	72.12	87.00	9005300099200
0.3937		10.00	133.00	72.00	87.00	9005300100000
0.3969	X	10.08	133.00	71.88	87.00	9005300100800
0.4016		10.20	133.00	71.70	87.00	9005300102000
0.4039	Y	10.26	133.00	71.61	87.00	9005300102600
0.4063	13/32	10.32	133.00	71.52	87.00	9005300103200
0.4130	Z	10.49	133.00	71.27	87.00	9005300104900
0.4134		10.50	133.00	71.25	87.00	9005300105000
0.4220	27/64	10.72	142.00	77.92	94.00	9005300107200
0.4331		11.00	142.00	77.50	94.00	9005300110000
0.4374	7/16	11.11	142.00	77.34	94.00	9005300111100
0.4528		11.50	142.00	76.75	94.00	9005300115000
0.4531	29/64	11.51	142.00	76.74	94.00	9005300115100
0.4689	15/32	11.91	151.00	83.14	101.00	9005300119100
0.4724		12.00	151.00	83.00	101.00	9005300120000
0.4843	31/64	12.30	151.00	82.55	101.00	9005300123000
0.4921		12.50	151.00	82.25	101.00	9005300125000
0.5000	1/2	12.70	151.00	81.95	101.00	9005300127000
0.5118		13.00	151.00	81.50	101.00	9005300130000
0.5157	33/64	13.10	151.00	81.35	101.00	9005300131000
0.5311	17/32	13.49	160.00	87.77	108.00	9005300134900
0.5315		13.50	160.00	87.75	108.00	9005300135000
0.5512		14.00	160.00	87.00	108.00	9005300140000
0.5626	9/16	14.29	169.00	92.57	114.00	9005300142900



BUSHING/TAPER LENGTH HSS, HSCO, HSS-E-PM DRILLS



Bushing length drills

Series no. **666**

~10xD	DIN 339	N	118°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface: **S**

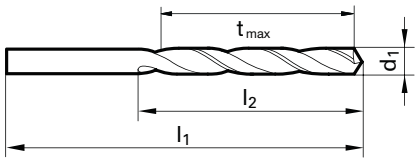
P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • for drilling through drill bushes

alloyed/unalloyed steel and cast steel • grey cast iron, malleable and spheroidal iron • sintered powder metal, German silver and graphite

$t_{max} = l_2 - 1.5 \times d_1$





Speeds and feeds information on pg. 519

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	48.00	24.50	26.00	9006660010000
0.0433		1.10	50.00	26.35	28.00	9006660011000
0.0472		1.20	52.00	28.20	30.00	9006660012000
0.0512		1.30	52.00	28.05	30.00	9006660013000
0.0551	#54	1.40	55.00	30.90	33.00	9006660014000
0.0591		1.50	55.00	30.75	33.00	9006660015000
0.0630		1.60	58.00	32.60	35.00	9006660016000
0.0669	#51	1.70	58.00	32.45	35.00	9006660017000
0.0709		1.80	62.00	35.30	38.00	9006660018000
0.0748		1.90	62.00	35.15	38.00	9006660019000
0.0780	5/64	1.98	66.00	38.03	41.00	9006660019800
0.0787		2.00	66.00	38.00	41.00	9006660020000
0.0827		2.10	66.00	37.85	41.00	9006660021000
0.0866		2.20	70.00	40.70	44.00	9006660022000
0.0906		2.30	70.00	40.55	44.00	9006660023000
0.0945		2.40	74.00	43.40	47.00	9006660024000
0.0984		2.50	74.00	43.25	47.00	9006660025000
0.1024		2.60	74.00	43.10	47.00	9006660026000
0.1063		2.70	79.00	46.95	51.00	9006660027000
0.1102		2.80	79.00	46.80	51.00	9006660028000
0.1142		2.90	79.00	46.65	51.00	9006660029000
0.1181		3.00	79.00	46.50	51.00	9006660030000
0.1220		3.10	84.00	50.35	55.00	9006660031000
0.1260		3.20	84.00	50.20	55.00	9006660032000
0.1299		3.30	84.00	50.05	55.00	9006660033000
0.1339		3.40	91.00	54.90	60.00	9006660034000
0.1378		3.50	91.00	54.75	60.00	9006660035000
0.1406	9/64	#28	3.57	91.00	54.65	60.00	9006660035700
0.1417		3.60	91.00	54.60	60.00	9006660036000
0.1457		3.70	91.00	54.45	60.00	9006660037000
0.1496	#25	3.80	96.00	58.30	64.00	9006660038000
0.1535		3.90	96.00	58.15	64.00	9006660039000
0.1575		4.00	96.00	58.00	64.00	9006660040000
0.1614		4.10	96.00	57.85	64.00	9006660041000
0.1654		4.20	96.00	57.70	64.00	9006660042000
0.1693	#18	4.30	102.00	62.55	69.00	9006660043000
0.1732		4.40	102.00	62.40	69.00	9006660044000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1772	#16	4.50	102.00	62.25	69.00	9006660045000
0.1811		4.60	102.00	62.10	69.00	9006660046000
0.1890	#12	4.80	108.00	66.80	74.00	9006660048000
0.1929		4.90	108.00	66.65	74.00	9006660049000
0.1969		5.00	108.00	66.50	74.00	9006660050000
0.2008		5.10	108.00	66.35	74.00	9006660051000
0.2047		5.20	108.00	66.20	74.00	9006660052000
0.2087		5.30	108.00	66.05	74.00	9006660053000
0.2126		5.40	116.00	71.90	80.00	9006660054000
0.2165		5.50	116.00	71.75	80.00	9006660055000
0.2205		5.60	116.00	71.60	80.00	9006660056000
0.2244		5.70	116.00	71.45	80.00	9006660057000
0.2283		5.80	116.00	71.30	80.00	9006660058000
0.2362		6.00	116.00	71.00	80.00	9006660060000
0.2402		6.10	124.00	76.85	86.00	9006660061000
0.2441		6.20	124.00	76.70	86.00	9006660062000
0.2480		6.30	124.00	76.55	86.00	9006660063000
0.2559		6.50	124.00	76.25	86.00	9006660065000
0.2598		6.60	124.00	76.10	86.00	9006660066000
0.2638		6.70	124.00	75.95	86.00	9006660067000
0.2677		6.80	133.00	82.80	93.00	9006660068000
0.2717	I	6.90	133.00	82.65	93.00	9006660069000
0.2756		7.00	133.00	82.50	93.00	9006660070000
0.2835		7.20	133.00	82.20	93.00	9006660072000
0.2874		7.30	133.00	82.05	93.00	9006660073000
0.2953		7.50	133.00	81.75	93.00	9006660075000
0.3031		7.70	142.00	88.45	100.00	9006660077000
0.3071		7.80	142.00	88.30	100.00	9006660078000
0.3110		7.90	142.00	88.15	100.00	9006660079000
0.3126	5/16	7.94	142.00	88.09	100.00	9006660079400
0.3150		8.00	142.00	88.00	100.00	9006660080000
0.3228	P	8.20	142.00	87.70	100.00	9006660082000
0.3307		8.40	142.00	87.40	100.00	9006660084000
0.3346		8.50	142.00	87.25	100.00	9006660085000
0.3543		9.00	151.00	93.50	107.00	9006660090000
0.4528		11.50	173.00	107.75	125.00	9006660115000

Taper length drills

Series no. **217**

~10xD	DIN 340	N	118°	h8		Cyl	R	GUHRING SELECT
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction	

Tool material **HSS**

Surface >Ø 2.36

P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

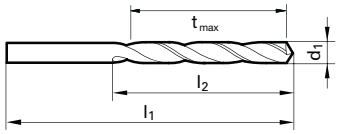
●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • for deep holes

alloyed/unalloyed steel and cast steel • grey cast iron, malleable and spheroidal iron • sintered powder metal, German silver and graphite



$t_{max} = l_2 - 1.5 \times d_1$



Speeds and feeds information on pg. 478

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0157	1/64	0.40	30.00	9.40	10.00	9002170004000
0.0173		0.44	30.00	9.34	10.00	9002170004400
0.0185		0.47	30.00	9.30	10.00	9002170004700
0.0197		0.50	32.00	11.25	12.00	9002170005000
0.0205		0.52	32.00	11.22	12.00	9002170005200
0.0217		0.55	35.00	14.18	15.00	9002170005500
0.0224	#74	0.57	35.00	14.15	15.00	9002170005700
0.0236		0.60	35.00	14.10	15.00	9002170006000
0.0244		0.62	38.00	17.07	18.00	9002170006200
0.0256		0.65	38.00	17.03	18.00	9002170006500
0.0276		0.70	42.00	19.95	21.00	9002170007000
0.0287		0.73	42.00	19.91	21.00	9002170007300
0.0295		0.75	42.00	19.88	21.00	9002170007500
0.0299		0.76	46.00	23.86	25.00	9002170007600
0.0311	1/32 #68	0.79	46.00	23.82	25.00	9002170007900
0.0315		0.80	46.00	23.80	25.00	9002170008000
0.0323		0.82	46.00	23.77	25.00	9002170008200
0.0335		0.85	46.00	23.73	25.00	9002170008500
0.0354		0.90	51.00	27.65	29.00	9002170009000
0.0362		0.92	51.00	27.62	29.00	9002170009200
0.0374		0.95	51.00	27.58	29.00	9002170009500
0.0382	#62	0.97	56.00	31.55	33.00	9002170009700
0.0394		1.00	56.00	31.50	33.00	9002170010000
0.0402	#60	1.02	56.00	31.47	33.00	9002170010200
0.0409	#59	1.04	56.00	31.44	33.00	9002170010400
0.0413		1.05	56.00	31.43	33.00	9002170010500
0.0421	#58	1.07	60.00	35.40	37.00	9002170010700
0.0429	#57	1.09	60.00	35.37	37.00	9002170010900
0.0433		1.10	60.00	35.35	37.00	9002170011000
0.0441		1.12	60.00	35.32	37.00	9002170011200
0.0453		1.15	60.00	35.28	37.00	9002170011500
0.0465	#56	1.18	60.00	35.23	37.00	9002170011800
0.0469	3/64	1.19	65.00	39.22	41.00	9002170011900
0.0472		1.20	65.00	39.20	41.00	9002170012000
0.0492		1.25	65.00	39.13	41.00	9002170012500
0.0512		1.30	65.00	39.05	41.00	9002170013000
0.0520	#55	1.32	65.00	39.02	41.00	9002170013200
0.0531		1.35	70.00	42.98	45.00	9002170013500
0.0551	#54	1.40	70.00	42.90	45.00	9002170014000
0.0571		1.45	70.00	42.83	45.00	9002170014500
0.0591		1.50	70.00	42.75	45.00	9002170015000
0.0594	#53	1.51	76.00	47.74	50.00	9002170015100
0.0610		1.55	76.00	47.68	50.00	9002170015500

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0626	1/16	1.59	76.00	47.62	50.00	9002170015900
0.0630		1.60	76.00	47.60	50.00	9002170016000
0.0634	#52	1.61	76.00	47.59	50.00	9002170016100
0.0650		1.65	76.00	47.53	50.00	9002170016500
0.0669	#51	1.70	76.00	47.45	50.00	9002170017000
0.0689		1.75	80.00	50.38	53.00	9002170017500
0.0701	#50	1.78	80.00	50.33	53.00	9002170017800
0.0709		1.80	80.00	50.30	53.00	9002170018000
0.0728	#49	1.85	80.00	50.23	53.00	9002170018500
0.0748		1.90	80.00	50.15	53.00	9002170019000
0.0760	#48	1.93	85.00	53.11	56.00	9002170019300
0.0768		1.95	85.00	53.08	56.00	9002170019500
0.0780	5/64	1.98	85.00	53.03	56.00	9002170019800
0.0783	#47	1.99	85.00	53.02	56.00	9002170019900
0.0787		2.00	85.00	53.00	56.00	9002170020000
0.0799		2.03	85.00	52.96	56.00	9002170020300
0.0807		2.05	85.00	52.93	56.00	9002170020500
0.0811	#46	2.06	85.00	52.91	56.00	9002170020600
0.0819	#45	2.08	85.00	52.88	56.00	9002170020800
0.0827		2.10	85.00	52.85	56.00	9002170021000
0.0846		2.15	90.00	55.78	59.00	9002170021500
0.0858	#44	2.18	90.00	55.73	59.00	9002170021800
0.0866		2.20	90.00	55.70	59.00	9002170022000
0.0886		2.25	90.00	55.63	59.00	9002170022500
0.0890	#43	2.26	90.00	55.61	59.00	9002170022600
0.0906		2.30	90.00	55.55	59.00	9002170023000
0.0913		2.32	90.00	55.52	59.00	9002170023200
0.0925		2.35	90.00	55.48	59.00	9002170023500
0.0933	#42	2.37	95.00	58.45	62.00	9002170023700
0.0937	3/32	2.38	95.00	58.43	62.00	9002170023800
0.0945		2.40	95.00	58.40	62.00	9002170024000
0.0961	#41	2.44	95.00	58.34	62.00	9002170024400
0.0965		2.45	95.00	58.33	62.00	9002170024500
0.0980	#40	2.49	95.00	58.27	62.00	9002170024900
0.0984		2.50	95.00	58.25	62.00	9002170025000
0.0996	#39	2.53	95.00	58.21	62.00	9002170025300
0.1004		2.55	95.00	58.18	62.00	9002170025500
0.1016	#38	2.58	95.00	58.13	62.00	9002170025800
0.1024		2.60	95.00	58.10	62.00	9002170026000
0.1031		2.62	95.00	58.07	62.00	9002170026200
0.1039	#37	2.64	95.00	58.04	62.00	9002170026400
0.1043		2.65	95.00	58.03	62.00	9002170026500
0.1063		2.70	100.00	61.95	66.00	9002170027000

Taper length drills

Series no. 217

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1067	#36	2.71	100.00	61.94	66.00	9002170027100
0.1083		2.75	100.00	61.88	66.00	9002170027500
0.1094	7/64	2.78	100.00	61.83	66.00	9002170027800
0.1098	#35	2.79	100.00	61.82	66.00	9002170027900
0.1102		2.80	100.00	61.80	66.00	9002170028000
0.1110	#34	2.82	100.00	61.77	66.00	9002170028200
0.1122		2.85	100.00	61.73	66.00	9002170028500
0.1130	#33	2.87	100.00	61.70	66.00	9002170028700
0.1142		2.90	100.00	61.65	66.00	9002170029000
0.1161	#32	2.95	100.00	61.58	66.00	9002170029500
0.1181		3.00	100.00	61.50	66.00	9002170030000
0.1201	#31	3.05	106.00	64.43	69.00	9002170030500
0.1220		3.10	106.00	64.35	69.00	9002170031000
0.1240		3.15	106.00	64.28	69.00	9002170031500
0.1248	1/8	3.17	106.00	64.25	69.00	9002170031700
0.1260		3.20	106.00	64.20	69.00	9002170032000
0.1280		3.25	106.00	64.13	69.00	9002170032500
0.1283	#30	3.26	106.00	64.11	69.00	9002170032600
0.1299		3.30	106.00	64.05	69.00	9002170033000
0.1319		3.35	106.00	63.98	69.00	9002170033500
0.1339		3.40	112.00	67.90	73.00	9002170034000
0.1358	#29	3.45	112.00	67.83	73.00	9002170034500
0.1378		3.50	112.00	67.75	73.00	9002170035000
0.1398		3.55	112.00	67.68	73.00	9002170035500
0.1406	9/64 #28	3.57	112.00	67.65	73.00	9002170035700
0.1417		3.60	112.00	67.60	73.00	9002170036000
0.1437		3.65	112.00	67.53	73.00	9002170036500
0.1441	#27	3.66	112.00	67.51	73.00	9002170036600
0.1457		3.70	112.00	67.45	73.00	9002170037000
0.1469	#26	3.73	112.00	67.41	73.00	9002170037300
0.1476		3.75	112.00	67.38	73.00	9002170037500
0.1496	#25	3.80	119.00	72.30	78.00	9002170038000
0.1516		3.85	119.00	72.23	78.00	9002170038500
0.1520	#24	3.86	119.00	72.21	78.00	9002170038600
0.1535		3.90	119.00	72.15	78.00	9002170039000
0.1539	#23	3.91	119.00	72.14	78.00	9002170039100
0.1555		3.95	119.00	72.08	78.00	9002170039500
0.1563	5/32	3.97	119.00	72.05	78.00	9002170039700
0.1571	#22	3.99	119.00	72.02	78.00	9002170039900
0.1575		4.00	119.00	72.00	78.00	9002170040000
0.1591	#21	4.04	119.00	71.94	78.00	9002170040400
0.1594		4.05	119.00	71.93	78.00	9002170040500
0.1610	#20	4.09	119.00	71.87	78.00	9002170040900
0.1614		4.10	119.00	71.85	78.00	9002170041000
0.1634		4.15	119.00	71.78	78.00	9002170041500
0.1654		4.20	119.00	71.70	78.00	9002170042000
0.1661	#19	4.22	119.00	71.67	78.00	9002170042200
0.1673		4.25	119.00	71.63	78.00	9002170042500
0.1693	#18	4.30	126.00	75.55	82.00	9002170043000
0.1713		4.35	126.00	75.48	82.00	9002170043500
0.1720	11/64	4.37	126.00	75.45	82.00	9002170043700
0.1728	#17	4.39	126.00	75.42	82.00	9002170043900
0.1732		4.40	126.00	75.40	82.00	9002170044000
0.1752		4.45	126.00	75.33	82.00	9002170044500
0.1772	#16	4.50	126.00	75.25	82.00	9002170045000
0.1799	#15	4.57	126.00	75.15	82.00	9002170045700
0.1811		4.60	126.00	75.10	82.00	9002170046000
0.1819	#14	4.62	126.00	75.07	82.00	9002170046200
0.1831		4.65	126.00	75.03	82.00	9002170046500
0.1850	#13	4.70	126.00	74.95	82.00	9002170047000
0.1870		4.75	126.00	74.88	82.00	9002170047500
0.1874	3/16	4.76	132.00	79.86	87.00	9002170047600
0.1890	#12	4.80	132.00	79.80	87.00	9002170048000
0.1909	#11	4.85	132.00	79.73	87.00	9002170048500
0.1929		4.90	132.00	79.65	87.00	9002170049000
0.1937	#10	4.92	132.00	79.62	87.00	9002170049200
0.1949		4.95	132.00	79.58	87.00	9002170049500
0.1961	#9	4.98	132.00	79.53	87.00	9002170049800
0.1969		5.00	132.00	79.50	87.00	9002170050000
0.1988		5.05	132.00	79.43	87.00	9002170050500
0.1992	#8	5.06	132.00	79.41	87.00	9002170050600
0.2008		5.10	132.00	79.35	87.00	9002170051000
0.2012	#7	5.11	132.00	79.34	87.00	9002170051100
0.2028		5.15	132.00	79.28	87.00	9002170051500
0.2031	13/64	5.16	132.00	79.26	87.00	9002170051600
0.2039	#6	5.18	132.00	79.23	87.00	9002170051800
0.2047		5.20	132.00	79.20	87.00	9002170052000
0.2055	#5	5.22	132.00	79.17	87.00	9002170052200
0.2067		5.25	132.00	79.13	87.00	9002170052500
0.2087		5.30	132.00	79.05	87.00	9002170053000
0.2091	#4	5.31	139.00	83.04	91.00	9002170053100
0.2106		5.35	139.00	82.98	91.00	9002170053500
0.2126		5.40	139.00	82.90	91.00	9002170054000
0.2130	#3	5.41	139.00	82.89	91.00	9002170054100
0.2146		5.45	139.00	82.83	91.00	9002170054500
0.2165		5.50	139.00	82.75	91.00	9002170055000
0.2185		5.55	139.00	82.68	91.00	9002170055500
0.2189	7/32	5.56	139.00	82.66	91.00	9002170055600
0.2205		5.60	139.00	82.60	91.00	9002170056000
0.2209	#2	5.61	139.00	82.59	91.00	9002170056100
0.2224		5.65	139.00	82.53	91.00	9002170056500
0.2244		5.70	139.00	82.45	91.00	9002170057000
0.2264		5.75	139.00	82.38	91.00	9002170057500
0.2280	#1	5.79	139.00	82.32	91.00	9002170057900
0.2283		5.80	139.00	82.30	91.00	9002170058000
0.2303		5.85	139.00	82.23	91.00	9002170058500
0.2323		5.90	139.00	82.15	91.00	9002170059000
0.2339	A	5.94	139.00	82.09	91.00	9002170059400
0.2343	15/64	5.95	139.00	82.08	91.00	9002170059500
0.2362		6.00	139.00	82.00	91.00	9002170060000
0.2378	B	6.04	148.00	87.94	97.00	9002170060400
0.2402		6.10	148.00	87.85	97.00	9002170061000
0.2421	C	6.15	148.00	87.78	97.00	9002170061500
0.2441		6.20	148.00	87.70	97.00	9002170062000
0.2461	D	6.25	148.00	87.63	97.00	9002170062500
0.2480		6.30	148.00	87.55	97.00	9002170063000
0.2500	1/4 E	6.35	148.00	87.48	97.00	9002170063500
0.2520		6.40	148.00	87.40	97.00	9002170064000
0.2559		6.50	148.00	87.25	97.00	9002170065000
0.2571		6.53	148.00	87.21	97.00	9002170065300
0.2598		6.60	148.00	87.10	97.00	9002170066000
0.2610	G	6.63	148.00	87.06	97.00	9002170066300
0.2638		6.70	148.00	86.95	97.00	9002170067000
0.2657	17/64 H	6.75	156.00	91.88	102.00	9002170067500
0.2677		6.80	156.00	91.80	102.00	9002170068000
0.2717	I	6.90	156.00	91.65	102.00	9002170069000
0.2756		7.00	156.00	91.50	102.00	9002170070000
0.2768	J	7.03	156.00	91.46	102.00	9002170070300
0.2795		7.10	156.00	91.35	102.00	9002170071000
0.2811	9/32 K	7.14	156.00	91.29	102.00	9002170071400
0.2835		7.20	156.00	91.20	102.00	9002170072000
0.2854		7.25	156.00	91.13	102.00	9002170072500
0.2874		7.30	156.00	91.05	102.00	9002170073000
0.2902	L	7.37	156.00	90.95	102.00	9002170073700
0.2913		7.40	156.00	90.90	102.00	9002170074000
0.2953		7.50	156.00	90.75	102.00	9002170075000
0.2969	19/64	7.54	165.00	97.69	109.00	9002170075400
0.2992		7.60	165.00	97.60	109.00	9002170076000
0.3020	N	7.67	165.00	97.50	109.00	9002170076700
0.3031		7.70	165.00	97.45	109.00	9002170077000
0.3051		7.75	165.00	97.38	109.00	9002170077500
0.3071		7.80	165.00	97.30	109.00	9002170078000

Taper length drills

Series no. 217

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3110		7.90	165.00	97.15	109.00	9002170079000
0.3126	5/16	7.94	165.00	97.09	109.00	9002170079400
0.3150		8.00	165.00	97.00	109.00	9002170080000
0.3161	O	8.03	165.00	96.96	109.00	9002170080300
0.3189		8.10	165.00	96.85	109.00	9002170081000
0.3228	P	8.20	165.00	96.70	109.00	9002170082000
0.3248		8.25	165.00	96.63	109.00	9002170082500
0.3268		8.30	165.00	96.55	109.00	9002170083000
0.3280	21/64	8.33	165.00	96.51	109.00	9002170083300
0.3307		8.40	165.00	96.40	109.00	9002170084000
0.3319	Q	8.43	165.00	96.36	109.00	9002170084300
0.3346		8.50	165.00	96.25	109.00	9002170085000
0.3386		8.60	175.00	102.10	115.00	9002170086000
0.3390	R	8.61	175.00	102.09	115.00	9002170086100
0.3425		8.70	175.00	101.95	115.00	9002170087000
0.3437	11/32	8.73	175.00	101.91	115.00	9002170087300
0.3445		8.75	175.00	101.88	115.00	9002170087500
0.3465		8.80	175.00	101.80	115.00	9002170088000
0.3480	S	8.84	175.00	101.74	115.00	9002170088400
0.3504		8.90	175.00	101.65	115.00	9002170089000
0.3543		9.00	175.00	101.50	115.00	9002170090000
0.3583		9.10	175.00	101.35	115.00	9002170091000
0.3594	23/64	9.13	175.00	101.31	115.00	9002170091300
0.3622		9.20	175.00	101.20	115.00	9002170092000
0.3642		9.25	175.00	101.13	115.00	9002170092500
0.3661		9.30	175.00	101.05	115.00	9002170093000
0.3701		9.40	175.00	100.90	115.00	9002170094000
0.3740		9.50	175.00	100.75	115.00	9002170095000
0.3748	3/8	9.52	184.00	106.72	121.00	9002170095200
0.3780		9.60	184.00	106.60	121.00	9002170096000
0.3819		9.70	184.00	106.45	121.00	9002170097000
0.3839		9.75	184.00	106.38	121.00	9002170097500
0.3858	W	9.80	184.00	106.30	121.00	9002170098000
0.3898		9.90	184.00	106.15	121.00	9002170099000
0.3906	25/64	9.92	184.00	106.12	121.00	9002170099200
0.3937		10.00	184.00	106.00	121.00	9002170100000
0.3969	X	10.08	184.00	105.88	121.00	9002170100800
0.3976		10.10	184.00	105.85	121.00	9002170101000
0.4016		10.20	184.00	105.70	121.00	9002170102000
0.4035		10.25	184.00	105.63	121.00	9002170102500
0.4039	Y	10.26	184.00	105.61	121.00	9002170102600
0.4055		10.30	184.00	105.55	121.00	9002170103000
0.4063	13/32	10.32	184.00	105.52	121.00	9002170103200
0.4094		10.40	184.00	105.40	121.00	9002170104000
0.4130	Z	10.49	184.00	105.27	121.00	9002170104900
0.4134		10.50	184.00	105.25	121.00	9002170105000
0.4173		10.60	184.00	105.10	121.00	9002170106000
0.4213		10.70	195.00	111.95	128.00	9002170107000
0.4220	27/64	10.72	195.00	111.92	128.00	9002170107200
0.4232		10.75	195.00	111.88	128.00	9002170107500
0.4252		10.80	195.00	111.80	128.00	9002170108000
0.4291		10.90	195.00	111.65	128.00	9002170109000
0.4331		11.00	195.00	111.50	128.00	9002170110000
0.4374	7/16	11.11	195.00	111.34	128.00	9002170111100
0.4409		11.20	195.00	111.20	128.00	9002170112000
0.4429		11.25	195.00	111.13	128.00	9002170112500
0.4449		11.30	195.00	111.05	128.00	9002170113000
0.4488		11.40	195.00	110.90	128.00	9002170114000
0.4528		11.50	195.00	110.75	128.00	9002170115000
0.4531	29/64	11.51	195.00	110.74	128.00	9002170115100
0.4567		11.60	195.00	110.60	128.00	9002170116000
0.4626		11.75	195.00	110.38	128.00	9002170117500
0.4646		11.80	195.00	110.30	128.00	9002170118000
0.4689	15/32	11.91	205.00	116.14	134.00	9002170119100
0.4724		12.00	205.00	116.00	134.00	9002170120000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4764		12.10	205.00	115.85	134.00	9002170121000
0.4803		12.20	205.00	115.70	134.00	9002170122000
0.4823		12.25	205.00	115.63	134.00	9002170122500
0.4843	31/64	12.30	205.00	115.55	134.00	9002170123000
0.4921		12.50	205.00	115.25	134.00	9002170125000
0.5000	1/2	12.70	205.00	114.95	134.00	9002170127000
0.5020		12.75	205.00	114.88	134.00	9002170127500
0.5039		12.80	205.00	114.80	134.00	9002170128000
0.5118		13.00	205.00	114.50	134.00	9002170130000
0.5157	33/64	13.10	205.00	114.35	134.00	9002170131000
0.5197		13.20	205.00	114.20	134.00	9002170132000
0.5311	17/32	13.49	214.00	119.77	140.00	9002170134900
0.5315		13.50	214.00	119.75	140.00	9002170135000
0.5413		13.75	214.00	119.38	140.00	9002170137500
0.5433		13.80	214.00	119.30	140.00	9002170138000
0.5469	35/64	13.89	214.00	119.17	140.00	9002170138900
0.5512		14.00	214.00	119.00	140.00	9002170140000
0.5591		14.20	220.00	122.70	144.00	9002170142000
0.5610		14.25	220.00	122.63	144.00	9002170142500
0.5626	9/16	14.29	220.00	122.57	144.00	9002170142900
0.5709		14.50	220.00	122.25	144.00	9002170145000
0.5780	37/64	14.68	220.00	121.98	144.00	9002170146800
0.5906		15.00	220.00	121.50	144.00	9002170150000
0.5937	19/32	15.08	227.00	126.38	149.00	9002170150800
0.6004		15.25	227.00	126.13	149.00	9002170152500
0.6063		15.40	227.00	125.90	149.00	9002170154000
0.6094	39/64	15.48	227.00	125.78	149.00	9002170154800
0.6102		15.50	227.00	125.75	149.00	9002170155000
0.6248	5/8	15.87	227.00	125.20	149.00	9002170158700
0.6299		16.00	227.00	125.00	149.00	9002170160000
0.6406	41/64	16.27	235.00	129.60	154.00	9002170162700
0.6496		16.50	235.00	129.25	154.00	9002170165000
0.6563	21/32	16.67	235.00	129.00	154.00	9002170166700
0.6693		17.00	235.00	128.50	154.00	9002170170000
0.6720	43/64	17.07	241.00	132.40	158.00	9002170170700
0.6874	11/16	17.46	241.00	131.81	158.00	9002170174600
0.6890		17.50	241.00	131.75	158.00	9002170175000
0.7031	45/64	17.86	241.00	131.21	158.00	9002170178600
0.7087		18.00	241.00	131.00	158.00	9002170180000
0.7185		18.25	247.00	134.63	162.00	9002170182500
0.7189	23/32	18.26	247.00	134.61	162.00	9002170182600
0.7283		18.50	247.00	134.25	162.00	9002170185000
0.7343	47/64	18.65	247.00	134.03	162.00	9002170186500
0.7480		19.00	247.00	133.50	162.00	9002170190000
0.7500	3/4	19.05	254.00	137.43	166.00	9002170190500
0.7657	49/64	19.45	254.00	136.83	166.00	9002170194500
0.7677		19.50	254.00	136.75	166.00	9002170195000
0.7811	25/32	19.84	254.00	136.24	166.00	9002170198400
0.7874		20.00	254.00	136.00	166.00	9002170200000
0.7969	51/64	20.24	261.00	140.64	171.00	9002170202400
0.8071		20.50	261.00	140.25	171.00	9002170205000
0.8126	13/16	20.64	261.00	140.04	171.00	9002170206400
0.8169		20.75	261.00	139.88	171.00	9002170207500
0.8268		21.00	261.00	139.50	171.00	9002170210000
0.8280	53/64	21.03	261.00	139.46	171.00	9002170210300
0.8465		21.50	268.00	143.75	176.00	9002170215000
0.8594	55/64	21.83	268.00	143.26	176.00	9002170218300
0.8661		22.00	268.00	143.00	176.00	9002170220000
0.8748	7/8	22.22	268.00	142.67	176.00	9002170222200
0.8906	57/64	22.62	275.00	146.07	180.00	9002170226200
0.9063	29/32	23.02	275.00	145.47	180.00	9002170230200
0.9374	15/16	23.81	282.00	149.29	185.00	9002170238100
0.9449		24.00	282.00	149.00	185.00	9002170240000
0.9689	31/32	24.61	282.00	148.09	185.00	9002170246100
0.9843	63/64	25.00	282.00	147.50	185.00	9002170250000

Taper length drills

Series no. **667**

~10xD	DIN 340	N	118°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material **HSS**

Surface **S**

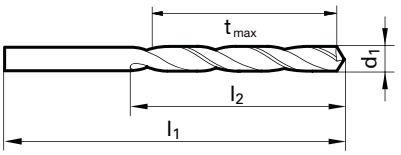
P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • for deep holes • for drilling through drill bushes

alloyed/unalloyed steel and cast steel • grey cast iron, malleable and spheroidal iron • sintered powder metal, German silver and graphite

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 520

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0197		0.50	32.00	11.25	12.00	9006670005000
0.0236		0.60	35.00	14.10	15.00	9006670006000
0.0256		0.65	38.00	17.03	18.00	9006670006500
0.0276		0.70	42.00	19.95	21.00	9006670007000
0.0295		0.75	42.00	19.88	21.00	9006670007500
0.0315		0.80	46.00	23.80	25.00	9006670008000
0.0335		0.85	46.00	23.73	25.00	9006670008500
0.0354		0.90	51.00	27.65	29.00	9006670009000
0.0374		0.95	51.00	27.58	29.00	9006670009500
0.0394		1.00	56.00	31.50	33.00	9006670010000
0.0413		1.05	56.00	31.43	33.00	9006670010500
0.0433		1.10	60.00	35.35	37.00	9006670011000
0.0453		1.15	60.00	35.28	37.00	9006670011500
0.0472		1.20	65.00	39.20	41.00	9006670012000
0.0492		1.25	65.00	39.13	41.00	9006670012500
0.0512		1.30	65.00	39.05	41.00	9006670013000
0.0531		1.35	70.00	42.98	45.00	9006670013500
0.0551	#54	1.40	70.00	42.90	45.00	9006670014000
0.0571		1.45	70.00	42.83	45.00	9006670014500
0.0591		1.50	70.00	42.75	45.00	9006670015000
0.0610		1.55	76.00	47.68	50.00	9006670015500
0.0626	1/16	1.59	76.00	47.62	50.00	9006670015900
0.0630		1.60	76.00	47.60	50.00	9006670016000
0.0650		1.65	76.00	47.53	50.00	9006670016500
0.0669	#51	1.70	76.00	47.45	50.00	9006670017000
0.0689		1.75	80.00	50.38	53.00	9006670017500
0.0709		1.80	80.00	50.30	53.00	9006670018000
0.0728	#49	1.85	80.00	50.23	53.00	9006670018500
0.0748		1.90	80.00	50.15	53.00	9006670019000
0.0760	#48	1.93	85.00	53.11	56.00	9006670019300
0.0768		1.95	85.00	53.08	56.00	9006670019500
0.0780	5/64	1.98	85.00	53.03	56.00	9006670019800
0.0787		2.00	85.00	53.00	56.00	9006670020000
0.0807		2.05	85.00	52.93	56.00	9006670020500
0.0827		2.10	85.00	52.85	56.00	9006670021000
0.0866		2.20	90.00	55.70	59.00	9006670022000
0.0886		2.25	90.00	55.63	59.00	9006670022500
0.0906		2.30	90.00	55.55	59.00	9006670023000
0.0925		2.35	90.00	55.48	59.00	9006670023500
0.0937	3/32	2.38	95.00	58.43	62.00	9006670023800
0.0945		2.40	95.00	58.40	62.00	9006670024000
0.0961	#41	2.44	95.00	58.34	62.00	9006670024400

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0965		2.45	95.00	58.33	62.00	9006670024500
0.0984		2.50	95.00	58.25	62.00	9006670025000
0.1004		2.55	95.00	58.18	62.00	9006670025500
0.1024		2.60	95.00	58.10	62.00	9006670026000
0.1043		2.65	95.00	58.03	62.00	9006670026500
0.1063		2.70	100.00	61.95	66.00	9006670027000
0.1083		2.75	100.00	61.88	66.00	9006670027500
0.1094	7/64	2.78	100.00	61.83	66.00	9006670027800
0.1102		2.80	100.00	61.80	66.00	9006670028000
0.1122		2.85	100.00	61.73	66.00	9006670028500
0.1142		2.90	100.00	61.65	66.00	9006670029000
0.1161	#32	2.95	100.00	61.58	66.00	9006670029500
0.1181		3.00	100.00	61.50	66.00	9006670030000
0.1201	#31	3.05	106.00	64.43	69.00	9006670030500
0.1220		3.10	106.00	64.35	69.00	9006670031000
0.1240		3.15	106.00	64.28	69.00	9006670031500
0.1248	1/8	3.17	106.00	64.25	69.00	9006670031700
0.1260		3.20	106.00	64.20	69.00	9006670032000
0.1280		3.25	106.00	64.13	69.00	9006670032500
0.1299		3.30	106.00	64.05	69.00	9006670033000
0.1319		3.35	106.00	63.98	69.00	9006670033500
0.1339		3.40	112.00	67.90	73.00	9006670034000
0.1378		3.50	112.00	67.75	73.00	9006670035000
0.1398		3.55	112.00	67.68	73.00	9006670035500
0.1406	9/64	#28 3.57	112.00	67.65	73.00	9006670035700
0.1417		3.60	112.00	67.60	73.00	9006670036000
0.1437		3.65	112.00	67.53	73.00	9006670036500
0.1457		3.70	112.00	67.45	73.00	9006670037000
0.1496	#25	3.80	119.00	72.30	78.00	9006670038000
0.1516		3.85	119.00	72.23	78.00	9006670038500
0.1535		3.90	119.00	72.15	78.00	9006670039000
0.1555		3.95	119.00	72.08	78.00	9006670039500
0.1563	5/32	3.97	119.00	72.05	78.00	9006670039700
0.1575		4.00	119.00	72.00	78.00	9006670040000
0.1594		4.05	119.00	71.93	78.00	9006670040500
0.1614		4.10	119.00	71.85	78.00	9006670041000
0.1654		4.20	119.00	71.70	78.00	9006670042000
0.1673		4.25	119.00	71.63	78.00	9006670042500
0.1693	#18	4.30	126.00	75.55	82.00	9006670043000
0.1720	11/64	4.37	126.00	75.45	82.00	9006670043700
0.1732		4.40	126.00	75.40	82.00	9006670044000
0.1772	#16	4.50	126.00	75.25	82.00	9006670045000

Taper length drills

Series no. 667

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1811		4.60	126.00	75.10	82.00	9006670046000
0.1850	#13	4.70	126.00	74.95	82.00	9006670047000
0.1870		4.75	126.00	74.88	82.00	9006670047500
0.1874	3/16	4.76	132.00	79.86	87.00	9006670047600
0.1890	#12	4.80	132.00	79.80	87.00	9006670048000
0.1909	#11	4.85	132.00	79.73	87.00	9006670048500
0.1929		4.90	132.00	79.65	87.00	9006670049000
0.1937	#10	4.92	132.00	79.62	87.00	9006670049200
0.1961	#9	4.98	132.00	79.53	87.00	9006670049800
0.1969		5.00	132.00	79.50	87.00	9006670050000
0.2008		5.10	132.00	79.35	87.00	9006670051000
0.2031	13/64	5.16	132.00	79.26	87.00	9006670051600
0.2047		5.20	132.00	79.20	87.00	9006670052000
0.2067		5.25	132.00	79.13	87.00	9006670052500
0.2087		5.30	132.00	79.05	87.00	9006670053000
0.2126		5.40	139.00	82.90	91.00	9006670054000
0.2165		5.50	139.00	82.75	91.00	9006670055000
0.2189	7/32	5.56	139.00	82.66	91.00	9006670055600
0.2205		5.60	139.00	82.60	91.00	9006670056000
0.2209	#2	5.61	139.00	82.59	91.00	9006670056100
0.2244		5.70	139.00	82.45	91.00	9006670057000
0.2280	#1	5.79	139.00	82.32	91.00	9006670057900
0.2283		5.80	139.00	82.30	91.00	9006670058000
0.2323		5.90	139.00	82.15	91.00	9006670059000
0.2362		6.00	139.00	82.00	91.00	9006670060000
0.2402		6.10	148.00	87.85	97.00	9006670061000
0.2441		6.20	148.00	87.70	97.00	9006670062000
0.2461	D	6.25	148.00	87.63	97.00	9006670062500
0.2480		6.30	148.00	87.55	97.00	9006670063000
0.2500	1/4 E	6.35	148.00	87.48	97.00	9006670063500
0.2520		6.40	148.00	87.40	97.00	9006670064000
0.2559		6.50	148.00	87.25	97.00	9006670065000
0.2598		6.60	148.00	87.10	97.00	9006670066000
0.2638		6.70	148.00	86.95	97.00	9006670067000
0.2657	17/64 H	6.75	156.00	91.88	102.00	9006670067500
0.2677		6.80	156.00	91.80	102.00	9006670068000
0.2717	I	6.90	156.00	91.65	102.00	9006670069000
0.2756		7.00	156.00	91.50	102.00	9006670070000
0.2795		7.10	156.00	91.35	102.00	9006670071000
0.2811	9/32 K	7.14	156.00	91.29	102.00	9006670071400
0.2835		7.20	156.00	91.20	102.00	9006670072000
0.2874		7.30	156.00	91.05	102.00	9006670073000
0.2902	L	7.37	156.00	90.95	102.00	9006670073700
0.2913		7.40	156.00	90.90	102.00	9006670074000
0.2953		7.50	156.00	90.75	102.00	9006670075000
0.2969	19/64	7.54	165.00	97.69	109.00	9006670075400
0.3031		7.70	165.00	97.45	109.00	9006670077000
0.3071		7.80	165.00	97.30	109.00	9006670078000
0.3110		7.90	165.00	97.15	109.00	9006670079000
0.3126	5/16	7.94	165.00	97.09	109.00	9006670079400
0.3150		8.00	165.00	97.00	109.00	9006670080000
0.3189		8.10	165.00	96.85	109.00	9006670081000
0.3228	P	8.20	165.00	96.70	109.00	9006670082000
0.3268		8.30	165.00	96.55	109.00	9006670083000
0.3307		8.40	165.00	96.40	109.00	9006670084000
0.3346		8.50	165.00	96.25	109.00	9006670085000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3386		8.60	175.00	102.10	115.00	9006670086000
0.3425		8.70	175.00	101.95	115.00	9006670087000
0.3437	11/32	8.73	175.00	101.91	115.00	9006670087300
0.3465		8.80	175.00	101.80	115.00	9006670088000
0.3504		8.90	175.00	101.65	115.00	9006670089000
0.3543		9.00	175.00	101.50	115.00	9006670090000
0.3583		9.10	175.00	101.35	115.00	9006670091000
0.3594	23/64	9.13	175.00	101.31	115.00	9006670091300
0.3622		9.20	175.00	101.20	115.00	9006670092000
0.3661		9.30	175.00	101.05	115.00	9006670093000
0.3701		9.40	175.00	100.90	115.00	9006670094000
0.3740		9.50	175.00	100.75	115.00	9006670095000
0.3748	3/8	9.52	184.00	106.72	121.00	9006670095200
0.3780		9.60	184.00	106.60	121.00	9006670096000
0.3819		9.70	184.00	106.45	121.00	9006670097000
0.3858	W	9.80	184.00	106.30	121.00	9006670098000
0.3898		9.90	184.00	106.15	121.00	9006670099000
0.3906	25/64	9.92	184.00	106.12	121.00	9006670099200
0.3937		10.00	184.00	106.00	121.00	9006670100000
0.4016		10.20	184.00	105.70	121.00	9006670102000
0.4063	13/32	10.32	184.00	105.52	121.00	9006670103200
0.4134		10.50	184.00	105.25	121.00	9006670105000
0.4173		10.60	184.00	105.10	121.00	9006670106000
0.4220	27/64	10.72	195.00	111.92	128.00	9006670107200
0.4252		10.80	195.00	111.80	128.00	9006670108000
0.4331		11.00	195.00	111.50	128.00	9006670110000
0.4374	7/16	11.11	195.00	111.34	128.00	9006670111100
0.4528		11.50	195.00	110.75	128.00	9006670115000
0.4531	29/64	11.51	195.00	110.74	128.00	9006670115100
0.4689	15/32	11.91	205.00	116.14	134.00	9006670119100
0.4724		12.00	205.00	116.00	134.00	9006670120000
0.4921		12.50	205.00	115.25	134.00	9006670125000
0.5000	1/2	12.70	205.00	114.95	134.00	9006670127000
0.5118		13.00	205.00	114.50	134.00	9006670130000
0.5311	17/32	13.49	214.00	119.77	140.00	9006670134900
0.5315		13.50	214.00	119.75	140.00	9006670135000
0.5433		13.80	214.00	119.30	140.00	9006670138000
0.5469	35/64	13.89	214.00	119.17	140.00	9006670138900
0.5512		14.00	214.00	119.00	140.00	9006670140000
0.5626	9/16	14.29	220.00	122.57	144.00	9006670142900
0.5709		14.50	220.00	122.25	144.00	9006670145000
0.5780	37/64	14.68	220.00	121.98	144.00	9006670146800
0.5807		14.75	220.00	121.88	144.00	9006670147500
0.5906		15.00	220.00	121.50	144.00	9006670150000
0.5937	19/32	15.08	227.00	126.38	149.00	9006670150800
0.6094	39/64	15.48	227.00	125.78	149.00	9006670154800
0.6102		15.50	227.00	125.75	149.00	9006670155000
0.6248	5/8	15.87	227.00	125.20	149.00	9006670158700
0.6299		16.00	227.00	125.00	149.00	9006670160000
0.6496		16.50	235.00	129.25	154.00	9006670165000
0.6563	21/32	16.67	235.00	129.00	154.00	9006670166700
0.6594		16.75	235.00	128.88	154.00	9006670167500
0.6693		17.00	235.00	128.50	154.00	9006670170000
0.6874	11/16	17.46	241.00	131.81	158.00	9006670174600
0.7087		18.00	241.00	131.00	158.00	9006670180000
0.7185		18.25	247.00	134.63	162.00	9006670182500

Taper length drills

Series no. **219**

~10xD	DIN 340	W	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface: ○

P	Steel	
M	Stainless steel	
K	Cast iron	
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

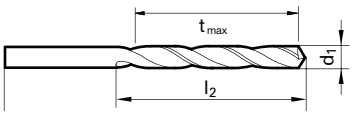
●=Optimal
○=Limited

web thinning ≥ Ø 14.500 • relieved cone • for deep holes

soft, long chipping materials • aluminum, Al-alloys (long-chipping) • zinc, refined copper, silumin, Elektron • soft synthetic materials, wood



$t_{max} = l_2\text{-}1.5 \times d_1$



Speeds and feeds information on pg. 478

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0157	1/64	0.40	30.00	9.40	10.00	9002190004000
0.0197		0.50	32.00	11.25	12.00	9002190005000
0.0236		0.60	35.00	14.10	15.00	9002190006000
0.0256		0.65	38.00	17.03	18.00	9002190006500
0.0276		0.70	42.00	19.95	21.00	9002190007000
0.0291	#69	0.74	42.00	19.89	21.00	9002190007400
0.0295		0.75	42.00	19.88	21.00	9002190007500
0.0315		0.80	46.00	23.80	25.00	9002190008000
0.0335		0.85	46.00	23.73	25.00	9002190008500
0.0354		0.90	51.00	27.65	29.00	9002190009000
0.0374		0.95	51.00	27.58	29.00	9002190009500
0.0394		1.00	56.00	31.50	33.00	9002190010000
0.0413		1.05	56.00	31.43	33.00	9002190010500
0.0433		1.10	60.00	35.35	37.00	9002190011000
0.0453		1.15	60.00	35.28	37.00	9002190011500
0.0472		1.20	65.00	39.20	41.00	9002190012000
0.0480		1.22	65.00	39.17	41.00	9002190012200
0.0492		1.25	65.00	39.13	41.00	9002190012500
0.0512		1.30	65.00	39.05	41.00	9002190013000
0.0531		1.35	70.00	42.98	45.00	9002190013500
0.0551	#54	1.40	70.00	42.90	45.00	9002190014000
0.0571		1.45	70.00	42.83	45.00	9002190014500
0.0591		1.50	70.00	42.75	45.00	9002190015000
0.0610		1.55	76.00	47.68	50.00	9002190015500
0.0630		1.60	76.00	47.60	50.00	9002190016000
0.0650		1.65	76.00	47.53	50.00	9002190016500
0.0669	#51	1.70	76.00	47.45	50.00	9002190017000
0.0689		1.75	80.00	50.38	53.00	9002190017500
0.0701	#50	1.78	80.00	50.33	53.00	9002190017800
0.0709		1.80	80.00	50.30	53.00	9002190018000
0.0728	#49	1.85	80.00	50.23	53.00	9002190018500
0.0748		1.90	80.00	50.15	53.00	9002190019000
0.0768		1.95	85.00	53.08	56.00	9002190019500
0.0780	5/64	1.98	85.00	53.03	56.00	9002190019800
0.0787		2.00	85.00	53.00	56.00	9002190020000
0.0807		2.05	85.00	52.93	56.00	9002190020500
0.0827		2.10	85.00	52.85	56.00	9002190021000
0.0846		2.15	90.00	55.78	59.00	9002190021500
0.0866		2.20	90.00	55.70	59.00	9002190022000
0.0886		2.25	90.00	55.63	59.00	9002190022500
0.0906		2.30	90.00	55.55	59.00	9002190023000
0.0925		2.35	90.00	55.48	59.00	9002190023500
0.0937	3/32	2.38	95.00	58.43	62.00	9002190023800

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0945		2.40	95.00	58.40	62.00	9002190024000
0.0965		2.45	95.00	58.33	62.00	9002190024500
0.0984		2.50	95.00	58.25	62.00	9002190025000
0.1004		2.55	95.00	58.18	62.00	9002190025500
0.1024		2.60	95.00	58.10	62.00	9002190026000
0.1043		2.65	95.00	58.03	62.00	9002190026500
0.1063		2.70	100.00	61.95	66.00	9002190027000
0.1083		2.75	100.00	61.88	66.00	9002190027500
0.1102		2.80	100.00	61.80	66.00	9002190028000
0.1122		2.85	100.00	61.73	66.00	9002190028500
0.1142		2.90	100.00	61.65	66.00	9002190029000
0.1161	#32	2.95	100.00	61.58	66.00	9002190029500
0.1181		3.00	100.00	61.50	66.00	9002190030000
0.1220		3.10	106.00	64.35	69.00	9002190031000
0.1240		3.15	106.00	64.28	69.00	9002190031500
0.1248	1/8	3.17	106.00	64.25	69.00	9002190031700
0.1260		3.20	106.00	64.20	69.00	9002190032000
0.1280		3.25	106.00	64.13	69.00	9002190032500
0.1299		3.30	106.00	64.05	69.00	9002190033000
0.1319		3.35	106.00	63.98	69.00	9002190033500
0.1339		3.40	112.00	67.90	73.00	9002190034000
0.1358	#29	3.45	112.00	67.83	73.00	9002190034500
0.1378		3.50	112.00	67.75	73.00	9002190035000
0.1398		3.55	112.00	67.68	73.00	9002190035500
0.1417		3.60	112.00	67.60	73.00	9002190036000
0.1437		3.65	112.00	67.53	73.00	9002190036500
0.1457		3.70	112.00	67.45	73.00	9002190037000
0.1476		3.75	112.00	67.38	73.00	9002190037500
0.1496	#25	3.80	119.00	72.30	78.00	9002190038000
0.1535		3.90	119.00	72.15	78.00	9002190039000
0.1575		4.00	119.00	72.00	78.00	9002190040000
0.1614		4.10	119.00	71.85	78.00	9002190041000
0.1634		4.15	119.00	71.78	78.00	9002190041500
0.1654		4.20	119.00	71.70	78.00	9002190042000
0.1673		4.25	119.00	71.63	78.00	9002190042500
0.1693	#18	4.30	126.00	75.55	82.00	9002190043000
0.1732		4.40	126.00	75.40	82.00	9002190044000
0.1772	#16	4.50	126.00	75.25	82.00	9002190045000
0.1811		4.60	126.00	75.10	82.00	9002190046000
0.1850	#13	4.70	126.00	74.95	82.00	9002190047000
0.1890	#12	4.80	132.00	79.80	87.00	9002190048000
0.1929		4.90	132.00	79.65	87.00	9002190049000
0.1969		5.00	132.00	79.50	87.00	9002190050000

Taper length drills

Series no. **219**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2008		5.10	132.00	79.35	87.00	9002190051000
0.2047		5.20	132.00	79.20	87.00	9002190052000
0.2087		5.30	132.00	79.05	87.00	9002190053000
0.2126		5.40	139.00	82.90	91.00	9002190054000
0.2165		5.50	139.00	82.75	91.00	9002190055000
0.2205		5.60	139.00	82.60	91.00	9002190056000
0.2244		5.70	139.00	82.45	91.00	9002190057000
0.2283		5.80	139.00	82.30	91.00	9002190058000
0.2323		5.90	139.00	82.15	91.00	9002190059000
0.2362		6.00	139.00	82.00	91.00	9002190060000
0.2402		6.10	148.00	87.85	97.00	9002190061000
0.2441		6.20	148.00	87.70	97.00	9002190062000
0.2461	D	6.25	148.00	87.63	97.00	9002190062500
0.2480		6.30	148.00	87.55	97.00	9002190063000
0.2520		6.40	148.00	87.40	97.00	9002190064000
0.2559		6.50	148.00	87.25	97.00	9002190065000
0.2598		6.60	148.00	87.10	97.00	9002190066000
0.2638		6.70	148.00	86.95	97.00	9002190067000
0.2677		6.80	156.00	91.80	102.00	9002190068000
0.2717	I	6.90	156.00	91.65	102.00	9002190069000
0.2756		7.00	156.00	91.50	102.00	9002190070000
0.2795		7.10	156.00	91.35	102.00	9002190071000
0.2835		7.20	156.00	91.20	102.00	9002190072000
0.2874		7.30	156.00	91.05	102.00	9002190073000
0.2913		7.40	156.00	90.90	102.00	9002190074000
0.2953		7.50	156.00	90.75	102.00	9002190075000
0.3031		7.70	165.00	97.45	109.00	9002190077000
0.3071		7.80	165.00	97.30	109.00	9002190078000
0.3110		7.90	165.00	97.15	109.00	9002190079000
0.3150		8.00	165.00	97.00	109.00	9002190080000
0.3169		8.05	165.00	96.93	109.00	9002190080500
0.3189		8.10	165.00	96.85	109.00	9002190081000
0.3228	P	8.20	165.00	96.70	109.00	9002190082000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3268		8.30	165.00	96.55	109.00	9002190083000
0.3307		8.40	165.00	96.40	109.00	9002190084000
0.3346		8.50	165.00	96.25	109.00	9002190085000
0.3366		8.55	175.00	102.18	115.00	9002190085500
0.3386		8.60	175.00	102.10	115.00	9002190086000
0.3425		8.70	175.00	101.95	115.00	9002190087000
0.3465		8.80	175.00	101.80	115.00	9002190088000
0.3504		8.90	175.00	101.65	115.00	9002190089000
0.3543		9.00	175.00	101.50	115.00	9002190090000
0.3583		9.10	175.00	101.35	115.00	9002190091000
0.3622		9.20	175.00	101.20	115.00	9002190092000
0.3740		9.50	175.00	100.75	115.00	9002190095000
0.3819		9.70	184.00	106.45	121.00	9002190097000
0.3858	W	9.80	184.00	106.30	121.00	9002190098000
0.3937		10.00	184.00	106.00	121.00	9002190100000
0.4016		10.20	184.00	105.70	121.00	9002190102000
0.4134		10.50	184.00	105.25	121.00	9002190105000
0.4252		10.80	195.00	111.80	128.00	9002190108000
0.4331		11.00	195.00	111.50	128.00	9002190110000
0.4528		11.50	195.00	110.75	128.00	9002190115000
0.4724		12.00	205.00	116.00	134.00	9002190120000
0.4921		12.50	205.00	115.25	134.00	9002190125000
0.5118		13.00	205.00	114.50	134.00	9002190130000
0.5157	33/64	13.10	205.00	114.35	134.00	9002190131000
0.5512		14.00	214.00	119.00	140.00	9002190140000
0.5709		14.50	220.00	122.25	144.00	9002190145000
0.5906		15.00	220.00	121.50	144.00	9002190150000
0.6299		16.00	227.00	125.00	149.00	9002190160000
0.6693		17.00	235.00	128.50	154.00	9002190170000
0.7087		18.00	241.00	131.00	158.00	9002190180000
0.7480		19.00	247.00	133.50	162.00	9002190190000
0.7874		20.00	254.00	136.00	166.00	9002190200000

Taper length drills

Series no. **501**

Tool material **HSS**

Surface

~10xD	DIN 340	GT 50	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

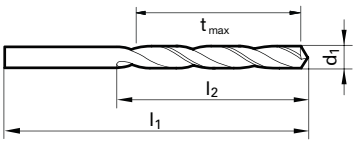
P	Steel	○
M	Stainless steel	
K	Cast iron	
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.370 • relieved cone • especially large flute

soft, long chipping materials up to 500 N/mm² • mild steels • aluminum, Al-alloys (long-chipping) • zinc, refined copper, silumin, Elektron • zamak, argalium, soft plastics, wood

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 493

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	56.00	31.50	33.00	9005010010000
0.0402	#60	1.02	56.00	31.47	33.00	9005010010200
0.0409	#59	1.04	56.00	31.44	33.00	9005010010400
0.0413		1.05	56.00	31.43	33.00	9005010010500
0.0421	#58	1.07	60.00	35.40	37.00	9005010010700
0.0429	#57	1.09	60.00	35.37	37.00	9005010010900
0.0433		1.10	60.00	35.35	37.00	9005010011000
0.0453		1.15	60.00	35.28	37.00	9005010011500
0.0465	#56	1.18	60.00	35.23	37.00	9005010011800
0.0469	3/64	1.19	65.00	39.22	41.00	9005010011900
0.0472		1.20	65.00	39.20	41.00	9005010012000
0.0492		1.25	65.00	39.13	41.00	9005010012500
0.0512		1.30	65.00	39.05	41.00	9005010013000
0.0520	#55	1.32	65.00	39.02	41.00	9005010013200
0.0551	#54	1.40	70.00	42.90	45.00	9005010014000
0.0591		1.50	70.00	42.75	45.00	9005010015000
0.0594	#53	1.51	76.00	47.74	50.00	9005010015100
0.0610		1.55	76.00	47.68	50.00	9005010015500
0.0626	1/16	1.59	76.00	47.62	50.00	9005010015900
0.0630		1.60	76.00	47.60	50.00	9005010016000
0.0634	#52	1.61	76.00	47.59	50.00	9005010016100
0.0669	#51	1.70	76.00	47.45	50.00	9005010017000
0.0689		1.75	80.00	50.38	53.00	9005010017500
0.0701	#50	1.78	80.00	50.33	53.00	9005010017800
0.0709		1.80	80.00	50.30	53.00	9005010018000
0.0728	#49	1.85	80.00	50.23	53.00	9005010018500
0.0748		1.90	80.00	50.15	53.00	9005010019000
0.0768		1.95	85.00	53.08	56.00	9005010019500
0.0780	5/64	1.98	85.00	53.03	56.00	9005010019800
0.0783	#47	1.99	85.00	53.02	56.00	9005010019900
0.0787		2.00	85.00	53.00	56.00	9005010020000
0.0807		2.05	85.00	52.93	56.00	9005010020500
0.0811	#46	2.06	85.00	52.91	56.00	9005010020600
0.0819	#45	2.08	85.00	52.88	56.00	9005010020800
0.0827		2.10	85.00	52.85	56.00	9005010021000
0.0846		2.15	90.00	55.78	59.00	9005010021500
0.0858	#44	2.18	90.00	55.73	59.00	9005010021800
0.0866		2.20	90.00	55.70	59.00	9005010022000
0.0886		2.25	90.00	55.63	59.00	9005010022500

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0890	#43	2.26	90.00	55.61	59.00	9005010022600
0.0906		2.30	90.00	55.55	59.00	9005010023000
0.0925		2.35	90.00	55.48	59.00	9005010023500
0.0933	#42	2.37	95.00	58.45	62.00	9005010023700
0.0937	3/32	2.38	95.00	58.43	62.00	9005010023800
0.0945		2.40	95.00	58.40	62.00	9005010024000
0.0961	#41	2.44	95.00	58.34	62.00	9005010024400
0.0965		2.45	95.00	58.33	62.00	9005010024500
0.0980	#40	2.49	95.00	58.27	62.00	9005010024900
0.0984		2.50	95.00	58.25	62.00	9005010025000
0.0992		2.52	95.00	58.22	62.00	9005010025200
0.0996	#39	2.53	95.00	58.21	62.00	9005010025300
0.1004		2.55	95.00	58.18	62.00	9005010025500
0.1016	#38	2.58	95.00	58.13	62.00	9005010025800
0.1024		2.60	95.00	58.10	62.00	9005010026000
0.1039	#37	2.64	95.00	58.04	62.00	9005010026400
0.1063		2.70	100.00	61.95	66.00	9005010027000
0.1067	#36	2.71	100.00	61.94	66.00	9005010027100
0.1083		2.75	100.00	61.88	66.00	9005010027500
0.1094	7/64	2.78	100.00	61.83	66.00	9005010027800
0.1098	#35	2.79	100.00	61.82	66.00	9005010027900
0.1102		2.80	100.00	61.80	66.00	9005010028000
0.1110	#34	2.82	100.00	61.77	66.00	9005010028200
0.1122		2.85	100.00	61.73	66.00	9005010028500
0.1130	#33	2.87	100.00	61.70	66.00	9005010028700
0.1142		2.90	100.00	61.65	66.00	9005010029000
0.1161	#32	2.95	100.00	61.58	66.00	9005010029500
0.1181		3.00	100.00	61.50	66.00	9005010030000
0.1201	#31	3.05	106.00	64.43	69.00	9005010030500
0.1220		3.10	106.00	64.35	69.00	9005010031000
0.1248	1/8	3.17	106.00	64.25	69.00	9005010031700
0.1260		3.20	106.00	64.20	69.00	9005010032000
0.1280		3.25	106.00	64.13	69.00	9005010032500
0.1283	#30	3.26	106.00	64.11	69.00	9005010032600
0.1299		3.30	106.00	64.05	69.00	9005010033000
0.1319		3.35	106.00	63.98	69.00	9005010033500
0.1339		3.40	112.00	67.90	73.00	9005010034000
0.1358	#29	3.45	112.00	67.83	73.00	9005010034500
0.1378		3.50	112.00	67.75	73.00	9005010035000

Taper length drills

Series no. **501**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1406	9/64 #28	3.57	112.00	67.65	73.00	9005010035700
0.1417		3.60	112.00	67.60	73.00	9005010036000
0.1437		3.65	112.00	67.53	73.00	9005010036500
0.1441	#27	3.66	112.00	67.51	73.00	9005010036600
0.1457		3.70	112.00	67.45	73.00	9005010037000
0.1496	#25	3.80	119.00	72.30	78.00	9005010038000
0.1520	#24	3.86	119.00	72.21	78.00	9005010038600
0.1535		3.90	119.00	72.15	78.00	9005010039000
0.1539	#23	3.91	119.00	72.14	78.00	9005010039100
0.1563	5/32	3.97	119.00	72.05	78.00	9005010039700
0.1571	#22	3.99	119.00	72.02	78.00	9005010039900
0.1575		4.00	119.00	72.00	78.00	9005010040000
0.1591	#21	4.04	119.00	71.94	78.00	9005010040400
0.1610	#20	4.09	119.00	71.87	78.00	9005010040900
0.1614		4.10	119.00	71.85	78.00	9005010041000
0.1654		4.20	119.00	71.70	78.00	9005010042000
0.1661	#19	4.22	119.00	71.67	78.00	9005010042200
0.1673		4.25	119.00	71.63	78.00	9005010042500
0.1693	#18	4.30	126.00	75.55	82.00	9005010043000
0.1720	11/64	4.37	126.00	75.45	82.00	9005010043700
0.1728	#17	4.39	126.00	75.42	82.00	9005010043900
0.1732		4.40	126.00	75.40	82.00	9005010044000
0.1772	#16	4.50	126.00	75.25	82.00	9005010045000
0.1799	#15	4.57	126.00	75.15	82.00	9005010045700
0.1811		4.60	126.00	75.10	82.00	9005010046000
0.1819	#14	4.62	126.00	75.07	82.00	9005010046200
0.1850	#13	4.70	126.00	74.95	82.00	9005010047000
0.1870		4.75	126.00	74.88	82.00	9005010047500
0.1874	3/16	4.76	132.00	79.86	87.00	9005010047600
0.1890	#12	4.80	132.00	79.80	87.00	9005010048000
0.1909	#11	4.85	132.00	79.73	87.00	9005010048500
0.1929		4.90	132.00	79.65	87.00	9005010049000
0.1937	#10	4.92	132.00	79.62	87.00	9005010049200
0.1961	#9	4.98	132.00	79.53	87.00	9005010049800
0.1969		5.00	132.00	79.50	87.00	9005010050000
0.1988		5.05	132.00	79.43	87.00	9005010050500
0.1992	#8	5.06	132.00	79.41	87.00	9005010050600
0.2008		5.10	132.00	79.35	87.00	9005010051000
0.2012	#7	5.11	132.00	79.34	87.00	9005010051100
0.2031	13/64	5.16	132.00	79.26	87.00	9005010051600
0.2039	#6	5.18	132.00	79.23	87.00	9005010051800
0.2047		5.20	132.00	79.20	87.00	9005010052000
0.2055	#5	5.22	132.00	79.17	87.00	9005010052200
0.2087		5.30	132.00	79.05	87.00	9005010053000
0.2091	#4	5.31	139.00	83.04	91.00	9005010053100
0.2126		5.40	139.00	82.90	91.00	9005010054000
0.2130	#3	5.41	139.00	82.89	91.00	9005010054100
0.2165		5.50	139.00	82.75	91.00	9005010055000
0.2189	7/32	5.56	139.00	82.66	91.00	9005010055600
0.2205		5.60	139.00	82.60	91.00	9005010056000
0.2209	#2	5.61	139.00	82.59	91.00	9005010056100
0.2244		5.70	139.00	82.45	91.00	9005010057000
0.2280	#1	5.79	139.00	82.32	91.00	9005010057900
0.2283		5.80	139.00	82.30	91.00	9005010058000
0.2323		5.90	139.00	82.15	91.00	9005010059000
0.2339	A	5.94	139.00	82.09	91.00	9005010059400
0.2343	15/64	5.95	139.00	82.08	91.00	9005010059500
0.2362		6.00	139.00	82.00	91.00	9005010060000
0.2378	B	6.04	148.00	87.94	97.00	9005010060400
0.2402		6.10	148.00	87.85	97.00	9005010061000
0.2421	C	6.15	148.00	87.78	97.00	9005010061500
0.2441		6.20	148.00	87.70	97.00	9005010062000
0.2461	D	6.25	148.00	87.63	97.00	9005010062500

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2480		6.30	148.00	87.55	97.00	9005010063000
0.2500	1/4 E	6.35	148.00	87.48	97.00	9005010063500
0.2520		6.40	148.00	87.40	97.00	9005010064000
0.2559		6.50	148.00	87.25	97.00	9005010065000
0.2571		6.53	148.00	87.21	97.00	9005010065300
0.2598		6.60	148.00	87.10	97.00	9005010066000
0.2610	G	6.63	148.00	87.06	97.00	9005010066300
0.2638		6.70	148.00	86.95	97.00	9005010067000
0.2657	17/64 H	6.75	156.00	91.88	102.00	9005010067500
0.2677		6.80	156.00	91.80	102.00	9005010068000
0.2717	I	6.90	156.00	91.65	102.00	9005010069000
0.2756		7.00	156.00	91.50	102.00	9005010070000
0.2772		7.04	156.00	91.44	102.00	9005010070400
0.2795		7.10	156.00	91.35	102.00	9005010071000
0.2811	9/32 K	7.14	156.00	91.29	102.00	9005010071400
0.2835		7.20	156.00	91.20	102.00	9005010072000
0.2874		7.30	156.00	91.05	102.00	9005010073000
0.2902	L	7.37	156.00	90.95	102.00	9005010073700
0.2913		7.40	156.00	90.90	102.00	9005010074000
0.2949	M	7.49	156.00	90.77	102.00	9005010074900
0.2953		7.50	156.00	90.75	102.00	9005010075000
0.2969	19/64	7.54	165.00	97.69	109.00	9005010075400
0.2992		7.60	165.00	97.60	109.00	9005010076000
0.3020	N	7.67	165.00	97.50	109.00	9005010076700
0.3031		7.70	165.00	97.45	109.00	9005010077000
0.3071		7.80	165.00	97.30	109.00	9005010078000
0.3110		7.90	165.00	97.15	109.00	9005010079000
0.3126	5/16	7.94	165.00	97.09	109.00	9005010079400
0.3150		8.00	165.00	97.00	109.00	9005010080000
0.3161	O	8.03	165.00	96.96	109.00	9005010080300
0.3189		8.10	165.00	96.85	109.00	9005010081000
0.3228	P	8.20	165.00	96.70	109.00	9005010082000
0.3268		8.30	165.00	96.55	109.00	9005010083000
0.3280	21/64	8.33	165.00	96.51	109.00	9005010083300
0.3307		8.40	165.00	96.40	109.00	9005010084000
0.3319	Q	8.43	165.00	96.36	109.00	9005010084300
0.3346		8.50	165.00	96.25	109.00	9005010085000
0.3386		8.60	175.00	102.10	115.00	9005010086000
0.3390	R	8.61	175.00	102.09	115.00	9005010086100
0.3425		8.70	175.00	101.95	115.00	9005010087000
0.3437	11/32	8.73	175.00	101.91	115.00	9005010087300
0.3465		8.80	175.00	101.80	115.00	9005010088000
0.3504		8.90	175.00	101.65	115.00	9005010089000
0.3543		9.00	175.00	101.50	115.00	9005010090000
0.3579	T	9.09	175.00	101.37	115.00	9005010090900
0.3583		9.10	175.00	101.35	115.00	9005010091000
0.3594	23/64	9.13	175.00	101.31	115.00	9005010091300
0.3622		9.20	175.00	101.20	115.00	9005010092000
0.3661		9.30	175.00	101.05	115.00	9005010093000
0.3677	U	9.34	175.00	100.99	115.00	9005010093400
0.3681		9.35	175.00	100.98	115.00	9005010093500
0.3701		9.40	175.00	100.90	115.00	9005010094000
0.3740		9.50	175.00	100.75	115.00	9005010095000
0.3748	3/8	9.52	184.00	106.72	121.00	9005010095200
0.3772	V	9.58	184.00	106.63	121.00	9005010095800
0.3780		9.60	184.00	106.60	121.00	9005010096000
0.3858	W	9.80	184.00	106.30	121.00	9005010098000
0.3898		9.90	184.00	106.15	121.00	9005010099000
0.3906	25/64	9.92	184.00	106.12	121.00	9005010099200
0.3937		10.00	184.00	106.00	121.00	9005010100000
0.3969	X	10.08	184.00	105.88	121.00	9005010100800
0.3976		10.10	184.00	105.85	121.00	9005010101000
0.4016		10.20	184.00	105.70	121.00	9005010102000

Taper length drills

Series no. **501**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4039	Y	10.26	184.00	105.61	121.00	9005010102600
0.4055		10.30	184.00	105.55	121.00	9005010103000
0.4063	13/32	10.32	184.00	105.52	121.00	9005010103200
0.4094		10.40	184.00	105.40	121.00	9005010104000
0.4134		10.50	184.00	105.25	121.00	9005010105000
0.4173		10.60	184.00	105.10	121.00	9005010106000
0.4213		10.70	195.00	111.95	128.00	9005010107000
0.4220	27/64	10.72	195.00	111.92	128.00	9005010107200
0.4252		10.80	195.00	111.80	128.00	9005010108000
0.4331		11.00	195.00	111.50	128.00	9005010110000
0.4374	7/16	11.11	195.00	111.34	128.00	9005010111100
0.4409		11.20	195.00	111.20	128.00	9005010112000
0.4449		11.30	195.00	111.05	128.00	9005010113000
0.4488		11.40	195.00	110.90	128.00	9005010114000
0.4528		11.50	195.00	110.75	128.00	9005010115000
0.4531	29/64	11.51	195.00	110.74	128.00	9005010115100

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4567		11.60	195.00	110.60	128.00	9005010116000
0.4626		11.75	195.00	110.38	128.00	9005010117500
0.4646		11.80	195.00	110.30	128.00	9005010118000
0.4685		11.90	205.00	116.15	134.00	9005010119000
0.4689	15/32	11.91	205.00	116.14	134.00	9005010119100
0.4724		12.00	205.00	116.00	134.00	9005010120000
0.4803		12.20	205.00	115.70	134.00	9005010122000
0.4843	31/64	12.30	205.00	115.55	134.00	9005010123000
0.4921		12.50	205.00	115.25	134.00	9005010125000
0.5000	1/2	12.70	205.00	114.95	134.00	9005010127000
0.5118		13.00	205.00	114.50	134.00	9005010130000
0.5157	33/64	13.10	205.00	114.35	134.00	9005010131000
0.5311	17/32	13.49	214.00	119.77	140.00	9005010134900
0.5469	35/64	13.89	214.00	119.17	140.00	9005010138900
0.5512		14.00	214.00	119.00	140.00	9005010140000

Taper length drills

Series no. **535**

~10xD	DIN 340	GT 100	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface: >Ø 2.36

P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

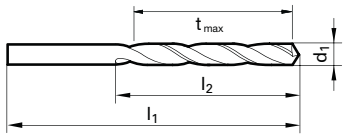
●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • wide flutes • in case of unsatisfactory chip evacuation

cast iron and steels up to 1000 N/mm² • Not recommended for: CrNi steels, stainless steels



$t_{max} = l_2 - 1.5 \times d_1$



Speeds and feeds information on pg. 498

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	56.00	31.50	33.00	9005350010000
0.0402	#60	1.02	56.00	31.47	33.00	9005350010200
0.0409	#59	1.04	56.00	31.44	33.00	9005350010400
0.0413		1.05	56.00	31.43	33.00	9005350010500
0.0421	#58	1.07	60.00	35.40	37.00	9005350010700
0.0429	#57	1.09	60.00	35.37	37.00	9005350010900
0.0433		1.10	60.00	35.35	37.00	9005350011000
0.0453		1.15	60.00	35.28	37.00	9005350011500
0.0465	#56	1.18	60.00	35.23	37.00	9005350011800
0.0469	3/64	1.19	65.00	39.22	41.00	9005350011900
0.0472		1.20	65.00	39.20	41.00	9005350012000
0.0492		1.25	65.00	39.13	41.00	9005350012500
0.0512		1.30	65.00	39.05	41.00	9005350013000
0.0520	#55	1.32	65.00	39.02	41.00	9005350013200
0.0531		1.35	70.00	42.98	45.00	9005350013500
0.0551	#54	1.40	70.00	42.90	45.00	9005350014000
0.0571		1.45	70.00	42.83	45.00	9005350014500
0.0591		1.50	70.00	42.75	45.00	9005350015000
0.0594	#53	1.51	76.00	47.74	50.00	9005350015100
0.0598		1.52	76.00	47.72	50.00	9005350015200
0.0610		1.55	76.00	47.68	50.00	9005350015500
0.0626	1/16	1.59	76.00	47.62	50.00	9005350015900
0.0630		1.60	76.00	47.60	50.00	9005350016000
0.0650		1.65	76.00	47.53	50.00	9005350016500
0.0657		1.67	76.00	47.50	50.00	9005350016700
0.0669	#51	1.70	76.00	47.45	50.00	9005350017000
0.0689		1.75	80.00	50.38	53.00	9005350017500
0.0701	#50	1.78	80.00	50.33	53.00	9005350017800
0.0709		1.80	80.00	50.30	53.00	9005350018000
0.0728	#49	1.85	80.00	50.23	53.00	9005350018500
0.0748		1.90	80.00	50.15	53.00	9005350019000
0.0760	#48	1.93	85.00	53.11	56.00	9005350019300
0.0768		1.95	85.00	53.08	56.00	9005350019500
0.0780	5/64	1.98	85.00	53.03	56.00	9005350019800
0.0783	#47	1.99	85.00	53.02	56.00	9005350019900
0.0787		2.00	85.00	53.00	56.00	9005350020000
0.0807		2.05	85.00	52.93	56.00	9005350020500
0.0811	#46	2.06	85.00	52.91	56.00	9005350020600
0.0819	#45	2.08	85.00	52.88	56.00	9005350020800
0.0827		2.10	85.00	52.85	56.00	9005350021000
0.0846		2.15	90.00	55.78	59.00	9005350021500
0.0858	#44	2.18	90.00	55.73	59.00	9005350021800
0.0866		2.20	90.00	55.70	59.00	9005350022000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0886		2.25	90.00	55.63	59.00	9005350022500
0.0890	#43	2.26	90.00	55.61	59.00	9005350022600
0.0906		2.30	90.00	55.55	59.00	9005350023000
0.0925		2.35	90.00	55.48	59.00	9005350023500
0.0933	#42	2.37	95.00	58.45	62.00	9005350023700
0.0937	3/32	2.38	95.00	58.43	62.00	9005350023800
0.0945		2.40	95.00	58.40	62.00	9005350024000
0.0961	#41	2.44	95.00	58.34	62.00	9005350024400
0.0965		2.45	95.00	58.33	62.00	9005350024500
0.0980	#40	2.49	95.00	58.27	62.00	9005350024900
0.0984		2.50	95.00	58.25	62.00	9005350025000
0.0996	#39	2.53	95.00	58.21	62.00	9005350025300
0.1004		2.55	95.00	58.18	62.00	9005350025500
0.1016	#38	2.58	95.00	58.13	62.00	9005350025800
0.1024		2.60	95.00	58.10	62.00	9005350026000
0.1039	#37	2.64	95.00	58.04	62.00	9005350026400
0.1043		2.65	95.00	58.03	62.00	9005350026500
0.1063		2.70	100.00	61.95	66.00	9005350027000
0.1067	#36	2.71	100.00	61.94	66.00	9005350027100
0.1083		2.75	100.00	61.88	66.00	9005350027500
0.1094	7/64	2.78	100.00	61.83	66.00	9005350027800
0.1098	#35	2.79	100.00	61.82	66.00	9005350027900
0.1102		2.80	100.00	61.80	66.00	9005350028000
0.1110	#34	2.82	100.00	61.77	66.00	9005350028200
0.1114		2.83	100.00	61.76	66.00	9005350028300
0.1122		2.85	100.00	61.73	66.00	9005350028500
0.1130	#33	2.87	100.00	61.70	66.00	9005350028700
0.1142		2.90	100.00	61.65	66.00	9005350029000
0.1161	#32	2.95	100.00	61.58	66.00	9005350029500
0.1181		3.00	100.00	61.50	66.00	9005350030000
0.1201	#31	3.05	106.00	64.43	69.00	9005350030500
0.1220		3.10	106.00	64.35	69.00	9005350031000
0.1240		3.15	106.00	64.28	69.00	9005350031500
0.1248	1/8	3.17	106.00	64.25	69.00	9005350031700
0.1260		3.20	106.00	64.20	69.00	9005350032000
0.1280		3.25	106.00	64.13	69.00	9005350032500
0.1283	#30	3.26	106.00	64.11	69.00	9005350032600
0.1287		3.27	106.00	64.10	69.00	9005350032700
0.1299		3.30	106.00	64.05	69.00	9005350033000
0.1339		3.40	112.00	67.90	73.00	9005350034000
0.1358	#29	3.45	112.00	67.83	73.00	9005350034500
0.1378		3.50	112.00	67.75	73.00	9005350035000
0.1406	9/64 #28	3.57	112.00	67.65	73.00	9005350035700

Taper length drills

Series no. **535**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1417		3.60	112.00	67.60	73.00	9005350036000
0.1441	#27	3.66	112.00	67.51	73.00	9005350036600
0.1457		3.70	112.00	67.45	73.00	9005350037000
0.1469	#26	3.73	112.00	67.41	73.00	9005350037300
0.1476		3.75	112.00	67.38	73.00	9005350037500
0.1496	#25	3.80	119.00	72.30	78.00	9005350038000
0.1520	#24	3.86	119.00	72.21	78.00	9005350038600
0.1535		3.90	119.00	72.15	78.00	9005350039000
0.1539	#23	3.91	119.00	72.14	78.00	9005350039100
0.1563	5/32	3.97	119.00	72.05	78.00	9005350039700
0.1571	#22	3.99	119.00	72.02	78.00	9005350039900
0.1575		4.00	119.00	72.00	78.00	9005350040000
0.1591	#21	4.04	119.00	71.94	78.00	9005350040400
0.1610	#20	4.09	119.00	71.87	78.00	9005350040900
0.1614		4.10	119.00	71.85	78.00	9005350041000
0.1634		4.15	119.00	71.78	78.00	9005350041500
0.1654		4.20	119.00	71.70	78.00	9005350042000
0.1661	#19	4.22	119.00	71.67	78.00	9005350042200
0.1673		4.25	119.00	71.63	78.00	9005350042500
0.1693	#18	4.30	126.00	75.55	82.00	9005350043000
0.1713		4.35	126.00	75.48	82.00	9005350043500
0.1720	11/64	4.37	126.00	75.45	82.00	9005350043700
0.1728	#17	4.39	126.00	75.42	82.00	9005350043900
0.1732		4.40	126.00	75.40	82.00	9005350044000
0.1772	#16	4.50	126.00	75.25	82.00	9005350045000
0.1799	#15	4.57	126.00	75.15	82.00	9005350045700
0.1811		4.60	126.00	75.10	82.00	9005350046000
0.1819	#14	4.62	126.00	75.07	82.00	9005350046200
0.1850	#13	4.70	126.00	74.95	82.00	9005350047000
0.1870		4.75	126.00	74.88	82.00	9005350047500
0.1874	3/16	4.76	132.00	79.86	87.00	9005350047600
0.1890	#12	4.80	132.00	79.80	87.00	9005350048000
0.1909	#11	4.85	132.00	79.73	87.00	9005350048500
0.1929		4.90	132.00	79.65	87.00	9005350049000
0.1937	#10	4.92	132.00	79.62	87.00	9005350049200
0.1961	#9	4.98	132.00	79.53	87.00	9005350049800
0.1969		5.00	132.00	79.50	87.00	9005350050000
0.1988		5.05	132.00	79.43	87.00	9005350050500
0.1992	#8	5.06	132.00	79.41	87.00	9005350050600
0.2008		5.10	132.00	79.35	87.00	9005350051000
0.2012	#7	5.11	132.00	79.34	87.00	9005350051100
0.2031	13/64	5.16	132.00	79.26	87.00	9005350051600
0.2039	#6	5.18	132.00	79.23	87.00	9005350051800
0.2047		5.20	132.00	79.20	87.00	9005350052000
0.2055	#5	5.22	132.00	79.17	87.00	9005350052200
0.2067		5.25	132.00	79.13	87.00	9005350052500
0.2087		5.30	132.00	79.05	87.00	9005350053000
0.2091	#4	5.31	139.00	83.04	91.00	9005350053100
0.2126		5.40	139.00	82.90	91.00	9005350054000
0.2130	#3	5.41	139.00	82.89	91.00	9005350054100
0.2165		5.50	139.00	82.75	91.00	9005350055000
0.2189	7/32	5.56	139.00	82.66	91.00	9005350055600
0.2205		5.60	139.00	82.60	91.00	9005350056000
0.2209	#2	5.61	139.00	82.59	91.00	9005350056100
0.2244		5.70	139.00	82.45	91.00	9005350057000
0.2264		5.75	139.00	82.38	91.00	9005350057500
0.2280	#1	5.79	139.00	82.32	91.00	9005350057900
0.2283		5.80	139.00	82.30	91.00	9005350058000
0.2323		5.90	139.00	82.15	91.00	9005350059000
0.2339	A	5.94	139.00	82.09	91.00	9005350059400
0.2343	15/64	5.95	139.00	82.08	91.00	9005350059500
0.2362		6.00	139.00	82.00	91.00	9005350060000
0.2378	B	6.04	148.00	87.94	97.00	9005350060400
0.2382		6.05	148.00	87.93	97.00	9005350060500
0.2402		6.10	148.00	87.85	97.00	9005350061000
0.2421	C	6.15	148.00	87.78	97.00	9005350061500
0.2441		6.20	148.00	87.70	97.00	9005350062000
0.2461	D	6.25	148.00	87.63	97.00	9005350062500
0.2480		6.30	148.00	87.55	97.00	9005350063000
0.2500	1/4 E	6.35	148.00	87.48	97.00	9005350063500
0.2520		6.40	148.00	87.40	97.00	9005350064000
0.2559		6.50	148.00	87.25	97.00	9005350065000
0.2571		6.53	148.00	87.21	97.00	9005350065300
0.2598		6.60	148.00	87.10	97.00	9005350066000
0.2610	G	6.63	148.00	87.06	97.00	9005350066300
0.2638		6.70	148.00	86.95	97.00	9005350067000
0.2657	17/64 H	6.75	156.00	91.88	102.00	9005350067500
0.2677		6.80	156.00	91.80	102.00	9005350068000
0.2717	I	6.90	156.00	91.65	102.00	9005350069000
0.2756		7.00	156.00	91.50	102.00	9005350070000
0.2768	J	7.03	156.00	91.46	102.00	9005350070300
0.2772		7.04	156.00	91.44	102.00	9005350070400
0.2795		7.10	156.00	91.35	102.00	9005350071000
0.2811	9/32 K	7.14	156.00	91.29	102.00	9005350071400
0.2835		7.20	156.00	91.20	102.00	9005350072000
0.2874		7.30	156.00	91.05	102.00	9005350073000
0.2902	L	7.37	156.00	90.95	102.00	9005350073700
0.2913		7.40	156.00	90.90	102.00	9005350074000
0.2933		7.45	156.00	90.83	102.00	9005350074500
0.2949	M	7.49	156.00	90.77	102.00	9005350074900
0.2953		7.50	156.00	90.75	102.00	9005350075000
0.2969	19/64	7.54	165.00	97.69	109.00	9005350075400
0.2992		7.60	165.00	97.60	109.00	9005350076000
0.3020	N	7.67	165.00	97.50	109.00	9005350076700
0.3031		7.70	165.00	97.45	109.00	9005350077000
0.3051		7.75	165.00	97.38	109.00	9005350077500
0.3071		7.80	165.00	97.30	109.00	9005350078000
0.3091		7.85	165.00	97.23	109.00	9005350078500
0.3110		7.90	165.00	97.15	109.00	9005350079000
0.3126	5/16	7.94	165.00	97.09	109.00	9005350079400
0.3150		8.00	165.00	97.00	109.00	9005350080000
0.3161	O	8.03	165.00	96.96	109.00	9005350080300
0.3189		8.10	165.00	96.85	109.00	9005350081000
0.3228	P	8.20	165.00	96.70	109.00	9005350082000
0.3268		8.30	165.00	96.55	109.00	9005350083000
0.3280	21/64	8.33	165.00	96.51	109.00	9005350083300
0.3307		8.40	165.00	96.40	109.00	9005350084000
0.3319	Q	8.43	165.00	96.36	109.00	9005350084300
0.3346		8.50	165.00	96.25	109.00	9005350085000
0.3386		8.60	175.00	102.10	115.00	9005350086000
0.3390	R	8.61	175.00	102.09	115.00	9005350086100
0.3425		8.70	175.00	101.95	115.00	9005350087000
0.3437	11/32	8.73	175.00	101.91	115.00	9005350087300
0.3465		8.80	175.00	101.80	115.00	9005350088000
0.3480	S	8.84	175.00	101.74	115.00	9005350088400
0.3504		8.90	175.00	101.65	115.00	9005350089000
0.3543		9.00	175.00	101.50	115.00	9005350090000
0.3579	T	9.09	175.00	101.37	115.00	9005350090900
0.3583		9.10	175.00	101.35	115.00	9005350091000
0.3594	23/64	9.13	175.00	101.31	115.00	9005350091300
0.3622		9.20	175.00	101.20	115.00	9005350092000
0.3642		9.25	175.00	101.13	115.00	9005350092500
0.3661		9.30	175.00	101.05	115.00	9005350093000
0.3681		9.35	175.00	100.98	115.00	9005350093500
0.3701		9.40	175.00	100.90	115.00	9005350094000
0.3740		9.50	175.00	100.75	115.00	9005350095000
0.3748	3/8	9.52	184.00	106.72	121.00	9005350095200
0.3780		9.60	184.00	106.60	121.00	9005350096000
0.3819		9.70	184.00	106.45	121.00	9005350097000
0.3858	W	9.80	184.00	106.30	121.00	9005350098000

Taper length drills

Series no. **535**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3898		9.90	184.00	106.15	121.00	9005350099000
0.3906	25/64	9.92	184.00	106.12	121.00	9005350099200
0.3937		10.00	184.00	106.00	121.00	9005350100000
0.3969	X	10.08	184.00	105.88	121.00	9005350100800
0.3976		10.10	184.00	105.85	121.00	9005350101000
0.4016		10.20	184.00	105.70	121.00	9005350102000
0.4055		10.30	184.00	105.55	121.00	9005350103000
0.4063	13/32	10.32	184.00	105.52	121.00	9005350103200
0.4094		10.40	184.00	105.40	121.00	9005350104000
0.4130	Z	10.49	184.00	105.27	121.00	9005350104900
0.4134		10.50	184.00	105.25	121.00	9005350105000
0.4220	27/64	10.72	195.00	111.92	128.00	9005350107200
0.4252		10.80	195.00	111.80	128.00	9005350108000
0.4291		10.90	195.00	111.65	128.00	9005350109000
0.4331		11.00	195.00	111.50	128.00	9005350110000
0.4370		11.10	195.00	111.35	128.00	9005350111000
0.4374	7/16	11.11	195.00	111.34	128.00	9005350111100
0.4449		11.30	195.00	111.05	128.00	9005350113000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4488		11.40	195.00	110.90	128.00	9005350114000
0.4528		11.50	195.00	110.75	128.00	9005350115000
0.4531	29/64	11.51	195.00	110.74	128.00	9005350115100
0.4646		11.80	195.00	110.30	128.00	9005350118000
0.4685		11.90	205.00	116.15	134.00	9005350119000
0.4689	15/32	11.91	205.00	116.14	134.00	9005350119100
0.4724		12.00	205.00	116.00	134.00	9005350120000
0.4843	31/64	12.30	205.00	115.55	134.00	9005350123000
0.4921		12.50	205.00	115.25	134.00	9005350125000
0.4961		12.60	205.00	115.10	134.00	9005350126000
0.5000	1/2	12.70	205.00	114.95	134.00	9005350127000
0.5118		13.00	205.00	114.50	134.00	9005350130000
0.5157	33/64	13.10	205.00	114.35	134.00	9005350131000
0.5311	17/32	13.49	214.00	119.77	140.00	9005350134900
0.5315		13.50	214.00	119.75	140.00	9005350135000
0.5469	35/64	13.89	214.00	119.17	140.00	9005350138900
0.5472		13.90	214.00	119.15	140.00	9005350139000
0.5512		14.00	214.00	119.00	140.00	9005350140000

Taper length drills

Series no. **668**

Tool material **HSS**

Surface **S**

~10xD	DIN 340	GT 100	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

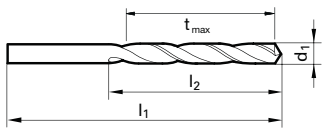
P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • wide flutes • in case of unsatisfactory chip evacuation

cast iron and steels up to 1000 N/mm² • Not recommended for: CrNi steels, stainless steels

$t_{max} = l_2 - 1.5 \times d_1$





Speeds and feeds information on pg. 520

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	56.00	31.50	33.00	9006680010000
0.0429	#57	1.09	60.00	35.37	37.00	9006680010900
0.0433		1.10	60.00	35.35	37.00	9006680011000
0.0465	#56	1.18	60.00	35.23	37.00	9006680011800
0.0469	3/64	1.19	65.00	39.22	41.00	9006680011900
0.0472		1.20	65.00	39.20	41.00	9006680012000
0.0512		1.30	65.00	39.05	41.00	9006680013000
0.0520	#55	1.32	65.00	39.02	41.00	9006680013200
0.0551	#54	1.40	70.00	42.90	45.00	9006680014000
0.0591		1.50	70.00	42.75	45.00	9006680015000
0.0594	#53	1.51	76.00	47.74	50.00	9006680015100
0.0626	1/16	1.59	76.00	47.62	50.00	9006680015900
0.0630		1.60	76.00	47.60	50.00	9006680016000
0.0650		1.65	76.00	47.53	50.00	9006680016500
0.0669	#51	1.70	76.00	47.45	50.00	9006680017000
0.0709		1.80	80.00	50.30	53.00	9006680018000
0.0728	#49	1.85	80.00	50.23	53.00	9006680018500
0.0748		1.90	80.00	50.15	53.00	9006680019000
0.0760	#48	1.93	85.00	53.11	56.00	9006680019300
0.0768		1.95	85.00	53.08	56.00	9006680019500
0.0780	5/64	1.98	85.00	53.03	56.00	9006680019800
0.0783	#47	1.99	85.00	53.02	56.00	9006680019900
0.0787		2.00	85.00	53.00	56.00	9006680020000
0.0811	#46	2.06	85.00	52.91	56.00	9006680020600
0.0819	#45	2.08	85.00	52.88	56.00	9006680020800
0.0827		2.10	85.00	52.85	56.00	9006680021000
0.0858	#44	2.18	90.00	55.73	59.00	9006680021800
0.0866		2.20	90.00	55.70	59.00	9006680022000
0.0886		2.25	90.00	55.63	59.00	9006680022500
0.0890	#43	2.26	90.00	55.61	59.00	9006680022600
0.0906		2.30	90.00	55.55	59.00	9006680023000
0.0937	3/32	2.38	95.00	58.43	62.00	9006680023800
0.0945		2.40	95.00	58.40	62.00	9006680024000
0.0980	#40	2.49	95.00	58.27	62.00	9006680024900
0.0984		2.50	95.00	58.25	62.00	9006680025000
0.0996	#39	2.53	95.00	58.21	62.00	9006680025300
0.1016	#38	2.58	95.00	58.13	62.00	9006680025800
0.1024		2.60	95.00	58.10	62.00	9006680026000
0.1039	#37	2.64	95.00	58.04	62.00	9006680026400
0.1063		2.70	100.00	61.95	66.00	9006680027000
0.1067	#36	2.71	100.00	61.94	66.00	9006680027100

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1094	7/64	2.78	100.00	61.83	66.00	9006680027800
0.1102		2.80	100.00	61.80	66.00	9006680028000
0.1110	#34	2.82	100.00	61.77	66.00	9006680028200
0.1130	#33	2.87	100.00	61.70	66.00	9006680028700
0.1142		2.90	100.00	61.65	66.00	9006680029000
0.1161	#32	2.95	100.00	61.58	66.00	9006680029500
0.1181		3.00	100.00	61.50	66.00	9006680030000
0.1201	#31	3.05	106.00	64.43	69.00	9006680030500
0.1220		3.10	106.00	64.35	69.00	9006680031000
0.1248	1/8	3.17	106.00	64.25	69.00	9006680031700
0.1260		3.20	106.00	64.20	69.00	9006680032000
0.1299		3.30	106.00	64.05	69.00	9006680033000
0.1339		3.40	112.00	67.90	73.00	9006680034000
0.1358	#29	3.45	112.00	67.83	73.00	9006680034500
0.1378		3.50	112.00	67.75	73.00	9006680035000
0.1406	9/64 #28	3.57	112.00	67.65	73.00	9006680035700
0.1417		3.60	112.00	67.60	73.00	9006680036000
0.1457		3.70	112.00	67.45	73.00	9006680037000
0.1469	#26	3.73	112.00	67.41	73.00	9006680037300
0.1496	#25	3.80	119.00	72.30	78.00	9006680038000
0.1520	#24	3.86	119.00	72.21	78.00	9006680038600
0.1524		3.87	119.00	72.20	78.00	9006680038700
0.1535		3.90	119.00	72.15	78.00	9006680039000
0.1563	5/32	3.97	119.00	72.05	78.00	9006680039700
0.1575		4.00	119.00	72.00	78.00	9006680040000
0.1591	#21	4.04	119.00	71.94	78.00	9006680040400
0.1610	#20	4.09	119.00	71.87	78.00	9006680040900
0.1614		4.10	119.00	71.85	78.00	9006680041000
0.1654		4.20	119.00	71.70	78.00	9006680042000
0.1661	#19	4.22	119.00	71.67	78.00	9006680042200
0.1693	#18	4.30	126.00	75.55	82.00	9006680043000
0.1720	11/64	4.37	126.00	75.45	82.00	9006680043700
0.1732		4.40	126.00	75.40	82.00	9006680044000
0.1772	#16	4.50	126.00	75.25	82.00	9006680045000
0.1811		4.60	126.00	75.10	82.00	9006680046000
0.1850	#13	4.70	126.00	74.95	82.00	9006680047000
0.1874	3/16	4.76	132.00	79.86	87.00	9006680047600
0.1890	#12	4.80	132.00	79.80	87.00	9006680048000
0.1909	#11	4.85	132.00	79.73	87.00	9006680048500
0.1929		4.90	132.00	79.65	87.00	9006680049000
0.1933		4.91	132.00	79.64	87.00	9006680049100

Taper length drills

Series no. **668**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1937	#10	4.92	132.00	79.62	87.00	9006680049200
0.1969		5.00	132.00	79.50	87.00	9006680050000
0.1992	#8	5.06	132.00	79.41	87.00	9006680050600
0.2008		5.10	132.00	79.35	87.00	9006680051000
0.2031	13/64	5.16	132.00	79.26	87.00	9006680051600
0.2047		5.20	132.00	79.20	87.00	9006680052000
0.2087		5.30	132.00	79.05	87.00	9006680053000
0.2091	#4	5.31	139.00	83.04	91.00	9006680053100
0.2126		5.40	139.00	82.90	91.00	9006680054000
0.2165		5.50	139.00	82.75	91.00	9006680055000
0.2189	7/32	5.56	139.00	82.66	91.00	9006680055600
0.2205		5.60	139.00	82.60	91.00	9006680056000
0.2244		5.70	139.00	82.45	91.00	9006680057000
0.2283		5.80	139.00	82.30	91.00	9006680058000
0.2323		5.90	139.00	82.15	91.00	9006680059000
0.2343	15/64	5.95	139.00	82.08	91.00	9006680059500
0.2362		6.00	139.00	82.00	91.00	9006680060000
0.2378	B	6.04	148.00	87.94	97.00	9006680060400
0.2402		6.10	148.00	87.85	97.00	9006680061000
0.2421	C	6.15	148.00	87.78	97.00	9006680061500
0.2441		6.20	148.00	87.70	97.00	9006680062000
0.2461	D	6.25	148.00	87.63	97.00	9006680062500
0.2480		6.30	148.00	87.55	97.00	9006680063000
0.2500	1/4 E	6.35	148.00	87.48	97.00	9006680063500
0.2520		6.40	148.00	87.40	97.00	9006680064000
0.2559		6.50	148.00	87.25	97.00	9006680065000
0.2571	F	6.53	148.00	87.21	97.00	9006680065300
0.2598		6.60	148.00	87.10	97.00	9006680066000
0.2638		6.70	148.00	86.95	97.00	9006680067000
0.2657	17/64 H	6.75	156.00	91.88	102.00	9006680067500
0.2677		6.80	156.00	91.80	102.00	9006680068000
0.2717	I	6.90	156.00	91.65	102.00	9006680069000
0.2756		7.00	156.00	91.50	102.00	9006680070000
0.2795		7.10	156.00	91.35	102.00	9006680071000
0.2811	9/32 K	7.14	156.00	91.29	102.00	9006680071400
0.2835		7.20	156.00	91.20	102.00	9006680072000
0.2854		7.25	156.00	91.13	102.00	9006680072500
0.2874		7.30	156.00	91.05	102.00	9006680073000
0.2913		7.40	156.00	90.90	102.00	9006680074000
0.2953		7.50	156.00	90.75	102.00	9006680075000
0.2992		7.60	165.00	97.60	109.00	9006680076000
0.3031		7.70	165.00	97.45	109.00	9006680077000
0.3071		7.80	165.00	97.30	109.00	9006680078000
0.3110		7.90	165.00	97.15	109.00	9006680079000

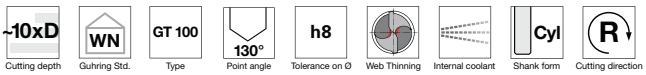
Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3126	5/16	7.94	165.00	97.09	109.00	9006680079400
0.3150		8.00	165.00	97.00	109.00	9006680080000
0.3189		8.10	165.00	96.85	109.00	9006680081000
0.3228	P	8.20	165.00	96.70	109.00	9006680082000
0.3268		8.30	165.00	96.55	109.00	9006680083000
0.3307		8.40	165.00	96.40	109.00	9006680084000
0.3319	Q	8.43	165.00	96.36	109.00	9006680084300
0.3346		8.50	165.00	96.25	109.00	9006680085000
0.3386		8.60	175.00	102.10	115.00	9006680086000
0.3390	R	8.61	175.00	102.09	115.00	9006680086100
0.3425		8.70	175.00	101.95	115.00	9006680087000
0.3437	11/32	8.73	175.00	101.91	115.00	9006680087300
0.3465		8.80	175.00	101.80	115.00	9006680088000
0.3504		8.90	175.00	101.65	115.00	9006680089000
0.3543		9.00	175.00	101.50	115.00	9006680090000
0.3583		9.10	175.00	101.35	115.00	9006680091000
0.3594	23/64	9.13	175.00	101.31	115.00	9006680091300
0.3661		9.30	175.00	101.05	115.00	9006680093000
0.3677	U	9.34	175.00	100.99	115.00	9006680093400
0.3701		9.40	175.00	100.90	115.00	9006680094000
0.3740		9.50	175.00	100.75	115.00	9006680095000
0.3748	3/8	9.52	184.00	106.72	121.00	9006680095200
0.3780		9.60	184.00	106.60	121.00	9006680096000
0.3819		9.70	184.00	106.45	121.00	9006680097000
0.3858	W	9.80	184.00	106.30	121.00	9006680098000
0.3898		9.90	184.00	106.15	121.00	9006680099000
0.3906	25/64	9.92	184.00	106.12	121.00	9006680099200
0.3937		10.00	184.00	106.00	121.00	9006680100000
0.4016		10.20	184.00	105.70	121.00	9006680102000
0.4063	13/32	10.32	184.00	105.52	121.00	9006680103200
0.4134		10.50	184.00	105.25	121.00	9006680105000
0.4220	27/64	10.72	195.00	111.92	128.00	9006680107200
0.4331		11.00	195.00	111.50	128.00	9006680110000
0.4374	7/16	11.11	195.00	111.34	128.00	9006680111100
0.4528		11.50	195.00	110.75	128.00	9006680115000
0.4531	29/64	11.51	195.00	110.74	128.00	9006680115100
0.4689	15/32	11.91	205.00	116.14	134.00	9006680119100
0.4724		12.00	205.00	116.00	134.00	9006680120000
0.4843	31/64	12.30	205.00	115.55	134.00	9006680123000
0.4921		12.50	205.00	115.25	134.00	9006680125000
0.5000	1/2	12.70	205.00	114.95	134.00	9006680127000
0.5118		13.00	205.00	114.50	134.00	9006680130000
0.5157	33/64	13.10	205.00	114.35	134.00	9006680131000
0.5512		14.00	214.00	119.00	140.00	9006680140000

Taper length drills

Series no. **390**

Tool material **HSS**

Surface



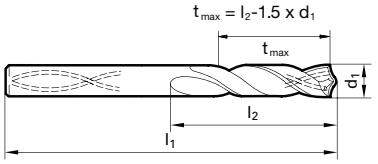
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • also for drilling through drill bushes • especially for drilling depths > 5xD

laminated sheet metal • steel and cast steel, grey cast iron • austenitic steels up to 800 N/mm²





Speeds and feeds information on pg. 493

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1181		3.00	100.00	61.50	66.00	9003900030000
0.1299		3.30	106.00	64.05	69.00	9003900033000
0.1378		3.50	112.00	67.75	73.00	9003900035000
0.1575		4.00	119.00	72.00	78.00	9003900040000
0.1654		4.20	119.00	71.70	78.00	9003900042000
0.1772	#16	4.50	126.00	75.25	82.00	9003900045000
0.1969		5.00	132.00	79.50	87.00	9003900050000
0.2165		5.50	139.00	82.75	91.00	9003900055000
0.2362		6.00	139.00	82.00	91.00	9003900060000
0.2559		6.50	148.00	87.25	97.00	9003900065000
0.2677		6.80	156.00	91.80	102.00	9003900068000
0.2756		7.00	156.00	91.50	102.00	9003900070000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2953		7.50	156.00	90.75	102.00	9003900075000
0.3150		8.00	165.00	97.00	109.00	9003900080000
0.3346		8.50	165.00	96.25	109.00	9003900085000
0.3543		9.00	175.00	101.50	115.00	9003900090000
0.3740		9.50	175.00	100.75	115.00	9003900095000
0.3937		10.00	184.00	106.00	121.00	9003900100000
0.4016		10.20	184.00	105.70	121.00	9003900102000
0.4134		10.50	184.00	105.25	121.00	9003900105000
0.4331		11.00	195.00	111.50	128.00	9003900110000
0.4528		11.50	195.00	110.75	128.00	9003900115000
0.4724		12.00	205.00	116.00	134.00	9003900120000
0.5118		13.00	205.00	114.50	134.00	9003900130000

Taper length drills

Series no. **317**

~10xD	DIN 340	N	118°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSCO**

Surface: >Ø 2.36

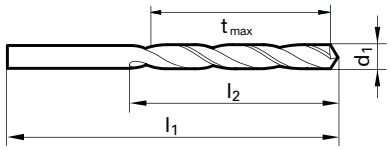
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • Co-alloyed high speed steel • increased wear resistance

alloyed/unalloyed steels and castings over 800 N/mm² • hot and cold rolled steels • antifriction bearing steels • high-alloyed steels • heat treatable and case hardened steels

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 490

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0197		0.50	32.00	11.25	12.00	9003170005000
0.0256		0.65	38.00	17.03	18.00	9003170006500
0.0276		0.70	42.00	19.95	21.00	9003170007000
0.0295		0.75	42.00	19.88	21.00	9003170007500
0.0315		0.80	46.00	23.80	25.00	9003170008000
0.0335		0.85	46.00	23.73	25.00	9003170008500
0.0354		0.90	51.00	27.65	29.00	9003170009000
0.0374		0.95	51.00	27.58	29.00	9003170009500
0.0394		1.00	56.00	31.50	33.00	9003170010000
0.0402	#60	1.02	56.00	31.47	33.00	9003170010200
0.0433		1.10	60.00	35.35	37.00	9003170011000
0.0469	3/64	1.19	65.00	39.22	41.00	9003170011900
0.0472		1.20	65.00	39.20	41.00	9003170012000
0.0492		1.25	65.00	39.13	41.00	9003170012500
0.0512		1.30	65.00	39.05	41.00	9003170013000
0.0551	#54	1.40	70.00	42.90	45.00	9003170014000
0.0591		1.50	70.00	42.75	45.00	9003170015000
0.0594	#53	1.51	76.00	47.74	50.00	9003170015100
0.0610		1.55	76.00	47.68	50.00	9003170015500
0.0626	1/16	1.59	76.00	47.62	50.00	9003170015900
0.0630		1.60	76.00	47.60	50.00	9003170016000
0.0650		1.65	76.00	47.53	50.00	9003170016500
0.0669	#51	1.70	76.00	47.45	50.00	9003170017000
0.0701	#50	1.78	80.00	50.33	53.00	9003170017800
0.0709		1.80	80.00	50.30	53.00	9003170018000
0.0748		1.90	80.00	50.15	53.00	9003170019000
0.0768		1.95	85.00	53.08	56.00	9003170019500
0.0780	5/64	1.98	85.00	53.03	56.00	9003170019800
0.0787		2.00	85.00	53.00	56.00	9003170020000
0.0807		2.05	85.00	52.93	56.00	9003170020500
0.0827		2.10	85.00	52.85	56.00	9003170021000
0.0866		2.20	90.00	55.70	59.00	9003170022000
0.0906		2.30	90.00	55.55	59.00	9003170023000
0.0937	3/32	2.38	95.00	58.43	62.00	9003170023800
0.0945		2.40	95.00	58.40	62.00	9003170024000
0.0965		2.45	95.00	58.33	62.00	9003170024500
0.0984		2.50	95.00	58.25	62.00	9003170025000
0.1024		2.60	95.00	58.10	62.00	9003170026000
0.1063		2.70	100.00	61.95	66.00	9003170027000
0.1094	7/64	2.78	100.00	61.83	66.00	9003170027800
0.1102		2.80	100.00	61.80	66.00	9003170028000
0.1142		2.90	100.00	61.65	66.00	9003170029000
0.1181		3.00	100.00	61.50	66.00	9003170030000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1201	#31	3.05	106.00	64.43	69.00	9003170030500
0.1220		3.10	106.00	64.35	69.00	9003170031000
0.1248	1/8	3.17	106.00	64.25	69.00	9003170031700
0.1260		3.20	106.00	64.20	69.00	9003170032000
0.1280		3.25	106.00	64.13	69.00	9003170032500
0.1299		3.30	106.00	64.05	69.00	9003170033000
0.1339		3.40	112.00	67.90	73.00	9003170034000
0.1358	#29	3.45	112.00	67.83	73.00	9003170034500
0.1378		3.50	112.00	67.75	73.00	9003170035000
0.1417		3.60	112.00	67.60	73.00	9003170036000
0.1457		3.70	112.00	67.45	73.00	9003170037000
0.1496	#25	3.80	119.00	72.30	78.00	9003170038000
0.1535		3.90	119.00	72.15	78.00	9003170039000
0.1563	5/32	3.97	119.00	72.05	78.00	9003170039700
0.1575		4.00	119.00	72.00	78.00	9003170040000
0.1614		4.10	119.00	71.85	78.00	9003170041000
0.1654		4.20	119.00	71.70	78.00	9003170042000
0.1693	#18	4.30	126.00	75.55	82.00	9003170043000
0.1720	11/64	4.37	126.00	75.45	82.00	9003170043700
0.1732		4.40	126.00	75.40	82.00	9003170044000
0.1772	#16	4.50	126.00	75.25	82.00	9003170045000
0.1811		4.60	126.00	75.10	82.00	9003170046000
0.1850	#13	4.70	126.00	74.95	82.00	9003170047000
0.1874	3/16	4.76	132.00	79.86	87.00	9003170047600
0.1890	#12	4.80	132.00	79.80	87.00	9003170048000
0.1909	#11	4.85	132.00	79.73	87.00	9003170048500
0.1929		4.90	132.00	79.65	87.00	9003170049000
0.1969		5.00	132.00	79.50	87.00	9003170050000
0.2008		5.10	132.00	79.35	87.00	9003170051000
0.2031	13/64	5.16	132.00	79.26	87.00	9003170051600
0.2047		5.20	132.00	79.20	87.00	9003170052000
0.2087		5.30	132.00	79.05	87.00	9003170053000
0.2126		5.40	139.00	82.90	91.00	9003170054000
0.2165		5.50	139.00	82.75	91.00	9003170055000
0.2189	7/32	5.56	139.00	82.66	91.00	9003170055600
0.2205		5.60	139.00	82.60	91.00	9003170056000
0.2244		5.70	139.00	82.45	91.00	9003170057000
0.2283		5.80	139.00	82.30	91.00	9003170058000
0.2323		5.90	139.00	82.15	91.00	9003170059000
0.2343	15/64	5.95	139.00	82.08	91.00	9003170059500
0.2362		6.00	139.00	82.00	91.00	9003170060000
0.2402		6.10	148.00	87.85	97.00	9003170061000
0.2441		6.20	148.00	87.70	97.00	9003170062000

Taper length drills

Series no. **317**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2480		6.30	148.00	87.55	97.00	9003170063000
0.2500	1/4 E	6.35	148.00	87.48	97.00	9003170063500
0.2520		6.40	148.00	87.40	97.00	9003170064000
0.2559		6.50	148.00	87.25	97.00	9003170065000
0.2598		6.60	148.00	87.10	97.00	9003170066000
0.2610	G	6.63	148.00	87.06	97.00	9003170066300
0.2638		6.70	148.00	86.95	97.00	9003170067000
0.2657	17/64 H	6.75	156.00	91.88	102.00	9003170067500
0.2677		6.80	156.00	91.80	102.00	9003170068000
0.2717	I	6.90	156.00	91.65	102.00	9003170069000
0.2756		7.00	156.00	91.50	102.00	9003170070000
0.2811	9/32 K	7.14	156.00	91.29	102.00	9003170071400
0.2835		7.20	156.00	91.20	102.00	9003170072000
0.2874		7.30	156.00	91.05	102.00	9003170073000
0.2913		7.40	156.00	90.90	102.00	9003170074000
0.2953		7.50	156.00	90.75	102.00	9003170075000
0.2969	19/64	7.54	165.00	97.69	109.00	9003170075400
0.2992		7.60	165.00	97.60	109.00	9003170076000
0.3031		7.70	165.00	97.45	109.00	9003170077000
0.3071		7.80	165.00	97.30	109.00	9003170078000
0.3110		7.90	165.00	97.15	109.00	9003170079000
0.3126	5/16	7.94	165.00	97.09	109.00	9003170079400
0.3150		8.00	165.00	97.00	109.00	9003170080000
0.3189		8.10	165.00	96.85	109.00	9003170081000
0.3228	P	8.20	165.00	96.70	109.00	9003170082000
0.3280	21/64	8.33	165.00	96.51	109.00	9003170083300
0.3307		8.40	165.00	96.40	109.00	9003170084000
0.3346		8.50	165.00	96.25	109.00	9003170085000
0.3386		8.60	175.00	102.10	115.00	9003170086000
0.3425		8.70	175.00	101.95	115.00	9003170087000
0.3437	11/32	8.73	175.00	101.91	115.00	9003170087300
0.3465		8.80	175.00	101.80	115.00	9003170088000
0.3543		9.00	175.00	101.50	115.00	9003170090000
0.3583		9.10	175.00	101.35	115.00	9003170091000
0.3594	23/64	9.13	175.00	101.31	115.00	9003170091300
0.3622		9.20	175.00	101.20	115.00	9003170092000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3661		9.30	175.00	101.05	115.00	9003170093000
0.3701		9.40	175.00	100.90	115.00	9003170094000
0.3740		9.50	175.00	100.75	115.00	9003170095000
0.3748	3/8	9.52	184.00	106.72	121.00	9003170095200
0.3780		9.60	184.00	106.60	121.00	9003170096000
0.3819		9.70	184.00	106.45	121.00	9003170097000
0.3858	W	9.80	184.00	106.30	121.00	9003170098000
0.3898		9.90	184.00	106.15	121.00	9003170099000
0.3906	25/64	9.92	184.00	106.12	121.00	9003170099200
0.3937		10.00	184.00	106.00	121.00	9003170100000
0.3976		10.10	184.00	105.85	121.00	9003170101000
0.4016		10.20	184.00	105.70	121.00	9003170102000
0.4063	13/32	10.32	184.00	105.52	121.00	9003170103200
0.4134		10.50	184.00	105.25	121.00	9003170105000
0.4220	27/64	10.72	195.00	111.92	128.00	9003170107200
0.4331		11.00	195.00	111.50	128.00	9003170110000
0.4374	7/16	11.11	195.00	111.34	128.00	9003170111100
0.4409		11.20	195.00	111.20	128.00	9003170112000
0.4528		11.50	195.00	110.75	128.00	9003170115000
0.4531	29/64	11.51	195.00	110.74	128.00	9003170115100
0.4646		11.80	195.00	110.30	128.00	9003170118000
0.4689	15/32	11.91	205.00	116.14	134.00	9003170119100
0.4724		12.00	205.00	116.00	134.00	9003170120000
0.4843	31/64	12.30	205.00	115.55	134.00	9003170123000
0.4921		12.50	205.00	115.25	134.00	9003170125000
0.5000	1/2	12.70	205.00	114.95	134.00	9003170127000
0.5118		13.00	205.00	114.50	134.00	9003170130000
0.5157	33/64	13.10	205.00	114.35	134.00	9003170131000
0.5311	17/32	13.49	214.00	119.77	140.00	9003170134900
0.5315		13.50	214.00	119.75	140.00	9003170135000
0.5512		14.00	214.00	119.00	140.00	9003170140000
0.5626	9/16	14.29	220.00	122.57	144.00	9003170142900
0.5906		15.00	220.00	121.50	144.00	9003170150000
0.6094	39/64	15.48	227.00	125.78	149.00	9003170154800
0.6248	5/8	15.87	227.00	125.20	149.00	9003170158700
0.6299		16.00	227.00	125.00	149.00	9003170160000

Taper length drills

Series no. **617**

~10xD	DIN 340	Ti	130°	h8		Cyl	R	GUHRING SELECT
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction	

Tool material: **HSCO**

Surface: ○



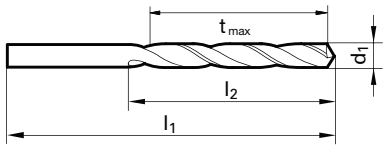
P	Steel	○
M	Stainless steel	●
K	Cast iron	
N	Aluminum	
S	Titanium alloys	●
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone split point • Co-alloyed high speed steel • increased wear resistance

Titanium and Titanium alloys • stainless/acid-/heat-resistant austenitic steels • high tensile/short chipping steels over 900 N/mm² • antifriction bearing steels • Hastelloy, Inconel, Nimonic

$t_{max} = l_2\text{-}1.5 \times d_1$



Speeds and feeds information on pg. 513

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	56.00	31.50	33.00	9006170010000
0.0433		1.10	60.00	35.35	37.00	9006170011000
0.0472		1.20	65.00	39.20	41.00	9006170012000
0.0512		1.30	65.00	39.05	41.00	9006170013000
0.0551	#54	1.40	70.00	42.90	45.00	9006170014000
0.0571		1.45	70.00	42.83	45.00	9006170014500
0.0591		1.50	70.00	42.75	45.00	9006170015000
0.0626	1/16	1.59	76.00	47.62	50.00	9006170015900
0.0630		1.60	76.00	47.60	50.00	9006170016000
0.0634	#52	1.61	76.00	47.59	50.00	9006170016100
0.0650		1.65	76.00	47.53	50.00	9006170016500
0.0669	#51	1.70	76.00	47.45	50.00	9006170017000
0.0689		1.75	80.00	50.38	53.00	9006170017500
0.0709		1.80	80.00	50.30	53.00	9006170018000
0.0728	#49	1.85	80.00	50.23	53.00	9006170018500
0.0748		1.90	80.00	50.15	53.00	9006170019000
0.0760	#48	1.93	85.00	53.11	56.00	9006170019300
0.0768		1.95	85.00	53.08	56.00	9006170019500
0.0780	5/64	1.98	85.00	53.03	56.00	9006170019800
0.0787		2.00	85.00	53.00	56.00	9006170020000
0.0807		2.05	85.00	52.93	56.00	9006170020500
0.0827		2.10	85.00	52.85	56.00	9006170021000
0.0846		2.15	90.00	55.78	59.00	9006170021500
0.0866		2.20	90.00	55.70	59.00	9006170022000
0.0890	#43	2.26	90.00	55.61	59.00	9006170022600
0.0906		2.30	90.00	55.55	59.00	9006170023000
0.0937	3/32	2.38	95.00	58.43	62.00	9006170023800
0.0945		2.40	95.00	58.40	62.00	9006170024000
0.0965		2.45	95.00	58.33	62.00	9006170024500
0.0984		2.50	95.00	58.25	62.00	9006170025000
0.1004		2.55	95.00	58.18	62.00	9006170025500
0.1024		2.60	95.00	58.10	62.00	9006170026000
0.1063		2.70	100.00	61.95	66.00	9006170027000
0.1094	7/64	2.78	100.00	61.83	66.00	9006170027800
0.1102		2.80	100.00	61.80	66.00	9006170028000
0.1142		2.90	100.00	61.65	66.00	9006170029000
0.1181		3.00	100.00	61.50	66.00	9006170030000
0.1201	#31	3.05	106.00	64.43	69.00	9006170030500
0.1220		3.10	106.00	64.35	69.00	9006170031000
0.1248	1/8	3.17	106.00	64.25	69.00	9006170031700
0.1260		3.20	106.00	64.20	69.00	9006170032000
0.1280		3.25	106.00	64.13	69.00	9006170032500
0.1299		3.30	106.00	64.05	69.00	9006170033000
0.1339		3.40	112.00	67.90	73.00	9006170034000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1358	#29	3.45	112.00	67.83	73.00	9006170034500
0.1378		3.50	112.00	67.75	73.00	9006170035000
0.1406	9/64 #28	3.57	112.00	67.65	73.00	9006170035700
0.1417		3.60	112.00	67.60	73.00	9006170036000
0.1457		3.70	112.00	67.45	73.00	9006170037000
0.1496	#25	3.80	119.00	72.30	78.00	9006170038000
0.1535		3.90	119.00	72.15	78.00	9006170039000
0.1563	5/32	3.97	119.00	72.05	78.00	9006170039700
0.1575		4.00	119.00	72.00	78.00	9006170040000
0.1594		4.05	119.00	71.93	78.00	9006170040500
0.1614		4.10	119.00	71.85	78.00	9006170041000
0.1654		4.20	119.00	71.70	78.00	9006170042000
0.1693	#18	4.30	126.00	75.55	82.00	9006170043000
0.1732		4.40	126.00	75.40	82.00	9006170044000
0.1772	#16	4.50	126.00	75.25	82.00	9006170045000
0.1811		4.60	126.00	75.10	82.00	9006170046000
0.1850	#13	4.70	126.00	74.95	82.00	9006170047000
0.1874	3/16	4.76	132.00	79.86	87.00	9006170047600
0.1890	#12	4.80	132.00	79.80	87.00	9006170048000
0.1929		4.90	132.00	79.65	87.00	9006170049000
0.1949		4.95	132.00	79.58	87.00	9006170049500
0.1969		5.00	132.00	79.50	87.00	9006170050000
0.2008		5.10	132.00	79.35	87.00	9006170051000
0.2031	13/64	5.16	132.00	79.26	87.00	9006170051600
0.2047		5.20	132.00	79.20	87.00	9006170052000
0.2087		5.30	132.00	79.05	87.00	9006170053000
0.2126		5.40	139.00	82.90	91.00	9006170054000
0.2165		5.50	139.00	82.75	91.00	9006170055000
0.2205		5.60	139.00	82.60	91.00	9006170056000
0.2244		5.70	139.00	82.45	91.00	9006170057000
0.2283		5.80	139.00	82.30	91.00	9006170058000
0.2362		6.00	139.00	82.00	91.00	9006170060000
0.2402		6.10	148.00	87.85	97.00	9006170061000
0.2441		6.20	148.00	87.70	97.00	9006170062000
0.2480		6.30	148.00	87.55	97.00	9006170063000
0.2500	1/4 E	6.35	148.00	87.48	97.00	9006170063500
0.2520		6.40	148.00	87.40	97.00	9006170064000
0.2559		6.50	148.00	87.25	97.00	9006170065000
0.2598		6.60	148.00	87.10	97.00	9006170066000
0.2638		6.70	148.00	86.95	97.00	9006170067000
0.2657	17/64 H	6.75	156.00	91.88	102.00	9006170067500
0.2677		6.80	156.00	91.80	102.00	9006170068000
0.2717	I	6.90	156.00	91.65	102.00	9006170069000
0.2756		7.00	156.00	91.50	102.00	9006170070000

Taper length drills

Series no. **617**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2795		7.10	156.00	91.35	102.00	9006170071000
0.2811	9/32 K	7.14	156.00	91.29	102.00	9006170071400
0.2913		7.40	156.00	90.90	102.00	9006170074000
0.2953		7.50	156.00	90.75	102.00	9006170075000
0.2969	19/64	7.54	165.00	97.69	109.00	9006170075400
0.3031		7.70	165.00	97.45	109.00	9006170077000
0.3071		7.80	165.00	97.30	109.00	9006170078000
0.3126	5/16	7.94	165.00	97.09	109.00	9006170079400
0.3150		8.00	165.00	97.00	109.00	9006170080000
0.3189		8.10	165.00	96.85	109.00	9006170081000
0.3228	P	8.20	165.00	96.70	109.00	9006170082000
0.3268		8.30	165.00	96.55	109.00	9006170083000
0.3280	21/64	8.33	165.00	96.51	109.00	9006170083300
0.3307		8.40	165.00	96.40	109.00	9006170084000
0.3346		8.50	165.00	96.25	109.00	9006170085000
0.3386		8.60	175.00	102.10	115.00	9006170086000
0.3425		8.70	175.00	101.95	115.00	9006170087000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3437	11/32	8.73	175.00	101.91	115.00	9006170087300
0.3465		8.80	175.00	101.80	115.00	9006170088000
0.3543		9.00	175.00	101.50	115.00	9006170090000
0.3583		9.10	175.00	101.35	115.00	9006170091000
0.3740		9.50	175.00	100.75	115.00	9006170095000
0.3748	3/8	9.52	184.00	106.72	121.00	9006170095200
0.3858	W	9.80	184.00	106.30	121.00	9006170098000
0.3937		10.00	184.00	106.00	121.00	9006170100000
0.4016		10.20	184.00	105.70	121.00	9006170102000
0.4134		10.50	184.00	105.25	121.00	9006170105000
0.4331		11.00	195.00	111.50	128.00	9006170110000
0.4374	7/16	11.11	195.00	111.34	128.00	9006170111100
0.4531	29/64	11.51	195.00	110.74	128.00	9006170115100
0.4724		12.00	205.00	116.00	134.00	9006170120000
0.4921		12.50	205.00	115.25	134.00	9006170125000
0.5118		13.00	205.00	114.50	134.00	9006170130000
0.5906		15.00	220.00	121.50	144.00	9006170150000

Taper length drills

Series no. **669**

Tool material **HSCO**

Surface **S**

~10xD Cutting depth | DIN 340 Standard | Ti Type | 130° Point angle | h8 Tolerance on Ø | Web Thinning | Cyl Shank form | R Cutting direction

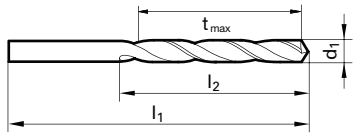
P	Steel	○
M	Stainless steel	●
K	Cast iron	
N	Aluminum	
S	Titanium alloys	●
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone split point • Co-alloyed high speed steel • increased wear resistance

Titanium and Titanium alloys • stainless/acid-/heat-resistant austenitic steels • high tensile/short chipping steels over 900 N/mm² • antifriction bearing steels • Hastelloy, Inconel, Nimonic

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 521

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	56.00	31.50	33.00	9006690010000
0.0551	#54	1.40	70.00	42.90	45.00	9006690014000
0.0591		1.50	70.00	42.75	45.00	9006690015000
0.0626	1/16	1.59	76.00	47.62	50.00	9006690015900
0.0630		1.60	76.00	47.60	50.00	9006690016000
0.0650		1.65	76.00	47.53	50.00	9006690016500
0.0669	#51	1.70	76.00	47.45	50.00	9006690017000
0.0709		1.80	80.00	50.30	53.00	9006690018000
0.0748		1.90	80.00	50.15	53.00	9006690019000
0.0780	5/64	1.98	85.00	53.03	56.00	9006690019800
0.0787		2.00	85.00	53.00	56.00	9006690020000
0.0827		2.10	85.00	52.85	56.00	9006690021000
0.0866		2.20	90.00	55.70	59.00	9006690022000
0.0906		2.30	90.00	55.55	59.00	9006690023000
0.0937	3/32	2.38	95.00	58.43	62.00	9006690023800
0.0945		2.40	95.00	58.40	62.00	9006690024000
0.0984		2.50	95.00	58.25	62.00	9006690025000
0.1024		2.60	95.00	58.10	62.00	9006690026000
0.1063		2.70	100.00	61.95	66.00	9006690027000
0.1094	7/64	2.78	100.00	61.83	66.00	9006690027800
0.1102		2.80	100.00	61.80	66.00	9006690028000
0.1142		2.90	100.00	61.65	66.00	9006690029000
0.1181		3.00	100.00	61.50	66.00	9006690030000
0.1220		3.10	106.00	64.35	69.00	9006690031000
0.1248	1/8	3.17	106.00	64.25	69.00	9006690031700
0.1260		3.20	106.00	64.20	69.00	9006690032000
0.1280		3.25	106.00	64.13	69.00	9006690032500
0.1299		3.30	106.00	64.05	69.00	9006690033000
0.1339		3.40	112.00	67.90	73.00	9006690034000
0.1378		3.50	112.00	67.75	73.00	9006690035000
0.1406	9/64	#28 3.57	112.00	67.65	73.00	9006690035700
0.1417		3.60	112.00	67.60	73.00	9006690036000
0.1457		3.70	112.00	67.45	73.00	9006690037000
0.1496	#25	3.80	119.00	72.30	78.00	9006690038000
0.1535		3.90	119.00	72.15	78.00	9006690039000
0.1563	5/32	3.97	119.00	72.05	78.00	9006690039700
0.1575		4.00	119.00	72.00	78.00	9006690040000
0.1614		4.10	119.00	71.85	78.00	9006690041000
0.1654		4.20	119.00	71.70	78.00	9006690042000
0.1693	#18	4.30	126.00	75.55	82.00	9006690043000
0.1732		4.40	126.00	75.40	82.00	9006690044000
0.1772	#16	4.50	126.00	75.25	82.00	9006690045000
0.1850	#13	4.70	126.00	74.95	82.00	9006690047000
0.1874	3/16	4.76	132.00	79.86	87.00	9006690047600
0.1890	#12	4.80	132.00	79.80	87.00	9006690048000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1929		4.90	132.00	79.65	87.00	9006690049000
0.1969		5.00	132.00	79.50	87.00	9006690050000
0.2008		5.10	132.00	79.35	87.00	9006690051000
0.2031	13/64	5.16	132.00	79.26	87.00	9006690051600
0.2047		5.20	132.00	79.20	87.00	9006690052000
0.2087		5.30	132.00	79.05	87.00	9006690053000
0.2165		5.50	139.00	82.75	91.00	9006690055000
0.2189	7/32	5.56	139.00	82.66	91.00	9006690055600
0.2205		5.60	139.00	82.60	91.00	9006690056000
0.2244		5.70	139.00	82.45	91.00	9006690057000
0.2283		5.80	139.00	82.30	91.00	9006690058000
0.2323		5.90	139.00	82.15	91.00	9006690059000
0.2362		6.00	139.00	82.00	91.00	9006690060000
0.2402		6.10	148.00	87.85	97.00	9006690061000
0.2441		6.20	148.00	87.70	97.00	9006690062000
0.2480		6.30	148.00	87.55	97.00	9006690063000
0.2500	1/4	E 6.35	148.00	87.48	97.00	9006690063500
0.2520		6.40	148.00	87.40	97.00	9006690064000
0.2559		6.50	148.00	87.25	97.00	9006690065000
0.2598		6.60	148.00	87.10	97.00	9006690066000
0.2638		6.70	148.00	86.95	97.00	9006690067000
0.2657	17/64	H 6.75	156.00	91.88	102.00	9006690067500
0.2677		6.80	156.00	91.80	102.00	9006690068000
0.2717		I 6.90	156.00	91.65	102.00	9006690069000
0.2756		7.00	156.00	91.50	102.00	9006690070000
0.2795		7.10	156.00	91.35	102.00	9006690071000
0.2811	9/32	K 7.14	156.00	91.29	102.00	9006690071400
0.2874		7.30	156.00	91.05	102.00	9006690073000
0.2913		7.40	156.00	90.90	102.00	9006690074000
0.2953		7.50	156.00	90.75	102.00	9006690075000
0.2969	19/64	7.54	165.00	97.69	109.00	9006690075400
0.2992		7.60	165.00	97.60	109.00	9006690076000
0.3031		7.70	165.00	97.45	109.00	9006690077000
0.3071		7.80	165.00	97.30	109.00	9006690078000
0.3110		7.90	165.00	97.15	109.00	9006690079000
0.3126	5/16	7.94	165.00	97.09	109.00	9006690079400
0.3150		8.00	165.00	97.00	109.00	9006690080000
0.3228		P 8.20	165.00	96.70	109.00	9006690082000
0.3307		8.40	165.00	96.40	109.00	9006690084000
0.3346		8.50	165.00	96.25	109.00	9006690085000
0.3437	11/32	8.73	175.00	101.91	115.00	9006690087300
0.3543		9.00	175.00	101.50	115.00	9006690090000
0.3740		9.50	175.00	100.75	115.00	9006690095000
0.3748	3/8	9.52	184.00	106.72	121.00	9006690095200
0.3937		10.00	184.00	106.00	121.00	9006690100000

Taper length drills

Series no. **336**

Tool material **HSCO**

Surface >Ø 2.36

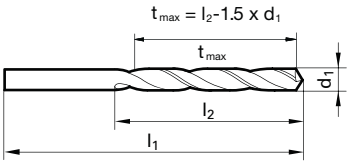
~10xD	DIN 340	GT 100	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • relieved cone • Co-alloyed high speed steel • wide flutes • increased wear resistance • in case of unsatisfactory chip evacuation

alloyed/unalloyed steels and castings over 800 N/mm² • hot and cold rolled steels • antifriction bearing steels • high-alloyed steels • heat treatable and case hardened steels





Speeds and feeds information on pg. 491

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	56.00	31.50	33.00	9003360010000
0.0402	#60	1.02	56.00	31.47	33.00	9003360010200
0.0409	#59	1.04	56.00	31.44	33.00	9003360010400
0.0421	#58	1.07	60.00	35.40	37.00	9003360010700
0.0429	#57	1.09	60.00	35.37	37.00	9003360010900
0.0433		1.10	60.00	35.35	37.00	9003360011000
0.0465	#56	1.18	60.00	35.23	37.00	9003360011800
0.0469	3/64	1.19	65.00	39.22	41.00	9003360011900
0.0472		1.20	65.00	39.20	41.00	9003360012000
0.0492		1.25	65.00	39.13	41.00	9003360012500
0.0512		1.30	65.00	39.05	41.00	9003360013000
0.0520	#55	1.32	65.00	39.02	41.00	9003360013200
0.0551	#54	1.40	70.00	42.90	45.00	9003360014000
0.0591		1.50	70.00	42.75	45.00	9003360015000
0.0594	#53	1.51	76.00	47.74	50.00	9003360015100
0.0610		1.55	76.00	47.68	50.00	9003360015500
0.0626	1/16	1.59	76.00	47.62	50.00	9003360015900
0.0630		1.60	76.00	47.60	50.00	9003360016000
0.0634	#52	1.61	76.00	47.59	50.00	9003360016100
0.0669	#51	1.70	76.00	47.45	50.00	9003360017000
0.0689		1.75	80.00	50.38	53.00	9003360017500
0.0701	#50	1.78	80.00	50.33	53.00	9003360017800
0.0709		1.80	80.00	50.30	53.00	9003360018000
0.0728	#49	1.85	80.00	50.23	53.00	9003360018500
0.0748		1.90	80.00	50.15	53.00	9003360019000
0.0760	#48	1.93	85.00	53.11	56.00	9003360019300
0.0780	5/64	1.98	85.00	53.03	56.00	9003360019800
0.0783	#47	1.99	85.00	53.02	56.00	9003360019900
0.0787		2.00	85.00	53.00	56.00	9003360020000
0.0807		2.05	85.00	52.93	56.00	9003360020500
0.0811	#46	2.06	85.00	52.91	56.00	9003360020600
0.0819	#45	2.08	85.00	52.88	56.00	9003360020800
0.0827		2.10	85.00	52.85	56.00	9003360021000
0.0858	#44	2.18	90.00	55.73	59.00	9003360021800
0.0866		2.20	90.00	55.70	59.00	9003360022000
0.0886		2.25	90.00	55.63	59.00	9003360022500
0.0890	#43	2.26	90.00	55.61	59.00	9003360022600
0.0906		2.30	90.00	55.55	59.00	9003360023000
0.0925		2.35	90.00	55.48	59.00	9003360023500
0.0933	#42	2.37	95.00	58.45	62.00	9003360023700
0.0937	3/32	2.38	95.00	58.43	62.00	9003360023800
0.0945		2.40	95.00	58.40	62.00	9003360024000
0.0961	#41	2.44	95.00	58.34	62.00	9003360024400

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0965		2.45	95.00	58.33	62.00	9003360024500
0.0980	#40	2.49	95.00	58.27	62.00	9003360024900
0.0984		2.50	95.00	58.25	62.00	9003360025000
0.0996	#39	2.53	95.00	58.21	62.00	9003360025300
0.1004		2.55	95.00	58.18	62.00	9003360025500
0.1016	#38	2.58	95.00	58.13	62.00	9003360025800
0.1024		2.60	95.00	58.10	62.00	9003360026000
0.1039	#37	2.64	95.00	58.04	62.00	9003360026400
0.1063		2.70	100.00	61.95	66.00	9003360027000
0.1067	#36	2.71	100.00	61.94	66.00	9003360027100
0.1083		2.75	100.00	61.88	66.00	9003360027500
0.1094	7/64	2.78	100.00	61.83	66.00	9003360027800
0.1098	#35	2.79	100.00	61.82	66.00	9003360027900
0.1102		2.80	100.00	61.80	66.00	9003360028000
0.1110	#34	2.82	100.00	61.77	66.00	9003360028200
0.1122		2.85	100.00	61.73	66.00	9003360028500
0.1130	#33	2.87	100.00	61.70	66.00	9003360028700
0.1142		2.90	100.00	61.65	66.00	9003360029000
0.1161	#32	2.95	100.00	61.58	66.00	9003360029500
0.1181		3.00	100.00	61.50	66.00	9003360030000
0.1201	#31	3.05	106.00	64.43	69.00	9003360030500
0.1220		3.10	106.00	64.35	69.00	9003360031000
0.1248	1/8	3.17	106.00	64.25	69.00	9003360031700
0.1260		3.20	106.00	64.20	69.00	9003360032000
0.1283	#30	3.26	106.00	64.11	69.00	9003360032600
0.1299		3.30	106.00	64.05	69.00	9003360033000
0.1339		3.40	112.00	67.90	73.00	9003360034000
0.1354		3.44	112.00	67.84	73.00	9003360034400
0.1358	#29	3.45	112.00	67.83	73.00	9003360034500
0.1378		3.50	112.00	67.75	73.00	9003360035000
0.1406	9/64	#28	3.57	112.00	67.65	73.00	9003360035700
0.1417		3.60	112.00	67.60	73.00	9003360036000
0.1441	#27	3.66	112.00	67.51	73.00	9003360036600
0.1457		3.70	112.00	67.45	73.00	9003360037000
0.1469	#26	3.73	112.00	67.41	73.00	9003360037300
0.1496	#25	3.80	119.00	72.30	78.00	9003360038000
0.1520	#24	3.86	119.00	72.21	78.00	9003360038600
0.1535		3.90	119.00	72.15	78.00	9003360039000
0.1539	#23	3.91	119.00	72.14	78.00	9003360039100
0.1563	5/32	3.97	119.00	72.05	78.00	9003360039700
0.1571	#22	3.99	119.00	72.02	78.00	9003360039900
0.1575		4.00	119.00	72.00	78.00	9003360040000
0.1591	#21	4.04	119.00	71.94	78.00	9003360040400

Taper length drills

Series no. 336

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1610	#20	4.09	119.00	71.87	78.00	9003360040900
0.1614		4.10	119.00	71.85	78.00	9003360041000
0.1654		4.20	119.00	71.70	78.00	9003360042000
0.1661	#19	4.22	119.00	71.67	78.00	9003360042200
0.1693	#18	4.30	126.00	75.55	82.00	9003360043000
0.1720	11/64	4.37	126.00	75.45	82.00	9003360043700
0.1728	#17	4.39	126.00	75.42	82.00	9003360043900
0.1732		4.40	126.00	75.40	82.00	9003360044000
0.1772	#16	4.50	126.00	75.25	82.00	9003360045000
0.1799	#15	4.57	126.00	75.15	82.00	9003360045700
0.1811		4.60	126.00	75.10	82.00	9003360046000
0.1819	#14	4.62	126.00	75.07	82.00	9003360046200
0.1850	#13	4.70	126.00	74.95	82.00	9003360047000
0.1874	3/16	4.76	132.00	79.86	87.00	9003360047600
0.1890	#12	4.80	132.00	79.80	87.00	9003360048000
0.1909	#11	4.85	132.00	79.73	87.00	9003360048500
0.1929		4.90	132.00	79.65	87.00	9003360049000
0.1937	#10	4.92	132.00	79.62	87.00	9003360049200
0.1961	#9	4.98	132.00	79.53	87.00	9003360049800
0.1969		5.00	132.00	79.50	87.00	9003360050000
0.1992	#8	5.06	132.00	79.41	87.00	9003360050600
0.2008		5.10	132.00	79.35	87.00	9003360051000
0.2012	#7	5.11	132.00	79.34	87.00	9003360051100
0.2031	13/64	5.16	132.00	79.26	87.00	9003360051600
0.2039	#6	5.18	132.00	79.23	87.00	9003360051800
0.2047		5.20	132.00	79.20	87.00	9003360052000
0.2055	#5	5.22	132.00	79.17	87.00	9003360052200
0.2087		5.30	132.00	79.05	87.00	9003360053000
0.2091	#4	5.31	139.00	83.04	91.00	9003360053100
0.2126		5.40	139.00	82.90	91.00	9003360054000
0.2130	#3	5.41	139.00	82.89	91.00	9003360054100
0.2165		5.50	139.00	82.75	91.00	9003360055000
0.2189	7/32	5.56	139.00	82.66	91.00	9003360055600
0.2205		5.60	139.00	82.60	91.00	9003360056000
0.2244		5.70	139.00	82.45	91.00	9003360057000
0.2280	#1	5.79	139.00	82.32	91.00	9003360057900
0.2283		5.80	139.00	82.30	91.00	9003360058000
0.2323		5.90	139.00	82.15	91.00	9003360059000
0.2343	15/64	5.95	139.00	82.08	91.00	9003360059500
0.2362		6.00	139.00	82.00	91.00	9003360060000
0.2378	B	6.04	148.00	87.94	97.00	9003360060400
0.2402		6.10	148.00	87.85	97.00	9003360061000
0.2421	C	6.15	148.00	87.78	97.00	9003360061500
0.2441		6.20	148.00	87.70	97.00	9003360062000
0.2461	D	6.25	148.00	87.63	97.00	9003360062500
0.2480		6.30	148.00	87.55	97.00	9003360063000
0.2500	1/4 E	6.35	148.00	87.48	97.00	9003360063500
0.2520		6.40	148.00	87.40	97.00	9003360064000
0.2559		6.50	148.00	87.25	97.00	9003360065000
0.2571		6.53	148.00	87.21	97.00	9003360065300
0.2598		6.60	148.00	87.10	97.00	9003360066000
0.2610	G	6.63	148.00	87.06	97.00	9003360066300
0.2638		6.70	148.00	86.95	97.00	9003360067000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2657	17/64 H	6.75	156.00	91.88	102.00	9003360067500
0.2677		6.80	156.00	91.80	102.00	9003360068000
0.2717	I	6.90	156.00	91.65	102.00	9003360069000
0.2756		7.00	156.00	91.50	102.00	9003360070000
0.2768	J	7.03	156.00	91.46	102.00	9003360070300
0.2795		7.10	156.00	91.35	102.00	9003360071000
0.2811	9/32 K	7.14	156.00	91.29	102.00	9003360071400
0.2835		7.20	156.00	91.20	102.00	9003360072000
0.2874		7.30	156.00	91.05	102.00	9003360073000
0.2913		7.40	156.00	90.90	102.00	9003360074000
0.2953		7.50	156.00	90.75	102.00	9003360075000
0.2969	19/64	7.54	165.00	97.69	109.00	9003360075400
0.3020	N	7.67	165.00	97.50	109.00	9003360076700
0.3031		7.70	165.00	97.45	109.00	9003360077000
0.3071		7.80	165.00	97.30	109.00	9003360078000
0.3110		7.90	165.00	97.15	109.00	9003360079000
0.3126	5/16	7.94	165.00	97.09	109.00	9003360079400
0.3150		8.00	165.00	97.00	109.00	9003360080000
0.3161	O	8.03	165.00	96.96	109.00	9003360080300
0.3189		8.10	165.00	96.85	109.00	9003360081000
0.3228	P	8.20	165.00	96.70	109.00	9003360082000
0.3268		8.30	165.00	96.55	109.00	9003360083000
0.3307		8.40	165.00	96.40	109.00	9003360084000
0.3346		8.50	165.00	96.25	109.00	9003360085000
0.3386		8.60	175.00	102.10	115.00	9003360086000
0.3390	R	8.61	175.00	102.09	115.00	9003360086100
0.3425		8.70	175.00	101.95	115.00	9003360087000
0.3437	11/32	8.73	175.00	101.91	115.00	9003360087300
0.3465		8.80	175.00	101.80	115.00	9003360088000
0.3480	S	8.84	175.00	101.74	115.00	9003360088400
0.3504		8.90	175.00	101.65	115.00	9003360089000
0.3543		9.00	175.00	101.50	115.00	9003360090000
0.3579	T	9.09	175.00	101.37	115.00	9003360090900
0.3583		9.10	175.00	101.35	115.00	9003360091000
0.3622		9.20	175.00	101.20	115.00	9003360092000
0.3661		9.30	175.00	101.05	115.00	9003360093000
0.3677	U	9.34	175.00	100.99	115.00	9003360093400
0.3701		9.40	175.00	100.90	115.00	9003360094000
0.3740		9.50	175.00	100.75	115.00	9003360095000
0.3748	3/8	9.52	184.00	106.72	121.00	9003360095200
0.3819		9.70	184.00	106.45	121.00	9003360097000
0.3839		9.75	184.00	106.38	121.00	9003360097500
0.3858	W	9.80	184.00	106.30	121.00	9003360098000
0.3898		9.90	184.00	106.15	121.00	9003360099000
0.3937		10.00	184.00	106.00	121.00	9003360100000
0.4016		10.20	184.00	105.70	121.00	9003360102000
0.4134		10.50	184.00	105.25	121.00	9003360105000
0.4252		10.80	195.00	111.80	128.00	9003360108000
0.4331		11.00	195.00	111.50	128.00	9003360110000
0.4528		11.50	195.00	110.75	128.00	9003360115000
0.4646		11.80	195.00	110.30	128.00	9003360118000
0.4689	15/32	11.91	205.00	116.14	134.00	9003360119100
0.4724		12.00	205.00	116.00	134.00	9003360120000

Taper length drills

5536

~10xD	DIN 338	GU 500 DZ	118°	h8		Cyl	R	GUHRING SELECT
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction	

Tool material: HSCO

Surface: ○

P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

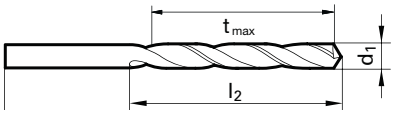
●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • facet split point • Co-alloyed high speed steel • low feed force required • low torque required • increased wear resistance • for universal application • only suitable for short drilling depths when used at full length for reach purposes

alloyed/unalloyed steels up to 800 N/mm² • cold/hot work steels • antifriction bearing steels • non-ferrous metals • cast materials • stainless steels • plastics



$t_{max} = l_2 - 1.5 \times d_1$



Speeds and feeds information on pg. 557

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	56.00	31.50	33.00	9055360010000
0.0402		1.02	56.00	32.00	33.00	9055360010200
0.0409		1.04	56.00	32.00	33.00	9055360010400
0.0421		1.07	60.00	36.00	37.00	9055360010700
0.0429		1.09	60.00	36.00	37.00	9055360010900
0.0433		1.10	60.00	35.35	37.00	9055360011000
0.0465		1.18	60.00	36.00	37.00	9055360011800
0.0469	3/64	1.19	65.00	40.00	41.00	9055360011900
0.0472		1.20	65.00	39.20	41.00	9055360012000
0.0512		1.30	65.00	39.05	41.00	9055360013000
0.0520		1.32	65.00	40.00	41.00	9055360013200
0.0551		1.40	70.00	42.90	45.00	9055360014000
0.0591		1.50	70.00	42.75	45.00	9055360015000
0.0594		1.51	76.00	49.00	50.00	9055360015100
0.0626	1/16	1.59	76.00	49.00	50.00	9055360015900
0.0630		1.60	76.00	47.60	50.00	9055360016000
0.0634		1.61	76.00	49.00	50.00	9055360016100
0.0669		1.70	76.00	47.45	50.00	9055360017000
0.0701		1.78	80.00	51.00	53.00	9055360017800
0.0709		1.80	80.00	50.30	53.00	9055360018000
0.0728		1.85	80.00	51.00	53.00	9055360018500
0.0748		1.90	80.00	50.15	53.00	9055360019000
0.0760		1.93	85.00	54.00	56.00	9055360019300
0.0780	5/64	1.98	85.00	54.00	56.00	9055360019800
0.0783		1.99	85.00	54.00	56.00	9055360019900
0.0787		2.00	85.00	53.00	56.00	9055360020000
0.0811		2.06	85.00	54.00	56.00	9055360020600
0.0819		2.08	85.00	54.00	56.00	9055360020800
0.0827		2.10	85.00	52.85	56.00	9055360021000
0.0858		2.18	90.00	57.00	59.00	9055360021800
0.0866		2.20	90.00	55.70	59.00	9055360022000
0.0890		2.26	90.00	57.00	59.00	9055360022600
0.0906		2.30	90.00	55.55	59.00	9055360023000
0.0933		2.37	95.00	60.00	62.00	9055360023700
0.0937	3/32	2.38	95.00	60.00	62.00	9055360023800
0.0945		2.40	95.00	58.40	62.00	9055360024000
0.0961		2.44	95.00	60.00	62.00	9055360024400
0.0980		2.49	95.00	60.00	62.00	9055360024900
0.0984		2.50	95.00	58.25	62.00	9055360025000
0.0996		2.53	95.00	60.00	62.00	9055360025300
0.1016		2.58	95.00	60.00	62.00	9055360025800
0.1024		2.60	95.00	58.10	62.00	9055360026000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1039		2.64	95.00	60.00	62.00	9055360026400
0.1063		2.70	100.00	61.95	66.00	9055360027000
0.1067		2.71	100.00	64.00	66.00	9055360027100
0.1094	7/64	2.78	100.00	63.00	66.00	9055360027800
0.1098		2.79	100.00	63.00	66.00	9055360027900
0.1102		2.80	100.00	61.80	66.00	9055360028000
0.1110		2.82	100.00	63.00	66.00	9055360028200
0.1130		2.87	100.00	63.00	66.00	9055360028700
0.1142		2.90	100.00	61.65	66.00	9055360029000
0.1161		2.95	100.00	63.00	66.00	9055360029500
0.1181		3.00	100.00	61.50	66.00	9055360030000
0.1201		3.05	106.00	66.00	69.00	9055360030500
0.1220		3.10	106.00	64.35	69.00	9055360031000
0.1248	1/8	3.17	106.00	66.00	69.00	9055360031700
0.1260		3.20	106.00	64.20	69.00	9055360032000
0.1283		3.26	106.00	66.00	69.00	9055360032600
0.1299		3.30	106.00	64.05	69.00	9055360033000
0.1339		3.40	112.00	67.90	73.00	9055360034000
0.1358		3.45	112.00	70.00	73.00	9055360034500
0.1378		3.50	112.00	67.75	73.00	9055360035000
0.1406	9/64 #28	3.57	112.00	70.00	73.00	9055360035700
0.1417		3.60	112.00	67.60	73.00	9055360036000
0.1441		3.66	112.00	70.00	73.00	9055360036600
0.1457		3.70	112.00	67.45	73.00	9055360037000
0.1469		3.73	112.00	70.00	73.00	9055360037300
0.1496		3.80	119.00	72.30	78.00	9055360038000
0.1520		3.86	119.00	75.00	78.00	9055360038600
0.1535		3.90	119.00	72.15	78.00	9055360039000
0.1539		3.91	119.00	74.00	78.00	9055360039100
0.1563	5/32	3.97	119.00	74.00	78.00	9055360039700
0.1571		3.99	119.00	74.00	78.00	9055360039900
0.1575		4.00	119.00	72.00	78.00	9055360040000
0.1591		4.04	119.00	74.00	78.00	9055360040400
0.1610		4.09	119.00	74.00	78.00	9055360040900
0.1614		4.10	119.00	71.85	78.00	9055360041000
0.1654		4.20	119.00	71.70	78.00	9055360042000
0.1661		4.22	119.00	74.00	78.00	9055360042200
0.1693		4.30	126.00	75.55	82.00	9055360043000
0.1720	11/64	4.37	126.00	78.00	82.00	9055360043700
0.1728		4.39	126.00	78.00	82.00	9055360043900
0.1732		4.40	126.00	75.40	82.00	9055360044000
0.1772		4.50	126.00	75.25	82.00	9055360045000

Taper length drills

Series no. **5536**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1799		4.57	126.00	78.00	82.00	9055360045700
0.1811		4.60	126.00	75.10	82.00	9055360046000
0.1819		4.62	126.00	78.00	82.00	9055360046200
0.1850		4.70	126.00	74.95	82.00	9055360047000
0.1874	3/16	4.76	132.00	83.00	87.00	9055360047600
0.1890		4.80	132.00	79.80	87.00	9055360048000
0.1909		4.85	132.00	83.00	87.00	9055360048500
0.1929		4.90	132.00	79.65	87.00	9055360049000
0.1937		4.92	132.00	83.00	87.00	9055360049200
0.1961		4.98	132.00	83.00	87.00	9055360049800
0.1969		5.00	132.00	79.50	87.00	9055360050000
0.1992		5.06	132.00	82.00	87.00	9055360050600
0.2008		5.10	132.00	79.35	87.00	9055360051000
0.2012		5.11	132.00	82.00	87.00	9055360051100
0.2031	13/64	5.16	132.00	82.00	87.00	9055360051600
0.2039		5.18	132.00	82.00	87.00	9055360051800
0.2047		5.20	132.00	79.20	87.00	9055360052000
0.2055		5.22	132.00	82.00	87.00	9055360052200
0.2087		5.30	132.00	79.05	87.00	9055360053000
0.2091		5.31	139.00	86.00	91.00	9055360053100
0.2126		5.40	139.00	82.90	91.00	9055360054000
0.2130		5.41	139.00	86.00	91.00	9055360054100
0.2165		5.50	139.00	82.75	91.00	9055360055000
0.2189	7/32	5.56	139.00	86.00	91.00	9055360055600
0.2205		5.60	139.00	82.60	91.00	9055360056000
0.2209		5.61	139.00	86.00	91.00	9055360056100
0.2244		5.70	139.00	82.45	91.00	9055360057000
0.2280		5.79	139.00	86.00	91.00	9055360057900
0.2283		5.80	139.00	82.30	91.00	9055360058000
0.2323		5.90	139.00	82.15	91.00	9055360059000
0.2339	A	5.94	139.00	86.00	91.00	9055360059400
0.2343	15/64	5.95	139.00	86.00	91.00	9055360059500
0.2362		6.00	139.00	82.00	91.00	9055360060000
0.2378	B	6.04	148.00	92.00	97.00	9055360060400
0.2402		6.10	148.00	87.85	97.00	9055360061000
0.2421	C	6.15	148.00	91.00	97.00	9055360061500
0.2441		6.20	148.00	87.70	97.00	9055360062000
0.2461	D	6.25	148.00	91.00	97.00	9055360062500
0.2480		6.30	148.00	87.55	97.00	9055360063000
0.2500	1/4 E	6.35	148.00	91.00	97.00	9055360063500
0.2520		6.40	148.00	87.40	97.00	9055360064000
0.2559		6.50	148.00	87.25	97.00	9055360065000
0.2571	F	6.53	148.00	91.00	97.00	9055360065300
0.2598		6.60	148.00	87.10	97.00	9055360066000
0.2610	G	6.63	148.00	91.00	97.00	9055360066300
0.2638		6.70	148.00	86.95	97.00	9055360067000
0.2657	17/64 H	6.75	156.00	96.00	102.00	9055360067500
0.2677		6.80	156.00	91.80	102.00	9055360068000
0.2717	I	6.90	156.00	91.65	102.00	9055360069000
0.2756		7.00	156.00	91.50	102.00	9055360070000
0.2768	J	7.03	156.00	96.00	102.00	9055360070300
0.2795		7.10	156.00	91.35	102.00	9055360071000
0.2811	9/32 K	7.14	156.00	96.00	102.00	9055360071400
0.2835		7.20	156.00	91.20	102.00	9055360072000
0.2874		7.30	156.00	91.05	102.00	9055360073000
0.2902	L	7.37	156.00	95.00	102.00	9055360073700
0.2913		7.40	156.00	90.90	102.00	9055360074000
0.2949	M	7.49	156.00	95.00	102.00	9055360074900
0.2953		7.50	156.00	90.75	102.00	9055360075000
0.2969	19/64	7.54	165.00	102.00	109.00	9055360075400
0.2992		7.60	165.00	97.60	109.00	9055360076000
0.3020	N	7.67	165.00	102.00	109.00	9055360076700

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3031		7.70	165.00	97.45	109.00	9055360077000
0.3071		7.80	165.00	97.30	109.00	9055360078000
0.3110		7.90	165.00	97.15	109.00	9055360079000
0.3126	5/16	7.94	165.00	102.00	109.00	9055360079400
0.3150		8.00	165.00	97.00	109.00	9055360080000
0.3161	O	8.03	165.00	102.00	109.00	9055360080300
0.3189		8.10	165.00	96.85	109.00	9055360081000
0.3228	P	8.20	165.00	96.70	109.00	9055360082000
0.3268		8.30	165.00	96.55	109.00	9055360083000
0.3280	21/64	8.33	165.00	101.00	109.00	9055360083300
0.3307		8.40	165.00	96.40	109.00	9055360084000
0.3319	Q	8.43	165.00	101.00	109.00	9055360084300
0.3346		8.50	165.00	96.25	109.00	9055360085000
0.3386		8.60	175.00	102.10	115.00	9055360086000
0.3390	R	8.61	175.00	107.00	115.00	9055360086100
0.3425		8.70	175.00	101.95	115.00	9055360087000
0.3437	11/32	8.73	175.00	107.00	115.00	9055360087300
0.3465		8.80	175.00	101.80	115.00	9055360088000
0.3480	S	8.84	175.00	107.00	115.00	9055360088400
0.3504		8.90	175.00	101.65	115.00	9055360089000
0.3543		9.00	175.00	101.50	115.00	9055360090000
0.3579	T	9.09	175.00	107.00	115.00	9055360090900
0.3583		9.10	175.00	101.35	115.00	9055360091000
0.3594	23/64	9.13	175.00	107.00	115.00	9055360091300
0.3622		9.20	175.00	101.20	115.00	9055360092000
0.3661		9.30	175.00	101.05	115.00	9055360093000
0.3677	U	9.34	175.00	107.00	115.00	9055360093400
0.3701		9.40	175.00	100.90	115.00	9055360094000
0.3740		9.50	175.00	100.75	115.00	9055360095000
0.3748	3/8	9.52	184.00	112.00	121.00	9055360095200
0.3772	V	9.58	184.00	112.00	121.00	9055360095800
0.3780		9.60	184.00	106.60	121.00	9055360096000
0.3819		9.70	184.00	106.45	121.00	9055360097000
0.3858	W	9.80	184.00	106.30	121.00	9055360098000
0.3898		9.90	184.00	106.15	121.00	9055360099000
0.3906	25/64	9.92	184.00	112.00	121.00	9055360099200
0.3937		10.00	184.00	106.00	121.00	9055360100000
0.3969	X	10.08	184.00	112.00	121.00	9055360100800
0.3976		10.10	184.00	105.85	121.00	9055360101000
0.4016		10.20	184.00	105.70	121.00	9055360102000
0.4039	Y	10.26	184.00	112.00	121.00	9055360102600
0.4055		10.30	184.00	105.55	121.00	9055360103000
0.4063	13/32	10.32	184.00	112.00	121.00	9055360103200
0.4094		10.40	184.00	105.40	121.00	9055360104000
0.4130	Z	10.49	184.00	111.00	121.00	9055360104900
0.4134		10.50	184.00	105.25	121.00	9055360105000
0.4220	27/64	10.72	195.00	118.00	128.00	9055360107200
0.4331		11.00	195.00	111.50	128.00	9055360110000
0.4374	7/16	11.11	195.00	118.00	128.00	9055360111100
0.4528		11.50	195.00	110.75	128.00	9055360115000
0.4531	29/64	11.51	195.00	118.00	128.00	9055360115100
0.4689	15/32	11.91	205.00	123.00	134.00	9055360119100
0.4724		12.00	205.00	116.00	134.00	9055360120000
0.4843	31/64	12.30	205.00	123.00	134.00	9055360123000
0.4921		12.50	205.00	115.25	134.00	9055360125000
0.5000	1/2	12.70	205.00	123.00	134.00	9055360127000
0.5118		13.00	205.00	114.50	134.00	9055360130000
0.5157	33/64	13.10	205.00	122.00	134.00	9055360131000
0.5311	17/32	13.49	214.00	128.00	140.00	9055360134900
0.5315		13.50	214.00	119.75	140.00	9055360135000
0.5512		14.00	214.00	119.00	140.00	9055360140000
0.5626	9/16	14.29	220.00	131.00	144.00	9055360142900

Taper length drills

5537

~10xD Cutting depth | DIN 338 Standard | GU 500 DZ Type | 118° Point angle | h8 Tolerance on Ø | Web Thinning | Cyl Shank form | R Cutting direction | GUHRING SELECT

Tool material: HSCO

Surface: S

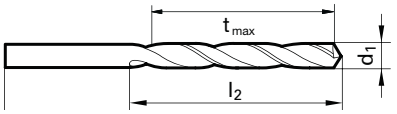
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.000 • facet split point • Co-alloyed high speed steel • low feed force required • low torque required • increased wear resistance • for universal application • only suitable for short drilling depths when used at full length for reach purposes

alloyed/unalloyed steels up to 800 N/mm² • cold/hot work steels • antifriction bearing steels • non-ferrous metals • cast materials • stainless steels • plastics

$t_{max} = l_2 - 1.5 \times d_1$





Speeds and feeds information on pg. 557

Taper Length

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	56.00	31.50	33.00	9055370010000
0.0402		1.02	56.00	32.00	33.00	9055370010200
0.0409		1.04	56.00	32.00	33.00	9055370010400
0.0421		1.07	60.00	36.00	37.00	9055370010700
0.0429		1.09	60.00	36.00	37.00	9055370010900
0.0433		1.10	60.00	35.35	37.00	9055370011000
0.0465		1.18	60.00	36.00	37.00	9055370011800
0.0469	3/64	1.19	65.00	40.00	41.00	9055370011900
0.0472		1.20	65.00	39.20	41.00	9055370012000
0.0512		1.30	65.00	39.05	41.00	9055370013000
0.0520		1.32	65.00	40.00	41.00	9055370013200
0.0551		1.40	70.00	42.90	45.00	9055370014000
0.0591		1.50	70.00	42.75	45.00	9055370015000
0.0594		1.51	76.00	49.00	50.00	9055370015100
0.0626	1/16	1.59	76.00	49.00	50.00	9055370015900
0.0630		1.60	76.00	47.60	50.00	9055370016000
0.0634		1.61	76.00	49.00	50.00	9055370016100
0.0669		1.70	76.00	47.45	50.00	9055370017000
0.0701		1.78	80.00	51.00	53.00	9055370017800
0.0709		1.80	80.00	50.30	53.00	9055370018000
0.0728		1.85	80.00	51.00	53.00	9055370018500
0.0748		1.90	80.00	50.15	53.00	9055370019000
0.0760		1.93	85.00	54.00	56.00	9055370019300
0.0780	5/64	1.98	85.00	54.00	56.00	9055370019800
0.0783		1.99	85.00	54.00	56.00	9055370019900
0.0787		2.00	85.00	53.00	56.00	9055370020000
0.0811		2.06	85.00	54.00	56.00	9055370020600
0.0819		2.08	85.00	54.00	56.00	9055370020800
0.0827		2.10	85.00	52.85	56.00	9055370021000
0.0858		2.18	90.00	57.00	59.00	9055370021800
0.0866		2.20	90.00	55.70	59.00	9055370022000
0.0890		2.26	90.00	57.00	59.00	9055370022600
0.0906		2.30	90.00	55.55	59.00	9055370023000
0.0933		2.37	95.00	60.00	62.00	9055370023700
0.0937	3/32	2.38	95.00	60.00	62.00	9055370023800
0.0945		2.40	95.00	58.40	62.00	9055370024000
0.0961		2.44	95.00	60.00	62.00	9055370024400
0.0980		2.49	95.00	60.00	62.00	9055370024900
0.0984		2.50	95.00	58.25	62.00	9055370025000
0.0996		2.53	95.00	60.00	62.00	9055370025300
0.1016		2.58	95.00	60.00	62.00	9055370025800
0.1024		2.60	95.00	58.10	62.00	9055370026000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1039		2.64	95.00	60.00	62.00	9055370026400
0.1063		2.70	100.00	61.95	66.00	9055370027000
0.1067		2.71	100.00	64.00	66.00	9055370027100
0.1094	7/64	2.78	100.00	63.00	66.00	9055370027800
0.1098		2.79	100.00	63.00	66.00	9055370027900
0.1102		2.80	100.00	61.80	66.00	9055370028000
0.1110		2.82	100.00	63.00	66.00	9055370028200
0.1130		2.87	100.00	63.00	66.00	9055370028700
0.1142		2.90	100.00	61.65	66.00	9055370029000
0.1161		2.95	100.00	63.00	66.00	9055370029500
0.1181		3.00	100.00	61.50	66.00	9055370030000
0.1201		3.05	106.00	66.00	69.00	9055370030500
0.1220		3.10	106.00	64.35	69.00	9055370031000
0.1248	1/8	3.17	106.00	66.00	69.00	9055370031700
0.1260		3.20	106.00	64.20	69.00	9055370032000
0.1283		3.26	106.00	66.00	69.00	9055370032600
0.1299		3.30	106.00	64.05	69.00	9055370033000
0.1339		3.40	112.00	67.90	73.00	9055370034000
0.1358		3.45	112.00	70.00	73.00	9055370034500
0.1378		3.50	112.00	67.75	73.00	9055370035000
0.1406	9/64	#28 3.57	112.00	70.00	73.00	9055370035700
0.1417		3.60	112.00	67.60	73.00	9055370036000
0.1441		3.66	112.00	70.00	73.00	9055370036600
0.1457		3.70	112.00	67.45	73.00	9055370037000
0.1469		3.73	112.00	70.00	73.00	9055370037300
0.1496		3.80	119.00	72.30	78.00	9055370038000
0.1520		3.86	119.00	75.00	78.00	9055370038600
0.1535		3.90	119.00	72.15	78.00	9055370039000
0.1539		3.91	119.00	74.00	78.00	9055370039100
0.1563	5/32	3.97	119.00	74.00	78.00	9055370039700
0.1571		3.99	119.00	74.00	78.00	9055370039900
0.1575		4.00	119.00	72.00	78.00	9055370040000
0.1591		4.04	119.00	74.00	78.00	9055370040400
0.1610		4.09	119.00	74.00	78.00	9055370040900
0.1614		4.10	119.00	71.85	78.00	9055370041000
0.1654		4.20	119.00	71.70	78.00	9055370042000
0.1661		4.22	119.00	74.00	78.00	9055370042200
0.1693		4.30	126.00	75.55	82.00	9055370043000
0.1720	11/64	4.37	126.00	78.00	82.00	9055370043700
0.1728		4.39	126.00	78.00	82.00	9055370043900
0.1732		4.40	126.00	75.40	82.00	9055370044000
0.1772		4.50	126.00	75.25	82.00	9055370045000

Taper length drills

Series no. **5537**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1799		4.57	126.00	78.00	82.00	9055370045700
0.1811		4.60	126.00	75.10	82.00	9055370046000
0.1819		4.62	126.00	78.00	82.00	9055370046200
0.1850		4.70	126.00	74.95	82.00	9055370047000
0.1874	3/16	4.76	132.00	83.00	87.00	9055370047600
0.1890		4.80	132.00	79.80	87.00	9055370048000
0.1909		4.85	132.00	83.00	87.00	9055370048500
0.1929		4.90	132.00	79.65	87.00	9055370049000
0.1937		4.92	132.00	83.00	87.00	9055370049200
0.1961		4.98	132.00	83.00	87.00	9055370049800
0.1969		5.00	132.00	79.50	87.00	9055370050000
0.1992		5.06	132.00	82.00	87.00	9055370050600
0.2008		5.10	132.00	79.35	87.00	9055370051000
0.2012		5.11	132.00	82.00	87.00	9055370051100
0.2031	13/64	5.16	132.00	82.00	87.00	9055370051600
0.2039		5.18	132.00	82.00	87.00	9055370051800
0.2047		5.20	132.00	79.20	87.00	9055370052000
0.2055		5.22	132.00	82.00	87.00	9055370052200
0.2087		5.30	132.00	79.05	87.00	9055370053000
0.2091		5.31	139.00	86.00	91.00	9055370053100
0.2126		5.40	139.00	82.90	91.00	9055370054000
0.2130		5.41	139.00	86.00	91.00	9055370054100
0.2165		5.50	139.00	82.75	91.00	9055370055000
0.2189	7/32	5.56	139.00	86.00	91.00	9055370055600
0.2205		5.60	139.00	82.60	91.00	9055370056000
0.2209		5.61	139.00	86.00	91.00	9055370056100
0.2244		5.70	139.00	82.45	91.00	9055370057000
0.2280		5.79	139.00	86.00	91.00	9055370057900
0.2283		5.80	139.00	82.30	91.00	9055370058000
0.2323		5.90	139.00	82.15	91.00	9055370059000
0.2339	A	5.94	139.00	86.00	91.00	9055370059400
0.2343	15/64	5.95	139.00	86.00	91.00	9055370059500
0.2362		6.00	139.00	82.00	91.00	9055370060000
0.2378	B	6.04	148.00	92.00	97.00	9055370060400
0.2402		6.10	148.00	87.85	97.00	9055370061000
0.2421	C	6.15	148.00	91.00	97.00	9055370061500
0.2441		6.20	148.00	87.70	97.00	9055370062000
0.2461	D	6.25	148.00	91.00	97.00	9055370062500
0.2480		6.30	148.00	87.55	97.00	9055370063000
0.2500	1/4 E	6.35	148.00	91.00	97.00	9055370063500
0.2520		6.40	148.00	87.40	97.00	9055370064000
0.2559		6.50	148.00	87.25	97.00	9055370065000
0.2571	F	6.53	148.00	91.00	97.00	9055370065300
0.2598		6.60	148.00	87.10	97.00	9055370066000
0.2610	G	6.63	148.00	91.00	97.00	9055370066300
0.2638		6.70	148.00	86.95	97.00	9055370067000
0.2657	17/64 H	6.75	156.00	96.00	102.00	9055370067500
0.2677		6.80	156.00	91.80	102.00	9055370068000
0.2717	I	6.90	156.00	91.65	102.00	9055370069000
0.2756		7.00	156.00	91.50	102.00	9055370070000
0.2768	J	7.03	156.00	96.00	102.00	9055370070300
0.2795		7.10	156.00	91.35	102.00	9055370071000
0.2811	9/32 K	7.14	156.00	96.00	102.00	9055370071400
0.2835		7.20	156.00	91.20	102.00	9055370072000
0.2874		7.30	156.00	91.05	102.00	9055370073000
0.2902	L	7.37	156.00	95.00	102.00	9055370073700
0.2913		7.40	156.00	90.90	102.00	9055370074000
0.2949	M	7.49	156.00	95.00	102.00	9055370074900
0.2953		7.50	156.00	90.75	102.00	9055370075000
0.2969	19/64	7.54	165.00	102.00	109.00	9055370075400
0.2992		7.60	165.00	97.60	109.00	9055370076000
0.3020	N	7.67	165.00	102.00	109.00	9055370076700

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3031		7.70	165.00	97.45	109.00	9055370077000
0.3071		7.80	165.00	97.30	109.00	9055370078000
0.3110		7.90	165.00	97.15	109.00	9055370079000
0.3126	5/16	7.94	165.00	102.00	109.00	9055370079400
0.3150		8.00	165.00	97.00	109.00	9055370080000
0.3161	O	8.03	165.00	102.00	109.00	9055370080300
0.3189		8.10	165.00	96.85	109.00	9055370081000
0.3228	P	8.20	165.00	96.70	109.00	9055370082000
0.3268		8.30	165.00	96.55	109.00	9055370083000
0.3280	21/64	8.33	165.00	101.00	109.00	9055370083300
0.3307		8.40	165.00	96.40	109.00	9055370084000
0.3319	Q	8.43	165.00	101.00	109.00	9055370084300
0.3346		8.50	165.00	96.25	109.00	9055370085000
0.3386		8.60	175.00	102.10	115.00	9055370086000
0.3390	R	8.61	175.00	107.00	115.00	9055370086100
0.3425		8.70	175.00	101.95	115.00	9055370087000
0.3437	11/32	8.73	175.00	107.00	115.00	9055370087300
0.3465		8.80	175.00	101.80	115.00	9055370088000
0.3480	S	8.84	175.00	107.00	115.00	9055370088400
0.3504		8.90	175.00	101.65	115.00	9055370089000
0.3543		9.00	175.00	101.50	115.00	9055370090000
0.3579	T	9.09	175.00	107.00	115.00	9055370090900
0.3583		9.10	175.00	101.35	115.00	9055370091000
0.3594	23/64	9.13	175.00	107.00	115.00	9055370091300
0.3622		9.20	175.00	101.20	115.00	9055370092000
0.3661		9.30	175.00	101.05	115.00	9055370093000
0.3677	U	9.34	175.00	107.00	115.00	9055370093400
0.3701		9.40	175.00	100.90	115.00	9055370094000
0.3740		9.50	175.00	100.75	115.00	9055370095000
0.3748	3/8	9.52	184.00	112.00	121.00	9055370095200
0.3772	V	9.58	184.00	112.00	121.00	9055370095800
0.3780		9.60	184.00	106.60	121.00	9055370096000
0.3819		9.70	184.00	106.45	121.00	9055370097000
0.3858	W	9.80	184.00	106.30	121.00	9055370098000
0.3898		9.90	184.00	106.15	121.00	9055370099000
0.3906	25/64	9.92	184.00	112.00	121.00	9055370099200
0.3937		10.00	184.00	106.00	121.00	9055370100000
0.3969	X	10.08	184.00	112.00	121.00	9055370100800
0.3976		10.10	184.00	105.85	121.00	9055370101000
0.4016		10.20	184.00	105.70	121.00	9055370102000
0.4039	Y	10.26	184.00	112.00	121.00	9055370102600
0.4055		10.30	184.00	105.55	121.00	9055370103000
0.4063	13/32	10.32	184.00	112.00	121.00	9055370103200
0.4094		10.40	184.00	105.40	121.00	9055370104000
0.4130	Z	10.49	184.00	111.00	121.00	9055370104900
0.4134		10.50	184.00	105.25	121.00	9055370105000
0.4220	27/64	10.72	195.00	118.00	128.00	9055370107200
0.4331		11.00	195.00	111.50	128.00	9055370110000
0.4374	7/16	11.11	195.00	118.00	128.00	9055370111100
0.4528		11.50	195.00	110.75	128.00	9055370115000
0.4531	29/64	11.51	195.00	118.00	128.00	9055370115100
0.4689	15/32	11.91	205.00	123.00	134.00	9055370119100
0.4724		12.00	205.00	116.00	134.00	9055370120000
0.4843	31/64	12.30	205.00	123.00	134.00	9055370123000
0.4921		12.50	205.00	115.25	134.00	9055370125000
0.5000	1/2	12.70	205.00	123.00	134.00	9055370127000
0.5118		13.00	205.00	114.50	134.00	9055370130000
0.5157	33/64	13.10	205.00	122.00	134.00	9055370131000
0.5311	17/32	13.49	214.00	128.00	140.00	9055370134900
0.5315		13.50	214.00	119.75	140.00	9055370135000
0.5512		14.00	214.00	119.00	140.00	9055370140000
0.5626	9/16	14.29	220.00	131.00	144.00	9055370142900



EXTRA LENGTH HSS, HSCO, HSS-E-PM DRILLS



Extra length drills, series 1

Series no. **235**

~15xD	DIN 1869	N	118°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface: >Ø 2.36

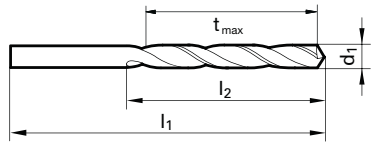
P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.380 • relieved cone • for extremely deep holes

alloyed/unalloyed steel and cast steel • grey cast iron, malleable and spheroidal iron • sintered powder metal, German silver and graphite

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 481

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0630		1.600	115.00	72.60	75.00	9002350016000
0.0709		1.800	120.00	77.30	80.00	9002350018000
0.0748		1.900	120.00	77.15	80.00	9002350019000
0.0768		1.950	125.00	82.08	85.00	9002350019500
0.0787		2.000	125.00	82.00	85.00	9002350020000
0.0807		2.050	125.00	81.93	85.00	9002350020500
0.0827		2.100	125.00	81.85	85.00	9002350021000
0.0866		2.200	135.00	86.70	90.00	9002350022000
0.0906		2.300	135.00	86.55	90.00	9002350023000
0.0937	3/32	2.380	140.00	91.43	95.00	9002350023800
0.0945		2.400	140.00	91.40	95.00	9002350024000
0.0984		2.500	140.00	91.25	95.00	9002350025000
0.1024		2.600	140.00	91.10	95.00	9002350026000
0.1063		2.700	150.00	95.95	100.00	9002350027000
0.1094	7/64	2.780	150.00	95.83	100.00	9002350027800
0.1102		2.800	150.00	95.80	100.00	9002350028000
0.1142		2.900	150.00	95.65	100.00	9002350029000
0.1181		3.000	150.00	95.50	100.00	9002350030000
0.1220		3.100	155.00	100.35	105.00	9002350031000
0.1248	1/8	3.170	155.00	100.25	105.00	9002350031700
0.1260		3.200	155.00	100.20	105.00	9002350032000
0.1280		3.250	155.00	100.13	105.00	9002350032500
0.1299		3.300	155.00	100.05	105.00	9002350033000
0.1339		3.400	165.00	109.90	115.00	9002350034000
0.1378		3.500	165.00	109.75	115.00	9002350035000
0.1406	9/64 #28	3.570	165.00	109.65	115.00	9002350035700
0.1417		3.600	165.00	109.60	115.00	9002350036000
0.1457		3.700	165.00	109.45	115.00	9002350037000
0.1496	#25	3.800	175.00	114.30	120.00	9002350038000
0.1535		3.900	175.00	114.15	120.00	9002350039000
0.1563	5/32	3.970	175.00	114.05	120.00	9002350039700
0.1575		4.000	175.00	114.00	120.00	9002350040000
0.1614		4.100	175.00	113.85	120.00	9002350041000
0.1654		4.200	175.00	113.70	120.00	9002350042000
0.1693	#18	4.300	185.00	118.55	125.00	9002350043000
0.1720	11/64	4.370	185.00	118.45	125.00	9002350043700
0.1732		4.400	185.00	118.40	125.00	9002350044000
0.1772	#16	4.500	185.00	118.25	125.00	9002350045000
0.1811		4.600	185.00	118.10	125.00	9002350046000
0.1850	#13	4.700	185.00	117.95	125.00	9002350047000
0.1874	3/16	4.760	195.00	127.86	135.00	9002350047600
0.1890	#12	4.800	195.00	127.80	135.00	9002350048000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1929		4.900	195.00	127.65	135.00	9002350049000
0.1969		5.000	195.00	127.50	135.00	9002350050000
0.2008		5.100	195.00	127.35	135.00	9002350051000
0.2047		5.200	195.00	127.20	135.00	9002350052000
0.2087		5.300	195.00	127.05	135.00	9002350053000
0.2126		5.400	205.00	131.90	140.00	9002350054000
0.2165		5.500	205.00	131.75	140.00	9002350055000
0.2189	7/32	5.560	205.00	131.66	140.00	9002350055600
0.2205		5.600	205.00	131.60	140.00	9002350056000
0.2244		5.700	205.00	131.45	140.00	9002350057000
0.2283		5.800	205.00	131.30	140.00	9002350058000
0.2323		5.900	205.00	131.15	140.00	9002350059000
0.2343	15/64	5.950	205.00	131.08	140.00	9002350059500
0.2362		6.000	205.00	131.00	140.00	9002350060000
0.2402		6.100	215.00	140.85	150.00	9002350061000
0.2441		6.200	215.00	140.70	150.00	9002350062000
0.2480		6.300	215.00	140.55	150.00	9002350063000
0.2500	1/4 E	6.350	215.00	140.48	150.00	9002350063500
0.2520		6.400	215.00	140.40	150.00	9002350064000
0.2559		6.500	215.00	140.25	150.00	9002350065000
0.2598		6.600	215.00	140.10	150.00	9002350066000
0.2638		6.700	215.00	139.95	150.00	9002350067000
0.2657	17/64 H	6.750	225.00	144.88	155.00	9002350067500
0.2677		6.800	225.00	144.80	155.00	9002350068000
0.2756		7.000	225.00	144.50	155.00	9002350070000
0.2795		7.100	225.00	144.35	155.00	9002350071000
0.2811	9/32 K	7.140	225.00	144.29	155.00	9002350071400
0.2835		7.200	225.00	144.20	155.00	9002350072000
0.2913		7.400	225.00	143.90	155.00	9002350074000
0.2953		7.500	225.00	143.75	155.00	9002350075000
0.2969	19/64	5.950	240.00	153.69	165.00	9002350075400
0.3031		7.700	240.00	153.45	165.00	9002350077000
0.3071		7.800	240.00	153.30	165.00	9002350078000
0.3110		7.900	240.00	153.15	165.00	9002350079000
0.3126	5/16	7.940	240.00	153.09	165.00	9002350079400
0.3150		8.000	240.00	153.00	165.00	9002350080000
0.3189		8.100	240.00	152.85	165.00	9002350081000
0.3228	P	8.200	240.00	152.70	165.00	9002350082000
0.3268		8.300	240.00	152.55	165.00	9002350083000
0.3280	21/64	8.330	240.00	152.51	165.00	9002350083300
0.3307		8.400	240.00	152.40	165.00	9002350084000
0.3346		8.500	240.00	152.25	165.00	9002350085000

Extra length drills, series 1

Series no. **235**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3386		8.600	250.00	162.10	175.00	9002350086000
0.3425		8.700	250.00	161.95	175.00	9002350087000
0.3437	11/32	8.730	250.00	161.91	175.00	9002350087300
0.3465		8.800	250.00	161.80	175.00	9002350088000
0.3543		9.000	250.00	161.50	175.00	9002350090000
0.3594	23/64	9.130	250.00	161.31	175.00	9002350091300
0.3740		9.500	250.00	160.75	175.00	9002350095000
0.3748	3/8	9.520	265.00	170.72	185.00	9002350095200
0.3780		9.600	265.00	170.60	185.00	9002350096000
0.3819		9.700	265.00	170.45	185.00	9002350097000
0.3858	W	9.800	265.00	170.30	185.00	9002350098000
0.3898		9.900	265.00	170.15	185.00	9002350099000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3937		10.000	265.00	170.00	185.00	9002350100000
0.4063	13/32	10.320	265.00	169.52	185.00	9002350103200
0.4134		10.500	265.00	169.25	185.00	9002350105000
0.4331		11.000	280.00	178.50	195.00	9002350110000
0.4374	7/16	11.110	280.00	178.34	195.00	9002350111100
0.4528		11.500	280.00	177.75	195.00	9002350115000
0.4724		12.000	295.00	187.00	205.00	9002350120000
0.4764		12.100	295.00	186.85	205.00	9002350121000
0.4843	31/64	12.300	295.00	186.55	205.00	9002350123000
0.4921		12.500	295.00	186.25	205.00	9002350125000
0.5000	1/2	12.700	295.00	185.95	205.00	9002350127000
0.5118		13.000	295.00	185.50	205.00	9002350130000

Extra length drills, series 1

Series no. **524**

~15xD	DIN 1869	GT 50	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface: ○

P	Steel	○
M	Stainless steel	
K	Cast iron	
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

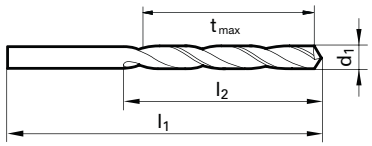
●=Optimal
○=Limited

web thinning ≥ Ø 2.380 • relieved cone • for extremely deep holes

soft, long chipping materials up to 500 N/mm² • mild steels • aluminum, Al-alloys (long-chipping) • zinc, refined copper, silumin, Elektron • zamak, argalium, soft plastics, wood



$t_{max} = l_2 - 1.5 \times d_1$



Speeds and feeds information on pg. 496

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0787		2.00	125.00	82.00	85.00	9005240020000
0.0827		2.10	125.00	81.85	85.00	9005240021000
0.0866		2.20	135.00	86.70	90.00	9005240022000
0.0906		2.30	135.00	86.55	90.00	9005240023000
0.0925		2.35	135.00	86.48	90.00	9005240023500
0.0937	3/32	2.38	140.00	91.43	95.00	9005240023800
0.0945		2.40	140.00	91.40	95.00	9005240024000
0.0965		2.45	140.00	91.33	95.00	9005240024500
0.0984		2.50	140.00	91.25	95.00	9005240025000
0.1024		2.60	140.00	91.10	95.00	9005240026000
0.1094	7/64	2.78	150.00	95.83	100.00	9005240027800
0.1102		2.80	150.00	95.80	100.00	9005240028000
0.1142		2.90	150.00	95.65	100.00	9005240029000
0.1161	#32	2.95	150.00	95.58	100.00	9005240029500
0.1181		3.00	150.00	95.50	100.00	9005240030000
0.1220		3.10	155.00	100.35	105.00	9005240031000
0.1248	1/8	3.17	155.00	100.25	105.00	9005240031700
0.1260		3.20	155.00	100.20	105.00	9005240032000
0.1299		3.30	155.00	100.05	105.00	9005240033000
0.1319		3.35	155.00	99.98	105.00	9005240033500
0.1339		3.40	165.00	109.90	115.00	9005240034000
0.1358	#29	3.45	165.00	109.83	115.00	9005240034500
0.1378		3.50	165.00	109.75	115.00	9005240035000
0.1390		3.53	165.00	109.71	115.00	9005240035300
0.1406	9/64 #28	3.57	165.00	109.65	115.00	9005240035700
0.1417		3.60	165.00	109.60	115.00	9005240036000
0.1457		3.70	165.00	109.45	115.00	9005240037000
0.1496	#25	3.80	175.00	114.30	120.00	9005240038000
0.1535		3.90	175.00	114.15	120.00	9005240039000
0.1563	5/32	3.97	175.00	114.05	120.00	9005240039700
0.1575		4.00	175.00	114.00	120.00	9005240040000
0.1614		4.10	175.00	113.85	120.00	9005240041000
0.1654		4.20	175.00	113.70	120.00	9005240042000
0.1673		4.25	175.00	113.63	120.00	9005240042500
0.1693	#18	4.30	185.00	118.55	125.00	9005240043000
0.1720	11/64	4.37	185.00	118.45	125.00	9005240043700
0.1732		4.40	185.00	118.40	125.00	9005240044000
0.1772	#16	4.50	185.00	118.25	125.00	9005240045000
0.1811		4.60	185.00	118.10	125.00	9005240046000
0.1850	#13	4.70	185.00	117.95	125.00	9005240047000
0.1874	3/16	4.76	195.00	127.86	135.00	9005240047600
0.1890	#12	4.80	195.00	127.80	135.00	9005240048000
0.1969		5.00	195.00	127.50	135.00	9005240050000
0.2008		5.10	195.00	127.35	135.00	9005240051000
0.2031	13/64	5.16	195.00	127.26	135.00	9005240051600
0.2047		5.20	195.00	127.20	135.00	9005240052000

Diameter (d_1) inch	wire/ltr		mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2087			5.30	195.00	127.05	135.00	9005240053000
0.2126			5.40	205.00	131.90	140.00	9005240054000
0.2165			5.50	205.00	131.75	140.00	9005240055000
0.2189	7/32		5.56	205.00	131.66	140.00	9005240055600
0.2283			5.80	205.00	131.30	140.00	9005240058000
0.2343	15/64		5.95	205.00	131.08	140.00	9005240059500
0.2362			6.00	205.00	131.00	140.00	9005240060000
0.2402			6.10	215.00	140.85	150.00	9005240061000
0.2500	1/4	E	6.35	215.00	140.48	150.00	9005240063500
0.2520			6.40	215.00	140.40	150.00	9005240064000
0.2559			6.50	215.00	140.25	150.00	9005240065000
0.2598			6.60	215.00	140.10	150.00	9005240066000
0.2638			6.70	215.00	139.95	150.00	9005240067000
0.2657	17/64	H	6.75	225.00	144.88	155.00	9005240067500
0.2677			6.80	225.00	144.80	155.00	9005240068000
0.2756			7.00	225.00	144.50	155.00	9005240070000
0.2874			7.30	225.00	144.05	155.00	9005240073000
0.2953			7.50	225.00	143.75	155.00	9005240075000
0.2969	19/64		7.54	240.00	153.69	165.00	9005240075400
0.2992			7.60	240.00	153.60	165.00	9005240076000
0.3071			7.80	240.00	153.30	165.00	9005240078000
0.3110			7.90	240.00	153.15	165.00	9005240079000
0.3126	5/16		7.94	240.00	153.09	165.00	9005240079400
0.3150			8.00	240.00	153.00	165.00	9005240080000
0.3189			8.10	240.00	152.85	165.00	9005240081000
0.3228		P	8.20	240.00	152.70	165.00	9005240082000
0.3280	21/64		8.33	240.00	152.51	165.00	9005240083300
0.3346			8.50	240.00	152.25	165.00	9005240085000
0.3386			8.60	250.00	162.10	175.00	9005240086000
0.3437	11/32		8.73	250.00	161.91	175.00	9005240087300
0.3504			8.90	250.00	161.65	175.00	9005240089000
0.3543			9.00	250.00	161.50	175.00	9005240090000
0.3594	23/64		9.13	250.00	161.31	175.00	9005240091300
0.3622			9.20	250.00	161.20	175.00	9005240092000
0.3740			9.50	250.00	160.75	175.00	9005240095000
0.3748	3/8		9.52	265.00	170.72	185.00	9005240095200
0.3937			10.00	265.00	170.00	185.00	9005240100000
0.4063	13/32		10.32	265.00	169.52	185.00	9005240103200
0.4134			10.50	265.00	169.25	185.00	9005240105000
0.4331			11.00	280.00	178.50	195.00	9005240110000
0.4374	7/16		11.11	280.00	178.34	195.00	9005240111100
0.4528			11.50	280.00	177.75	195.00	9005240115000
0.4689	15/32		11.91	295.00	187.14	205.00	9005240119100
0.4724			12.00	295.00	187.00	205.00	9005240120000
0.5000	1/2		12.70	295.00	185.95	205.00	9005240127000

Extra length drills, series 1

Series no. **502**

~15xD	DIN 1869	GT 100	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface: >Ø 2.36

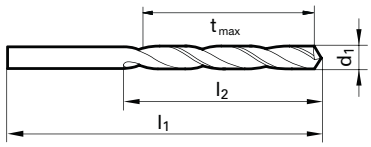
P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.950 • relieved cone • wide flutes • for extremely deep holes • in case of unsatisfactory chip evacuation

cast iron and steels up to 1000 N/mm² • Not recommended for: CrNi steels, stainless steels

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 494

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0768		1.95	125.00	82.08	85.00	9005020019500
0.0787		2.00	125.00	82.00	85.00	9005020020000
0.0807		2.05	125.00	81.93	85.00	9005020020500
0.0827		2.10	125.00	81.85	85.00	9005020021000
0.0866		2.20	135.00	86.70	90.00	9005020022000
0.0906		2.30	135.00	86.55	90.00	9005020023000
0.0933	#42	2.37	140.00	91.45	95.00	9005020023700
0.0937	3/32	2.38	140.00	91.43	95.00	9005020023800
0.0945		2.40	140.00	91.40	95.00	9005020024000
0.0984		2.50	140.00	91.25	95.00	9005020025000
0.1004		2.55	140.00	91.18	95.00	9005020025500
0.1016	#38	2.58	140.00	91.13	95.00	9005020025800
0.1024		2.60	140.00	91.10	95.00	9005020026000
0.1063		2.70	150.00	95.95	100.00	9005020027000
0.1094	7/64	2.78	150.00	95.83	100.00	9005020027800
0.1102		2.80	150.00	95.80	100.00	9005020028000
0.1122		2.85	150.00	95.73	100.00	9005020028500
0.1130	#33	2.87	150.00	95.70	100.00	9005020028700
0.1142		2.90	150.00	95.65	100.00	9005020029000
0.1161	#32	2.95	150.00	95.58	100.00	9005020029500
0.1181		3.00	150.00	95.50	100.00	9005020030000
0.1193		3.03	155.00	100.46	105.00	9005020030300
0.1220		3.10	155.00	100.35	105.00	9005020031000
0.1248	1/8	3.17	155.00	100.25	105.00	9005020031700
0.1260		3.20	155.00	100.20	105.00	9005020032000
0.1280		3.25	155.00	100.13	105.00	9005020032500
0.1299		3.30	155.00	100.05	105.00	9005020033000
0.1339		3.40	165.00	109.90	115.00	9005020034000
0.1378		3.50	165.00	109.75	115.00	9005020035000
0.1406	9/64	#28	3.57	165.00	109.65	115.00	9005020035700
0.1417		3.60	165.00	109.60	115.00	9005020036000
0.1457		3.70	165.00	109.45	115.00	9005020037000
0.1476		3.75	165.00	109.38	115.00	9005020037500
0.1496	#25	3.80	175.00	114.30	120.00	9005020038000
0.1520	#24	3.86	175.00	114.21	120.00	9005020038600
0.1535		3.90	175.00	114.15	120.00	9005020039000
0.1563	5/32	3.97	175.00	114.05	120.00	9005020039700
0.1575		4.00	175.00	114.00	120.00	9005020040000
0.1614		4.10	175.00	113.85	120.00	9005020041000
0.1654		4.20	175.00	113.70	120.00	9005020042000
0.1693	#18	4.30	185.00	118.55	125.00	9005020043000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1720	11/64	4.37	185.00	118.45	125.00	9005020043700
0.1732		4.40	185.00	118.40	125.00	9005020044000
0.1772	#16	4.50	185.00	118.25	125.00	9005020045000
0.1799	#15	4.57	185.00	118.15	125.00	9005020045700
0.1811		4.60	185.00	118.10	125.00	9005020046000
0.1850	#13	4.70	185.00	117.95	125.00	9005020047000
0.1874	3/16	4.76	195.00	127.86	135.00	9005020047600
0.1890	#12	4.80	195.00	127.80	135.00	9005020048000
0.1929		4.90	195.00	127.65	135.00	9005020049000
0.1969		5.00	195.00	127.50	135.00	9005020050000
0.2008		5.10	195.00	127.35	135.00	9005020051000
0.2012	#7	5.11	195.00	127.34	135.00	9005020051100
0.2031	13/64	5.16	195.00	127.26	135.00	9005020051600
0.2047		5.20	195.00	127.20	135.00	9005020052000
0.2087		5.30	195.00	127.05	135.00	9005020053000
0.2126		5.40	205.00	131.90	140.00	9005020054000
0.2165		5.50	205.00	131.75	140.00	9005020055000
0.2189	7/32	5.56	205.00	131.66	140.00	9005020055600
0.2205		5.60	205.00	131.60	140.00	9005020056000
0.2244		5.70	205.00	131.45	140.00	9005020057000
0.2264		5.75	205.00	131.38	140.00	9005020057500
0.2283		5.80	205.00	131.30	140.00	9005020058000
0.2323		5.90	205.00	131.15	140.00	9005020059000
0.2343	15/64	5.95	205.00	131.08	140.00	9005020059500
0.2362		6.00	205.00	131.00	140.00	9005020060000
0.2382		6.05	215.00	140.93	150.00	9005020060500
0.2402		6.10	215.00	140.85	150.00	9005020061000
0.2441		6.20	215.00	140.70	150.00	9005020062000
0.2461	D	6.25	215.00	140.63	150.00	9005020062500
0.2480		6.30	215.00	140.55	150.00	9005020063000
0.2500	1/4	E	6.35	215.00	140.48	150.00	9005020063500
0.2520		6.40	215.00	140.40	150.00	9005020064000
0.2559		6.50	215.00	140.25	150.00	9005020065000
0.2598		6.60	215.00	140.10	150.00	9005020066000
0.2638		6.70	215.00	139.95	150.00	9005020067000
0.2657	17/64	H	6.75	225.00	144.88	155.00	9005020067500
0.2677		6.80	225.00	144.80	155.00	9005020068000
0.2717	I	6.90	225.00	144.65	155.00	9005020069000
0.2756		7.00	225.00	144.50	155.00	9005020070000
0.2795		7.10	225.00	144.35	155.00	9005020071000
0.2835		7.20	225.00	144.20	155.00	9005020072000

Extra length drills, series 1

Series no. **502**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2874		7.30	225.00	144.05	155.00	9005020073000
0.2913		7.40	225.00	143.90	155.00	9005020074000
0.2953		7.50	225.00	143.75	155.00	9005020075000
0.2969	19/64	7.54	240.00	153.69	165.00	9005020075400
0.2992		7.60	240.00	153.60	165.00	9005020076000
0.3031		7.70	240.00	153.45	165.00	9005020077000
0.3051		7.75	240.00	153.38	165.00	9005020077500
0.3071		7.80	240.00	153.30	165.00	9005020078000
0.3110		7.90	240.00	153.15	165.00	9005020079000
0.3126	5/16	7.94	240.00	153.09	165.00	9005020079400
0.3150		8.00	240.00	153.00	165.00	9005020080000
0.3189		8.10	240.00	152.85	165.00	9005020081000
0.3228	P	8.20	240.00	152.70	165.00	9005020082000
0.3268		8.30	240.00	152.55	165.00	9005020083000
0.3280	21/64	8.33	240.00	152.51	165.00	9005020083300
0.3307		8.40	240.00	152.40	165.00	9005020084000
0.3319	Q	8.43	240.00	152.36	165.00	9005020084300
0.3346		8.50	240.00	152.25	165.00	9005020085000
0.3386		8.60	250.00	162.10	175.00	9005020086000
0.3425		8.70	250.00	161.95	175.00	9005020087000
0.3437	11/32	8.73	250.00	161.91	175.00	9005020087300
0.3465		8.80	250.00	161.80	175.00	9005020088000
0.3543		9.00	250.00	161.50	175.00	9005020090000
0.3622		9.20	250.00	161.20	175.00	9005020092000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3661		9.30	250.00	161.05	175.00	9005020093000
0.3701		9.40	250.00	160.90	175.00	9005020094000
0.3740		9.50	250.00	160.75	175.00	9005020095000
0.3748	3/8	9.52	265.00	170.72	185.00	9005020095200
0.3780		9.60	265.00	170.60	185.00	9005020096000
0.3819		9.70	265.00	170.45	185.00	9005020097000
0.3858	W	9.80	265.00	170.30	185.00	9005020098000
0.3898		9.90	265.00	170.15	185.00	9005020099000
0.3906	25/64	9.92	265.00	170.12	185.00	9005020099200
0.3937		10.00	265.00	170.00	185.00	9005020100000
0.4016		10.20	265.00	169.70	185.00	9005020102000
0.4063	13/32	10.32	265.00	169.52	185.00	9005020103200
0.4134		10.50	265.00	169.25	185.00	9005020105000
0.4220	27/64	10.72	280.00	178.92	195.00	9005020107200
0.4331		11.00	280.00	178.50	195.00	9005020110000
0.4374	7/16	11.11	280.00	178.34	195.00	9005020111100
0.4409		11.20	280.00	178.20	195.00	9005020112000
0.4528		11.50	280.00	177.75	195.00	9005020115000
0.4531	29/64	11.51	280.00	177.74	195.00	9005020115100
0.4646		11.80	280.00	177.30	195.00	9005020118000
0.4724		12.00	295.00	187.00	205.00	9005020120000
0.4921		12.50	295.00	186.25	205.00	9005020125000
0.5000	1/2	12.70	295.00	185.95	205.00	9005020127000
0.5118		13.00	295.00	185.50	205.00	9005020130000

Extra length drills, series 1

Series no. **670**

~15xD	DIN 1869	GT 100	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface: **S**

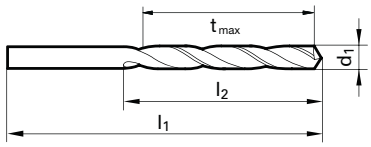
P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.980 • relieved cone • wide flutes • for extremely deep holes • in case of unsatisfactory chip evacuation

cast iron and steels up to 1000 N/mm² • Not recommended for: CrNi steels, stainless steels

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 521

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0780	5/64	1.98	125.00	82.03	85.00	9006700019800
0.0787		2.00	125.00	82.00	85.00	9006700020000
0.0827		2.10	125.00	81.85	85.00	9006700021000
0.0866		2.20	135.00	86.70	90.00	9006700022000
0.0906		2.30	135.00	86.55	90.00	9006700023000
0.0937	3/32	2.38	140.00	91.43	95.00	9006700023800
0.0945		2.40	140.00	91.40	95.00	9006700024000
0.0984		2.50	140.00	91.25	95.00	9006700025000
0.1102		2.80	150.00	95.80	100.00	9006700028000
0.1161	#32	2.95	150.00	95.58	100.00	9006700029500
0.1181		3.00	150.00	95.50	100.00	9006700030000
0.1220		3.10	155.00	100.35	105.00	9006700031000
0.1248	1/8	3.17	155.00	100.25	105.00	9006700031700
0.1260		3.20	155.00	100.20	105.00	9006700032000
0.1268		3.22	155.00	100.17	105.00	9006700032200
0.1299		3.30	155.00	100.05	105.00	9006700033000
0.1378		3.50	165.00	109.75	115.00	9006700035000
0.1406	9/64	#28 3.57	165.00	109.65	115.00	9006700035700
0.1417		3.60	165.00	109.60	115.00	9006700036000
0.1496		#25 3.80	175.00	114.30	120.00	9006700038000
0.1535		3.90	175.00	114.15	120.00	9006700039000
0.1539		#23 3.91	175.00	114.14	120.00	9006700039100
0.1563	5/32	3.97	175.00	114.05	120.00	9006700039700
0.1575		4.00	175.00	114.00	120.00	9006700040000
0.1614		4.10	175.00	113.85	120.00	9006700041000
0.1654		4.20	175.00	113.70	120.00	9006700042000
0.1720	11/64	4.37	185.00	118.45	125.00	9006700043700
0.1772		#16 4.50	185.00	118.25	125.00	9006700045000
0.1811		4.60	185.00	118.10	125.00	9006700046000
0.1874	3/16	4.76	195.00	127.86	135.00	9006700047600
0.1890		#12 4.80	195.00	127.80	135.00	9006700048000

Diameter (d_1) inch	wire/ltr		mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1969			5.00	195.00	127.50	135.00	9006700050000
0.2008			5.10	195.00	127.35	135.00	9006700051000
0.2031	13/64		5.16	195.00	127.26	135.00	9006700051600
0.2047			5.20	195.00	127.20	135.00	9006700052000
0.2165			5.50	205.00	131.75	140.00	9006700055000
0.2189	7/32		5.56	205.00	131.66	140.00	9006700055600
0.2362			6.00	205.00	131.00	140.00	9006700060000
0.2402			6.10	215.00	140.85	150.00	9006700061000
0.2441			6.20	215.00	140.70	150.00	9006700062000
0.2500	1/4	E	6.35	215.00	140.48	150.00	9006700063500
0.2559			6.50	215.00	140.25	150.00	9006700065000
0.2638			6.70	215.00	139.95	150.00	9006700067000
0.2756			7.00	225.00	144.50	155.00	9006700070000
0.2811	9/32	K	7.14	225.00	144.29	155.00	9006700071400
0.2953			7.50	225.00	143.75	155.00	9006700075000
0.2969	19/64		7.54	240.00	153.69	165.00	9006700075400
0.3126	5/16		7.94	240.00	153.09	165.00	9006700079400
0.3150			8.00	240.00	153.00	165.00	9006700080000
0.3346			8.50	240.00	152.25	165.00	9006700085000
0.3386			8.60	250.00	162.10	175.00	9006700086000
0.3437	11/32		8.73	250.00	161.91	175.00	9006700087300
0.3465			8.80	250.00	161.80	175.00	9006700088000
0.3543			9.00	250.00	161.50	175.00	9006700090000
0.3740			9.50	250.00	160.75	175.00	9006700095000
0.3748	3/8		9.52	265.00	170.72	185.00	9006700095200
0.3906	25/64		9.92	265.00	170.12	185.00	9006700099200
0.3937			10.00	265.00	170.00	185.00	9006700100000
0.4331			11.00	280.00	178.50	195.00	9006700110000
0.4724			12.00	295.00	187.00	205.00	9006700120000
0.4921			12.50	295.00	186.25	205.00	9006700125000

Extra length drills, series 1

Series no. **618**

~15xD Cutting depth | DIN 1869 Standard | GT 100 Type | 130° Point angle | h8 Tolerance on Ø | Web Thinning | Cyl Shank form | R Cutting direction

Tool material **HSCO**

Surface

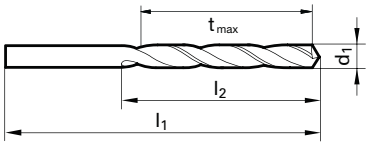
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	●
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 2.700 • relieved cone • Co-alloyed high speed steel • wide flutes • increased wear resistance • for extremely deep holes • in case of unsatisfactory chip evacuation

high tensile steels and cast steels • grey cast iron, malleable and spheroidal iron

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 513

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1063		2.70	150.00	95.95	100.00	9006180027000
0.1142		2.90	150.00	95.65	100.00	9006180029000
0.1181		3.00	150.00	95.50	100.00	9006180030000
0.1220		3.10	155.00	100.35	105.00	9006180031000
0.1248	1/8	3.17	155.00	100.25	105.00	9006180031700
0.1260		3.20	155.00	100.20	105.00	9006180032000
0.1299		3.30	155.00	100.05	105.00	9006180033000
0.1339		3.40	165.00	109.90	115.00	9006180034000
0.1378		3.50	165.00	109.75	115.00	9006180035000
0.1417		3.60	165.00	109.60	115.00	9006180036000
0.1457		3.70	165.00	109.45	115.00	9006180037000
0.1496	#25	3.80	175.00	114.30	120.00	9006180038000
0.1535		3.90	175.00	114.15	120.00	9006180039000
0.1563	5/32	3.97	175.00	114.05	120.00	9006180039700
0.1575		4.00	175.00	114.00	120.00	9006180040000
0.1614		4.10	175.00	113.85	120.00	9006180041000
0.1654		4.20	175.00	113.70	120.00	9006180042000
0.1693	#18	4.30	185.00	118.55	125.00	9006180043000
0.1720	11/64	4.37	185.00	118.45	125.00	9006180043700
0.1732		4.40	185.00	118.40	125.00	9006180044000
0.1772	#16	4.50	185.00	118.25	125.00	9006180045000
0.1811		4.60	185.00	118.10	125.00	9006180046000
0.1874	3/16	4.76	195.00	127.86	135.00	9006180047600
0.1890	#12	4.80	195.00	127.80	135.00	9006180048000
0.1909	#11	4.85	195.00	127.73	135.00	9006180048500
0.1969		5.00	195.00	127.50	135.00	9006180050000
0.2008		5.10	195.00	127.35	135.00	9006180051000
0.2031	13/64	5.16	195.00	127.26	135.00	9006180051600
0.2047		5.20	195.00	127.20	135.00	9006180052000
0.2087		5.30	195.00	127.05	135.00	9006180053000
0.2126		5.40	205.00	131.90	140.00	9006180054000
0.2165		5.50	205.00	131.75	140.00	9006180055000
0.2189	7/32	5.56	205.00	131.66	140.00	9006180055600
0.2205		5.60	205.00	131.60	140.00	9006180056000
0.2244		5.70	205.00	131.45	140.00	9006180057000

Diameter (d_1) inch	wire/ltr		mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2283			5.80	205.00	131.30	140.00	9006180058000
0.2362			6.00	205.00	131.00	140.00	9006180060000
0.2402			6.10	215.00	140.85	150.00	9006180061000
0.2441			6.20	215.00	140.70	150.00	9006180062000
0.2480			6.30	215.00	140.55	150.00	9006180063000
0.2500	1/4	E	6.35	215.00	140.48	150.00	9006180063500
0.2520			6.40	215.00	140.40	150.00	9006180064000
0.2559			6.50	215.00	140.25	150.00	9006180065000
0.2598			6.60	215.00	140.10	150.00	9006180066000
0.2638			6.70	215.00	139.95	150.00	9006180067000
0.2657	17/64	H	6.75	225.00	144.88	155.00	9006180067500
0.2677			6.80	225.00	144.80	155.00	9006180068000
0.2756			7.00	225.00	144.50	155.00	9006180070000
0.2811	9/32	K	7.14	225.00	144.29	155.00	9006180071400
0.2913			7.40	225.00	143.90	155.00	9006180074000
0.2953			7.50	225.00	143.75	155.00	9006180075000
0.2969	19/64		7.54	240.00	153.69	165.00	9006180075400
0.3031			7.70	240.00	153.45	165.00	9006180077000
0.3126	5/16		7.94	240.00	153.09	165.00	9006180079400
0.3150			8.00	240.00	153.00	165.00	9006180080000
0.3228		P	8.20	240.00	152.70	165.00	9006180082000
0.3280	21/64		8.33	240.00	152.51	165.00	9006180083300
0.3307			8.40	240.00	152.40	165.00	9006180084000
0.3346			8.50	240.00	152.25	165.00	9006180085000
0.3425			8.70	250.00	161.95	175.00	9006180087000
0.3437	11/32		8.73	250.00	161.91	175.00	9006180087300
0.3465			8.80	250.00	161.80	175.00	9006180088000
0.3543			9.00	250.00	161.50	175.00	9006180090000
0.3594	23/64		9.13	250.00	161.31	175.00	9006180091300
0.3701			9.40	250.00	160.90	175.00	9006180094000
0.3740			9.50	250.00	160.75	175.00	9006180095000
0.3748	3/8		9.52	265.00	170.72	185.00	9006180095200
0.3819			9.70	265.00	170.45	185.00	9006180097000
0.3937			10.00	265.00	170.00	185.00	9006180100000

Extra length drills, series 2

Series no. **503**

~20xD	DIN 1869	GT 100	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface: >Ø 2.36

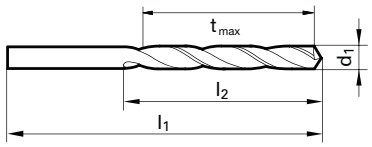
P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.000 • relieved cone • wide flutes • for extremely deep holes • in case of unsatisfactory chip evacuation

cast iron and steels up to 1000 N/mm² • Not recommended for: CrNi steels, stainless steels

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 494

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0906		2.30	170.00	111.55	115.00	9005030023000
0.1102		2.80	190.00	125.80	130.00	9005030028000
0.1181		3.00	190.00	125.50	130.00	9005030030000
0.1193		3.03	200.00	130.46	135.00	9005030030300
0.1220		3.10	200.00	130.35	135.00	9005030031000
0.1248	1/8	3.17	200.00	130.25	135.00	9005030031700
0.1260		3.20	200.00	130.20	135.00	9005030032000
0.1299		3.30	200.00	130.05	135.00	9005030033000
0.1339		3.40	210.00	139.90	145.00	9005030034000
0.1378		3.50	210.00	139.75	145.00	9005030035000
0.1406	9/64 #28	3.57	210.00	139.65	145.00	9005030035700
0.1417		3.60	210.00	139.60	145.00	9005030036000
0.1457		3.70	210.00	139.45	145.00	9005030037000
0.1496	#25	3.80	220.00	144.30	150.00	9005030038000
0.1535		3.90	220.00	144.15	150.00	9005030039000
0.1563	5/32	3.97	220.00	144.05	150.00	9005030039700
0.1575		4.00	220.00	144.00	150.00	9005030040000
0.1614		4.10	220.00	143.85	150.00	9005030041000
0.1654		4.20	220.00	143.70	150.00	9005030042000
0.1693	#18	4.30	235.00	153.55	160.00	9005030043000
0.1720	11/64	4.37	235.00	153.45	160.00	9005030043700
0.1732		4.40	235.00	153.40	160.00	9005030044000
0.1772	#16	4.50	235.00	153.25	160.00	9005030045000
0.1850	#13	4.70	235.00	152.95	160.00	9005030047000
0.1874	3/16	4.76	245.00	162.86	170.00	9005030047600
0.1890	#12	4.80	245.00	162.80	170.00	9005030048000
0.1929		4.90	245.00	162.65	170.00	9005030049000
0.1969		5.00	245.00	162.50	170.00	9005030050000
0.2008		5.10	245.00	162.35	170.00	9005030051000
0.2031	13/64	5.16	245.00	162.26	170.00	9005030051600
0.2047		5.20	245.00	162.20	170.00	9005030052000
0.2087		5.30	245.00	162.05	170.00	9005030053000
0.2126		5.40	260.00	171.90	180.00	9005030054000
0.2165		5.50	260.00	171.75	180.00	9005030055000
0.2189	7/32	5.56	260.00	171.66	180.00	9005030055600
0.2244		5.70	260.00	171.45	180.00	9005030057000
0.2283		5.80	260.00	171.30	180.00	9005030058000
0.2323		5.90	260.00	171.15	180.00	9005030059000
0.2343	15/64	5.95	260.00	171.08	180.00	9005030059500
0.2362		6.00	260.00	171.00	180.00	9005030060000
0.2402		6.10	275.00	180.85	190.00	9005030061000
0.2421	C	6.15	275.00	180.78	190.00	9005030061500
0.2441		6.20	275.00	180.70	190.00	9005030062000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2480		6.30	275.00	180.55	190.00	9005030063000
0.2500	1/4 E	6.35	275.00	180.48	190.00	9005030063500
0.2520		6.40	275.00	180.40	190.00	9005030064000
0.2559		6.50	275.00	180.25	190.00	9005030065000
0.2598		6.60	275.00	180.10	190.00	9005030066000
0.2638		6.70	275.00	179.95	190.00	9005030067000
0.2657	17/64 H	6.75	290.00	189.88	200.00	9005030067500
0.2677		6.80	290.00	189.80	200.00	9005030068000
0.2717	I	6.90	290.00	189.65	200.00	9005030069000
0.2756		7.00	290.00	189.50	200.00	9005030070000
0.2811	9/32 K	7.14	290.00	189.29	200.00	9005030071400
0.2835		7.20	290.00	189.20	200.00	9005030072000
0.2953		7.50	290.00	188.75	200.00	9005030075000
0.2969	19/64	7.54	305.00	198.69	210.00	9005030075400
0.3071		7.80	305.00	198.30	210.00	9005030078000
0.3126	5/16	7.94	305.00	198.09	210.00	9005030079400
0.3150		8.00	305.00	198.00	210.00	9005030080000
0.3228	P	8.20	305.00	197.70	210.00	9005030082000
0.3280	21/64	8.33	305.00	197.51	210.00	9005030083300
0.3346		8.50	305.00	197.25	210.00	9005030085000
0.3386		8.60	320.00	207.10	220.00	9005030086000
0.3437	11/32	8.73	320.00	206.91	220.00	9005030087300
0.3543		9.00	320.00	206.50	220.00	9005030090000
0.3583		9.10	320.00	206.35	220.00	9005030091000
0.3740		9.50	320.00	205.75	220.00	9005030095000
0.3748	3/8	9.52	340.00	220.72	235.00	9005030095200
0.3819		9.70	340.00	220.45	235.00	9005030097000
0.3858	W	9.80	340.00	220.30	235.00	9005030098000
0.3906	25/64	9.92	340.00	220.12	235.00	9005030099200
0.3937		10.00	340.00	220.00	235.00	9005030100000
0.4134		10.50	340.00	219.25	235.00	9005030105000
0.4220	27/64	10.72	365.00	233.92	250.00	9005030107200
0.4331		11.00	365.00	233.50	250.00	9005030110000
0.4374	7/16	11.11	365.00	233.34	250.00	9005030111100
0.4528		11.50	365.00	232.75	250.00	9005030115000
0.4531	29/64	11.51	365.00	232.74	250.00	9005030115100
0.4689	15/32	11.91	375.00	242.14	260.00	9005030119100
0.4724		12.00	375.00	242.00	260.00	9005030120000
0.4843	31/64	12.30	375.00	241.55	260.00	9005030123000
0.4921		12.50	375.00	241.25	260.00	9005030125000
0.5000	1/2	12.70	375.00	240.95	260.00	9005030127000
0.5118		13.00	375.00	240.50	260.00	9005030130000

Extra length drills, series 2

Series no. **671**

~25xD	DIN 1869	GT 100	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface: **S**

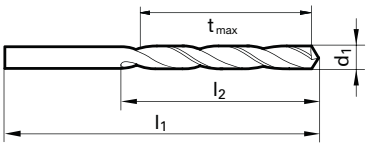
P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.300 • relieved cone • wide flutes • for extremely deep holes • in case of unsatisfactory chip evacuation

cast iron and steels up to 1000 N/mm² • Not recommended for: CrNi steels, stainless steels

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 522

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1181		3.00	190.00	125.50	130.00	9006710030000
0.1220		3.10	200.00	130.35	135.00	9006710031000
0.1248	1/8	3.17	200.00	130.25	135.00	9006710031700
0.1260		3.20	200.00	130.20	135.00	9006710032000
0.1339		3.40	210.00	139.90	145.00	9006710034000
0.1378		3.50	210.00	139.75	145.00	9006710035000
0.1406	9/64 #28	3.57	210.00	139.65	145.00	9006710035700
0.1496	#25	3.80	220.00	144.30	150.00	9006710038000
0.1563	5/32	3.97	220.00	144.05	150.00	9006710039700
0.1575		4.00	220.00	144.00	150.00	9006710040000
0.1610	#20	4.09	220.00	143.87	150.00	9006710040900
0.1673		4.25	220.00	143.63	150.00	9006710042500
0.1720	11/64	4.37	235.00	153.45	160.00	9006710043700
0.1732		4.40	235.00	153.40	160.00	9006710044000
0.1772	#16	4.50	235.00	153.25	160.00	9006710045000
0.1811		4.60	235.00	153.10	160.00	9006710046000
0.1874	3/16	4.76	245.00	162.86	170.00	9006710047600

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1890	#12	4.80	245.00	162.80	170.00	9006710048000
0.1969		5.00	245.00	162.50	170.00	9006710050000
0.2008		5.10	245.00	162.35	170.00	9006710051000
0.2087		5.30	245.00	162.05	170.00	9006710053000
0.2165		5.50	260.00	171.75	180.00	9006710055000
0.2189	7/32	5.56	260.00	171.66	180.00	9006710055600
0.2343	15/64	5.95	260.00	171.08	180.00	9006710059500
0.2362		6.00	260.00	171.00	180.00	9006710060000
0.2402		6.10	275.00	180.85	190.00	9006710061000
0.2500	1/4 E	6.35	275.00	180.48	190.00	9006710063500
0.2520		6.40	275.00	180.40	190.00	9006710064000
0.2559		6.50	275.00	180.25	190.00	9006710065000
0.2677		6.80	290.00	189.80	200.00	9006710068000
0.2756		7.00	290.00	189.50	200.00	9006710070000
0.2953		7.50	290.00	188.75	200.00	9006710075000
0.3126	5/16	7.94	305.00	198.09	210.00	9006710079400
0.3150		8.00	305.00	198.00	210.00	9006710080000

Extra length drills, series 2

Series no. **619**

~20xD	DIN 1869	GT 100	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSCO**

Surface:

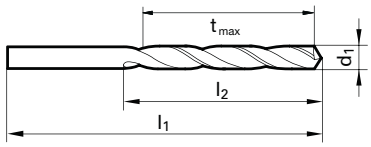
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	●
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • Co-alloyed high speed steel • wide flutes • increased wear resistance • for extremely deep holes • in case of unsatisfactory chip evacuation

high tensile steels and cast steels • grey cast iron, malleable and spheroidal iron

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 514

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1181		3.00	190.00	125.50	130.00	9006190030000
0.1248	1/8	3.17	200.00	130.25	135.00	9006190031700
0.1260		3.20	200.00	130.20	135.00	9006190032000
0.1299		3.30	200.00	130.05	135.00	9006190033000
0.1378		3.50	210.00	139.75	145.00	9006190035000
0.1406	9/64 #28	3.57	210.00	139.65	145.00	9006190035700
0.1563	5/32	3.97	220.00	144.05	150.00	9006190039700
0.1575		4.00	220.00	144.00	150.00	9006190040000
0.1614		4.10	220.00	143.85	150.00	9006190041000
0.1654		4.20	220.00	143.70	150.00	9006190042000
0.1720	11/64	4.37	235.00	153.45	160.00	9006190043700
0.1772	#16	4.50	235.00	153.25	160.00	9006190045000
0.1874	3/16	4.76	245.00	162.86	170.00	9006190047600
0.1890	#12	4.80	245.00	162.80	170.00	9006190048000
0.1929		4.90	245.00	162.65	170.00	9006190049000
0.1969		5.00	245.00	162.50	170.00	9006190050000
0.2047		5.20	245.00	162.20	170.00	9006190052000
0.2165		5.50	260.00	171.75	180.00	9006190055000
0.2189	7/32	5.56	260.00	171.66	180.00	9006190055600
0.2244		5.70	260.00	171.45	180.00	9006190057000
0.2343	15/64	5.95	260.00	171.08	180.00	9006190059500
0.2362		6.00	260.00	171.00	180.00	9006190060000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2402		6.10	275.00	180.85	190.00	9006190061000
0.2441		6.20	275.00	180.70	190.00	9006190062000
0.2500	1/4 E	6.35	275.00	180.48	190.00	9006190063500
0.2559		6.50	275.00	180.25	190.00	9006190065000
0.2638		6.70	275.00	179.95	190.00	9006190067000
0.2657	17/64 H	6.75	290.00	189.88	200.00	9006190067500
0.2756		7.00	290.00	189.50	200.00	9006190070000
0.2811	9/32 K	7.14	290.00	189.29	200.00	9006190071400
0.2913		7.40	290.00	188.90	200.00	9006190074000
0.2953		7.50	290.00	188.75	200.00	9006190075000
0.2969	19/64	7.54	305.00	198.69	210.00	9006190075400
0.3031		7.70	305.00	198.45	210.00	9006190077000
0.3126	5/16	7.94	305.00	198.09	210.00	9006190079400
0.3150		8.00	305.00	198.00	210.00	9006190080000
0.3228	P	8.20	305.00	197.70	210.00	9006190082000
0.3346		8.50	305.00	197.25	210.00	9006190085000
0.3425		8.70	320.00	206.95	220.00	9006190087000
0.3437	11/32	8.73	320.00	206.91	220.00	9006190087300
0.3543		9.00	320.00	206.50	220.00	9006190090000
0.3740		9.50	320.00	205.75	220.00	9006190095000
0.3748	3/8	9.52	340.00	220.72	235.00	9006190095200
0.3937		10.00	340.00	220.00	235.00	9006190100000

Extra length drills, series 3

Series no. **504**

~25xD	DIN 1869	GT 100	130°	h8		Cyl	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface: >Ø 2.36

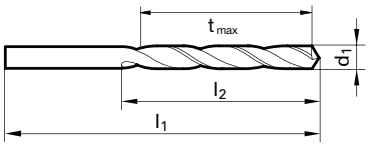
P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.500 • relieved cone • wide flutes • in case of unsatisfactory chip evacuation • for extremely deep holes

cast iron and steels up to 1000 N/mm² • Not recommended for: CrNi steels, stainless steels

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 495

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1181		3.00	240.00	155.50	160.00	9005040030000
0.1220		3.10	250.00	165.35	170.00	9005040031000
0.1248	1/8	3.17	250.00	165.25	170.00	9005040031700
0.1260		3.20	250.00	165.20	170.00	9005040032000
0.1299		3.30	250.00	165.05	170.00	9005040033000
0.1339		3.40	265.00	174.90	180.00	9005040034000
0.1378		3.50	265.00	174.75	180.00	9005040035000
0.1406	9/64 #28	3.57	265.00	174.65	180.00	9005040035700
0.1417		3.60	265.00	174.60	180.00	9005040036000
0.1457		3.70	265.00	174.45	180.00	9005040037000
0.1496	#25	3.80	280.00	184.30	190.00	9005040038000
0.1535		3.90	280.00	184.15	190.00	9005040039000
0.1563	5/32	3.97	280.00	184.05	190.00	9005040039700
0.1575		4.00	280.00	184.00	190.00	9005040040000
0.1614		4.10	280.00	183.85	190.00	9005040041000
0.1654		4.20	280.00	183.70	190.00	9005040042000
0.1693	#18	4.30	295.00	193.55	200.00	9005040043000
0.1720	11/64	4.37	295.00	193.45	200.00	9005040043700
0.1732		4.40	295.00	193.40	200.00	9005040044000
0.1772	#16	4.50	295.00	193.25	200.00	9005040045000
0.1811		4.60	295.00	193.10	200.00	9005040046000
0.1874	3/16	4.76	315.00	202.86	210.00	9005040047600
0.1890	#12	4.80	315.00	202.80	210.00	9005040048000
0.1929		4.90	315.00	202.65	210.00	9005040049000
0.1969		5.00	315.00	202.50	210.00	9005040050000
0.2008		5.10	315.00	202.35	210.00	9005040051000
0.2047		5.20	315.00	202.20	210.00	9005040052000
0.2165		5.50	330.00	216.75	225.00	9005040055000
0.2189	7/32	5.56	330.00	216.66	225.00	9005040055600
0.2283		5.80	330.00	216.30	225.00	9005040058000
0.2343	15/64	5.95	330.00	216.08	225.00	9005040059500
0.2362		6.00	330.00	216.00	225.00	9005040060000
0.2402		6.10	350.00	225.85	235.00	9005040061000
0.2441		6.20	350.00	225.70	235.00	9005040062000
0.2480		6.30	350.00	225.55	235.00	9005040063000
0.2500	1/4 E	6.35	350.00	225.48	235.00	9005040063500
0.2520		6.40	350.00	225.40	235.00	9005040064000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2559		6.50	350.00	225.25	235.00	9005040065000
0.2598		6.60	350.00	225.10	235.00	9005040066000
0.2638		6.70	350.00	224.95	235.00	9005040067000
0.2657	17/64 H	6.75	370.00	239.88	250.00	9005040067500
0.2677		6.80	370.00	239.80	250.00	9005040068000
0.2756		7.00	370.00	239.50	250.00	9005040070000
0.2811	9/32 K	7.14	370.00	239.29	250.00	9005040071400
0.2835		7.20	370.00	239.20	250.00	9005040072000
0.2953		7.50	370.00	238.75	250.00	9005040075000
0.2969	19/64	7.54	390.00	253.69	265.00	9005040075400
0.2992		7.60	390.00	253.60	265.00	9005040076000
0.3071		7.80	390.00	253.30	265.00	9005040078000
0.3110		7.90	390.00	253.15	265.00	9005040079000
0.3126	5/16	7.94	390.00	253.09	265.00	9005040079400
0.3150		8.00	390.00	253.00	265.00	9005040080000
0.3228	P	8.20	390.00	252.70	265.00	9005040082000
0.3280	21/64	8.33	390.00	252.51	265.00	9005040083300
0.3346		8.50	390.00	252.25	265.00	9005040085000
0.3386		8.60	410.00	267.10	280.00	9005040086000
0.3437	11/32	8.73	410.00	266.91	280.00	9005040087300
0.3504		8.90	410.00	266.65	280.00	9005040089000
0.3543		9.00	410.00	266.50	280.00	9005040090000
0.3583		9.10	410.00	266.35	280.00	9005040091000
0.3622		9.20	410.00	266.20	280.00	9005040092000
0.3740		9.50	410.00	265.75	280.00	9005040095000
0.3748	3/8	9.52	430.00	280.72	295.00	9005040095200
0.3906	25/64	9.92	430.00	280.12	295.00	9005040099200
0.3937		10.00	430.00	280.00	295.00	9005040100000
0.4063	13/32	10.32	430.00	279.52	295.00	9005040103200
0.4134		10.50	430.00	279.25	295.00	9005040105000
0.4220	27/64	10.72	455.00	293.92	310.00	9005040107200
0.4331		11.00	455.00	293.50	310.00	9005040110000
0.4374	7/16	11.11	455.00	293.34	310.00	9005040111100
0.4528		11.50	455.00	292.75	310.00	9005040115000
0.4724		12.00	480.00	312.00	330.00	9005040120000
0.4921		12.50	480.00	311.25	330.00	9005040125000
0.5118		13.00	480.00	310.50	330.00	9005040130000

GUHRING

GROOVING SYSTEMS

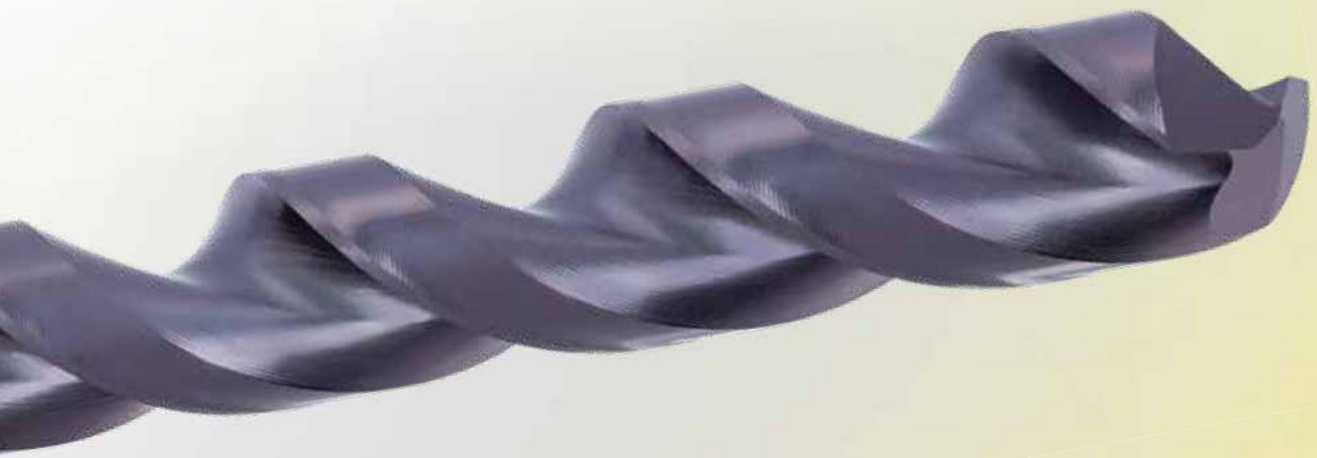


Guhring now offers a complete line of holders and inserts for boring, grooving, chamfering, threading, broaching and parting.





TAPER SHANK HSS, HSCO, HSS-E-PM DRILLS



Morse Taper Shank drills

Series no. **245**

~5xD	DIN 345	N	118°	h8		MT	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material **HSS**

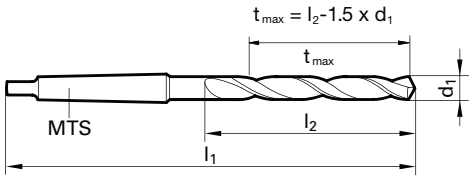
Surface >Ø 16.0

P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 14.050 • relieved cone

alloyed/unalloyed steel and cast steel • grey cast iron, malleable and spheroidal iron • sintered powder metal, German silver and graphite





Speeds and feeds information on pg. 481

Morse Taper Length

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0937	3/32	2.38	MTS 1	111.00	26.43	30.00	9002450023800
0.0984		2.50	MTS 1	111.00	26.25	30.00	9002450025000
0.1094	7/64	2.78	MTS 1	114.00	28.83	33.00	9002450027800
0.1248	1/8	3.17	MTS 1	117.00	31.25	36.00	9002450031700
0.1406	9/64 #28	3.57	MTS 1	120.00	33.65	39.00	9002450035700
0.1496	#25	3.80	MTS 1	124.00	37.30	43.00	9002450038000
0.1563	5/32	3.97	MTS 1	124.00	37.05	43.00	9002450039700
0.1575		4.00	MTS 1	124.00	37.00	43.00	9002450040000
0.1673		4.25	MTS 1	124.00	36.63	43.00	9002450042500
0.1720	11/64	4.37	MTS 1	128.00	40.45	47.00	9002450043700
0.1772	#16	4.50	MTS 1	128.00	40.25	47.00	9002450045000
0.1874	3/16	4.76	MTS 1	133.00	44.86	52.00	9002450047600
0.1969		5.00	MTS 1	133.00	44.50	52.00	9002450050000
0.2008		5.10	MTS 1	133.00	44.35	52.00	9002450051000
0.2031	13/64	5.16	MTS 1	133.00	44.26	52.00	9002450051600
0.2047		5.20	MTS 1	133.00	44.20	52.00	9002450052000
0.2067		5.25	MTS 1	133.00	44.13	52.00	9002450052500
0.2087		5.30	MTS 1	133.00	44.05	52.00	9002450053000
0.2126		5.40	MTS 1	138.00	48.90	57.00	9002450054000
0.2165		5.50	MTS 1	138.00	48.75	57.00	9002450055000
0.2189	7/32	5.56	MTS 1	138.00	48.66	57.00	9002450055600
0.2205		5.60	MTS 1	138.00	48.60	57.00	9002450056000
0.2244		5.70	MTS 1	138.00	48.45	57.00	9002450057000
0.2264		5.75	MTS 1	138.00	48.38	57.00	9002450057500
0.2283		5.80	MTS 1	138.00	48.30	57.00	9002450058000
0.2323		5.90	MTS 1	138.00	48.15	57.00	9002450059000
0.2343	15/64	5.95	MTS 1	138.00	48.08	57.00	9002450059500
0.2362		6.00	MTS 1	138.00	48.00	57.00	9002450060000
0.2402		6.10	MTS 1	144.00	53.85	63.00	9002450061000
0.2441		6.20	MTS 1	144.00	53.70	63.00	9002450062000
0.2461	D	6.25	MTS 1	144.00	53.63	63.00	9002450062500
0.2480		6.30	MTS 1	144.00	53.55	63.00	9002450063000
0.2500	1/4 E	6.35	MTS 1	144.00	53.48	63.00	9002450063500
0.2520		6.40	MTS 1	144.00	53.40	63.00	9002450064000
0.2559		6.50	MTS 1	144.00	53.25	63.00	9002450065000
0.2598		6.60	MTS 1	144.00	53.10	63.00	9002450066000
0.2638		6.70	MTS 1	144.00	52.95	63.00	9002450067000
0.2657	17/64 H	6.75	MTS 1	150.00	58.88	69.00	9002450067500
0.2677		6.80	MTS 1	150.00	58.80	69.00	9002450068000
0.2717	I	6.90	MTS 1	150.00	58.65	69.00	9002450069000
0.2756		7.00	MTS 1	150.00	58.50	69.00	9002450070000
0.2811	9/32 K	7.14	MTS 1	150.00	58.29	69.00	9002450071400
0.2835		7.20	MTS 1	150.00	58.20	69.00	9002450072000

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2854		7.25	MTS 1	150.00	58.13	69.00	9002450072500
0.2874		7.30	MTS 1	150.00	58.05	69.00	9002450073000
0.2913		7.40	MTS 1	150.00	57.90	69.00	9002450074000
0.2953		7.50	MTS 1	150.00	57.75	69.00	9002450075000
0.2969	19/64	7.54	MTS 1	156.00	63.69	75.00	9002450075400
0.2992		7.60	MTS 1	156.00	63.60	75.00	9002450076000
0.3031		7.70	MTS 1	156.00	63.45	75.00	9002450077000
0.3051		7.75	MTS 1	156.00	63.38	75.00	9002450077500
0.3071		7.80	MTS 1	156.00	63.30	75.00	9002450078000
0.3110		7.90	MTS 1	156.00	63.15	75.00	9002450079000
0.3126	5/16	7.94	MTS 1	156.00	63.09	75.00	9002450079400
0.3150		8.00	MTS 1	156.00	63.00	75.00	9002450080000
0.3189		8.10	MTS 1	156.00	62.85	75.00	9002450081000
0.3228	P	8.20	MTS 1	156.00	62.70	75.00	9002450082000
0.3248		8.25	MTS 1	156.00	62.63	75.00	9002450082500
0.3268		8.30	MTS 1	156.00	62.55	75.00	9002450083000
0.3280	21/64	8.33	MTS 1	156.00	62.51	75.00	9002450083300
0.3307		8.40	MTS 1	156.00	62.40	75.00	9002450084000
0.3346		8.50	MTS 1	156.00	62.25	75.00	9002450085000
0.3386		8.60	MTS 1	162.00	68.10	81.00	9002450086000
0.3425		8.70	MTS 1	162.00	67.95	81.00	9002450087000
0.3437	11/32	8.73	MTS 1	162.00	67.91	81.00	9002450087300
0.3445		8.75	MTS 1	162.00	67.88	81.00	9002450087500
0.3465		8.80	MTS 1	162.00	67.80	81.00	9002450088000
0.3504		8.90	MTS 1	162.00	67.65	81.00	9002450089000
0.3543		9.00	MTS 1	162.00	67.50	81.00	9002450090000
0.3583		9.10	MTS 1	162.00	67.35	81.00	9002450091000
0.3594	23/64	9.13	MTS 1	162.00	67.31	81.00	9002450091300
0.3622		9.20	MTS 1	162.00	67.20	81.00	9002450092000
0.3642		9.25	MTS 1	162.00	67.13	81.00	9002450092500
0.3661		9.30	MTS 1	162.00	67.05	81.00	9002450093000
0.3701		9.40	MTS 1	162.00	66.90	81.00	9002450094000
0.3740		9.50	MTS 1	162.00	66.75	81.00	9002450095000
0.3748	3/8	9.52	MTS 1	168.00	72.72	87.00	9002450095200
0.3819		9.70	MTS 1	168.00	72.45	87.00	9002450097000
0.3839		9.75	MTS 1	168.00	72.38	87.00	9002450097500
0.3858	W	9.80	MTS 1	168.00	72.30	87.00	9002450098000
0.3898		9.90	MTS 1	168.00	72.15	87.00	9002450099000
0.3906	25/64	9.92	MTS 1	168.00	72.12	87.00	9002450099200
0.3937		10.00	MTS 1	168.00	72.00	87.00	9002450100000
0.3976		10.10	MTS 1	168.00	71.85	87.00	9002450101000
0.4016		10.20	MTS 1	168.00	71.70	87.00	9002450102000
0.4035		10.25	MTS 1	168.00	71.63	87.00	9002450102500

Morse Taper Shank drills

Series no. 245

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4055		10.30	MTS 1	168.00	71.55	87.00	9002450103000
0.4063	13/32	10.32	MTS 1	168.00	71.52	87.00	9002450103200
0.4094		10.40	MTS 1	168.00	71.40	87.00	9002450104000
0.4134		10.50	MTS 1	168.00	71.25	87.00	9002450105000
0.4173		10.60	MTS 1	168.00	71.10	87.00	9002450106000
0.4213		10.70	MTS 1	175.00	77.95	94.00	9002450107000
0.4220	27/64	10.72	MTS 1	175.00	77.92	94.00	9002450107200
0.4232		10.75	MTS 1	175.00	77.88	94.00	9002450107500
0.4252		10.80	MTS 1	175.00	77.80	94.00	9002450108000
0.4291		10.90	MTS 1	175.00	77.65	94.00	9002450109000
0.4331		11.00	MTS 1	175.00	77.50	94.00	9002450110000
0.4370		11.10	MTS 1	175.00	77.35	94.00	9002450111000
0.4374	7/16	11.11	MTS 1	175.00	77.34	94.00	9002450111100
0.4409		11.20	MTS 1	175.00	77.20	94.00	9002450112000
0.4429		11.25	MTS 1	175.00	77.13	94.00	9002450112500
0.4449		11.30	MTS 1	175.00	77.05	94.00	9002450113000
0.4488		11.40	MTS 1	175.00	76.90	94.00	9002450114000
0.4528		11.50	MTS 1	175.00	76.75	94.00	9002450115000
0.4531	29/64	11.51	MTS 1	175.00	76.74	94.00	9002450115100
0.4567		11.60	MTS 1	175.00	76.60	94.00	9002450116000
0.4606		11.70	MTS 1	175.00	76.45	94.00	9002450117000
0.4626		11.75	MTS 1	175.00	76.38	94.00	9002450117500
0.4646		11.80	MTS 1	175.00	76.30	94.00	9002450118000
0.4685		11.90	MTS 1	182.00	83.15	101.00	9002450119000
0.4689	15/32	11.91	MTS 1	182.00	83.14	101.00	9002450119100
0.4724		12.00	MTS 1	182.00	83.00	101.00	9002450120000
0.4764		12.10	MTS 1	182.00	82.85	101.00	9002450121000
0.4803		12.20	MTS 1	182.00	82.70	101.00	9002450122000
0.4823		12.25	MTS 1	182.00	82.63	101.00	9002450122500
0.4843	31/64	12.30	MTS 1	182.00	82.55	101.00	9002450123000
0.4882		12.40	MTS 1	182.00	82.40	101.00	9002450124000
0.4921		12.50	MTS 1	182.00	82.25	101.00	9002450125000
0.4961		12.60	MTS 1	182.00	82.10	101.00	9002450126000
0.5000	1/2	12.70	MTS 1	182.00	81.95	101.00	9002450127000
0.5020		12.75	MTS 1	182.00	81.88	101.00	9002450127500
0.5039		12.80	MTS 1	182.00	81.80	101.00	9002450128000
0.5059		12.85	MTS 1	182.00	81.73	101.00	9002450128500
0.5079		12.90	MTS 1	182.00	81.65	101.00	9002450129000
0.5118		13.00	MTS 1	182.00	81.50	101.00	9002450130000
0.5157	33/64	13.10	MTS 1	182.00	81.35	101.00	9002450131000
0.5197		13.20	MTS 1	182.00	81.20	101.00	9002450132000
0.5217		13.25	MTS 1	189.00	88.13	108.00	9002450132500
0.5236		13.30	MTS 1	189.00	88.05	108.00	9002450133000
0.5276		13.40	MTS 1	189.00	87.90	108.00	9002450134000
0.5311	17/32	13.49	MTS 1	189.00	87.77	108.00	9002450134900
0.5315		13.50	MTS 1	189.00	87.75	108.00	9002450135000
0.5354		13.60	MTS 1	189.00	87.60	108.00	9002450136000
0.5394		13.70	MTS 1	189.00	87.45	108.00	9002450137000
0.5413		13.75	MTS 1	189.00	87.38	108.00	9002450137500
0.5433		13.80	MTS 1	189.00	87.30	108.00	9002450138000
0.5469	35/64	13.89	MTS 1	189.00	87.17	108.00	9002450138900
0.5472		13.90	MTS 1	189.00	87.15	108.00	9002450139000
0.5512		14.00	MTS 1	189.00	87.00	108.00	9002450140000
0.5551		14.10	MTS 2	212.00	92.85	114.00	9002450141000
0.5591		14.20	MTS 2	212.00	92.70	114.00	9002450142000
0.5610		14.25	MTS 2	212.00	92.63	114.00	9002450142500
0.5626	9/16	14.29	MTS 2	212.00	92.57	114.00	9002450142900
0.5630		14.30	MTS 2	212.00	92.55	114.00	9002450143000
0.5669		14.40	MTS 2	212.00	92.40	114.00	9002450144000
0.5709		14.50	MTS 2	212.00	92.25	114.00	9002450145000
0.5748		14.60	MTS 2	212.00	92.10	114.00	9002450146000
0.5780	37/64	14.68	MTS 2	212.00	91.98	114.00	9002450146800
0.5787		14.70	MTS 2	212.00	91.95	114.00	9002450147000
0.5807		14.75	MTS 2	212.00	91.88	114.00	9002450147500
0.5827		14.80	MTS 2	212.00	91.80	114.00	9002450148000
0.5866		14.90	MTS 2	212.00	91.65	114.00	9002450149000

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.5906		15.00	MTS 2	212.00	91.50	114.00	9002450150000
0.5937	19/32	15.08	MTS 2	218.00	97.38	120.00	9002450150800
0.5945		15.10	MTS 2	218.00	97.35	120.00	9002450151000
0.5984		15.20	MTS 2	218.00	97.20	120.00	9002450152000
0.6004		15.25	MTS 2	218.00	97.13	120.00	9002450152500
0.6024		15.30	MTS 2	218.00	97.05	120.00	9002450153000
0.6063		15.40	MTS 2	218.00	96.90	120.00	9002450154000
0.6094	39/64	15.48	MTS 2	218.00	96.78	120.00	9002450154800
0.6102		15.50	MTS 2	218.00	96.75	120.00	9002450155000
0.6142		15.60	MTS 2	218.00	96.60	120.00	9002450156000
0.6181		15.70	MTS 2	218.00	96.45	120.00	9002450157000
0.6201		15.75	MTS 2	218.00	96.38	120.00	9002450157500
0.6220		15.80	MTS 2	218.00	96.30	120.00	9002450158000
0.6248	5/8	15.87	MTS 2	218.00	96.20	120.00	9002450158700
0.6260		15.90	MTS 2	218.00	96.15	120.00	9002450159000
0.6299		16.00	MTS 2	218.00	96.00	120.00	9002450160000
0.6319		16.05	MTS 2	223.00	100.93	125.00	9002450160500
0.6339		16.10	MTS 2	223.00	100.85	125.00	9002450161000
0.6378		16.20	MTS 2	223.00	100.70	125.00	9002450162000
0.6398		16.25	MTS 2	223.00	100.63	125.00	9002450162500
0.6406	41/64	16.27	MTS 2	223.00	100.60	125.00	9002450162700
0.6417		16.30	MTS 2	223.00	100.55	125.00	9002450163000
0.6457		16.40	MTS 2	223.00	100.40	125.00	9002450164000
0.6496		16.50	MTS 2	223.00	100.25	125.00	9002450165000
0.6535		16.60	MTS 2	223.00	100.10	125.00	9002450166000
0.6563	21/32	16.67	MTS 2	223.00	100.00	125.00	9002450166700
0.6575		16.70	MTS 2	223.00	99.95	125.00	9002450167000
0.6594		16.75	MTS 2	223.00	99.88	125.00	9002450167500
0.6614		16.80	MTS 2	223.00	99.80	125.00	9002450168000
0.6654		16.90	MTS 2	223.00	99.65	125.00	9002450169000
0.6693		17.00	MTS 2	223.00	99.50	125.00	9002450170000
0.6720	43/64	17.07	MTS 2	228.00	104.40	130.00	9002450170700
0.6732		17.10	MTS 2	228.00	104.35	130.00	9002450171000
0.6772		17.20	MTS 2	228.00	104.20	130.00	9002450172000
0.6791		17.25	MTS 2	228.00	104.13	130.00	9002450172500
0.6811		17.30	MTS 2	228.00	104.05	130.00	9002450173000
0.6850		17.40	MTS 2	228.00	103.90	130.00	9002450174000
0.6874	11/16	17.46	MTS 2	228.00	103.81	130.00	9002450174600
0.6890		17.50	MTS 2	228.00	103.75	130.00	9002450175000
0.6929		17.60	MTS 2	228.00	103.60	130.00	9002450176000
0.6969		17.70	MTS 2	228.00	103.45	130.00	9002450177000
0.6988		17.75	MTS 2	228.00	103.38	130.00	9002450177500
0.7008		17.80	MTS 2	228.00	103.30	130.00	9002450178000
0.7031	45/64	17.86	MTS 2	228.00	103.21	130.00	9002450178600
0.7047		17.90	MTS 2	228.00	103.15	130.00	9002450179000
0.7087		18.00	MTS 2	228.00	103.00	130.00	9002450180000
0.7126		18.10	MTS 2	233.00	107.85	135.00	9002450181000
0.7165		18.20	MTS 2	233.00	107.70	135.00	9002450182000
0.7185		18.25	MTS 2	233.00	107.63	135.00	9002450182500
0.7189	23/32	18.26	MTS 2	233.00	107.61	135.00	9002450182600
0.7205		18.30	MTS 2	233.00	107.55	135.00	9002450183000
0.7283		18.50	MTS 2	233.00	107.25	135.00	9002450185000
0.7323		18.60	MTS 2	233.00	107.10	135.00	9002450186000
0.7343	47/64	18.65	MTS 2	233.00	107.03	135.00	9002450186500
0.7382		18.75	MTS 2	233.00	106.88	135.00	9002450187500
0.7402		18.80	MTS 2	233.00	106.80	135.00	9002450188000
0.7441		18.90	MTS 2	233.00	106.65	135.00	9002450189000
0.7480		19.00	MTS 2	233.00	106.50	135.00	9002450190000
0.7500	3/4	19.05	MTS 2	238.00	111.43	140.00	9002450190500
0.7520		19.10	MTS 2	238.00	111.35	140.00	9002450191000
0.7559		19.20	MTS 2	238.00	111.20	140.00	9002450192000
0.7579		19.25	MTS 2	238.00	111.13	140.00	9002450192500
0.7657	49/64	19.45	MTS 2	238.00	110.83	140.00	9002450194500
0.7677		19.50	MTS 2	238.00	110.75	140.00	9002450195000
0.7717		19.60	MTS 2	238.00	110.60	140.00	9002450196000
0.7756		19.70	MTS 2	238.00	110.45	140.00	9002450197000

Morse Taper Shank drills

Series no. 245

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.7776		19.75	MTS 2	238.00	110.38	140.00	9002450197500
0.7795		19.80	MTS 2	238.00	110.30	140.00	9002450198000
0.7811	25/32	19.84	MTS 2	238.00	110.24	140.00	9002450198400
0.7835		19.90	MTS 2	238.00	110.15	140.00	9002450199000
0.7874		20.00	MTS 2	238.00	110.00	140.00	9002450200000
0.7913		20.10	MTS 2	243.00	114.85	145.00	9002450201000
0.7953		20.20	MTS 2	243.00	114.70	145.00	9002450202000
0.7969	51/64	20.24	MTS 2	243.00	114.64	145.00	9002450202400
0.7972		20.25	MTS 2	243.00	114.63	145.00	9002450202500
0.7992		20.30	MTS 2	243.00	114.55	145.00	9002450203000
0.8031		20.40	MTS 2	243.00	114.40	145.00	9002450204000
0.8071		20.50	MTS 2	243.00	114.25	145.00	9002450205000
0.8110		20.60	MTS 2	243.00	114.10	145.00	9002450206000
0.8126	13/16	20.64	MTS 2	243.00	114.04	145.00	9002450206400
0.8150		20.70	MTS 2	243.00	113.95	145.00	9002450207000
0.8169		20.75	MTS 2	243.00	113.88	145.00	9002450207500
0.8189		20.80	MTS 2	243.00	113.80	145.00	9002450208000
0.8268		21.00	MTS 2	243.00	113.50	145.00	9002450210000
0.8280	53/64	21.03	MTS 2	243.00	113.46	145.00	9002450210300
0.8307		21.10	MTS 2	243.00	113.35	145.00	9002450211000
0.8346		21.20	MTS 2	243.00	113.20	145.00	9002450212000
0.8366		21.25	MTS 2	248.00	118.13	150.00	9002450212500
0.8425		21.40	MTS 2	248.00	117.90	150.00	9002450214000
0.8437	27/32	21.43	MTS 2	248.00	117.86	150.00	9002450214300
0.8465		21.50	MTS 2	248.00	117.75	150.00	9002450215000
0.8543		21.70	MTS 2	248.00	117.45	150.00	9002450217000
0.8563		21.75	MTS 2	248.00	117.38	150.00	9002450217500
0.8594	55/64	21.83	MTS 2	248.00	117.26	150.00	9002450218300
0.8661		22.00	MTS 2	248.00	117.00	150.00	9002450220000
0.8701		22.10	MTS 2	248.00	116.85	150.00	9002450221000
0.8740		22.20	MTS 2	248.00	116.70	150.00	9002450222000
0.8748	7/8	22.22	MTS 2	248.00	116.67	150.00	9002450222200
0.8760		22.25	MTS 2	248.00	116.63	150.00	9002450222500
0.8780		22.30	MTS 2	248.00	116.55	150.00	9002450223000
0.8819		22.40	MTS 2	248.00	116.40	150.00	9002450224000
0.8858		22.50	MTS 2	253.00	121.25	155.00	9002450225000
0.8906	57/64	22.62	MTS 2	253.00	121.07	155.00	9002450226200
0.8957		22.75	MTS 2	253.00	120.88	155.00	9002450227500
0.9055		23.00	MTS 2	253.00	120.50	155.00	9002450230000
0.9063	29/32	23.02	MTS 2	253.00	120.47	155.00	9002450230200
0.9154		23.25	MTS 3	276.00	120.13	155.00	9002450232500
0.9220	59/64	23.42	MTS 3	276.00	119.87	155.00	9002450234200
0.9252		23.50	MTS 3	276.00	119.75	155.00	9002450235000
0.9350		23.75	MTS 3	281.00	124.38	160.00	9002450237500
0.9374	15/16	23.81	MTS 3	281.00	124.29	160.00	9002450238100
0.9449		24.00	MTS 3	281.00	124.00	160.00	9002450240000
0.9531	61/64	24.21	MTS 3	281.00	123.69	160.00	9002450242100
0.9547		24.25	MTS 3	281.00	123.63	160.00	9002450242500
0.9567		24.30	MTS 3	281.00	123.55	160.00	9002450243000
0.9646		24.50	MTS 3	281.00	123.25	160.00	9002450245000
0.9689	31/32	24.61	MTS 3	281.00	123.09	160.00	9002450246100
0.9744		24.75	MTS 3	281.00	122.88	160.00	9002450247500
0.9843	63/64	25.00	MTS 3	281.00	122.50	160.00	9002450250000
0.9941		25.25	MTS 3	286.00	127.13	165.00	9002450252500
1.0000	1.0000	25.40	MTS 3	286.00	126.90	165.00	9002450254000
1.0039		25.50	MTS 3	286.00	126.75	165.00	9002450255000
1.0138		25.75	MTS 3	286.00	126.38	165.00	9002450257500
1.0157	1 1/64	25.80	MTS 3	286.00	126.30	165.00	9002450258000
1.0236		26.00	MTS 3	286.00	126.00	165.00	9002450260000
1.0311	1 1/32	26.19	MTS 3	286.00	125.72	165.00	9002450261900

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
1.0335		26.25	MTS 3	286.00	125.63	165.00	9002450262500
1.0433		26.50	MTS 3	286.00	125.25	165.00	9002450265000
1.0469	1 3/64	26.59	MTS 3	291.00	130.12	170.00	9002450265900
1.0531		26.75	MTS 3	291.00	129.88	170.00	9002450267500
1.0626	1 1/16	26.99	MTS 3	291.00	129.52	170.00	9002450269900
1.0630		27.00	MTS 3	291.00	129.50	170.00	9002450270000
1.0728		27.25	MTS 3	291.00	129.13	170.00	9002450272500
1.0780	1 5/64	27.38	MTS 3	291.00	128.93	170.00	9002450273800
1.0827		27.50	MTS 3	291.00	128.75	170.00	9002450275000
1.0925		27.75	MTS 3	291.00	128.38	170.00	9002450277500
1.0937	1 3/32	27.78	MTS 3	291.00	128.33	170.00	9002450277800
1.0945		27.80	MTS 3	291.00	128.30	170.00	9002450278000
1.1024		28.00	MTS 3	291.00	128.00	170.00	9002450280000
1.1122		28.25	MTS 3	296.00	132.63	175.00	9002450282500
1.1220		28.50	MTS 3	296.00	132.25	175.00	9002450285000
1.1248	1 1/8	28.57	MTS 3	296.00	132.15	175.00	9002450285700
1.1319		28.75	MTS 3	296.00	131.88	175.00	9002450287500
1.1417		29.00	MTS 3	296.00	131.50	175.00	9002450290000
1.1516		29.25	MTS 3	296.00	131.13	175.00	9002450292500
1.1563	1 5/32	29.37	MTS 3	296.00	130.95	175.00	9002450293700
1.1614		29.50	MTS 3	296.00	130.75	175.00	9002450295000
1.1713		29.75	MTS 3	296.00	130.38	175.00	9002450297500
1.1811		30.00	MTS 3	296.00	130.00	175.00	9002450300000
1.1874	1 3/16	30.16	MTS 3	301.00	134.76	180.00	9002450301600
1.1909		30.25	MTS 3	301.00	134.63	180.00	9002450302500
1.2008		30.50	MTS 3	301.00	134.25	180.00	9002450305000
1.2106		30.75	MTS 3	301.00	133.88	180.00	9002450307500
1.2205		31.00	MTS 3	301.00	133.50	180.00	9002450310000
1.2303		31.25	MTS 3	301.00	133.13	180.00	9002450312500
1.2402		31.50	MTS 3	301.00	132.75	180.00	9002450315000
1.2500	1 1/4	31.75	MTS 3	306.00	137.38	185.00	9002450317500
1.2598		32.00	MTS 4	334.00	137.00	185.00	9002450320000
1.2657	1 17/64	32.15	MTS 4	334.00	136.78	185.00	9002450321500
1.2697		32.25	MTS 4	334.00	136.63	185.00	9002450322500
1.2795		32.50	MTS 4	334.00	136.25	185.00	9002450325000
1.2811	1 9/32	32.54	MTS 4	334.00	136.19	185.00	9002450325400
1.2992		33.00	MTS 4	334.00	135.50	185.00	9002450330000
1.3126	1 5/16	33.34	MTS 4	334.00	134.99	185.00	9002450333400
1.3189		33.50	MTS 4	334.00	134.75	185.00	9002450335000
1.3280	1 21/64	33.73	MTS 4	339.00	139.41	190.00	9002450337300
1.3386		34.00	MTS 4	339.00	139.00	190.00	9002450340000
1.3437	1 11/32	34.13	MTS 4	339.00	138.81	190.00	9002450341300
1.3583		34.50	MTS 4	339.00	138.25	190.00	9002450345000
1.3748	1 3/8	34.92	MTS 4	339.00	137.62	190.00	9002450349200
1.3780		35.00	MTS 4	339.00	137.50	190.00	9002450350000
1.3976		35.50	MTS 4	339.00	136.75	190.00	9002450355000
1.4173		36.00	MTS 4	344.00	141.00	195.00	9002450360000
1.4370		36.50	MTS 4	344.00	140.25	195.00	9002450365000
1.4567		37.00	MTS 4	344.00	139.50	195.00	9002450370000
1.4689	1 15/32	37.31	MTS 4	344.00	139.04	195.00	9002450373100
1.4764		37.50	MTS 4	344.00	138.75	195.00	9002450375000
1.4961		38.00	MTS 4	349.00	143.00	200.00	9002450380000
1.5000	1 1/2	38.10	MTS 4	349.00	142.85	200.00	9002450381000
1.6094	1 39/64	40.88	MTS 4	354.00	143.68	205.00	9002450408800
1.7189	1 23/32	43.66	MTS 4	359.00	144.51	210.00	9002450436600
1.7811	1 25/32	45.24	MTS 4	364.00	147.14	215.00	9002450452400
1.8437	1 27/32	46.83	MTS 4	364.00	144.76	215.00	9002450468300
1.9220	1 59/64	48.82	MTS 4	369.00	146.77	220.00	9002450488200
2.1874	2 3/16	55.56	MTS 5	417.00	146.66	230.00	9002450555600
3.1248	3 1/8	79.37	MTS 6	514.00	140.95	260.00	9002450793700

Morse Taper Shank drills

Series no. **654**

~5xD	DIN 345	N	118°	h8		MT	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material **HSS**

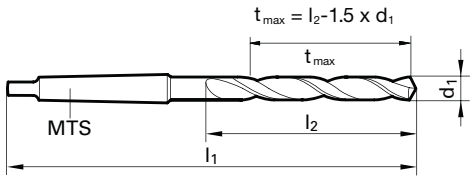
Surface **S**

P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone

alloyed/unalloyed steel and cast steel • grey cast iron, malleable and spheroidal iron • sintered powder metal, German silver and graphite





Speeds and feeds information on pg. 516

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1181		3.00	MTS 1	114.00	28.50	33.00	9006540030000
0.1720	11/64	4.37	MTS 1	128.00	40.45	47.00	9006540043700
0.1874	3/16	4.76	MTS 1	133.00	44.86	52.00	9006540047600
0.2031	13/64	5.16	MTS 1	133.00	44.26	52.00	9006540051600
0.2559		6.50	MTS 1	144.00	53.25	63.00	9006540065000
0.2657	17/64	H 6.75	MTS 1	150.00	58.88	69.00	9006540067500
0.2811	9/32	K 7.14	MTS 1	150.00	58.29	69.00	9006540071400
0.2969	19/64	7.54	MTS 1	156.00	63.69	75.00	9006540075400
0.3031		7.70	MTS 1	156.00	63.45	75.00	9006540077000
0.3125	5/16	7.94	MTS 1	156.00	63.09	75.00	9006540079400
0.3150		8.00	MTS 1	156.00	63.00	75.00	9006540080000
0.3228		P 8.20	MTS 1	156.00	62.70	75.00	9006540082000
0.3280	21/64	8.33	MTS 1	156.00	62.51	75.00	9006540083300
0.3437	11/32	8.73	MTS 1	162.00	67.91	81.00	9006540087300
0.3750	3/8	9.52	MTS 1	168.00	72.72	87.00	9006540095200
0.3858		W 9.80	MTS 1	168.00	72.30	87.00	9006540098000
0.3937		10.00	MTS 1	168.00	72.00	87.00	9006540100000
0.4016		10.20	MTS 1	168.00	71.70	87.00	9006540102000
0.4035		10.25	MTS 1	168.00	71.63	87.00	9006540102500
0.4063	13/32	10.32	MTS 1	168.00	71.52	87.00	9006540103200
0.4134		10.50	MTS 1	168.00	71.25	87.00	9006540105000
0.4220	27/64	10.72	MTS 1	175.00	77.92	94.00	9006540107200
0.4252		10.80	MTS 1	175.00	77.80	94.00	9006540108000
0.4331		11.00	MTS 1	175.00	77.50	94.00	9006540110000
0.4374	7/16	11.11	MTS 1	175.00	77.34	94.00	9006540111100
0.4409		11.20	MTS 1	175.00	77.20	94.00	9006540112000
0.4429		11.25	MTS 1	175.00	77.13	94.00	9006540112500
0.4528		11.50	MTS 1	175.00	76.75	94.00	9006540115000
0.4531	29/64	11.51	MTS 1	175.00	76.74	94.00	9006540115100
0.4626		11.75	MTS 1	175.00	76.38	94.00	9006540117500
0.4646		11.80	MTS 1	175.00	76.30	94.00	9006540118000
0.4689	15/32	11.91	MTS 1	182.00	83.14	101.00	9006540119100
0.4724		12.00	MTS 1	182.00	83.00	101.00	9006540120000
0.4803		12.20	MTS 1	182.00	82.70	101.00	9006540122000
0.4823		12.25	MTS 1	182.00	82.63	101.00	9006540122500
0.4843	31/64	12.30	MTS 1	182.00	82.55	101.00	9006540123000
0.4921		12.50	MTS 1	182.00	82.25	101.00	9006540125000
0.5000	1/2	12.70	MTS 1	182.00	81.95	101.00	9006540127000
0.5020		12.75	MTS 1	182.00	81.88	101.00	9006540127500
0.5039		12.80	MTS 1	182.00	81.80	101.00	9006540128000
0.5118		13.00	MTS 1	182.00	81.50	101.00	9006540130000
0.5157	33/64	13.10	MTS 1	182.00	81.35	101.00	9006540131000

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.5217		13.25	MTS 1	189.00	88.13	108.00	9006540132500
0.5311	17/32	13.49	MTS 1	189.00	87.77	108.00	9006540134900
0.5315		13.50	MTS 1	189.00	87.75	108.00	9006540135000
0.5413		13.75	MTS 1	189.00	87.38	108.00	9006540137500
0.5469	35/64	13.89	MTS 1	189.00	87.17	108.00	9006540138900
0.5512		14.00	MTS 1	189.00	87.00	108.00	9006540140000
0.5591		14.20	MTS 2	212.00	92.70	114.00	9006540142000
0.5610		14.25	MTS 2	212.00	92.63	114.00	9006540142500
0.5626	9/16	14.29	MTS 2	212.00	92.57	114.00	9006540142900
0.5709		14.50	MTS 2	212.00	92.25	114.00	9006540145000
0.5748		14.60	MTS 2	212.00	92.10	114.00	9006540146000
0.5780	37/64	14.68	MTS 2	212.00	91.98	114.00	9006540146800
0.5807		14.75	MTS 2	212.00	91.88	114.00	9006540147500
0.5906		15.00	MTS 2	212.00	91.50	114.00	9006540150000
0.5937	19/32	15.08	MTS 2	218.00	97.38	120.00	9006540150800
0.5945		15.10	MTS 2	218.00	97.35	120.00	9006540151000
0.6004		15.25	MTS 2	218.00	97.13	120.00	9006540152500
0.6094	39/64	15.48	MTS 2	218.00	96.78	120.00	9006540154800
0.6102		15.50	MTS 2	218.00	96.75	120.00	9006540155000
0.6201		15.75	MTS 2	218.00	96.38	120.00	9006540157500
0.6250	5/8	15.87	MTS 2	218.00	96.20	120.00	9006540158700
0.6299		16.00	MTS 2	218.00	96.00	120.00	9006540160000
0.6398		16.25	MTS 2	223.00	100.63	125.00	9006540162500
0.6406	41/64	16.27	MTS 2	223.00	100.60	125.00	9006540162700
0.6496		16.50	MTS 2	223.00	100.25	125.00	9006540165000
0.6563	21/32	16.67	MTS 2	223.00	100.00	125.00	9006540166700
0.6594		16.75	MTS 2	223.00	99.88	125.00	9006540167500
0.6693		17.00	MTS 2	223.00	99.50	125.00	9006540170000
0.6720	43/64	17.07	MTS 2	228.00	104.40	130.00	9006540170700
0.6791		17.25	MTS 2	228.00	104.13	130.00	9006540172500
0.6874	11/16	17.46	MTS 2	228.00	103.81	130.00	9006540174600
0.6890		17.50	MTS 2	228.00	103.75	130.00	9006540175000
0.6988		17.75	MTS 2	228.00	103.38	130.00	9006540177500
0.7087		18.00	MTS 2	228.00	103.00	130.00	9006540180000
0.7185		18.25	MTS 2	233.00	107.63	135.00	9006540182500
0.7189	23/32	18.26	MTS 2	233.00	107.61	135.00	9006540182600
0.7283		18.50	MTS 2	233.00	107.25	135.00	9006540185000
0.7343	47/64	18.65	MTS 2	233.00	107.03	135.00	9006540186500
0.7382		18.75	MTS 2	233.00	106.88	135.00	9006540187500
0.7480		19.00	MTS 2	233.00	106.50	135.00	9006540190000
0.7500	3/4	19.05	MTS 2	238.00	111.43	140.00	9006540190500
0.7579		19.25	MTS 2	238.00	111.13	140.00	9006540192500

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.7657	49/64	19.45	MTS 2	238.00	110.83	140.00	9006540194500
0.7677		19.50	MTS 2	238.00	110.75	140.00	9006540195000
0.7776		19.75	MTS 2	238.00	110.38	140.00	9006540197500
0.7811	25/32	19.84	MTS 2	238.00	110.24	140.00	9006540198400
0.7874		20.00	MTS 2	238.00	110.00	140.00	9006540200000
0.7972		20.25	MTS 2	243.00	114.63	145.00	9006540202500
0.8071		20.50	MTS 2	243.00	114.25	145.00	9006540205000
0.8126	13/16	20.64	MTS 2	243.00	114.04	145.00	9006540206400
0.8169		20.75	MTS 2	243.00	113.88	145.00	9006540207500
0.8268		21.00	MTS 2	243.00	113.50	145.00	9006540210000
0.8366		21.25	MTS 2	248.00	118.13	150.00	9006540212500
0.8437	27/32	21.43	MTS 2	248.00	117.86	150.00	9006540214300
0.8465		21.50	MTS 2	248.00	117.75	150.00	9006540215000
0.8563		21.75	MTS 2	248.00	117.38	150.00	9006540217500
0.8594	55/64	21.83	MTS 2	248.00	117.26	150.00	9006540218300
0.8661		22.00	MTS 2	248.00	117.00	150.00	9006540220000
0.8748	7/8	22.22	MTS 2	248.00	116.67	150.00	9006540222200
0.8858		22.50	MTS 2	253.00	121.25	155.00	9006540225000
0.9055		23.00	MTS 2	253.00	120.50	155.00	9006540230000
0.9252		23.50	MTS 3	276.00	119.75	155.00	9006540235000

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.9350		23.75	MTS 3	281.00	124.38	160.00	9006540237500
0.9374	15/16	23.81	MTS 3	281.00	124.29	160.00	9006540238100
0.9449		24.00	MTS 3	281.00	124.00	160.00	9006540240000
0.9646		24.50	MTS 3	281.00	123.25	160.00	9006540245000
0.9744		24.75	MTS 3	281.00	122.88	160.00	9006540247500
0.9843	63/64	25.00	MTS 3	281.00	122.50	160.00	9006540250000
1.0000	1.0000	25.40	MTS 3	286.00	126.90	165.00	9006540254000
1.0039		25.50	MTS 3	286.00	126.75	165.00	9006540255000
1.0236		26.00	MTS 3	286.00	126.00	165.00	9006540260000
1.0433		26.50	MTS 3	286.00	125.25	165.00	9006540265000
1.0625	1 1/16	26.99	MTS 3	291.00	129.52	170.00	9006540269900
1.0630		27.00	MTS 3	291.00	129.50	170.00	9006540270000
1.1024		28.00	MTS 3	291.00	128.00	170.00	9006540280000
1.1220		28.50	MTS 3	296.00	132.25	175.00	9006540285000
1.1252	1 1/8	28.57	MTS 3	296.00	132.15	175.00	9006540285700
1.1417		29.00	MTS 3	296.00	131.50	175.00	9006540290000
1.1614		29.50	MTS 3	296.00	130.75	175.00	9006540295000
1.1713		29.75	MTS 3	296.00	130.38	175.00	9006540297500
1.2008		30.50	MTS 3	301.00	134.25	180.00	9006540305000

Morse Taper Shank drills

Series no. **345**

~5xD	DIN 345	N	118°	h8		MT	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSCO**

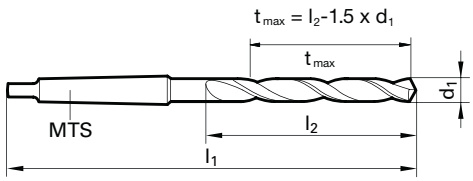
Surface: ●

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • Co-alloyed high speed steel • increased wear resistance

alloyed/unalloyed steels and castings over 800 N/mm² • hot and cold rolled steels • antifriction bearing steels • high-alloyed steels • heat S treatable and case hardened steels





Speeds and feeds information on pg. 492

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1181		3.00	MTS 1	114.00	28.50	33.00	9003450030000
0.1575		4.00	MTS 1	124.00	37.00	43.00	9003450040000
0.1969		5.00	MTS 1	133.00	44.50	52.00	9003450050000
0.2047		5.20	MTS 1	133.00	44.20	52.00	9003450052000
0.2165		5.50	MTS 1	138.00	48.75	57.00	9003450055000
0.2362		6.00	MTS 1	138.00	48.00	57.00	9003450060000
0.2441		6.20	MTS 1	144.00	53.70	63.00	9003450062000
0.2500	1/4 E	6.35	MTS 1	144.00	53.48	63.00	9003450063500
0.2559		6.50	MTS 1	144.00	53.25	63.00	9003450065000
0.2657	17/64 H	6.75	MTS 1	150.00	58.88	69.00	9003450067500
0.2756		7.00	MTS 1	150.00	58.50	69.00	9003450070000
0.3125	5/16	7.94	MTS 1	156.00	63.09	75.00	9003450079400
0.3425		8.70	MTS 1	162.00	67.95	81.00	9003450087000
0.3701		9.40	MTS 1	162.00	66.90	81.00	9003450094000
0.3750	3/8	9.52	MTS 1	168.00	72.72	87.00	9003450095200
0.3906	25/64	9.92	MTS 1	168.00	72.12	87.00	9003450099200
0.3937		10.00	MTS 1	168.00	72.00	87.00	9003450100000
0.3976		10.10	MTS 1	168.00	71.85	87.00	9003450101000
0.4016		10.20	MTS 1	168.00	71.70	87.00	9003450102000
0.4035		10.25	MTS 1	168.00	71.63	87.00	9003450102500
0.4055		10.30	MTS 1	168.00	71.55	87.00	9003450103000
0.4063	13/32	10.32	MTS 1	168.00	71.52	87.00	9003450103200
0.4134		10.50	MTS 1	168.00	71.25	87.00	9003450105000
0.4220	27/64	10.72	MTS 1	175.00	77.92	94.00	9003450107200
0.4232		10.75	MTS 1	175.00	77.88	94.00	9003450107500
0.4252		10.80	MTS 1	175.00	77.80	94.00	9003450108000
0.4331		11.00	MTS 1	175.00	77.50	94.00	9003450110000
0.4374	7/16	11.11	MTS 1	175.00	77.34	94.00	9003450111100
0.4409		11.20	MTS 1	175.00	77.20	94.00	9003450112000
0.4429		11.25	MTS 1	175.00	77.13	94.00	9003450112500
0.4528		11.50	MTS 1	175.00	76.75	94.00	9003450115000
0.4606		11.70	MTS 1	175.00	76.45	94.00	9003450117000
0.4626		11.75	MTS 1	175.00	76.38	94.00	9003450117500
0.4646		11.80	MTS 1	175.00	76.30	94.00	9003450118000
0.4689	15/32	11.91	MTS 1	182.00	83.14	101.00	9003450119100
0.4724		12.00	MTS 1	182.00	83.00	101.00	9003450120000
0.4764		12.10	MTS 1	182.00	82.85	101.00	9003450121000
0.4803		12.20	MTS 1	182.00	82.70	101.00	9003450122000
0.4823		12.25	MTS 1	182.00	82.63	101.00	9003450122500
0.4843	31/64	12.30	MTS 1	182.00	82.55	101.00	9003450123000
0.4921		12.50	MTS 1	182.00	82.25	101.00	9003450125000
0.5000	1/2	12.70	MTS 1	182.00	81.95	101.00	9003450127000

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.5020		12.75	MTS 1	182.00	81.88	101.00	9003450127500
0.5039		12.80	MTS 1	182.00	81.80	101.00	9003450128000
0.5118		13.00	MTS 1	182.00	81.50	101.00	9003450130000
0.5157	33/64	13.10	MTS 1	182.00	81.35	101.00	9003450131000
0.5197		13.20	MTS 1	182.00	81.20	101.00	9003450132000
0.5217		13.25	MTS 1	189.00	88.13	108.00	9003450132500
0.5311	17/32	13.49	MTS 1	189.00	87.77	108.00	9003450134900
0.5315		13.50	MTS 1	189.00	87.75	108.00	9003450135000
0.5354		13.60	MTS 1	189.00	87.60	108.00	9003450136000
0.5394		13.70	MTS 1	189.00	87.45	108.00	9003450137000
0.5413		13.75	MTS 1	189.00	87.38	108.00	9003450137500
0.5433		13.80	MTS 1	189.00	87.30	108.00	9003450138000
0.5469	35/64	13.89	MTS 1	189.00	87.17	108.00	9003450138900
0.5512		14.00	MTS 1	189.00	87.00	108.00	9003450140000
0.5551		14.10	MTS 2	212.00	92.85	114.00	9003450141000
0.5591		14.20	MTS 2	212.00	92.70	114.00	9003450142000
0.5610		14.25	MTS 2	212.00	92.63	114.00	9003450142500
0.5626	9/16	14.29	MTS 2	212.00	92.57	114.00	9003450142900
0.5709		14.50	MTS 2	212.00	92.25	114.00	9003450145000
0.5780	37/64	14.68	MTS 2	212.00	91.98	114.00	9003450146800
0.5807		14.75	MTS 2	212.00	91.88	114.00	9003450147500
0.5906		15.00	MTS 2	212.00	91.50	114.00	9003450150000
0.5937	19/32	15.08	MTS 2	218.00	97.38	120.00	9003450150800
0.5984		15.20	MTS 2	218.00	97.20	120.00	9003450152000
0.6004		15.25	MTS 2	218.00	97.13	120.00	9003450152500
0.6102		15.50	MTS 2	218.00	96.75	120.00	9003450155000
0.6201		15.75	MTS 2	218.00	96.38	120.00	9003450157500
0.6250	5/8	15.87	MTS 2	218.00	96.20	120.00	9003450158700
0.6260		15.90	MTS 2	218.00	96.15	120.00	9003450159000
0.6299		16.00	MTS 2	218.00	96.00	120.00	9003450160000
0.6398		16.25	MTS 2	223.00	100.63	125.00	9003450162500
0.6406	41/64	16.27	MTS 2	223.00	100.60	125.00	9003450162700
0.6457		16.40	MTS 2	223.00	100.40	125.00	9003450164000
0.6496		16.50	MTS 2	223.00	100.25	125.00	9003450165000
0.6563	21/32	16.67	MTS 2	223.00	100.00	125.00	9003450166700
0.6594		16.75	MTS 2	223.00	99.88	125.00	9003450167500
0.6693		17.00	MTS 2	223.00	99.50	125.00	9003450170000
0.6720	43/64	17.07	MTS 2	228.00	104.40	130.00	9003450170700
0.6791		17.25	MTS 2	228.00	104.13	130.00	9003450172500
0.6874	11/16	17.46	MTS 2	228.00	103.81	130.00	9003450174600
0.6890		17.50	MTS 2	228.00	103.75	130.00	9003450175000
0.6988		17.75	MTS 2	228.00	103.38	130.00	9003450177500

Morse Taper Shank drills

Series no. **345**

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.7031	45/64	17.86	MTS 2	228.00	103.21	130.00	9003450178600
0.7087		18.00	MTS 2	228.00	103.00	130.00	9003450180000
0.7185		18.25	MTS 2	233.00	107.63	135.00	9003450182500
0.7189	23/32	18.26	MTS 2	233.00	107.61	135.00	9003450182600
0.7283		18.50	MTS 2	233.00	107.25	135.00	9003450185000
0.7343	47/64	18.65	MTS 2	233.00	107.03	135.00	9003450186500
0.7382		18.75	MTS 2	233.00	106.88	135.00	9003450187500
0.7480		19.00	MTS 2	233.00	106.50	135.00	9003450190000
0.7500	3/4	19.05	MTS 2	238.00	111.43	140.00	9003450190500
0.7579		19.25	MTS 2	238.00	111.13	140.00	9003450192500
0.7657	49/64	19.45	MTS 2	238.00	110.83	140.00	9003450194500
0.7677		19.50	MTS 2	238.00	110.75	140.00	9003450195000
0.7776		19.75	MTS 2	238.00	110.38	140.00	9003450197500
0.7811	25/32	19.84	MTS 2	238.00	110.24	140.00	9003450198400
0.7874		20.00	MTS 2	238.00	110.00	140.00	9003450200000
0.7972		20.25	MTS 2	243.00	114.63	145.00	9003450202500
0.8071		20.50	MTS 2	243.00	114.25	145.00	9003450205000
0.8126	13/16	20.64	MTS 2	243.00	114.04	145.00	9003450206400
0.8169		20.75	MTS 2	243.00	113.88	145.00	9003450207500

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.8268		21.00	MTS 2	243.00	113.50	145.00	9003450210000
0.8366		21.25	MTS 2	248.00	118.13	150.00	9003450212500
0.8465		21.50	MTS 2	248.00	117.75	150.00	9003450215000
0.8563		21.75	MTS 2	248.00	117.38	150.00	9003450217500
0.8661		22.00	MTS 2	248.00	117.00	150.00	9003450220000
0.8748	7/8	22.22	MTS 2	248.00	116.67	150.00	9003450222200
0.8760		22.25	MTS 2	248.00	116.63	150.00	9003450222500
0.8858		22.50	MTS 2	253.00	121.25	155.00	9003450225000
0.9055		23.00	MTS 2	253.00	120.50	155.00	9003450230000
0.9063	29/32	23.02	MTS 2	253.00	120.47	155.00	9003450230200
0.9252		23.50	MTS 3	276.00	119.75	155.00	9003450235000
0.9370		23.80	MTS 3	281.00	124.30	160.00	9003450238000
0.9374	15/16	23.81	MTS 3	281.00	124.29	160.00	9003450238100
0.9449		24.00	MTS 3	281.00	124.00	160.00	9003450240000
0.9547		24.25	MTS 3	281.00	123.63	160.00	9003450242500
0.9646		24.50	MTS 3	281.00	123.25	160.00	9003450245000
0.9843	63/64	25.00	MTS 3	281.00	122.50	160.00	9003450250000
0.9941		25.25	MTS 3	286.00	127.13	165.00	9003450252500
1.0000	1.0000	25.40	MTS 3	286.00	126.90	165.00	9003450254000

Morse Taper Shank drills

Series no. **257**

~10xD	DIN 341	N	118°	h8		MT	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material: **HSS**

Surface: ●

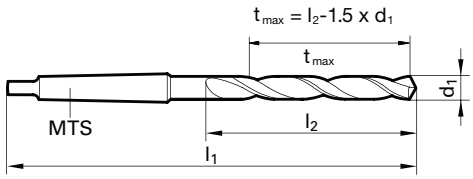
P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 14.100 • relieved cone • for drilling through drill bushes

alloyed/unalloyed steel and cast steel • grey cast iron, malleable and spheroidal iron • sintered powder metal, German silver and graphite





Speeds and feeds information on pg. 482

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1575		4.00	MTS 1	145.00	58.00	64.00	9002570040000
0.2008		5.10	MTS 1	155.00	66.35	74.00	9002570051000
0.2520		6.40	MTS 1	167.00	76.40	86.00	9002570064000
0.2559		6.50	MTS 1	167.00	76.25	86.00	9002570065000
0.2657	17/64 H	6.75	MTS 1	174.00	82.88	93.00	9002570067500
0.3228	P	8.20	MTS 1	181.00	87.70	100.00	9002570082000
0.3346		8.50	MTS 1	181.00	87.25	100.00	9002570085000
0.3740		9.50	MTS 1	188.00	92.75	107.00	9002570095000
0.3937		10.00	MTS 1	197.00	101.00	116.00	9002570100000
0.3976		10.10	MTS 1	197.00	100.85	116.00	9002570101000
0.4016		10.20	MTS 1	197.00	100.70	116.00	9002570102000
0.4035		10.25	MTS 1	197.00	100.63	116.00	9002570102500
0.4055		10.30	MTS 1	197.00	100.55	116.00	9002570103000
0.4094		10.40	MTS 1	197.00	100.40	116.00	9002570104000
0.4134		10.50	MTS 1	197.00	100.25	116.00	9002570105000
0.4173		10.60	MTS 1	197.00	100.10	116.00	9002570106000
0.4213		10.70	MTS 1	206.00	108.95	125.00	9002570107000
0.4232		10.75	MTS 1	206.00	108.88	125.00	9002570107500
0.4252		10.80	MTS 1	206.00	108.80	125.00	9002570108000
0.4291		10.90	MTS 1	206.00	108.65	125.00	9002570109000
0.4331		11.00	MTS 1	206.00	108.50	125.00	9002570110000
0.4370		11.10	MTS 1	206.00	108.35	125.00	9002570111000
0.4409		11.20	MTS 1	206.00	108.20	125.00	9002570112000
0.4429		11.25	MTS 1	206.00	108.13	125.00	9002570112500
0.4449		11.30	MTS 1	206.00	108.05	125.00	9002570113000
0.4488		11.40	MTS 1	206.00	107.90	125.00	9002570114000
0.4528		11.50	MTS 1	206.00	107.75	125.00	9002570115000
0.4567		11.60	MTS 1	206.00	107.60	125.00	9002570116000
0.4626		11.75	MTS 1	206.00	107.38	125.00	9002570117500
0.4646		11.80	MTS 1	206.00	107.30	125.00	9002570118000
0.4685		11.90	MTS 1	215.00	116.15	134.00	9002570119000
0.4724		12.00	MTS 1	215.00	116.00	134.00	9002570120000
0.4764		12.10	MTS 1	215.00	115.85	134.00	9002570121000
0.4803		12.20	MTS 1	215.00	115.70	134.00	9002570122000
0.4823		12.25	MTS 1	215.00	115.63	134.00	9002570122500
0.4843	31/64	12.30	MTS 1	215.00	115.55	134.00	9002570123000
0.4882		12.40	MTS 1	215.00	115.40	134.00	9002570124000
0.4921		12.50	MTS 1	215.00	115.25	134.00	9002570125000
0.4961		12.60	MTS 1	215.00	115.10	134.00	9002570126000
0.5000	1/2	12.70	MTS 1	215.00	114.95	134.00	9002570127000
0.5020		12.75	MTS 1	215.00	114.88	134.00	9002570127500
0.5039		12.80	MTS 1	215.00	114.80	134.00	9002570128000
0.5118		13.00	MTS 1	215.00	114.50	134.00	9002570130000

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.5157	33/64	13.10	MTS 1	215.00	114.35	134.00	9002570131000
0.5197		13.20	MTS 1	215.00	114.20	134.00	9002570132000
0.5217		13.25	MTS 1	223.00	122.13	142.00	9002570132500
0.5236		13.30	MTS 1	223.00	122.05	142.00	9002570133000
0.5311	17/32	13.49	MTS 1	223.00	121.77	142.00	9002570134900
0.5315		13.50	MTS 1	223.00	121.75	142.00	9002570135000
0.5354		13.60	MTS 1	223.00	121.60	142.00	9002570136000
0.5413		13.75	MTS 1	223.00	121.38	142.00	9002570137500
0.5433		13.80	MTS 1	223.00	121.30	142.00	9002570138000
0.5472		13.90	MTS 1	223.00	121.15	142.00	9002570139000
0.5512		14.00	MTS 1	223.00	121.00	142.00	9002570140000
0.5551		14.10	MTS 2	245.00	125.85	147.00	9002570141000
0.5591		14.20	MTS 2	245.00	125.70	147.00	9002570142000
0.5610		14.25	MTS 2	245.00	125.63	147.00	9002570142500
0.5626	9/16	14.29	MTS 2	245.00	125.57	147.00	9002570142900
0.5630		14.30	MTS 2	245.00	125.55	147.00	9002570143000
0.5709		14.50	MTS 2	245.00	125.25	147.00	9002570145000
0.5807		14.75	MTS 2	245.00	124.88	147.00	9002570147500
0.5827		14.80	MTS 2	245.00	124.80	147.00	9002570148000
0.5866		14.90	MTS 2	245.00	124.65	147.00	9002570149000
0.5906		15.00	MTS 2	245.00	124.50	147.00	9002570150000
0.5937	19/32	15.08	MTS 2	251.00	130.38	153.00	9002570150800
0.5945		15.10	MTS 2	251.00	130.35	153.00	9002570151000
0.5984		15.20	MTS 2	251.00	130.20	153.00	9002570152000
0.6004		15.25	MTS 2	251.00	130.13	153.00	9002570152500
0.6024		15.30	MTS 2	251.00	130.05	153.00	9002570153000
0.6102		15.50	MTS 2	251.00	129.75	153.00	9002570155000
0.6142		15.60	MTS 2	251.00	129.60	153.00	9002570156000
0.6201		15.75	MTS 2	251.00	129.38	153.00	9002570157500
0.6220		15.80	MTS 2	251.00	129.30	153.00	9002570158000
0.6250	5/8	15.87	MTS 2	251.00	129.20	153.00	9002570158700
0.6299		16.00	MTS 2	251.00	129.00	153.00	9002570160000
0.6339		16.10	MTS 2	257.00	134.85	159.00	9002570161000
0.6398		16.25	MTS 2	257.00	134.63	159.00	9002570162500
0.6406	41/64	16.27	MTS 2	257.00	134.60	159.00	9002570162700
0.6457		16.40	MTS 2	257.00	134.40	159.00	9002570164000
0.6496		16.50	MTS 2	257.00	134.25	159.00	9002570165000
0.6563	21/32	16.67	MTS 2	257.00	134.00	159.00	9002570166700
0.6594		16.75	MTS 2	257.00	133.88	159.00	9002570167500
0.6693		17.00	MTS 2	257.00	133.50	159.00	9002570170000
0.6791		17.25	MTS 2	263.00	139.13	165.00	9002570172500
0.6874	11/16	17.46	MTS 2	263.00	138.81	165.00	9002570174600
0.6890		17.50	MTS 2	263.00	138.75	165.00	9002570175000

Morse Taper Shank drills

Series no. **257**

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.6988		17.75	MTS 2	263.00	138.38	165.00	9002570177500
0.7087		18.00	MTS 2	263.00	138.00	165.00	9002570180000
0.7185		18.25	MTS 2	269.00	143.63	171.00	9002570182500
0.7189	23/32	18.26	MTS 2	269.00	143.61	171.00	9002570182600
0.7283		18.50	MTS 2	269.00	143.25	171.00	9002570185000
0.7382		18.75	MTS 2	269.00	142.88	171.00	9002570187500
0.7480		19.00	MTS 2	269.00	142.50	171.00	9002570190000
0.7579		19.25	MTS 2	275.00	148.13	177.00	9002570192500
0.7677		19.50	MTS 2	275.00	147.75	177.00	9002570195000
0.7776		19.75	MTS 2	275.00	147.38	177.00	9002570197500
0.7811	25/32	19.84	MTS 2	275.00	147.24	177.00	9002570198400
0.7874		20.00	MTS 2	275.00	147.00	177.00	9002570200000
0.7972		20.25	MTS 2	282.00	153.63	184.00	9002570202500
0.8071		20.50	MTS 2	282.00	153.25	184.00	9002570205000
0.8126	13/16	20.64	MTS 2	282.00	153.04	184.00	9002570206400
0.8268		21.00	MTS 2	282.00	152.50	184.00	9002570210000
0.8465		21.50	MTS 2	289.00	158.75	191.00	9002570215000
0.8563		21.75	MTS 2	289.00	158.38	191.00	9002570217500
0.8661		22.00	MTS 2	289.00	158.00	191.00	9002570220000
0.8748	7/8	22.22	MTS 2	289.00	157.67	191.00	9002570222200
0.8760		22.25	MTS 2	289.00	157.63	191.00	9002570222500

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.8858		22.50	MTS 2	296.00	164.25	198.00	9002570225000
0.9055		23.00	MTS 2	296.00	163.50	198.00	9002570230000
0.9154		23.25	MTS 3	319.00	163.13	198.00	9002570232500
0.9252		23.50	MTS 3	319.00	162.75	198.00	9002570235000
0.9350		23.75	MTS 3	327.00	170.38	206.00	9002570237500
0.9374	15/16	23.81	MTS 3	327.00	170.29	206.00	9002570238100
0.9449		24.00	MTS 3	327.00	170.00	206.00	9002570240000
0.9547		24.25	MTS 3	327.00	169.63	206.00	9002570242500
0.9646		24.50	MTS 3	327.00	169.25	206.00	9002570245000
0.9843	63/64	25.00	MTS 3	327.00	168.50	206.00	9002570250000
0.9941		25.25	MTS 3	335.00	176.13	214.00	9002570252500
1.0039		25.50	MTS 3	335.00	175.75	214.00	9002570255000
1.0236		26.00	MTS 3	335.00	175.00	214.00	9002570260000
1.0433		26.50	MTS 3	335.00	174.25	214.00	9002570265000
1.0630		27.00	MTS 3	343.00	181.50	222.00	9002570270000
1.0827		27.50	MTS 3	343.00	180.75	222.00	9002570275000
1.1024		28.00	MTS 3	343.00	180.00	222.00	9002570280000
1.1220		28.50	MTS 3	351.00	187.25	230.00	9002570285000
1.1417		29.00	MTS 3	351.00	186.50	230.00	9002570290000
1.1563	1 5/32	29.37	MTS 3	351.00	185.95	230.00	9002570293700

Morse Taper Shank drills

Series no. **551**

~10xD Cutting depth | DIN 341 Standard | GT 100 Type | 130° Point angle | h8 Tolerance on Ø | Web Thinning | MT Shank form | R Cutting direction

Tool material **HSS**

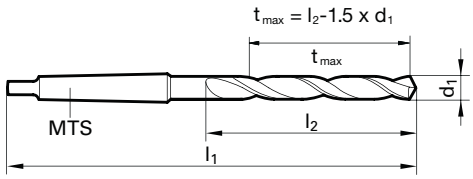
Surface >Ø 16.0

P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 5.500 • relieved cone • wide flutes • in case of unsatisfactory chip evacuation

cast iron and steels up to 1000 N/mm² • Not recommended for: CrNi steels, stainless steels





Speeds and feeds information on pg. 500

Series no. **551**

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2362		6.00	MTS 1	161.00	71.00	80.00	9005510060000
0.2559		6.50	MTS 1	167.00	76.25	86.00	9005510065000
0.2657	17/64 H	6.75	MTS 1	174.00	82.88	93.00	9005510067500
0.2953		7.50	MTS 1	174.00	81.75	93.00	9005510075000
0.3125	5/16	7.94	MTS 1	181.00	88.09	100.00	9005510079400
0.3280	21/64	8.33	MTS 1	181.00	87.51	100.00	9005510083300
0.3346		8.50	MTS 1	181.00	87.25	100.00	9005510085000
0.3543		9.00	MTS 1	188.00	93.50	107.00	9005510090000
0.3740		9.50	MTS 1	188.00	92.75	107.00	9005510095000
0.3750	3/8	9.52	MTS 1	197.00	101.72	116.00	9005510095200
0.3898		9.90	MTS 1	197.00	101.15	116.00	9005510099000
0.3906	25/64	9.92	MTS 1	197.00	101.12	116.00	9005510099200
0.3937		10.00	MTS 1	197.00	101.00	116.00	9005510100000
0.4016		10.20	MTS 1	197.00	100.70	116.00	9005510102000
0.4035		10.25	MTS 1	197.00	100.63	116.00	9005510102500
0.4055		10.30	MTS 1	197.00	100.55	116.00	9005510103000
0.4063	13/32	10.32	MTS 1	197.00	100.52	116.00	9005510103200
0.4134		10.50	MTS 1	197.00	100.25	116.00	9005510105000
0.4173		10.60	MTS 1	197.00	100.10	116.00	9005510106000
0.4220	27/64	10.72	MTS 1	206.00	108.92	125.00	9005510107200
0.4331		11.00	MTS 1	206.00	108.50	125.00	9005510110000
0.4374	7/16	11.11	MTS 1	206.00	108.34	125.00	9005510111100
0.4409		11.20	MTS 1	206.00	108.20	125.00	9005510112000
0.4528		11.50	MTS 1	206.00	107.75	125.00	9005510115000
0.4531	29/64	11.51	MTS 1	206.00	107.74	125.00	9005510115100
0.4646		11.80	MTS 1	206.00	107.30	125.00	9005510118000
0.4689	15/32	11.91	MTS 1	215.00	116.14	134.00	9005510119100
0.4724		12.00	MTS 1	215.00	116.00	134.00	9005510120000
0.4803		12.20	MTS 1	215.00	115.70	134.00	9005510122000
0.4843	31/64	12.30	MTS 1	215.00	115.55	134.00	9005510123000
0.4921		12.50	MTS 1	215.00	115.25	134.00	9005510125000
0.5000	1/2	12.70	MTS 1	215.00	114.95	134.00	9005510127000
0.5039		12.80	MTS 1	215.00	114.80	134.00	9005510128000
0.5118		13.00	MTS 1	215.00	114.50	134.00	9005510130000
0.5157	33/64	13.10	MTS 1	215.00	114.35	134.00	9005510131000
0.5197		13.20	MTS 1	215.00	114.20	134.00	9005510132000

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.5311	17/32	13.49	MTS 1	223.00	121.77	142.00	9005510134900
0.5315		13.50	MTS 1	223.00	121.75	142.00	9005510135000
0.5433		13.80	MTS 1	223.00	121.30	142.00	9005510138000
0.5469	35/64	13.89	MTS 1	223.00	121.17	142.00	9005510138900
0.5512		14.00	MTS 1	223.00	121.00	142.00	9005510140000
0.5591		14.20	MTS 2	245.00	125.70	147.00	9005510142000
0.5626	9/16	14.29	MTS 2	245.00	125.57	147.00	9005510142900
0.5709		14.50	MTS 2	245.00	125.25	147.00	9005510145000
0.5807		14.75	MTS 2	245.00	124.88	147.00	9005510147500
0.5906		15.00	MTS 2	245.00	124.50	147.00	9005510150000
0.6004		15.25	MTS 2	251.00	130.13	153.00	9005510152500
0.6094	39/64	15.48	MTS 2	251.00	129.78	153.00	9005510154800
0.6102		15.50	MTS 2	251.00	129.75	153.00	9005510155000
0.6201		15.75	MTS 2	251.00	129.38	153.00	9005510157500
0.6250	5/8	15.87	MTS 2	251.00	129.20	153.00	9005510158700
0.6299		16.00	MTS 2	251.00	129.00	153.00	9005510160000
0.6406	41/64	16.27	MTS 2	257.00	134.60	159.00	9005510162700
0.6496		16.50	MTS 2	257.00	134.25	159.00	9005510165000
0.6563	21/32	16.67	MTS 2	257.00	134.00	159.00	9005510166700
0.6614		16.80	MTS 2	257.00	133.80	159.00	9005510168000
0.6693		17.00	MTS 2	257.00	133.50	159.00	9005510170000
0.6874	11/16	17.46	MTS 2	263.00	138.81	165.00	9005510174600
0.6890		17.50	MTS 2	263.00	138.75	165.00	9005510175000
0.7087		18.00	MTS 2	263.00	138.00	165.00	9005510180000
0.7189	23/32	18.26	MTS 2	269.00	143.61	171.00	9005510182600
0.7480		19.00	MTS 2	269.00	142.50	171.00	9005510190000
0.7500	3/4	19.05	MTS 2	275.00	148.43	177.00	9005510190500
0.7657	49/64	19.45	MTS 2	275.00	147.83	177.00	9005510194500
0.7677		19.50	MTS 2	275.00	147.75	177.00	9005510195000
0.7811	25/32	19.84	MTS 2	275.00	147.24	177.00	9005510198400
0.9374	15/16	23.81	MTS 3	327.00	170.29	206.00	9005510238100
1.1417		29.00	MTS 3	351.00	186.50	230.00	9005510290000
1.1874	1 3/16	30.16	MTS 3	360.00	193.76	239.00	9005510301600
1.2008		30.50	MTS 3	360.00	193.25	239.00	9005510305000
1.2205		31.00	MTS 3	360.00	192.50	239.00	9005510310000
1.2402		31.50	MTS 3	360.00	191.75	239.00	9005510315000

Morse Taper Shank drills

Series no. **266**

Tool material **HSS**

Surface

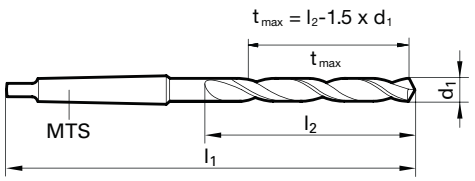
~15xD Cutting depth | DIN 1870 Standard | N Type | 118° Point angle | h8 Tolerance on Ø | Web Thinning | MT Shank form | R Cutting direction

P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 7.800 • relieved cone • for extremely deep holes

alloyed/unalloyed steel and cast steel • grey cast iron, malleable and spheroidal iron • sintered powder metal, German silver and graphite





Speeds and feeds information on pg. 482

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3346		8.50	MTS 1	265.00	152.25	165.00	9002660085000
0.3543		9.00	MTS 1	275.00	161.50	175.00	9002660090000
0.3937		10.00	MTS 1	285.00	170.00	185.00	9002660100000
0.4016		10.20	MTS 1	285.00	169.70	185.00	9002660102000
0.4035		10.25	MTS 1	285.00	169.63	185.00	9002660102500
0.4063	13/32	10.32	MTS 1	285.00	169.52	185.00	9002660103200
0.4134		10.50	MTS 1	285.00	169.25	185.00	9002660105000
0.4331		11.00	MTS 1	300.00	178.50	195.00	9002660110000
0.4374	7/16	11.11	MTS 1	300.00	178.34	195.00	9002660111100
0.4528		11.50	MTS 1	300.00	177.75	195.00	9002660115000
0.4646		11.80	MTS 1	300.00	177.30	195.00	9002660118000
0.4724		12.00	MTS 1	310.00	187.00	205.00	9002660120000
0.4921		12.50	MTS 1	310.00	186.25	205.00	9002660125000
0.5000	1/2	12.70	MTS 1	310.00	185.95	205.00	9002660127000
0.5118		13.00	MTS 1	310.00	185.50	205.00	9002660130000
0.5311	17/32	13.49	MTS 1	325.00	199.77	220.00	9002660134900
0.5315		13.50	MTS 1	325.00	199.75	220.00	9002660135000
0.5512		14.00	MTS 1	325.00	199.00	220.00	9002660140000
0.5626	9/16	14.29	MTS 2	340.00	198.57	220.00	9002660142900
0.5709		14.50	MTS 2	340.00	198.25	220.00	9002660145000
0.5906		15.00	MTS 2	340.00	197.50	220.00	9002660150000
0.6004		15.25	MTS 2	355.00	207.13	230.00	9002660152500
0.6102		15.50	MTS 2	355.00	206.75	230.00	9002660155000

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.6299		16.00	MTS 2	355.00	206.00	230.00	9002660160000
0.6496		16.50	MTS 2	355.00	205.25	230.00	9002660165000
0.6563	21/32	16.67	MTS 2	355.00	205.00	230.00	9002660166700
0.6693		17.00	MTS 2	355.00	204.50	230.00	9002660170000
0.6890		17.50	MTS 2	370.00	218.75	245.00	9002660175000
0.7087		18.00	MTS 2	370.00	218.00	245.00	9002660180000
0.7283		18.50	MTS 2	370.00	217.25	245.00	9002660185000
0.7343	47/64	18.65	MTS 2	370.00	217.03	245.00	9002660186500
0.7480		19.00	MTS 2	370.00	216.50	245.00	9002660190000
0.7500	3/4	19.05	MTS 2	385.00	231.43	260.00	9002660190500
0.7677		19.50	MTS 2	385.00	230.75	260.00	9002660195000
0.7776		19.75	MTS 2	385.00	230.38	260.00	9002660197500
0.7874		20.00	MTS 2	385.00	230.00	260.00	9002660200000
0.8071		20.50	MTS 2	385.00	229.25	260.00	9002660205000
0.8126	13/16	20.64	MTS 2	385.00	229.04	260.00	9002660206400
0.8268		21.00	MTS 2	385.00	228.50	260.00	9002660210000
0.8465		21.50	MTS 2	405.00	237.75	270.00	9002660215000
0.8661		22.00	MTS 2	405.00	237.00	270.00	9002660220000
0.8858		22.50	MTS 2	405.00	236.25	270.00	9002660225000
0.9055		23.00	MTS 2	405.00	235.50	270.00	9002660230000
0.9063	29/32	23.02	MTS 2	405.00	235.47	270.00	9002660230200
1.3386		34.00	MTS 4	530.00	289.00	340.00	9002660340000

Morse Taper Shank drills

Series no. **526**

~15xD	DIN 1870	GT 100	130°	h8		MT	R
Cutting depth	Standard	Type	Point angle	Tolerance on Ø	Web Thinning	Shank form	Cutting direction

Tool material **HSS**

Surface >Ø 16.0

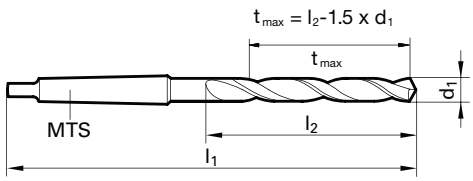
P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 5.800 • relieved cone • wide flutes • for extremely deep holes • in case of unsatisfactory chip evacuation

cast iron and steels up to 1000 N/mm² • Not recommended for: CrNi steels, stainless steels





Speeds and feeds information on pg. 496

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3150		8.00	MTS 1	265.00	153.00	165.00	9005260080000
0.3346		8.50	MTS 1	265.00	152.25	165.00	9005260085000
0.3465		8.80	MTS 1	275.00	161.80	175.00	9005260088000
0.3750	3/8	9.52	MTS 1	285.00	170.72	185.00	9005260095200
0.3906	25/64	9.92	MTS 1	285.00	170.12	185.00	9005260099200
0.3937		10.00	MTS 1	285.00	170.00	185.00	9005260100000
0.4063	13/32	10.32	MTS 1	285.00	169.52	185.00	9005260103200
0.4134		10.50	MTS 1	285.00	169.25	185.00	9005260105000
0.4220	27/64	10.72	MTS 1	300.00	178.92	195.00	9005260107200
0.4252		10.80	MTS 1	300.00	178.80	195.00	9005260108000
0.4331		11.00	MTS 1	300.00	178.50	195.00	9005260110000
0.4374	7/16	11.11	MTS 1	300.00	178.34	195.00	9005260111100
0.4528		11.50	MTS 1	300.00	177.75	195.00	9005260115000
0.4531	29/64	11.51	MTS 1	300.00	177.74	195.00	9005260115100
0.4724		12.00	MTS 1	310.00	187.00	205.00	9005260120000
0.4843	31/64	12.30	MTS 1	310.00	186.55	205.00	9005260123000
0.4921		12.50	MTS 1	310.00	186.25	205.00	9005260125000
0.5000	1/2	12.70	MTS 1	310.00	185.95	205.00	9005260127000
0.5079		12.90	MTS 1	310.00	185.65	205.00	9005260129000
0.5118		13.00	MTS 1	310.00	185.50	205.00	9005260130000
0.5311	17/32	13.49	MTS 1	325.00	199.77	220.00	9005260134900
0.5315		13.50	MTS 1	325.00	199.75	220.00	9005260135000
0.5512		14.00	MTS 1	325.00	199.00	220.00	9005260140000

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.5591		14.20	MTS 2	340.00	198.70	220.00	9005260142000
0.5626	9/16	14.29	MTS 2	340.00	198.57	220.00	9005260142900
0.5709		14.50	MTS 2	340.00	198.25	220.00	9005260145000
0.5780	37/64	14.68	MTS 2	340.00	197.98	220.00	9005260146800
0.5906		15.00	MTS 2	340.00	197.50	220.00	9005260150000
0.6102		15.50	MTS 2	355.00	206.75	230.00	9005260155000
0.6250	5/8	15.87	MTS 2	355.00	206.20	230.00	9005260158700
0.6299		16.00	MTS 2	355.00	206.00	230.00	9005260160000
0.6496		16.50	MTS 2	355.00	205.25	230.00	9005260165000
0.6563	21/32	16.67	MTS 2	355.00	205.00	230.00	9005260166700
0.6693		17.00	MTS 2	355.00	204.50	230.00	9005260170000
0.6720	43/64	17.07	MTS 2	370.00	219.40	245.00	9005260170700
0.6874	11/16	17.46	MTS 2	370.00	218.81	245.00	9005260174600
0.6890		17.50	MTS 2	370.00	218.75	245.00	9005260175000
0.7087		18.00	MTS 2	370.00	218.00	245.00	9005260180000
0.7283		18.50	MTS 2	370.00	217.25	245.00	9005260185000
0.7480		19.00	MTS 2	370.00	216.50	245.00	9005260190000
0.7657	49/64	19.45	MTS 2	385.00	230.83	260.00	9005260194500
0.7677		19.50	MTS 2	385.00	230.75	260.00	9005260195000
1.0827		27.50	MTS 3	460.00	263.75	305.00	9005260275000
1.1220		28.50	MTS 3	460.00	262.25	305.00	9005260285000
1.1811		30.00	MTS 3	460.00	260.00	305.00	9005260300000
1.1874	1 3/16	30.16	MTS 3	480.00	274.76	320.00	9005260301600

Morse Taper Shank drills

Series no. **527**

Tool material **HSS**

Surface >Ø 16.0

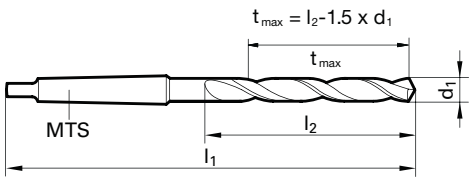
~20xD Cutting depth | DIN 1870 Standard | GT 100 Type | 130° Point angle | h8 Tolerance on Ø | Web Thinning | MT Shank form | R Cutting direction

P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 7.800 • relieved cone • wide flutes • in case of unsatisfactory chip evacuation • for extremely deep holes

cast iron and steels up to 1000 N/mm² • Not recommended for: CrNi steels, stainless steels





Speeds and feeds information on pg. 497

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3150		8.00	MTS 1	330.00	198.00	210.00	9005270080000
0.3307		8.40	MTS 1	330.00	197.40	210.00	9005270084000
0.3346		8.50	MTS 1	330.00	197.25	210.00	9005270085000
0.3504		8.90	MTS 1	345.00	206.65	220.00	9005270089000
0.3937		10.00	MTS 1	360.00	220.00	235.00	9005270100000
0.4063	13/32	10.32	MTS 1	360.00	219.52	235.00	9005270103200
0.4134		10.50	MTS 1	360.00	219.25	235.00	9005270105000
0.4331		11.00	MTS 1	375.00	233.50	250.00	9005270110000
0.4374	7/16	11.11	MTS 1	375.00	233.34	250.00	9005270111100
0.4528		11.50	MTS 1	375.00	232.75	250.00	9005270115000
0.4531	29/64	11.51	MTS 1	375.00	232.74	250.00	9005270115100
0.4689	15/32	11.91	MTS 1	395.00	242.14	260.00	9005270119100
0.4724		12.00	MTS 1	395.00	242.00	260.00	9005270120000
0.4843	31/64	12.30	MTS 1	395.00	241.55	260.00	9005270123000
0.4921		12.50	MTS 1	395.00	241.25	260.00	9005270125000
0.5000	1/2	12.70	MTS 1	395.00	240.95	260.00	9005270127000
0.5118		13.00	MTS 1	395.00	240.50	260.00	9005270130000
0.5315		13.50	MTS 1	410.00	254.75	275.00	9005270135000
0.5469	35/64	13.89	MTS 1	410.00	254.17	275.00	9005270138900
0.5512		14.00	MTS 1	410.00	254.00	275.00	9005270140000
0.5591		14.20	MTS 2	425.00	253.70	275.00	9005270142000
0.5626	9/16	14.29	MTS 2	425.00	253.57	275.00	9005270142900
0.5709		14.50	MTS 2	425.00	253.25	275.00	9005270145000

Diameter (d_1) inch	wire/ltr	mm	Shank Size	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.5906		15.00	MTS 2	425.00	252.50	275.00	9005270150000
0.6102		15.50	MTS 2	445.00	271.75	295.00	9005270155000
0.6299		16.00	MTS 2	445.00	271.00	295.00	9005270160000
0.6496		16.50	MTS 2	445.00	270.25	295.00	9005270165000
0.6693		17.00	MTS 2	445.00	269.50	295.00	9005270170000
0.6720	43/64	17.07	MTS 2	465.00	284.40	310.00	9005270170700
0.6890		17.50	MTS 2	465.00	283.75	310.00	9005270175000
0.7008		17.80	MTS 2	465.00	283.30	310.00	9005270178000
0.7087		18.00	MTS 2	465.00	283.00	310.00	9005270180000
0.7283		18.50	MTS 2	465.00	282.25	310.00	9005270185000
0.7480		19.00	MTS 2	465.00	281.50	310.00	9005270190000
0.7657	49/64	19.45	MTS 2	490.00	295.83	325.00	9005270194500
0.7677		19.50	MTS 2	490.00	295.75	325.00	9005270195000
0.8280	53/64	21.03	MTS 2	490.00	293.46	325.00	9005270210300
0.8594	55/64	21.83	MTS 2	515.00	312.26	345.00	9005270218300
0.9532	61/64	24.21	MTS 3	555.00	328.69	365.00	9005270242100
0.9646		24.50	MTS 3	555.00	328.25	365.00	9005270245000
1.0827		27.50	MTS 3	580.00	343.75	385.00	9005270275000
1.0937	1 3/32	27.78	MTS 3	580.00	343.33	385.00	9005270277800
1.1220		28.50	MTS 3	580.00	342.25	385.00	9005270285000
1.1319		28.75	MTS 3	580.00	341.88	385.00	9005270287500
1.1614		29.50	MTS 3	580.00	340.75	385.00	9005270295000

GUHRING





CARBIDE MICRO-PRECISION DRILLS



Micro-precision drills

Series no. **3899**

Tool material **Solid Carbide**

Surface **A**

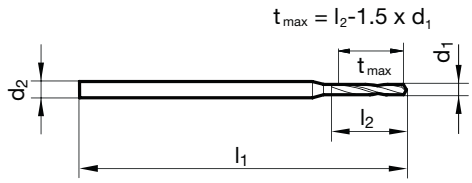
~5xD Cutting depth | N Type | 140° Point angle | ≥1.0 h7 Tolerance | Without Internal coolant | HA Shank form | R Cutting direction

P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 0.800 • facet point grinding

structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • cast materials





Speeds and feeds information on pg. 542

Series no. **3899**

Diameter (d_1) inch	wire/ltr	mm	d2 h6 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0039		0.10	3.00	38.00	1.05	1.20	9038990001000
0.0043		0.11	3.00	38.00	1.04	1.20	9038990001100
0.0047		0.12	3.00	38.00	1.22	1.40	9038990001200
0.0051		0.13	3.00	38.00	1.21	1.40	9038990001300
0.0055		0.14	3.00	38.00	1.19	1.40	9038990001400
0.0059	#97	0.15	3.00	38.00	1.78	2.00	9038990001500
0.0063	#96	0.16	3.00	38.00	1.76	2.00	9038990001600
0.0067	#95	0.17	3.00	38.00	1.75	2.00	9038990001700
0.0071	#94	0.18	3.00	38.00	1.73	2.00	9038990001800
0.0075	#93	0.19	3.00	38.00	1.72	2.00	9038990001900
0.0079	#92	0.20	3.00	38.00	2.20	3.00	9038990002000
0.0083	#91	0.21	3.00	38.00	2.19	3.00	9038990002100
0.0087	#90	0.22	3.00	38.00	2.17	3.00	9038990002200
0.0091	#89	0.23	3.00	38.00	2.16	3.00	9038990002300
0.0094	#88	0.24	3.00	38.00	2.14	3.00	9038990002400
0.0098	#87	0.25	3.00	38.00	2.63	3.00	9038990002500
0.0102		0.26	3.00	38.00	2.61	3.00	9038990002600
0.0106	#86	0.27	3.00	38.00	2.60	3.00	9038990002700
0.0110	#85	0.28	3.00	38.00	2.58	3.00	9038990002800
0.0114	#84	0.29	3.00	38.00	2.57	3.00	9038990002900
0.0118		0.30	3.00	38.00	4.55	5.00	9038990003000
0.0122	#83	0.31	3.00	38.00	4.54	5.00	9038990003100
0.0126	#82	0.32	3.00	38.00	4.52	5.00	9038990003200
0.0130	#81	0.33	3.00	38.00	4.51	5.00	9038990003300
0.0134	#80	0.34	3.00	38.00	4.49	5.00	9038990003400
0.0138		0.35	3.00	38.00	5.48	6.00	9038990003500
0.0142		0.36	3.00	38.00	5.46	6.00	9038990003600
0.0146	#79	0.37	3.00	38.00	5.45	6.00	9038990003700
0.0150		0.38	3.00	38.00	5.43	6.00	9038990003800
0.0154		0.39	3.00	38.00	5.42	6.00	9038990003900
0.0157	1/64	0.40	3.00	38.00	6.40	7.00	9038990004000
0.0161	#78	0.41	3.00	38.00	6.39	7.00	9038990004100
0.0165		0.42	3.00	38.00	6.37	7.00	9038990004200
0.0169		0.43	3.00	38.00	6.36	7.00	9038990004300
0.0173		0.44	3.00	38.00	6.34	7.00	9038990004400
0.0177		0.45	3.00	38.00	6.33	7.00	9038990004500
0.0181	#77	0.46	3.00	38.00	6.31	7.00	9038990004600
0.0185		0.47	3.00	38.00	6.30	7.00	9038990004700
0.0189		0.48	3.00	38.00	6.28	7.00	9038990004800
0.0193		0.49	3.00	38.00	6.27	7.00	9038990004900
0.0197		0.50	3.00	38.00	6.25	7.00	9038990005000
0.0201	#76	0.51	3.00	38.00	6.24	7.00	9038990005100

Diameter (d_1) inch	wire/ltr	mm	d2 h6 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0205		0.52	3.00	38.00	6.22	7.00	9038990005200
0.0209	#75	0.53	3.00	38.00	6.21	7.00	9038990005300
0.0213		0.54	3.00	38.00	6.19	7.00	9038990005400
0.0217		0.55	3.00	38.00	6.18	7.00	9038990005500
0.0220		0.56	3.00	38.00	6.16	7.00	9038990005600
0.0224	#74	0.57	3.00	38.00	6.15	7.00	9038990005700
0.0228		0.58	3.00	38.00	6.13	7.00	9038990005800
0.0232		0.59	3.00	38.00	6.12	7.00	9038990005900
0.0236		0.60	3.00	38.00	6.10	7.00	9038990006000
0.0240	#73	0.61	3.00	38.00	6.09	7.00	9038990006100
0.0244		0.62	3.00	38.00	6.07	7.00	9038990006200
0.0248		0.63	3.00	38.00	6.06	7.00	9038990006300
0.0252	#72	0.64	3.00	38.00	6.04	7.00	9038990006400
0.0256		0.65	3.00	38.00	6.03	7.00	9038990006500
0.0260	#71	0.66	3.00	38.00	6.01	7.00	9038990006600
0.0264		0.67	3.00	38.00	6.00	7.00	9038990006700
0.0268		0.68	3.00	38.00	5.98	7.00	9038990006800
0.0272		0.69	3.00	38.00	5.97	7.00	9038990006900
0.0276		0.70	3.00	38.00	6.95	8.00	9038990007000
0.0280	#70	0.71	3.00	38.00	6.94	8.00	9038990007100
0.0283		0.72	3.00	38.00	6.92	8.00	9038990007200
0.0287		0.73	3.00	38.00	6.91	8.00	9038990007300
0.0291	#69	0.74	3.00	38.00	6.89	8.00	9038990007400
0.0295		0.75	3.00	38.00	6.88	8.00	9038990007500
0.0299		0.76	3.00	38.00	6.86	8.00	9038990007600
0.0303		0.77	3.00	38.00	6.85	8.00	9038990007700
0.0307		0.78	3.00	38.00	6.83	8.00	9038990007800
0.0311	1/32 #68	0.79	3.00	38.00	6.82	8.00	9038990007900
0.0315		0.80	3.00	38.00	8.80	10.00	9038990008000
0.0319	#67	0.81	3.00	38.00	8.79	10.00	9038990008100
0.0323		0.82	3.00	38.00	8.77	10.00	9038990008200
0.0327		0.83	3.00	38.00	8.76	10.00	9038990008300
0.0331	#66	0.84	3.00	38.00	8.74	10.00	9038990008400
0.0335		0.85	3.00	38.00	8.73	10.00	9038990008500
0.0339		0.86	3.00	38.00	8.71	10.00	9038990008600
0.0343		0.87	3.00	38.00	8.70	10.00	9038990008700
0.0346		0.88	3.00	38.00	8.68	10.00	9038990008800
0.0350	#65	0.89	3.00	38.00	8.67	10.00	9038990008900
0.0354		0.90	3.00	38.00	8.65	10.00	9038990009000
0.0358	#64	0.91	3.00	38.00	8.64	10.00	9038990009100
0.0362		0.92	3.00	38.00	8.62	10.00	9038990009200
0.0366		0.93	3.00	38.00	8.61	10.00	9038990009300

Micro-precision drills

Series no. **3899**

Diameter (d_1) inch	wire/ltr	mm	d2 h6 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0370	#63	0.94	3.00	38.00	8.59	10.00	9038990009400
0.0374		0.95	3.00	38.00	8.58	10.00	9038990009500
0.0378		0.96	3.00	38.00	8.56	10.00	9038990009600
0.0382	#62	0.97	3.00	38.00	8.55	10.00	9038990009700
0.0386		0.98	3.00	38.00	8.53	10.00	9038990009800
0.0390	#61	0.99	3.00	38.00	8.52	10.00	9038990009900
0.0394		1.00	3.00	38.00	8.50	10.00	9038990010000
0.0398		1.01	3.00	38.00	8.49	10.00	9038990010100
0.0402	#60	1.02	3.00	38.00	8.47	10.00	9038990010200
0.0406		1.03	3.00	38.00	8.46	10.00	9038990010300
0.0409	#59	1.04	3.00	38.00	8.44	10.00	9038990010400
0.0413		1.05	3.00	38.00	8.43	10.00	9038990010500
0.0417		1.06	3.00	38.00	8.41	10.00	9038990010600
0.0421	#58	1.07	3.00	38.00	8.40	10.00	9038990010700
0.0425		1.08	3.00	38.00	8.38	10.00	9038990010800
0.0429	#57	1.09	3.00	38.00	8.37	10.00	9038990010900
0.0433		1.10	3.00	38.00	8.35	10.00	9038990011000
0.0437		1.11	3.00	38.00	8.34	10.00	9038990011100
0.0441		1.12	3.00	38.00	8.32	10.00	9038990011200
0.0445		1.13	3.00	38.00	8.31	10.00	9038990011300
0.0449		1.14	3.00	38.00	8.29	10.00	9038990011400
0.0453		1.15	3.00	38.00	8.28	10.00	9038990011500
0.0457		1.16	3.00	38.00	8.26	10.00	9038990011600
0.0461		1.17	3.00	38.00	8.25	10.00	9038990011700
0.0465	#56	1.18	3.00	38.00	8.23	10.00	9038990011800
0.0469	3/64	1.19	3.00	38.00	8.22	10.00	9038990011900
0.0472		1.20	3.00	38.00	8.20	10.00	9038990012000
0.0476		1.21	3.00	38.00	8.19	10.00	9038990012100
0.0480		1.22	3.00	38.00	8.17	10.00	9038990012200
0.0484		1.23	3.00	38.00	8.16	10.00	9038990012300
0.0488		1.24	3.00	38.00	8.14	10.00	9038990012400
0.0492		1.25	3.00	38.00	8.13	10.00	9038990012500
0.0496		1.26	3.00	38.00	8.11	10.00	9038990012600
0.0500		1.27	3.00	38.00	8.10	10.00	9038990012700
0.0504		1.28	3.00	38.00	8.08	10.00	9038990012800
0.0508		1.29	3.00	38.00	8.07	10.00	9038990012900
0.0512		1.30	3.00	38.00	8.05	10.00	9038990013000
0.0516		1.31	3.00	38.00	8.04	10.00	9038990013100
0.0520	#55	1.32	3.00	38.00	8.02	10.00	9038990013200
0.0524		1.33	3.00	38.00	8.01	10.00	9038990013300
0.0528		1.34	3.00	38.00	7.99	10.00	9038990013400
0.0531		1.35	3.00	38.00	7.98	10.00	9038990013500
0.0535		1.36	3.00	38.00	7.96	10.00	9038990013600
0.0539		1.37	3.00	38.00	7.95	10.00	9038990013700
0.0543		1.38	3.00	38.00	7.93	10.00	9038990013800
0.0547		1.39	3.00	38.00	7.92	10.00	9038990013900
0.0551	#54	1.40	3.00	38.00	7.90	10.00	9038990014000
0.0555		1.41	3.00	38.00	7.89	10.00	9038990014100
0.0559		1.42	3.00	38.00	7.87	10.00	9038990014200
0.0563		1.43	3.00	38.00	7.86	10.00	9038990014300
0.0567		1.44	3.00	38.00	7.84	10.00	9038990014400
0.0571		1.45	3.00	38.00	7.83	10.00	9038990014500
0.0575		1.46	3.00	38.00	7.81	10.00	9038990014600
0.0579		1.47	3.00	38.00	7.80	10.00	9038990014700
0.0583		1.48	3.00	38.00	7.78	10.00	9038990014800
0.0587		1.49	3.00	38.00	7.77	10.00	9038990014900
0.0591		1.50	3.00	38.00	7.75	10.00	9038990015000
0.0594		1.51	3.00	38.00	7.74	10.00	9038990015100
0.0598		1.52	3.00	38.00	7.72	10.00	9038990015200
0.0602		1.53	3.00	38.00	7.71	10.00	9038990015300
0.0606		1.54	3.00	38.00	7.69	10.00	9038990015400
0.0610		1.55	3.00	38.00	7.68	10.00	9038990015500
0.0614		1.56	3.00	38.00	7.66	10.00	9038990015600
0.0618		1.57	3.00	38.00	7.65	10.00	9038990015700
0.0622		1.58	3.00	38.00	7.63	10.00	9038990015800
0.0626	1/16	1.59	3.00	38.00	7.62	10.00	9038990015900
0.0630		1.60	3.00	38.00	9.60	12.00	9038990016000
0.0634	#52	1.61	3.00	38.00	9.59	12.00	9038990016100
0.0638		1.62	3.00	38.00	9.57	12.00	9038990016200
0.0642		1.63	3.00	38.00	9.56	12.00	9038990016300
0.0646		1.64	3.00	38.00	9.54	12.00	9038990016400
0.0650		1.65	3.00	38.00	9.53	12.00	9038990016500
0.0654		1.66	3.00	38.00	9.51	12.00	9038990016600
0.0657		1.67	3.00	38.00	9.50	12.00	9038990016700
0.0661		1.68	3.00	38.00	9.48	12.00	9038990016800
0.0665		1.69	3.00	38.00	9.47	12.00	9038990016900
0.0669	#51	1.70	3.00	38.00	9.45	12.00	9038990017000
0.0673		1.71	3.00	38.00	9.44	12.00	9038990017100
0.0677		1.72	3.00	38.00	9.42	12.00	9038990017200
0.0681		1.73	3.00	38.00	9.41	12.00	9038990017300
0.0685		1.74	3.00	38.00	9.39	12.00	9038990017400
0.0689		1.75	3.00	38.00	9.38	12.00	9038990017500
0.0693		1.76	3.00	38.00	9.36	12.00	9038990017600
0.0697		1.77	3.00	38.00	9.35	12.00	9038990017700
0.0701		1.78	3.00	38.00	9.33	12.00	9038990017800
0.0705		1.79	3.00	38.00	9.32	12.00	9038990017900
0.0709		1.80	3.00	38.00	9.30	12.00	9038990018000
0.0713		1.81	3.00	38.00	9.29	12.00	9038990018100
0.0717		1.82	3.00	38.00	9.27	12.00	9038990018200
0.0720		1.83	3.00	38.00	9.26	12.00	9038990018300
0.0724		1.84	3.00	38.00	9.24	12.00	9038990018400
0.0728	#49	1.85	3.00	38.00	9.23	12.00	9038990018500
0.0732		1.86	3.00	38.00	9.21	12.00	9038990018600
0.0736		1.87	3.00	38.00	9.20	12.00	9038990018700
0.0740		1.88	3.00	38.00	9.18	12.00	9038990018800
0.0744		1.89	3.00	38.00	9.17	12.00	9038990018900
0.0748		1.90	3.00	38.00	9.15	12.00	9038990019000
0.0752		1.91	3.00	38.00	9.14	12.00	9038990019100
0.0756		1.92	3.00	38.00	9.12	12.00	9038990019200
0.0760	#48	1.93	3.00	38.00	9.11	12.00	9038990019300
0.0764		1.94	3.00	38.00	9.09	12.00	9038990019400
0.0768		1.95	3.00	38.00	9.08	12.00	9038990019500
0.0772		1.96	3.00	38.00	9.06	12.00	9038990019600
0.0776		1.97	3.00	38.00	9.05	12.00	9038990019700
0.0780	5/64	1.98	3.00	38.00	9.03	12.00	9038990019800
0.0783	#47	1.99	3.00	38.00	9.02	12.00	9038990019900
0.0787		2.00	3.00	38.00	9.00	12.00	9038990020000
0.0807		2.05	3.00	38.00	8.93	12.00	9038990020500
0.0827		2.10	3.00	38.00	8.85	12.00	9038990021000
0.0846		2.15	3.00	38.00	8.78	12.00	9038990021500
0.0866		2.20	3.00	38.00	8.70	12.00	9038990022000
0.0886		2.25	3.00	38.00	8.63	12.00	9038990022500
0.0906		2.30	3.00	38.00	8.55	12.00	9038990023000
0.0925		2.35	3.00	38.00	8.48	12.00	9038990023500
0.0945		2.40	3.00	38.00	8.40	12.00	9038990024000
0.0965		2.45	3.00	38.00	8.33	12.00	9038990024500
0.0984		2.50	3.00	38.00	8.25	12.00	9038990025000
0.1004		2.55	3.00	38.00	8.18	12.00	9038990025500
0.1024		2.60	3.00	38.00	8.10	12.00	9038990026000
0.1043		2.65	3.00	38.00	8.03	12.00	9038990026500
0.1063		2.70	3.00	38.00	7.95	12.00	9038990027000
0.1083		2.75	3.00	38.00	7.88	12.00	9038990027500
0.1102		2.80	3.00	38.00	7.80	12.00	9038990028000
0.1122		2.85	3.00	38.00	7.73	12.00	9038990028500
0.1142		2.90	3.00	38.00	7.65	12.00	9038990029000
0.1161	#32	2.95	3.00	38.00	7.58	12.00	9038990029500
0.1181		3.00	3.00	38.00	7.50	12.00	9038990030000

Exclusive Line micro-precision drills

Series no. **6400**



Tool material **Solid Carbide**

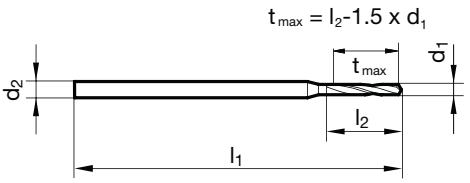
Surface **A**

P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 0.500 • facet point grinding • main cutting edge form straight • edge preparation

structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials





Speeds and feeds information on pg. 566

Diameter (d_1) inch	wire/ltr	mm	d2 h6 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0197		0.50	3.00	47.00	2.40	3.00	9064000005000
0.0217		0.55	3.00	47.00	2.60	3.30	9064000005500
0.0236		0.60	3.00	47.00	2.90	3.60	9064000006000
0.0256		0.65	3.00	47.00	3.10	3.90	9064000006500
0.0276		0.70	3.00	47.00	3.30	4.20	9064000007000
0.0295		0.75	3.00	47.00	3.60	4.50	9064000007500
0.0315		0.80	3.00	47.00	3.80	4.80	9064000008000
0.0335		0.85	3.00	47.00	4.10	5.10	9064000008500
0.0354		0.90	3.00	47.00	4.30	5.40	9064000009000
0.0374		0.95	3.00	47.00	4.50	5.70	9064000009500
0.0394		1.00	3.00	47.00	4.80	6.00	9064000010000
0.0413		1.05	3.00	47.00	5.00	6.30	9064000010500
0.0433		1.10	3.00	47.00	5.30	6.60	9064000011000
0.0453		1.15	3.00	47.00	5.50	6.90	9064000011500
0.0472		1.20	3.00	47.00	5.70	7.20	9064000012000
0.0492		1.25	3.00	47.00	6.00	7.50	9064000012500
0.0512		1.30	3.00	47.00	6.20	7.80	9064000013000
0.0531		1.35	3.00	47.00	6.40	8.10	9064000013500
0.0551	#54	1.40	3.00	47.00	6.70	8.40	9064000014000
0.0571		1.45	3.00	47.00	6.90	8.70	9064000014500
0.0591		1.50	3.00	47.00	7.20	9.00	9064000015000
0.0610		1.55	3.00	47.00	7.40	9.30	9064000015500
0.0626	1/16	1.59	3.00	47.00	7.70	9.60	9064000015900
0.0630		1.60	3.00	47.00	7.60	9.60	9064000016000
0.0650		1.65	3.00	47.00	7.90	9.90	9064000016500
0.0669	#51	1.70	3.00	47.00	8.10	10.20	9064000017000
0.0689		1.75	3.00	47.00	8.40	10.50	9064000017500
0.0709		1.80	3.00	52.00	8.60	10.80	9064000018000

Diameter (d_1) inch	wire/ltr	mm	d2 h6 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0728	#49	1.85	3.00	52.00	8.80	11.10	9064000018500
0.0748		1.90	3.00	52.00	9.10	11.40	9064000019000
0.0768		1.95	3.00	52.00	9.30	11.70	9064000019500
0.0780	5/64	1.98	4.00	59.00	9.60	12.00	9064000019800
0.0787		2.00	4.00	59.00	9.60	12.00	9064000020000
0.0807		2.05	4.00	59.00	9.80	12.30	9064000020500
0.0827		2.10	4.00	59.00	10.00	12.60	9064000021000
0.0846		2.15	4.00	59.00	10.30	12.90	9064000021500
0.0866		2.20	4.00	59.00	10.50	13.20	9064000022000
0.0886		2.25	4.00	59.00	10.70	13.50	9064000022500
0.0906		2.30	4.00	59.00	11.00	13.80	9064000023000
0.0925		2.35	4.00	59.00	11.20	14.10	9064000023500
0.0937	3/32	2.38	4.00	59.00	11.50	14.40	9064000023800
0.0945		2.40	4.00	59.00	11.50	14.40	9064000024000
0.0965		2.45	4.00	59.00	11.70	14.70	9064000024500
0.0984		2.50	4.00	59.00	11.90	15.00	9064000025000
0.1004		2.55	4.00	59.00	12.20	15.30	9064000025500
0.1024		2.60	4.00	59.00	12.40	15.60	9064000026000
0.1043		2.65	4.00	59.00	12.70	15.90	9064000026500
0.1063		2.70	4.00	59.00	12.90	16.20	9064000027000
0.1083		2.75	4.00	59.00	13.10	16.50	9064000027500
0.1094	7/64	2.78	4.00	59.00	13.40	16.80	9064000027800
0.1102		2.80	4.00	59.00	13.40	16.80	9064000028000
0.1122		2.85	4.00	59.00	13.60	17.10	9064000028500
0.1142		2.90	4.00	59.00	13.90	17.40	9064000029000
0.1161	#32	2.95	4.00	59.00	14.10	17.70	9064000029500
0.1181		3.00	4.00	59.00	14.30	18.00	9064000030000

Exclusive Line micro-precision drills

Series no. **6405**

5xD	N	140°	m7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: **A**

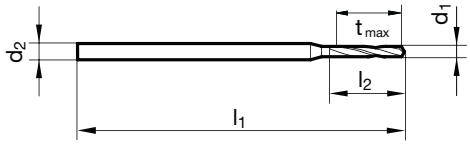
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.400 • facet point grinding • main cutting edge form straight • edge preparation

structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 568

Diameter (d_1) inch	wire/ltr	mm	d2 h6 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0551	#54	1.40	4.00	52.00	9.30	11.00	9064050014000
0.0571		1.45	4.00	52.00	10.20	12.00	9064050014500
0.0591		1.50	4.00	52.00	10.20	12.00	9064050015000
0.0610		1.55	4.00	52.00	10.10	12.00	9064050015500
0.0626	1/16	1.59	4.00	52.00	11.10	13.00	9064050015900
0.0630		1.60	4.00	52.00	11.00	13.00	9064050016000
0.0650		1.65	4.00	52.00	11.00	13.00	9064050016500
0.0669	#51	1.70	4.00	56.00	11.90	14.00	9064050017000
0.0689		1.75	4.00	56.00	11.90	14.00	9064050017500
0.0709		1.80	4.00	56.00	11.80	14.00	9064050018000
0.0728	#49	1.85	4.00	56.00	12.70	15.00	9064050018500
0.0748		1.90	4.00	56.00	12.70	15.00	9064050019000
0.0768		1.95	4.00	56.00	13.60	16.00	9064050019500
0.0780	5/64	1.98	4.00	56.00	13.60	16.00	9064050019800
0.0787		2.00	4.00	56.00	13.60	16.00	9064050020000
0.0807		2.05	4.00	56.00	13.50	16.00	9064050020500
0.0827		2.10	4.00	62.00	14.40	17.00	9064050021000
0.0846		2.15	4.00	62.00	14.40	17.00	9064050021500
0.0866		2.20	4.00	62.00	15.30	18.00	9064050022000

Diameter (d_1) inch	wire/ltr	mm	d2 h6 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0886		2.25	4.00	62.00	15.20	18.00	9064050022500
0.0906		2.30	4.00	62.00	15.20	18.00	9064050023000
0.0925		2.35	4.00	62.00	16.10	19.00	9064050023500
0.0937	3/32	2.38	4.00	62.00	16.10	19.00	9064050023800
0.0945		2.40	4.00	62.00	16.10	19.00	9064050024000
0.0965		2.45	4.00	62.00	17.00	20.00	9064050024500
0.0984		2.50	4.00	62.00	16.90	20.00	9064050025000
0.1004		2.55	4.00	62.00	16.90	20.00	9064050025500
0.1024		2.60	4.00	66.00	17.80	21.00	9064050026000
0.1043		2.65	4.00	66.00	17.80	21.00	9064050026500
0.1063		2.70	4.00	66.00	18.70	22.00	9064050027000
0.1083		2.75	4.00	66.00	18.60	22.00	9064050027500
0.1094	7/64	2.78	4.00	66.00	18.60	22.00	9064050027800
0.1102		2.80	4.00	66.00	18.60	22.00	9064050028000
0.1122		2.85	4.00	66.00	19.50	23.00	9064050028500
0.1142		2.90	4.00	66.00	19.50	23.00	9064050029000
0.1161	#32	2.95	4.00	66.00	20.40	24.00	9064050029500
0.1181		3.00	4.00	66.00	20.30	24.00	9064050030000

Exclusive Line micro-precision drills

Series no. **6401**



Tool material **Solid Carbide**

Surface **A**

P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	

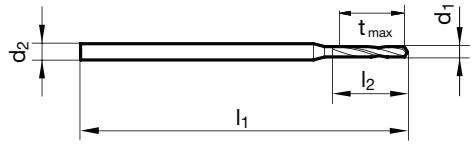
●=Optimal
○=Limited

web thinning ≥ Ø 0.500 • facet point grinding • main cutting edge form straight • edge preparation

structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials



$t_{max} = l_2\text{-}1.5 \times d_1$



Speeds and feeds information on pg. 567

Diameter (d_1) inch	wire/ltr	mm	d2 h6 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0197		0.50	3.00	47.00	3.40	4.00	9064010005000
0.0217		0.55	3.00	47.00	3.70	4.40	9064010005500
0.0236		0.60	3.00	47.00	4.10	4.80	9064010006000
0.0256		0.65	3.00	47.00	4.40	5.20	9064010006500
0.0276		0.70	3.00	47.00	4.70	5.60	9064010007000
0.0295		0.75	3.00	47.00	5.10	6.00	9064010007500
0.0315		0.80	3.00	47.00	5.40	6.40	9064010008000
0.0335		0.85	3.00	47.00	5.80	6.80	9064010008500
0.0354		0.90	3.00	47.00	6.10	7.20	9064010009000
0.0374		0.95	3.00	47.00	6.40	7.60	9064010009500
0.0394		1.00	3.00	47.00	6.80	8.00	9064010010000
0.0413		1.05	3.00	47.00	7.10	8.40	9064010010500
0.0433		1.10	3.00	47.00	7.50	8.80	9064010011000
0.0453		1.15	3.00	47.00	7.80	9.20	9064010011500
0.0472		1.20	3.00	52.00	9.30	10.80	9064010012000
0.0492		1.25	3.00	52.00	9.80	11.30	9064010012500
0.0512		1.30	3.00	52.00	10.10	11.70	9064010013000
0.0531		1.35	3.00	52.00	10.50	12.20	9064010013500
0.0551	#54	1.40	3.00	52.00	10.90	12.60	9064010014000
0.0571		1.45	3.00	52.00	11.30	13.10	9064010014500
0.0591		1.50	3.00	52.00	11.70	13.50	9064010015000
0.0610		1.55	3.00	52.00	12.10	14.00	9064010015500
0.0626	1/16	1.59	3.00	52.00	12.50	14.40	9064010015900
0.0630		1.60	3.00	52.00	12.40	14.40	9064010016000
0.0650		1.65	3.00	52.00	12.90	14.90	9064010016500
0.0669	#51	1.70	3.00	52.00	13.20	15.30	9064010017000
0.0689		1.75	3.00	52.00	13.70	15.80	9064010017500
0.0709		1.80	3.00	52.00	14.00	16.20	9064010018000

Diameter (d_1) inch	wire/ltr	mm	d2 h6 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0728	#49	1.85	3.00	52.00	14.40	16.70	9064010018500
0.0748		1.90	3.00	52.00	14.80	17.10	9064010019000
0.0768		1.95	3.00	52.00	15.20	17.60	9064010019500
0.0780	5/64	1.98	4.00	63.00	15.60	18.00	9064010019800
0.0787		2.00	4.00	63.00	15.60	18.00	9064010020000
0.0807		2.05	4.00	63.00	16.00	18.50	9064010020500
0.0827		2.10	4.00	63.00	16.30	18.90	9064010021000
0.0846		2.15	4.00	63.00	16.80	19.40	9064010021500
0.0866		2.20	4.00	63.00	17.10	19.80	9064010022000
0.0886		2.25	4.00	63.00	17.50	20.30	9064010022500
0.0906		2.30	4.00	63.00	17.90	20.70	9064010023000
0.0925		2.35	4.00	63.00	18.30	21.20	9064010023500
0.0937	3/32	2.38	4.00	63.00	18.70	21.60	9064010023800
0.0945		2.40	4.00	63.00	18.70	21.60	9064010024000
0.0965		2.45	4.00	63.00	19.10	22.10	9064010024500
0.0984		2.50	4.00	63.00	19.40	22.50	9064010025000
0.1004		2.55	4.00	63.00	19.90	23.00	9064010025500
0.1024		2.60	4.00	67.00	20.20	23.40	9064010026000
0.1043		2.65	4.00	67.00	20.70	23.90	9064010026500
0.1063		2.70	4.00	67.00	21.00	24.30	9064010027000
0.1083		2.75	4.00	67.00	21.40	24.80	9064010027500
0.1094	7/64	2.78	4.00	67.00	21.80	25.20	9064010027800
0.1102		2.80	4.00	67.00	21.80	25.20	9064010028000
0.1122		2.85	4.00	67.00	22.20	25.70	9064010028500
0.1142		2.90	4.00	67.00	22.60	26.10	9064010029000
0.1161	#32	2.95	4.00	67.00	23.00	26.60	9064010029500
0.1181		3.00	4.00	67.00	23.30	27.00	9064010030000

Exclusive Line micro-precision drills

Series no. **6408**

8xD	N	135°	h7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: **A**

P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	

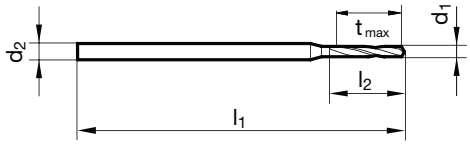
●=Optimal
○=Limited

web thinning ≥ Ø 1.400 • facet point grinding • main cutting edge form straight • edge preparation

structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials



$t_{max} = l_2 - 1.5 \times d_1$



Speeds and feeds information on pg. 568

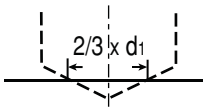
Diameter (d_1) inch	wire/ltr	mm	d2 h6 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0551	#54	1.40	4.00	52.00	12.80	15.00	9064080014000
0.0571		1.45	4.00	52.00	13.80	16.00	9064080014500
0.0591		1.50	4.00	52.00	14.70	17.00	9064080015000
0.0610		1.55	4.00	52.00	14.60	17.00	9064080015500
0.0626	1/16	1.59	4.00	52.00	15.50	18.00	9064080015900
0.0630		1.60	4.00	52.00	15.50	18.00	9064080016000
0.0650		1.65	4.00	52.00	15.40	18.00	9064080016500
0.0669	#51	1.70	4.00	56.00	16.40	19.00	9064080017000
0.0689		1.75	4.00	56.00	16.30	19.00	9064080017500
0.0709		1.80	4.00	56.00	17.70	20.00	9064080018000
0.0728	#49	1.85	4.00	56.00	17.70	20.00	9064080018500
0.0748		1.90	4.00	56.00	18.60	21.00	9064080019000
0.0768		1.95	4.00	56.00	18.60	21.00	9064080019500
0.0780	5/64	1.98	4.00	56.00	19.50	22.00	9064080019800
0.0787		2.00	4.00	56.00	19.50	22.00	9064080020000
0.0807		2.05	4.00	56.00	20.40	23.00	9064080020500
0.0827		2.10	4.00	62.00	20.40	23.00	9064080021000
0.0846		2.15	4.00	62.00	21.30	24.00	9064080021500
0.0866		2.20	4.00	62.00	21.20	24.00	9064080022000

Diameter (d_1) inch	wire/ltr	mm	d2 h6 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0886		2.25	4.00	62.00	22.20	25.00	9064080022500
0.0906		2.30	4.00	62.00	22.10	25.00	9064080023000
0.0925		2.35	4.00	62.00	23.10	26.00	9064080023500
0.0937	3/32	2.38	4.00	62.00	23.00	26.00	9064080023800
0.0945		2.40	4.00	62.00	23.00	26.00	9064080024000
0.0965		2.45	4.00	62.00	23.90	27.00	9064080024500
0.0984		2.50	4.00	62.00	24.90	28.00	9064080025000
0.1004		2.55	4.00	62.00	24.80	28.00	9064080025500
0.1024		2.60	4.00	66.00	25.70	29.00	9064080026000
0.1043		2.65	4.00	66.00	25.70	29.00	9064080026500
0.1063		2.70	4.00	66.00	26.60	30.00	9064080027000
0.1083		2.75	4.00	66.00	26.60	30.00	9064080027500
0.1094	7/64	2.78	4.00	66.00	27.50	31.00	9064080027800
0.1102		2.80	4.00	66.00	27.50	31.00	9064080028000
0.1122		2.85	4.00	66.00	27.40	31.00	9064080028500
0.1142		2.90	4.00	66.00	28.40	32.00	9064080029000
0.1161	#32	2.95	4.00	66.00	28.30	32.00	9064080029500
0.1181		3.00	4.00	66.00	29.20	33.00	9064080030000

Spot Drilling

In order to achieve full performance with Series 6408 carbide micro-precision drills, we recommend spot drilling.

The Series 6400 solid carbide micro-precision drill can be applied for this purpose. The spot drill diameter should be approximately 2/3 of the subsequent hole diameter.



Exclusive Line micro-precision drills

Series no. **6412**

15xD	N	135°	h7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: **A**

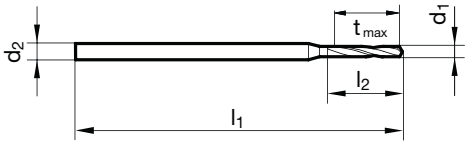
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 1.400 • facet point grinding • main cutting edge form straight • edge preparation

structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials

$t_{max} = l_2\text{-}1.5 \times d_1$





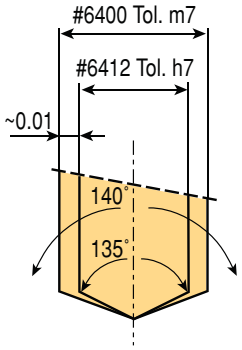
Speeds and feeds information on pg. 569

Diameter (d_1) inch	wire/ltr	mm	d2 h6 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0551		1.40	4.00	62.00	22.80	25.00	9064120014000
0.0591		1.50	4.00	62.00	24.70	27.00	9064120015000
0.0626	1/16	1.59	4.00	62.00	26.50	29.00	9064120015900
0.0630		1.60	4.00	62.00	26.50	29.00	9064120016000
0.0669		1.70	4.00	70.00	28.40	31.00	9064120017000
0.0689		1.75	4.00	70.00	29.30	32.00	9064120017500
0.0709		1.80	4.00	70.00	29.70	32.00	9064120018000
0.0748		1.90	4.00	70.00	31.60	34.00	9064120019000
0.0780	5/64	1.98	4.00	70.00	33.50	36.00	9064120019800
0.0787		2.00	4.00	70.00	33.50	36.00	9064120020000
0.0827		2.10	4.00	78.00	35.40	38.00	9064120021000

Diameter (d_1) inch	wire/ltr	mm	d2 h6 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0866		2.20	4.00	78.00	37.20	40.00	9064120022000
0.0906		2.30	4.00	78.00	39.10	42.00	9064120023000
0.0937	3/32	2.38	4.00	78.00	41.00	44.00	9064120023800
0.0945		2.40	4.00	78.00	41.00	44.00	9064120024000
0.0984		2.50	4.00	78.00	41.90	45.00	9064120025000
0.1024		2.60	4.00	87.00	43.70	47.00	9064120026000
0.1063		2.70	4.00	87.00	44.60	48.00	9064120027000
0.1094	7/64	2.78	4.00	87.00	46.50	50.00	9064120027800
0.1102		2.80	4.00	87.00	46.50	50.00	9064120028000
0.1142		2.90	4.00	87.00	48.40	52.00	9064120029000
0.1181		3.00	4.00	87.00	50.20	54.00	9064120030000

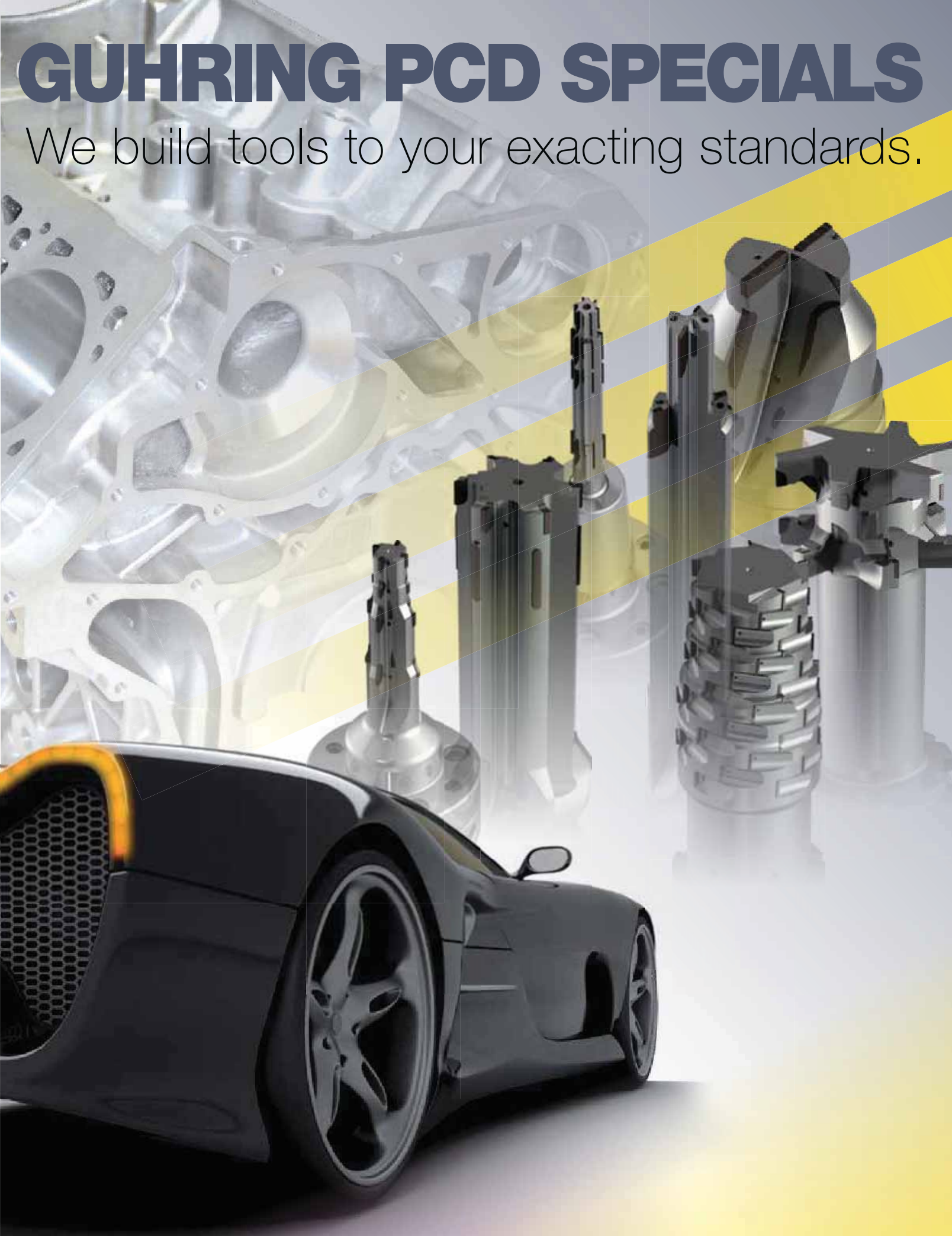
Pilot drilling

It is recommended to utilize a pilot drill for the series 6412 deep hole micro drill. Use series 6400 or 6405 drills with m7 diameter tolerance and 140° point to drill a minimum of 1xD deep. Then enter the pilot hole with the deep hole drill at max. 300RPM and 20IPM stopping shy of the bottom of the pilot hole. Start high pressure coolant and increase RPM to recommended operating speed. Drill at recommended feed rate to hole depth without pecking. Slow to max. 300RPM before retracting.

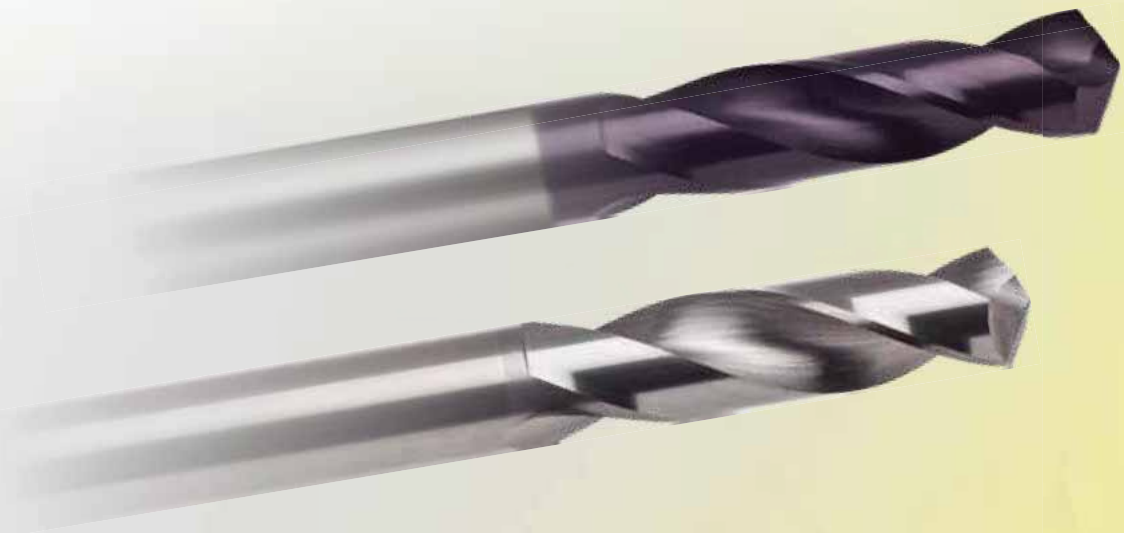


GUHRING PCD SPECIALS

We build tools to your exacting standards.



STUB LENGTH CARBIDE DRILLS



Stub length drills 730

~3xD Cutting depth | N Type | 118° Point angle | h7 Tolerance on Ø | Without Internal coolant | Cyl Shank form | R Cutting direction | GUHRING SELECT

Tool material: **Solid Carbide**

Surface: ○

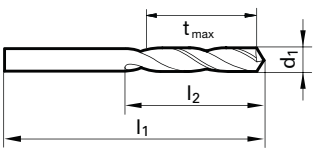
P	Steel	○
M	Stainless steel	○
K	Cast iron	○
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.060
• facet point grinding
• main cutting edge form straight

structural and case hardened steels
• free-cutting steels, heat-treatable steels
• grey cast iron • bronze, brass • aluminum and Al-alloys
• magnesium

$t_{max} = l_2 - 1.5 \times d_1$





Speeds and feeds information on pg. 522

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.0197		0.50	20.00	2.25	3.00	9007300005000
0.0236		0.60	21.00	2.60	3.50	9007300006000
0.0276		0.70	23.00	3.45	4.50	9007300007000
0.0315		0.80	24.00	3.80	5.00	9007300008000
0.0354		0.90	25.00	4.15	5.50	9007300009000
0.0394		1.00	26.00	4.50	6.00	9007300010000
0.0402	#60	1.02	26.00	4.47	6.00	9007300010200
0.0409	#59	1.04	26.00	4.44	6.00	9007300010400
0.0421	#58	1.07	28.00	5.40	7.00	9007300010700
0.0429	#57	1.09	28.00	5.37	7.00	9007300010900
0.0433		1.10	28.00	5.35	7.00	9007300011000
0.0465	#56	1.18	28.00	5.23	7.00	9007300011800
0.0469	3/64	1.19	30.00	6.22	8.00	9007300011900
0.0472		1.20	30.00	6.20	8.00	9007300012000
0.0512		1.30	30.00	6.05	8.00	9007300013000
0.0520	#55	1.32	30.00	6.02	8.00	9007300013200
0.0551	#54	1.40	32.00	6.90	9.00	9007300014000
0.0591		1.50	32.00	6.75	9.00	9007300015000
0.0594	#53	1.51	34.00	7.74	10.00	9007300015100
0.0626	1/16	1.59	34.00	7.62	10.00	9007300015900
0.0630		1.60	34.00	7.60	10.00	9007300016000
0.0634	#52	1.61	34.00	7.59	10.00	9007300016100
0.0669	#51	1.70	34.00	7.45	10.00	9007300017000
0.0701	#50	1.78	36.00	8.33	11.00	9007300017800
0.0709		1.80	36.00	8.30	11.00	9007300018000
0.0728	#49	1.85	36.00	8.23	11.00	9007300018500
0.0748		1.90	36.00	8.15	11.00	9007300019000
0.0760	#48	1.93	38.00	9.11	12.00	9007300019300
0.0780	5/64	1.98	38.00	9.03	12.00	9007300019800
0.0783	#47	1.99	38.00	9.02	12.00	9007300019900
0.0787		2.00	38.00	9.00	12.00	9007300020000
0.0811	#46	2.06	38.00	8.91	12.00	9007300020600
0.0819	#45	2.08	38.00	8.88	12.00	9007300020800
0.0827		2.10	38.00	8.85	12.00	9007300021000
0.0858	#44	2.18	40.00	9.73	13.00	9007300021800
0.0866		2.20	40.00	9.70	13.00	9007300022000
0.0886		2.25	40.00	9.63	13.00	9007300022500
0.0890	#43	2.26	40.00	9.61	13.00	9007300022600
0.0906		2.30	40.00	9.55	13.00	9007300023000
0.0933	#42	2.37	43.00	10.45	14.00	9007300023700
0.0937	3/32	2.38	43.00	10.43	14.00	9007300023800
0.0945		2.40	43.00	10.40	14.00	9007300024000

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.0961	#41	2.44	43.00	10.34	14.00	9007300024400
0.0980	#40	2.49	43.00	10.27	14.00	9007300024900
0.0984		2.50	43.00	10.25	14.00	9007300025000
0.0996	#39	2.53	43.00	10.21	14.00	9007300025300
0.1016	#38	2.58	43.00	10.13	14.00	9007300025800
0.1024		2.60	43.00	10.10	14.00	9007300026000
0.1039	#37	2.64	43.00	10.04	14.00	9007300026400
0.1063		2.70	46.00	11.95	16.00	9007300027000
0.1067	#36	2.71	46.00	11.94	16.00	9007300027100
0.1094	7/64	2.78	46.00	11.83	16.00	9007300027800
0.1098	#35	2.79	46.00	11.82	16.00	9007300027900
0.1102		2.80	46.00	11.80	16.00	9007300028000
0.1110	#34	2.82	46.00	11.77	16.00	9007300028200
0.1130	#33	2.87	46.00	11.70	16.00	9007300028700
0.1142		2.90	46.00	11.65	16.00	9007300029000
0.1161	#32	2.95	46.00	11.58	16.00	9007300029500
0.1181		3.00	46.00	11.50	16.00	9007300030000
0.1201		3.05	49.00	13.43	18.00	9007300030500
0.1220		3.10	49.00	13.35	18.00	9007300031000
0.1248	1/8	3.17	49.00	13.25	18.00	9007300031700
0.1260		3.20	49.00	13.20	18.00	9007300032000
0.1283	#30	3.26	49.00	13.11	18.00	9007300032600
0.1299		3.30	49.00	13.05	18.00	9007300033000
0.1339		3.40	52.00	14.90	20.00	9007300034000
0.1358	#29	3.45	52.00	14.83	20.00	9007300034500
0.1378		3.50	52.00	14.75	20.00	9007300035000
0.1406	9/64 #28	3.57	52.00	14.65	20.00	9007300035700
0.1417		3.60	52.00	14.60	20.00	9007300036000
0.1441	#27	3.66	52.00	14.51	20.00	9007300036600
0.1457		3.70	52.00	14.45	20.00	9007300037000
0.1469	#26	3.73	52.00	14.41	20.00	9007300037300
0.1496	#25	3.80	55.00	16.30	22.00	9007300038000
0.1520	#24	3.86	55.00	16.21	22.00	9007300038600
0.1535		3.90	55.00	16.15	22.00	9007300039000
0.1539	#23	3.91	55.00	16.14	22.00	9007300039100
0.1563	5/32	3.97	55.00	16.05	22.00	9007300039700
0.1571	#22	3.99	55.00	16.02	22.00	9007300039900
0.1575		4.00	55.00	16.00	22.00	9007300040000
0.1591	#21	4.04	55.00	15.94	22.00	9007300040400
0.1614		4.10	55.00	15.85	22.00	9007300041000
0.1654		4.20	55.00	15.70	22.00	9007300042000
0.1661	#19	4.22	55.00	15.67	22.00	9007300042200

Stub length drills

Series no. **730**

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1693	#18	4.30	58.00	17.55	24.00	9007300043000
0.1720	11/64	4.37	58.00	17.45	24.00	9007300043700
0.1728	#17	4.39	58.00	17.42	24.00	9007300043900
0.1732		4.40	58.00	17.40	24.00	9007300044000
0.1772	#16	4.50	58.00	17.25	24.00	9007300045000
0.1799	#15	4.57	58.00	17.15	24.00	9007300045700
0.1811		4.60	58.00	17.10	24.00	9007300046000
0.1819	#14	4.62	58.00	17.07	24.00	9007300046200
0.1850	#13	4.70	58.00	16.95	24.00	9007300047000
0.1874	3/16	4.76	62.00	18.86	26.00	9007300047600
0.1890	#12	4.80	62.00	18.80	26.00	9007300048000
0.1909	#11	4.85	62.00	18.73	26.00	9007300048500
0.1929		4.90	62.00	18.65	26.00	9007300049000
0.1937	#10	4.92	62.00	18.62	26.00	9007300049200
0.1961	#9	4.98	62.00	18.53	26.00	9007300049800
0.1969		5.00	62.00	18.50	26.00	9007300050000
0.1992	#8	5.06	62.00	18.41	26.00	9007300050600
0.2008		5.10	62.00	18.35	26.00	9007300051000
0.2012	#7	5.11	62.00	18.34	26.00	9007300051100
0.2031	13/64	5.16	62.00	18.26	26.00	9007300051600
0.2039	#6	5.18	62.00	18.23	26.00	9007300051800
0.2047		5.20	62.00	18.20	26.00	9007300052000
0.2055	#5	5.22	62.00	18.17	26.00	9007300052200
0.2087		5.30	62.00	18.05	26.00	9007300053000
0.2091	#4	5.31	66.00	20.04	28.00	9007300053100
0.2126		5.40	66.00	19.90	28.00	9007300054000
0.2130	#3	5.41	66.00	19.89	28.00	9007300054100
0.2165		5.50	66.00	19.75	28.00	9007300055000
0.2189	7/32	5.56	66.00	19.66	28.00	9007300055600
0.2205		5.60	66.00	19.60	28.00	9007300056000
0.2244		5.70	66.00	19.45	28.00	9007300057000
0.2280	#1	5.79	66.00	19.32	28.00	9007300057900
0.2283		5.80	66.00	19.30	28.00	9007300058000
0.2323		5.90	66.00	19.15	28.00	9007300059000
0.2339		5.94	66.00	19.09	28.00	9007300059400
0.2343	15/64	5.95	66.00	19.08	28.00	9007300059500
0.2362		6.00	66.00	19.00	28.00	9007300060000
0.2378		6.04	70.00	21.94	31.00	9007300060400
0.2402		6.10	70.00	21.85	31.00	9007300061000
0.2421	C	6.15	70.00	21.78	31.00	9007300061500
0.2441		6.20	70.00	21.70	31.00	9007300062000
0.2461	D	6.25	70.00	21.63	31.00	9007300062500
0.2480		6.30	70.00	21.55	31.00	9007300063000
0.2500	1/4 E	6.35	70.00	21.48	31.00	9007300063500
0.2520		6.40	70.00	21.40	31.00	9007300064000
0.2559		6.50	70.00	21.25	31.00	9007300065000
0.2571		6.53	70.00	21.21	31.00	9007300065300
0.2598		6.60	70.00	21.10	31.00	9007300066000
0.2610	G	6.63	70.00	21.06	31.00	9007300066300
0.2638		6.70	70.00	20.95	31.00	9007300067000
0.2657	17/64 H	6.75	74.00	23.88	34.00	9007300067500
0.2677		6.80	74.00	23.80	34.00	9007300068000
0.2717	I	6.90	74.00	23.65	34.00	9007300069000
0.2756		7.00	74.00	23.50	34.00	9007300070000
0.2768	J	7.03	74.00	23.46	34.00	9007300070300
0.2795		7.10	74.00	23.35	34.00	9007300071000
0.2811	9/32 K	7.14	74.00	23.29	34.00	9007300071400
0.2835		7.20	74.00	23.20	34.00	9007300072000
0.2874		7.30	74.00	23.05	34.00	9007300073000
0.2902	L	7.37	74.00	22.95	34.00	9007300073700
0.2913		7.40	74.00	22.90	34.00	9007300074000
0.2949	M	7.49	74.00	22.77	34.00	9007300074900
0.2953		7.50	74.00	22.75	34.00	9007300075000
0.2969	19/64	7.54	79.00	25.69	37.00	9007300075400
0.2992		7.60	79.00	25.60	37.00	9007300076000

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3020		7.67	79.00	25.50	37.00	9007300076700
0.3031		7.70	79.00	25.45	37.00	9007300077000
0.3071		7.80	79.00	25.30	37.00	9007300078000
0.3110		7.90	79.00	25.15	37.00	9007300079000
0.3126	5/16	7.94	79.00	25.09	37.00	9007300079400
0.3150		8.00	79.00	25.00	37.00	9007300080000
0.3161	O	8.03	79.00	24.96	37.00	9007300080300
0.3189		8.10	79.00	24.85	37.00	9007300081000
0.3228	P	8.20	79.00	24.70	37.00	9007300082000
0.3268		8.30	79.00	24.55	37.00	9007300083000
0.3280	21/64	8.33	79.00	24.51	37.00	9007300083300
0.3307		8.40	79.00	24.40	37.00	9007300084000
0.3319	Q	8.43	79.00	24.36	37.00	9007300084300
0.3346		8.50	79.00	24.25	37.00	9007300085000
0.3386		8.60	84.00	27.10	40.00	9007300086000
0.3390	R	8.61	84.00	27.09	40.00	9007300086100
0.3425		8.70	84.00	26.95	40.00	9007300087000
0.3437	11/32	8.73	84.00	26.91	40.00	9007300087300
0.3465		8.80	84.00	26.80	40.00	9007300088000
0.3480	S	8.84	84.00	26.74	40.00	9007300088400
0.3504		8.90	84.00	26.65	40.00	9007300089000
0.3543		9.00	84.00	26.50	40.00	9007300090000
0.3579		9.09	84.00	26.37	40.00	9007300090900
0.3583		9.10	84.00	26.35	40.00	9007300091000
0.3594	23/64	9.13	84.00	26.31	40.00	9007300091300
0.3622		9.20	84.00	26.20	40.00	9007300092000
0.3661		9.30	84.00	26.05	40.00	9007300093000
0.3677	U	9.34	84.00	25.99	40.00	9007300093400
0.3701		9.40	84.00	25.90	40.00	9007300094000
0.3740		9.50	84.00	25.75	40.00	9007300095000
0.3748	3/8	9.52	89.00	28.72	43.00	9007300095200
0.3772	V	9.58	89.00	28.63	43.00	9007300095800
0.3780		9.60	89.00	28.60	43.00	9007300096000
0.3819		9.70	89.00	28.45	43.00	9007300097000
0.3858	W	9.80	89.00	28.30	43.00	9007300098000
0.3898		9.90	89.00	28.15	43.00	9007300099000
0.3906	25/64	9.92	89.00	28.12	43.00	9007300099200
0.3937		10.00	89.00	28.00	43.00	9007300100000
0.3969	X	10.08	89.00	27.88	43.00	9007300100800
0.4016		10.20	89.00	27.70	43.00	9007300102000
0.4039	Y	10.26	89.00	27.61	43.00	9007300102600
0.4055		10.30	89.00	27.55	43.00	9007300103000
0.4063	13/32	10.32	89.00	27.52	43.00	9007300103200
0.4130	Z	10.49	89.00	27.27	43.00	9007300104900
0.4134		10.50	89.00	27.25	43.00	9007300105000
0.4220	27/64	10.72	95.00	30.92	47.00	9007300107200
0.4331		11.00	95.00	30.50	47.00	9007300110000
0.4374	7/16	11.11	95.00	30.34	47.00	9007300111100
0.4528		11.50	95.00	29.75	47.00	9007300115000
0.4531	29/64	11.51	95.00	29.74	47.00	9007300115100
0.4689	15/32	11.91	102.00	33.14	51.00	9007300119100
0.4724		12.00	102.00	33.00	51.00	9007300120000
0.4843	31/64	12.30	102.00	32.55	51.00	9007300123000
0.5000	1/2	12.70	102.00	31.95	51.00	9007300127000
0.5118		13.00	102.00	31.50	51.00	9007300130000
0.5311	17/32	13.49	107.00	33.77	54.00	9007300134900
0.5512		14.00	107.00	33.00	54.00	9007300140000
0.5626	9/16	14.29	111.00	34.57	56.00	9007300142900
0.5906		15.00	111.00	33.50	56.00	9007300150000
0.6299		16.00	115.00	34.00	58.00	9007300160000

Stub length drills 2463

~3xD Cutting depth | N Type | 118° Point angle | h7 Tolerance on Ø | Without Internal coolant | Cyl Shank form | R Cutting direction | GUHRING SELECT

Tool material: **Solid Carbide**

Surface: F

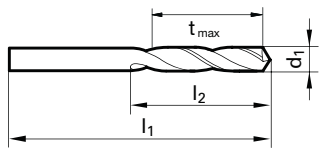
P	Steel	○
M	Stainless steel	○
K	Cast iron	○
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.060
• facet point grinding
• main cutting edge form straight

structural and case hardened steels • free-cutting steels, heat-treatable steels • cast materials • brass • Al materials with high Si-content • magnesium and magnesium alloys • plastics and fiber reinforced plastics

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 537

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.0394		1.00	26.00	4.50	6.00	9024630010000
0.0402	#60	1.02	26.00	4.47	6.00	9024630010200
0.0409	#59	1.04	26.00	4.44	6.00	9024630010400
0.0421	#58	1.07	28.00	5.40	7.00	9024630010700
0.0429	#57	1.09	28.00	5.37	7.00	9024630010900
0.0433		1.10	28.00	5.35	7.00	9024630011000
0.0465	#56	1.18	28.00	5.23	7.00	9024630011800
0.0469	3/64	1.19	30.00	6.22	8.00	9024630011900
0.0472		1.20	30.00	6.20	8.00	9024630012000
0.0512		1.30	30.00	6.05	8.00	9024630013000
0.0520	#55	1.32	30.00	6.02	8.00	9024630013200
0.0551	#54	1.40	32.00	6.90	9.00	9024630014000
0.0591		1.50	32.00	6.75	9.00	9024630015000
0.0594	#53	1.51	34.00	7.74	10.00	9024630015100
0.0626	1/16	1.59	34.00	7.62	10.00	9024630015900
0.0630		1.60	34.00	7.60	10.00	9024630016000
0.0634	#52	1.61	34.00	7.59	10.00	9024630016100
0.0669	#51	1.70	34.00	7.45	10.00	9024630017000
0.0701	#50	1.78	36.00	8.33	11.00	9024630017800
0.0709		1.80	36.00	8.30	11.00	9024630018000
0.0728	#49	1.85	36.00	8.23	11.00	9024630018500
0.0748		1.90	36.00	8.15	11.00	9024630019000
0.0760	#48	1.93	38.00	9.11	12.00	9024630019300
0.0780	5/64	1.98	38.00	9.03	12.00	9024630019800
0.0783	#47	1.99	38.00	9.02	12.00	9024630019900
0.0787		2.00	38.00	9.00	12.00	9024630020000
0.0811	#46	2.06	38.00	8.91	12.00	9024630020600
0.0819	#45	2.08	38.00	8.88	12.00	9024630020800
0.0827		2.10	38.00	8.85	12.00	9024630021000
0.0858	#44	2.18	40.00	9.73	13.00	9024630021800
0.0866		2.20	40.00	9.70	13.00	9024630022000
0.0886		2.25	40.00	9.63	13.00	9024630022500
0.0890	#43	2.26	40.00	9.61	13.00	9024630022600
0.0906		2.30	40.00	9.55	13.00	9024630023000
0.0933	#47	2.37	43.00	10.45	14.00	9024630023700
0.0937	3/32	2.38	43.00	10.43	14.00	9024630023800
0.0945		2.40	43.00	10.40	14.00	9024630024000
0.0961	#41	2.44	43.00	10.34	14.00	9024630024400
0.0980	#40	2.49	43.00	10.27	14.00	9024630024900
0.0984		2.50	43.00	10.25	14.00	9024630025000
0.0996	#39	2.53	43.00	10.21	14.00	9024630025300
0.1016	#38	2.58	43.00	10.13	14.00	9024630025800

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1024		2.60	43.00	10.10	14.00	9024630026000
0.1039	#37	2.64	43.00	10.04	14.00	9024630026400
0.1063		2.70	46.00	11.95	16.00	9024630027000
0.1067	#36	2.71	46.00	11.94	16.00	9024630027100
0.1094	7/64	2.78	46.00	11.83	16.00	9024630027800
0.1098	#35	2.79	46.00	11.82	16.00	9024630027900
0.1102		2.80	46.00	11.80	16.00	9024630028000
0.1110	#34	2.82	46.00	11.77	16.00	9024630028200
0.1130	#33	2.87	46.00	11.70	16.00	9024630028700
0.1142		2.90	46.00	11.65	16.00	9024630029000
0.1161	#32	2.95	46.00	11.58	16.00	9024630029500
0.1181		3.00	46.00	11.50	16.00	9024630030000
0.1201	#31	3.05	49.00	13.43	18.00	9024630030500
0.1220		3.10	49.00	13.35	18.00	9024630031000
0.1248	1/8	3.17	49.00	13.25	18.00	9024630031700
0.1260		3.20	49.00	13.20	18.00	9024630032000
0.1283	#30	3.26	49.00	13.11	18.00	9024630032600
0.1299		3.30	49.00	13.05	18.00	9024630033000
0.1339		3.40	52.00	14.90	20.00	9024630034000
0.1358	#29	3.45	52.00	14.83	20.00	9024630034500
0.1378		3.50	52.00	14.75	20.00	9024630035000
0.1406	9/64 #28	3.57	52.00	14.65	20.00	9024630035700
0.1417		3.60	52.00	14.60	20.00	9024630036000
0.1441	#27	3.66	52.00	14.51	20.00	9024630036600
0.1457		3.70	52.00	14.45	20.00	9024630037000
0.1469	#26	3.73	52.00	14.41	20.00	9024630037300
0.1496	#25	3.80	55.00	16.30	22.00	9024630038000
0.1520	#24	3.86	55.00	16.21	22.00	9024630038600
0.1535		3.90	55.00	16.15	22.00	9024630039000
0.1539	#23	3.91	55.00	16.14	22.00	9024630039100
0.1563	5/32	3.97	55.00	16.05	22.00	9024630039700
0.1571	#22	3.99	55.00	16.02	22.00	9024630039900
0.1575		4.00	55.00	16.00	22.00	9024630040000
0.1591	#21	4.04	55.00	15.94	22.00	9024630040400
0.1610	#20	4.09	55.00	15.87	22.00	9024630040900
0.1614		4.10	55.00	15.85	22.00	9024630041000
0.1654		4.20	55.00	15.70	22.00	9024630042000
0.1661	#19	4.22	55.00	15.67	22.00	9024630042200
0.1693	#18	4.30	58.00	17.55	24.00	9024630043000
0.1720	11/64	4.37	58.00	17.45	24.00	9024630043700
0.1728	#17	4.39	58.00	17.42	24.00	9024630043900
0.1732		4.40	58.00	17.40	24.00	9024630044000

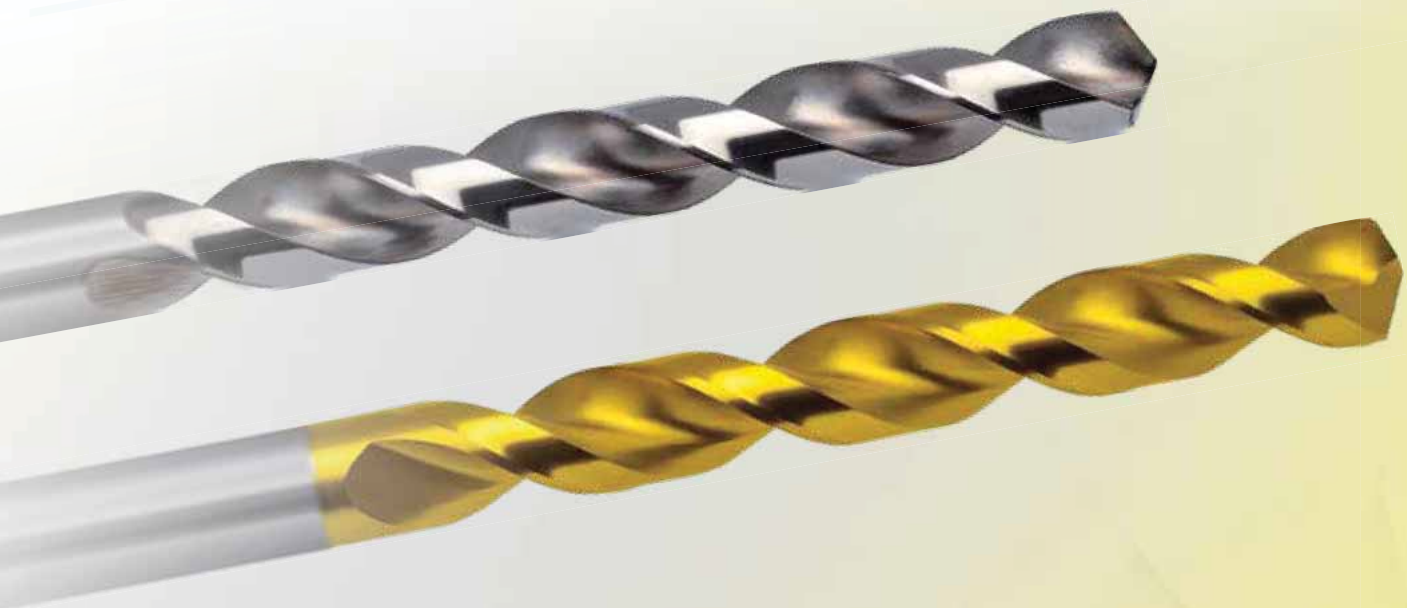
3xD Ratio drills

Series no. **2463**

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1772	#16	4.50	58.00	17.25	24.00	9024630045000
0.1799	#15	4.57	58.00	17.15	24.00	9024630045700
0.1811		4.60	58.00	17.10	24.00	9024630046000
0.1819	#14	4.62	58.00	17.07	24.00	9024630046200
0.1850	#13	4.70	58.00	16.95	24.00	9024630047000
0.1874	3/16	4.76	62.00	18.86	26.00	9024630047600
0.1890	#12	4.80	62.00	18.80	26.00	9024630048000
0.1909	#11	4.85	62.00	18.73	26.00	9024630048500
0.1929		4.90	62.00	18.65	26.00	9024630049000
0.1937	#10	4.92	62.00	18.62	26.00	9024630049200
0.1961	#9	4.98	62.00	18.53	26.00	9024630049800
0.1969		5.00	62.00	18.50	26.00	9024630050000
0.1992	#8	5.06	62.00	18.41	26.00	9024630050600
0.2008		5.10	62.00	18.35	26.00	9024630051000
0.2012	#7	5.11	62.00	18.34	26.00	9024630051100
0.2031	13/64	5.16	62.00	18.26	26.00	9024630051600
0.2039	#6	5.18	62.00	18.23	26.00	9024630051800
0.2047		5.20	62.00	18.20	26.00	9024630052000
0.2055	#5	5.22	62.00	18.17	26.00	9024630052200
0.2087		5.30	62.00	18.05	26.00	9024630053000
0.2091	#4	5.31	66.00	20.04	28.00	9024630053100
0.2126		5.40	66.00	19.90	28.00	9024630054000
0.2130	#3	5.41	66.00	19.89	28.00	9024630054100
0.2165		5.50	66.00	19.75	28.00	9024630055000
0.2189	7/32	5.56	66.00	19.66	28.00	9024630055600
0.2205		5.60	66.00	19.60	28.00	9024630056000
0.2209	#2	5.61	66.00	19.59	28.00	9024630056100
0.2244		5.70	66.00	19.45	28.00	9024630057000
0.2280	#1	5.79	66.00	19.32	28.00	9024630057900
0.2283		5.80	66.00	19.30	28.00	9024630058000
0.2323		5.90	66.00	19.15	28.00	9024630059000
0.2339	A	5.94	66.00	19.09	28.00	9024630059400
0.2343	15/64	5.95	66.00	19.08	28.00	9024630059500
0.2362		6.00	66.00	19.00	28.00	9024630060000
0.2378	B	6.04	70.00	21.94	31.00	9024630060400
0.2402		6.10	70.00	21.85	31.00	9024630061000
0.2421	C	6.15	70.00	21.78	31.00	9024630061500
0.2441		6.20	70.00	21.70	31.00	9024630062000
0.2461	D	6.25	70.00	21.63	31.00	9024630062500
0.2480		6.30	70.00	21.55	31.00	9024630063000
0.2500	1/4 E	6.35	70.00	21.48	31.00	9024630063500
0.2520		6.40	70.00	21.40	31.00	9024630064000
0.2559		6.50	70.00	21.25	31.00	9024630065000
0.2571	F	6.53	70.00	21.21	31.00	9024630065300
0.2598		6.60	70.00	21.10	31.00	9024630066000
0.2610	G	6.63	70.00	21.06	31.00	9024630066300
0.2638		6.70	70.00	20.95	31.00	9024630067000
0.2657	17/64 H	6.75	74.00	23.88	34.00	9024630067500
0.2677		6.80	74.00	23.80	34.00	9024630068000
0.2717		6.90	74.00	23.65	34.00	9024630069000
0.2756		7.00	74.00	23.50	34.00	9024630070000
0.2768	J	7.03	74.00	23.46	34.00	9024630070300
0.2795		7.10	74.00	23.35	34.00	9024630071000
0.2811	9/32 K	7.14	74.00	23.29	34.00	9024630071400
0.2835		7.20	74.00	23.20	34.00	9024630072000
0.2874		7.30	74.00	23.05	34.00	9024630073000
0.2902	L	7.37	74.00	22.95	34.00	9024630073700
0.2913		7.40	74.00	22.90	34.00	9024630074000
0.2953		7.50	74.00	22.75	34.00	9024630075000
0.2969	19/64	7.54	79.00	25.69	37.00	9024630075400
0.2992		7.60	79.00	25.60	37.00	9024630076000

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3020	N	7.67	79.00	25.50	37.00	9024630076700
0.3031		7.70	79.00	25.45	37.00	9024630077000
0.3071		7.80	79.00	25.30	37.00	9024630078000
0.3110		7.90	79.00	25.15	37.00	9024630079000
0.3126	5/16	7.94	79.00	25.09	37.00	9024630079400
0.3150		8.00	79.00	25.00	37.00	9024630080000
0.3161	O	8.03	79.00	24.96	37.00	9024630080300
0.3189		8.10	79.00	24.85	37.00	9024630081000
0.3228		8.20	79.00	24.70	37.00	9024630082000
0.3268		8.30	79.00	24.55	37.00	9024630083000
0.3280	21/64	8.33	79.00	24.51	37.00	9024630083300
0.3307		8.40	79.00	24.40	37.00	9024630084000
0.3319	Q	8.43	79.00	24.36	37.00	9024630084300
0.3346		8.50	79.00	24.25	37.00	9024630085000
0.3386		8.60	84.00	27.10	40.00	9024630086000
0.3390	R	8.61	84.00	27.09	40.00	9024630086100
0.3425		8.70	84.00	26.95	40.00	9024630087000
0.3437	11/32	8.73	84.00	26.91	40.00	9024630087300
0.3465		8.80	84.00	26.80	40.00	9024630088000
0.3480	S	8.84	84.00	26.74	40.00	9024630088400
0.3504		8.90	84.00	26.65	40.00	9024630089000
0.3543		9.00	84.00	26.50	40.00	9024630090000
0.3579	T	9.09	84.00	26.37	40.00	9024630090900
0.3583		9.10	84.00	26.35	40.00	9024630091000
0.3594	23/64	9.13	84.00	26.31	40.00	9024630091300
0.3622		9.20	84.00	26.20	40.00	9024630092000
0.3661		9.30	84.00	26.05	40.00	9024630093000
0.3677	U	9.34	84.00	25.99	40.00	9024630093400
0.3701		9.40	84.00	25.90	40.00	9024630094000
0.3740		9.50	84.00	25.75	40.00	9024630095000
0.3748	3/8	9.52	89.00	28.72	43.00	9024630095200
0.3772	V	9.58	89.00	28.63	43.00	9024630095800
0.3780		9.60	89.00	28.60	43.00	9024630096000
0.3819		9.70	89.00	28.45	43.00	9024630097000
0.3858	W	9.80	89.00	28.30	43.00	9024630098000
0.3898		9.90	89.00	28.15	43.00	9024630099000
0.3906	25/64	9.92	89.00	28.12	43.00	9024630099200
0.3937		10.00	89.00	28.00	43.00	9024630100000
0.3969	X	10.08	89.00	27.88	43.00	9024630100800
0.4016		10.20	89.00	27.70	43.00	9024630102000
0.4039	Y	10.26	89.00	27.61	43.00	9024630102600
0.4055		10.30	89.00	27.55	43.00	9024630103000
0.4063	13/32	10.32	89.00	27.52	43.00	9024630103200
0.4130	Z	10.49	89.00	27.27	43.00	9024630104900
0.4134		10.50	89.00	27.25	43.00	9024630105000
0.4220	27/64	10.72	95.00	30.92	47.00	9024630107200
0.4331		11.00	95.00	30.50	47.00	9024630110000
0.4374	7/16	11.11	95.00	30.34	47.00	9024630111100
0.4528		11.50	95.00	29.75	47.00	9024630115000
0.4531	29/64	11.51	95.00	29.74	47.00	9024630115100
0.4689	15/32	11.91	102.00	33.14	51.00	9024630119100
0.4724		12.00	102.00	33.00	51.00	9024630120000
0.4843	31/64	12.30	102.00	32.55	51.00	9024630123000
0.5000	1/2	12.70	102.00	31.95	51.00	9024630127000
0.5118		13.00	102.00	31.50	51.00	9024630130000
0.5311	17/32	13.49	107.00	33.77	54.00	9024630134900
0.5512		14.00	107.00	33.00	54.00	9024630140000
0.5626	9/16	14.29	111.00	34.57	56.00	9024630142900
0.5906		15.00	111.00	33.50	56.00	9024630150000
0.6299		16.00	115.00	34.00	58.00	9024630160000

JOBBER LENGTH CARBIDE DRILLS



Jobber length drills

Series no. **732**

~5xD Cutting depth | N Type | 118° Point angle | h8 Tolerance on Ø | Without Internal coolant | Cyl Shank form | R Cutting direction | GUHRING SELECT

Tool material **Solid Carbide**

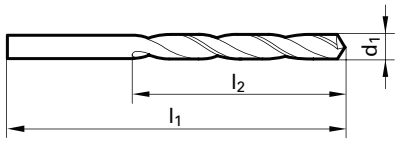
Surface ◯

P	Steel	○
M	Stainless steel	○
K	Cast iron	○
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.060
• facet point grinding
• main cutting edge form straight

structural and case hardened steels • free-cutting steels, heat-treatable steels • grey cast iron • bronze, brass • aluminium and Al-alloys • magnesium and magnesium alloys • plastics and fiber reinforced plastics





Speeds and feeds information on pg. 524

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	34.00	10.50	12.00	9007320010000
0.0402	#60	1.02	34.00	10.47	12.00	9007320010200
0.0409	#59	1.04	34.00	10.44	12.00	9007320010400
0.0421	#58	1.07	36.00	12.40	14.00	9007320010700
0.0429	#57	1.09	36.00	12.37	14.00	9007320010900
0.0433		1.10	36.00	12.35	14.00	9007320011000
0.0465	#56	1.18	36.00	12.23	14.00	9007320011800
0.0469	3/64	1.19	38.00	14.22	16.00	9007320011900
0.0472		1.20	38.00	14.20	16.00	9007320012000
0.0512		1.30	38.00	14.05	16.00	9007320013000
0.0520	#55	1.32	38.00	14.02	16.00	9007320013200
0.0551	#54	1.40	40.00	15.90	18.00	9007320014000
0.0591		1.50	40.00	15.75	18.00	9007320015000
0.0594	#53	1.51	43.00	17.74	20.00	9007320015100
0.0626	1/16	1.59	43.00	17.62	20.00	9007320015900
0.0630		1.60	43.00	17.60	20.00	9007320016000
0.0634	#52	1.61	43.00	17.59	20.00	9007320016100
0.0669	#51	1.70	43.00	17.45	20.00	9007320017000
0.0701	#50	1.78	46.00	19.33	22.00	9007320017800
0.0709		1.80	46.00	19.30	22.00	9007320018000
0.0728	#49	1.85	46.00	19.23	22.00	9007320018500
0.0748		1.90	46.00	19.15	22.00	9007320019000
0.0760	#48	1.93	49.00	21.11	24.00	9007320019300
0.0780	5/64	1.98	49.00	21.03	24.00	9007320019800
0.0783	#47	1.99	49.00	21.02	24.00	9007320019900
0.0787		2.00	49.00	21.00	24.00	9007320020000
0.0811	#46	2.06	49.00	20.91	24.00	9007320020600
0.0819	#45	2.08	49.00	20.88	24.00	9007320020800
0.0827		2.10	49.00	20.85	24.00	9007320021000
0.0858	#44	2.18	53.00	23.73	27.00	9007320021800
0.0866		2.20	53.00	23.70	27.00	9007320022000
0.0890	#43	2.26	53.00	23.61	27.00	9007320022600
0.0906		2.30	53.00	23.55	27.00	9007320023000
0.0933	#42	2.37	57.00	26.45	30.00	9007320023700
0.0937	3/32	2.38	57.00	26.43	30.00	9007320023800
0.0945		2.40	57.00	26.40	30.00	9007320024000
0.0961	#41	2.44	57.00	26.34	30.00	9007320024400
0.0980	#40	2.49	57.00	26.27	30.00	9007320024900
0.0984		2.50	57.00	26.25	30.00	9007320025000
0.0996	#39	2.53	57.00	26.21	30.00	9007320025300
0.1016	#38	2.58	57.00	26.13	30.00	9007320025800
0.1024		2.60	57.00	26.10	30.00	9007320026000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1039	#37	2.64	57.00	26.04	30.00	9007320026400
0.1063		2.70	61.00	28.95	33.00	9007320027000
0.1067	#36	2.71	61.00	28.94	33.00	9007320027100
0.1094	7/64	2.78	61.00	28.83	33.00	9007320027800
0.1098	#35	2.79	61.00	28.82	33.00	9007320027900
0.1102		2.80	61.00	28.80	33.00	9007320028000
0.1110	#34	2.82	61.00	28.77	33.00	9007320028200
0.1130	#33	2.87	61.00	28.70	33.00	9007320028700
0.1142		2.90	61.00	28.65	33.00	9007320029000
0.1161	#32	2.95	61.00	28.58	33.00	9007320029500
0.1181		3.00	61.00	28.50	33.00	9007320030000
0.1201	#31	3.05	65.00	31.43	36.00	9007320030500
0.1220		3.10	65.00	31.35	36.00	9007320031000
0.1248	1/8	3.17	65.00	31.25	36.00	9007320031700
0.1260		3.20	65.00	31.20	36.00	9007320032000
0.1283	#30	3.26	65.00	31.11	36.00	9007320032600
0.1299		3.30	65.00	31.05	36.00	9007320033000
0.1339		3.40	70.00	33.90	39.00	9007320034000
0.1358	#29	3.45	70.00	33.83	39.00	9007320034500
0.1378		3.50	70.00	33.75	39.00	9007320035000
0.1406	9/64 #28	3.57	70.00	33.65	39.00	9007320035700
0.1417		3.60	70.00	33.60	39.00	9007320036000
0.1441	#27	3.66	70.00	33.51	39.00	9007320036600
0.1457		3.70	70.00	33.45	39.00	9007320037000
0.1469	#26	3.73	70.00	33.41	39.00	9007320037300
0.1496	#25	3.80	75.00	37.30	43.00	9007320038000
0.1520	#24	3.86	75.00	37.21	43.00	9007320038600
0.1535		3.90	75.00	37.15	43.00	9007320039000
0.1539	#23	3.91	75.00	37.14	43.00	9007320039100
0.1563	5/32	3.97	75.00	37.05	43.00	9007320039700
0.1571	#22	3.99	75.00	37.02	43.00	9007320039900
0.1575		4.00	75.00	37.00	43.00	9007320040000
0.1591	#21	4.04	75.00	36.94	43.00	9007320040400
0.1610	#20	4.09	75.00	36.87	43.00	9007320040900
0.1614		4.10	75.00	36.85	43.00	9007320041000
0.1654		4.20	75.00	36.70	43.00	9007320042000
0.1661	#19	4.22	75.00	36.67	43.00	9007320042200
0.1693	#18	4.30	80.00	40.55	47.00	9007320043000
0.1720	11/64	4.37	80.00	40.45	47.00	9007320043700
0.1728	#17	4.39	80.00	40.42	47.00	9007320043900
0.1732		4.40	80.00	40.40	47.00	9007320044000
0.1772	#16	4.50	80.00	40.25	47.00	9007320045000

Jobber length drills

Series no. **732**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1799	#15	4.57	80.00	40.15	47.00	9007320045700
0.1811		4.60	80.00	40.10	47.00	9007320046000
0.1819	#14	4.62	80.00	40.07	47.00	9007320046200
0.1850	#13	4.70	80.00	39.95	47.00	9007320047000
0.1874	3/16	4.76	86.00	44.86	52.00	9007320047600
0.1890	#12	4.80	86.00	44.80	52.00	9007320048000
0.1909	#11	4.85	86.00	44.73	52.00	9007320048500
0.1929		4.90	86.00	44.65	52.00	9007320049000
0.1937	#10	4.92	86.00	44.62	52.00	9007320049200
0.1961	#9	4.98	86.00	44.53	52.00	9007320049800
0.1969		5.00	86.00	44.50	52.00	9007320050000
0.1992	#8	5.06	86.00	44.41	52.00	9007320050600
0.2008		5.10	86.00	44.35	52.00	9007320051000
0.2012	#7	5.11	86.00	44.34	52.00	9007320051100
0.2031	13/64	5.16	86.00	44.26	52.00	9007320051600
0.2039	#6	5.18	86.00	44.23	52.00	9007320051800
0.2047		5.20	86.00	44.20	52.00	9007320052000
0.2055	#5	5.22	86.00	44.17	52.00	9007320052200
0.2087		5.30	86.00	44.05	52.00	9007320053000
0.2091	#4	5.31	93.00	49.04	57.00	9007320053100
0.2126		5.40	93.00	48.90	57.00	9007320054000
0.2130	#3	5.41	93.00	48.89	57.00	9007320054100
0.2165		5.50	93.00	48.75	57.00	9007320055000
0.2189	7/32	5.56	93.00	48.66	57.00	9007320055600
0.2205		5.60	93.00	48.60	57.00	9007320056000
0.2209	#2	5.61	93.00	48.59	57.00	9007320056100
0.2244		5.70	93.00	48.45	57.00	9007320057000
0.2280	#1	5.79	93.00	48.32	57.00	9007320057900
0.2283		5.80	93.00	48.30	57.00	9007320058000
0.2323		5.90	93.00	48.15	57.00	9007320059000
0.2339	A	5.94	93.00	48.09	57.00	9007320059400
0.2343	15/64	5.95	93.00	48.08	57.00	9007320059500
0.2362		6.00	93.00	48.00	57.00	9007320060000
0.2378	B	6.04	101.00	53.94	63.00	9007320060400
0.2402		6.10	101.00	53.85	63.00	9007320061000
0.2421	C	6.15	101.00	53.78	63.00	9007320061500
0.2441		6.20	101.00	53.70	63.00	9007320062000
0.2461	D	6.25	101.00	53.63	63.00	9007320062500
0.2480		6.30	101.00	53.55	63.00	9007320063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9007320063500
0.2520		6.40	101.00	53.40	63.00	9007320064000
0.2559		6.50	101.00	53.25	63.00	9007320065000
0.2571	F	6.53	101.00	53.21	63.00	9007320065300
0.2598		6.60	101.00	53.10	63.00	9007320066000
0.2610	G	6.63	101.00	53.06	63.00	9007320066300
0.2638		6.70	101.00	52.95	63.00	9007320067000
0.2657	17/64 H	6.75	109.00	58.88	69.00	9007320067500
0.2677		6.80	109.00	58.80	69.00	9007320068000
0.2717	I	6.90	109.00	58.65	69.00	9007320069000
0.2756		7.00	109.00	58.50	69.00	9007320070000
0.2768	J	7.03	109.00	58.46	69.00	9007320070300
0.2795		7.10	109.00	58.35	69.00	9007320071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9007320071400
0.2835		7.20	109.00	58.20	69.00	9007320072000
0.2874		7.30	109.00	58.05	69.00	9007320073000
0.2902	L	7.37	109.00	57.95	69.00	9007320073700
0.2913		7.40	109.00	57.90	69.00	9007320074000
0.2949	M	7.49	109.00	57.77	69.00	9007320074900

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2953		7.50	109.00	57.75	69.00	9007320075000
0.2969	19/64	7.54	117.00	63.69	75.00	9007320075400
0.2992		7.60	117.00	63.60	75.00	9007320076000
0.3020	N	7.67	117.00	63.50	75.00	9007320076700
0.3031		7.70	117.00	63.45	75.00	9007320077000
0.3071		7.80	117.00	63.30	75.00	9007320078000
0.3110		7.90	117.00	63.15	75.00	9007320079000
0.3126	5/16	7.94	117.00	63.09	75.00	9007320079400
0.3150		8.00	117.00	63.00	75.00	9007320080000
0.3161	O	8.03	117.00	62.96	75.00	9007320080300
0.3189		8.10	117.00	62.85	75.00	9007320081000
0.3228	P	8.20	117.00	62.70	75.00	9007320082000
0.3268		8.30	117.00	62.55	75.00	9007320083000
0.3280	21/64	8.33	117.00	62.51	75.00	9007320083300
0.3307		8.40	117.00	62.40	75.00	9007320084000
0.3319	Q	8.43	117.00	62.36	75.00	9007320084300
0.3346		8.50	117.00	62.25	75.00	9007320085000
0.3386		8.60	125.00	68.10	81.00	9007320086000
0.3390	R	8.61	125.00	68.09	81.00	9007320086100
0.3425		8.70	125.00	67.95	81.00	9007320087000
0.3437	11/32	8.73	125.00	67.91	81.00	9007320087300
0.3465		8.80	125.00	67.80	81.00	9007320088000
0.3480	S	8.84	125.00	67.74	81.00	9007320088400
0.3504		8.90	125.00	67.65	81.00	9007320089000
0.3543		9.00	125.00	67.50	81.00	9007320090000
0.3579	T	9.09	125.00	67.37	81.00	9007320090900
0.3583		9.10	125.00	67.35	81.00	9007320091000
0.3594	23/64	9.13	125.00	67.31	81.00	9007320091300
0.3622		9.20	125.00	67.20	81.00	9007320092000
0.3661		9.30	125.00	67.05	81.00	9007320093000
0.3677	U	9.34	125.00	66.99	81.00	9007320093400
0.3701		9.40	125.00	66.90	81.00	9007320094000
0.3740		9.50	125.00	66.75	81.00	9007320095000
0.3748	3/8	9.52	133.00	72.72	87.00	9007320095200
0.3772	V	9.58	133.00	72.63	87.00	9007320095800
0.3780		9.60	133.00	72.60	87.00	9007320096000
0.3819		9.70	133.00	72.45	87.00	9007320097000
0.3858	W	9.80	133.00	72.30	87.00	9007320098000
0.3898		9.90	133.00	72.15	87.00	9007320099000
0.3906	25/64	9.92	133.00	72.12	87.00	9007320099200
0.3937		10.00	133.00	72.00	87.00	9007320100000
0.3969	X	10.08	133.00	71.88	87.00	9007320100800
0.4016		10.20	133.00	71.70	87.00	9007320102000
0.4039	Y	10.26	133.00	71.61	87.00	9007320102600
0.4055		10.30	133.00	71.55	87.00	9007320103000
0.4063	13/32	10.32	133.00	71.52	87.00	9007320103200
0.4130	Z	10.49	133.00	71.27	87.00	9007320104900
0.4134		10.50	133.00	71.25	87.00	9007320105000
0.4220	27/64	10.72	142.00	77.92	94.00	9007320107200
0.4331		11.00	142.00	77.50	94.00	9007320110000
0.4374	7/16	11.11	142.00	77.34	94.00	9007320111100
0.4528		11.50	142.00	76.75	94.00	9007320115000
0.4531	29/64	11.51	142.00	76.74	94.00	9007320115100
0.4689	15/32	11.91	151.00	83.14	101.00	9007320119100
0.4724		12.00	151.00	83.00	101.00	9007320120000
0.4843	31/64	12.30	151.00	82.55	101.00	9007320123000
0.5000	1/2	12.70	151.00	81.95	101.00	9007320127000

Jobber length drills

Series no. **2464**

~5xD	N	118°	h7		Cyl	R	GUHRING SELECT
Cutting depth	Type	Point angle	Tolerance on Ø	Without Internal coolant	Shank form	Cutting direction	

Tool material: **Solid Carbide**

Surface: **F**

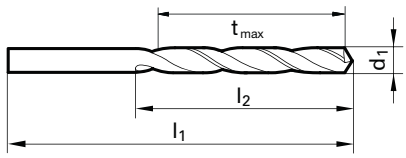
P	Steel	○
M	Stainless steel	○
K	Cast iron	○
N	Aluminum	●
S	Titanium alloys	○
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 2.060
• facet point grinding
• main cutting edge form straight

structural and case hardened steels • free-cutting steels, heat-treatable steels • cast materials • brass • Al materials with high Si-content • magnesium and magnesium alloys • plastics and fiber reinforced plastics

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 537

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.0394		1.00	34.00	10.50	12.00	9024640010000
0.0402	#60	1.02	34.00	10.47	12.00	9024640010200
0.0409	#59	1.04	34.00	10.44	12.00	9024640010400
0.0421	#58	1.07	36.00	12.40	14.00	9024640010700
0.0429	#57	1.09	36.00	12.37	14.00	9024640010900
0.0433		1.10	36.00	12.35	14.00	9024640011000
0.0465	#56	1.18	36.00	12.23	14.00	9024640011800
0.0469	3/64	1.19	38.00	14.22	16.00	9024640011900
0.0472		1.20	38.00	14.20	16.00	9024640012000
0.0512		1.30	38.00	14.05	16.00	9024640013000
0.0520	#55	1.32	38.00	14.02	16.00	9024640013200
0.0551	#54	1.40	40.00	15.90	18.00	9024640014000
0.0591		1.50	40.00	15.75	18.00	9024640015000
0.0594	#53	1.51	43.00	17.74	20.00	9024640015100
0.0626	1/16	1.59	43.00	17.62	20.00	9024640015900
0.0630		1.60	43.00	17.60	20.00	9024640016000
0.0634	#52	1.61	43.00	17.59	20.00	9024640016100
0.0669	#51	1.70	43.00	17.45	20.00	9024640017000
0.0701	#50	1.78	46.00	19.33	22.00	9024640017800
0.0709		1.80	46.00	19.30	22.00	9024640018000
0.0728	#49	1.85	46.00	19.23	22.00	9024640018500
0.0748		1.90	46.00	19.15	22.00	9024640019000
0.0760	#48	1.93	49.00	21.11	24.00	9024640019300
0.0780	5/64	1.98	49.00	21.03	24.00	9024640019800
0.0783	#47	1.99	49.00	21.02	24.00	9024640019900
0.0787		2.00	49.00	21.00	24.00	9024640020000
0.0811	#46	2.06	49.00	20.91	24.00	9024640020600
0.0819	#45	2.08	49.00	20.88	24.00	9024640020800
0.0827		2.10	49.00	20.85	24.00	9024640021000
0.0858	#44	2.18	53.00	23.73	27.00	9024640021800
0.0866		2.20	53.00	23.70	27.00	9024640022000
0.0890	#43	2.26	53.00	23.61	27.00	9024640022600
0.0906		2.30	53.00	23.55	27.00	9024640023000
0.0933	#42	2.37	57.00	26.45	30.00	9024640023700
0.0937	3/32	2.38	57.00	26.43	30.00	9024640023800
0.0945		2.40	57.00	26.40	30.00	9024640024000
0.0961	#41	2.44	57.00	26.34	30.00	9024640024400
0.0980	#40	2.49	57.00	26.27	30.00	9024640024900
0.0984		2.50	57.00	26.25	30.00	9024640025000
0.0996	#39	2.53	57.00	26.21	30.00	9024640025300
0.1016	#38	2.58	57.00	26.13	30.00	9024640025800
0.1024		2.60	57.00	26.10	30.00	9024640026000

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1039	#37	2.64	57.00	26.04	30.00	9024640026400
0.1063		2.70	61.00	28.95	33.00	9024640027000
0.1067	#36	2.71	61.00	28.94	33.00	9024640027100
0.1094	7/64	2.78	61.00	28.83	33.00	9024640027800
0.1098	#35	2.79	61.00	28.82	33.00	9024640027900
0.1102		2.80	61.00	28.80	33.00	9024640028000
0.1110	#34	2.82	61.00	28.77	33.00	9024640028200
0.1130	#33	2.87	61.00	28.70	33.00	9024640028700
0.1142		2.90	61.00	28.65	33.00	9024640029000
0.1161	#32	2.95	61.00	28.58	33.00	9024640029500
0.1181		3.00	61.00	28.50	33.00	9024640030000
0.1201	#31	3.05	65.00	31.43	36.00	9024640030500
0.1220		3.10	65.00	31.35	36.00	9024640031000
0.1248	1/8	3.17	65.00	31.25	36.00	9024640031700
0.1260		3.20	65.00	31.20	36.00	9024640032000
0.1283	#30	3.26	65.00	31.11	36.00	9024640032600
0.1299		3.30	65.00	31.05	36.00	9024640033000
0.1339		3.40	70.00	33.90	39.00	9024640034000
0.1358	#29	3.45	70.00	33.83	39.00	9024640034500
0.1378		3.50	70.00	33.75	39.00	9024640035000
0.1406	9/64 #28	3.57	70.00	33.65	39.00	9024640035700
0.1417		3.60	70.00	33.60	39.00	9024640036000
0.1441	#27	3.66	70.00	33.51	39.00	9024640036600
0.1457		3.70	70.00	33.45	39.00	9024640037000
0.1469	#26	3.73	70.00	33.41	39.00	9024640037300
0.1496	#25	3.80	75.00	37.30	43.00	9024640038000
0.1520	#24	3.86	75.00	37.21	43.00	9024640038600
0.1535		3.90	75.00	37.15	43.00	9024640039000
0.1539	#23	3.91	75.00	37.14	43.00	9024640039100
0.1563	5/32	3.97	75.00	37.05	43.00	9024640039700
0.1571	#22	3.99	75.00	37.02	43.00	9024640039900
0.1575		4.00	75.00	37.00	43.00	9024640040000
0.1591	#21	4.04	75.00	36.94	43.00	9024640040400
0.1610	#20	4.09	75.00	36.87	43.00	9024640040900
0.1614		4.10	75.00	36.85	43.00	9024640041000
0.1654		4.20	75.00	36.70	43.00	9024640042000
0.1661	#19	4.22	75.00	36.67	43.00	9024640042200
0.1693	#18	4.30	80.00	40.55	47.00	9024640043000
0.1720	11/64	4.37	80.00	40.45	47.00	9024640043700
0.1728	#17	4.39	80.00	40.42	47.00	9024640043900
0.1732		4.40	80.00	40.40	47.00	9024640044000
0.1772	#16	4.50	80.00	40.25	47.00	9024640045000

Jobber length drills

Series no. **2464**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1799	#15	4.57	80.00	40.15	47.00	9024640045700
0.1811		4.60	80.00	40.10	47.00	9024640046000
0.1819	#14	4.62	80.00	40.07	47.00	9024640046200
0.1850	#13	4.70	80.00	39.95	47.00	9024640047000
0.1874	3/16	4.76	86.00	44.86	52.00	9024640047600
0.1890	#12	4.80	86.00	44.80	52.00	9024640048000
0.1909	#11	4.85	86.00	44.73	52.00	9024640048500
0.1929		4.90	86.00	44.65	52.00	9024640049000
0.1937	#10	4.92	86.00	44.62	52.00	9024640049200
0.1961	#9	4.98	86.00	44.53	52.00	9024640049800
0.1969		5.00	86.00	44.50	52.00	9024640050000
0.1992	#8	5.06	86.00	44.41	52.00	9024640050600
0.2008		5.10	86.00	44.35	52.00	9024640051000
0.2012	#7	5.11	86.00	44.34	52.00	9024640051100
0.2031	13/64	5.16	86.00	44.26	52.00	9024640051600
0.2039	#6	5.18	86.00	44.23	52.00	9024640051800
0.2047		5.20	86.00	44.20	52.00	9024640052000
0.2055	#5	5.22	86.00	44.17	52.00	9024640052200
0.2087		5.30	86.00	44.05	52.00	9024640053000
0.2091	#4	5.31	93.00	49.04	57.00	9024640053100
0.2126		5.40	93.00	48.90	57.00	9024640054000
0.2130	#3	5.41	93.00	48.89	57.00	9024640054100
0.2165		5.50	93.00	48.75	57.00	9024640055000
0.2189	7/32	5.56	93.00	48.66	57.00	9024640055600
0.2205		5.60	93.00	48.60	57.00	9024640056000
0.2209	#2	5.61	93.00	48.59	57.00	9024640056100
0.2244		5.70	93.00	48.45	57.00	9024640057000
0.2280	#1	5.79	93.00	48.32	57.00	9024640057900
0.2283		5.80	93.00	48.30	57.00	9024640058000
0.2323		5.90	93.00	48.15	57.00	9024640059000
0.2339	A	5.94	93.00	48.09	57.00	9024640059400
0.2343	15/64	5.95	93.00	48.08	57.00	9024640059500
0.2362		6.00	93.00	48.00	57.00	9024640060000
0.2378	B	6.04	101.00	53.94	63.00	9024640060400
0.2402		6.10	101.00	53.85	63.00	9024640061000
0.2421	C	6.15	101.00	53.78	63.00	9024640061500
0.2441		6.20	101.00	53.70	63.00	9024640062000
0.2461	D	6.25	101.00	53.63	63.00	9024640062500
0.2480		6.30	101.00	53.55	63.00	9024640063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9024640063500
0.2520		6.40	101.00	53.40	63.00	9024640064000
0.2559		6.50	101.00	53.25	63.00	9024640065000
0.2571	F	6.53	101.00	53.21	63.00	9024640065300
0.2598		6.60	101.00	53.10	63.00	9024640066000
0.2610	G	6.63	101.00	53.06	63.00	9024640066300
0.2638		6.70	101.00	52.95	63.00	9024640067000
0.2657	17/64 H	6.75	109.00	58.88	69.00	9024640067500
0.2677		6.80	109.00	58.80	69.00	9024640068000
0.2717	I	6.90	109.00	58.65	69.00	9024640069000
0.2756		7.00	109.00	58.50	69.00	9024640070000
0.2768	J	7.03	109.00	58.46	69.00	9024640070300
0.2795		7.10	109.00	58.35	69.00	9024640071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9024640071400
0.2835		7.20	109.00	58.20	69.00	9024640072000
0.2874		7.30	109.00	58.05	69.00	9024640073000
0.2902	L	7.37	109.00	57.95	69.00	9024640073700
0.2913		7.40	109.00	57.90	69.00	9024640074000
0.2949	M	7.49	109.00	57.77	69.00	9024640074900

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2953		7.50	109.00	57.75	69.00	9024640075000
0.2969	19/64	7.54	117.00	63.69	75.00	9024640075400
0.2992		7.60	117.00	63.60	75.00	9024640076000
0.3020	N	7.67	117.00	63.50	75.00	9024640076700
0.3031		7.70	117.00	63.45	75.00	9024640077000
0.3071		7.80	117.00	63.30	75.00	9024640078000
0.3110		7.90	117.00	63.15	75.00	9024640079000
0.3126	5/16	7.94	117.00	63.09	75.00	9024640079400
0.3150		8.00	117.00	63.00	75.00	9024640080000
0.3161	O	8.03	117.00	62.96	75.00	9024640080300
0.3189		8.10	117.00	62.85	75.00	9024640081000
0.3228	P	8.20	117.00	62.70	75.00	9024640082000
0.3268		8.30	117.00	62.55	75.00	9024640083000
0.3280	21/64	8.33	117.00	62.51	75.00	9024640083300
0.3307		8.40	117.00	62.40	75.00	9024640084000
0.3319	Q	8.43	117.00	62.36	75.00	9024640084300
0.3346		8.50	117.00	62.25	75.00	9024640085000
0.3386		8.60	125.00	68.10	81.00	9024640086000
0.3390	R	8.61	125.00	68.09	81.00	9024640086100
0.3425		8.70	125.00	67.95	81.00	9024640087000
0.3437	11/32	8.73	125.00	67.91	81.00	9024640087300
0.3465		8.80	125.00	67.80	81.00	9024640088000
0.3480	S	8.84	125.00	67.74	81.00	9024640088400
0.3504		8.90	125.00	67.65	81.00	9024640089000
0.3543		9.00	125.00	67.50	81.00	9024640090000
0.3579	T	9.09	125.00	67.37	81.00	9024640090900
0.3583		9.10	125.00	67.35	81.00	9024640091000
0.3594	23/64	9.13	125.00	67.31	81.00	9024640091300
0.3622		9.20	125.00	67.20	81.00	9024640092000
0.3661		9.30	125.00	67.05	81.00	9024640093000
0.3677	U	9.34	125.00	66.99	81.00	9024640093400
0.3701		9.40	125.00	66.90	81.00	9024640094000
0.3740		9.50	125.00	66.75	81.00	9024640095000
0.3748	3/8	9.52	133.00	72.72	87.00	9024640095200
0.3772	V	9.58	133.00	72.63	87.00	9024640095800
0.3780		9.60	133.00	72.60	87.00	9024640096000
0.3819		9.70	133.00	72.45	87.00	9024640097000
0.3858	W	9.80	133.00	72.30	87.00	9024640098000
0.3898		9.90	133.00	72.15	87.00	9024640099000
0.3906	25/64	9.92	133.00	72.12	87.00	9024640099200
0.3937		10.00	133.00	72.00	87.00	9024640100000
0.3969	X	10.08	133.00	71.88	87.00	9024640100800
0.4016		10.20	133.00	71.70	87.00	9024640102000
0.4039	Y	10.26	133.00	71.61	87.00	9024640102600
0.4055		10.30	133.00	71.55	87.00	9024640103000
0.4063	13/32	10.32	133.00	71.52	87.00	9024640103200
0.4130	Z	10.49	133.00	71.27	87.00	9024640104900
0.4134		10.50	133.00	71.25	87.00	9024640105000
0.4220	27/64	10.72	142.00	77.92	94.00	9024640107200
0.4331		11.00	142.00	77.50	94.00	9024640110000
0.4374	7/16	11.11	142.00	77.34	94.00	9024640111100
0.4528		11.50	142.00	76.75	94.00	9024640115000
0.4531	29/64	11.51	142.00	76.74	94.00	9024640115100
0.4689	15/32	11.91	151.00	83.14	101.00	9024640119100
0.4724		12.00	151.00	83.00	101.00	9024640120000
0.4843	31/64	12.30	151.00	82.55	101.00	9024640123000
0.5000	1/2	12.70	151.00	81.95	101.00	9024640127000

Jobber length drills

Series no. **2601**

8xD	GT 100	130°	h8		Cyl	R
Cutting depth	Type	Point angle	Tolerance on Ø	Without Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

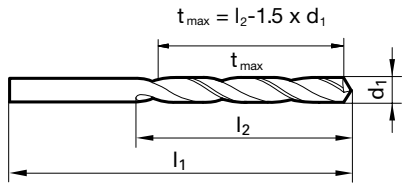
Surface: ◯

P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 3.17 • relieved cone • wide flutes • especially for drilling depths > 3xD

grey cast iron • steels up to 1000 N/mm² • Not recommended for: CrNi steels, stainless steels





Speeds and feeds information on pg. 539

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1248	1/8	3.17	70.70	37.05	41.80	9026010031700
0.1260		3.20	70.70	37.00	41.80	9026010032000
0.1283	#30	3.26	70.70	36.91	41.80	9026010032600
0.1299		3.30	73.80	39.95	44.90	9026010033000
0.1339		3.40	73.80	39.80	44.90	9026010034000
0.1358	#29	3.45	73.80	39.73	44.90	9026010034500
0.1378		3.50	73.80	39.65	44.90	9026010035000
0.1406	9/64 #28	3.57	73.80	39.55	44.90	9026010035700
0.1441	#27	3.66	76.90	43.31	48.80	9026010036600
0.1469	#26	3.73	76.90	43.21	48.80	9026010037300
0.1496	#25	3.80	76.90	43.10	48.80	9026010038000
0.1520	#24	3.86	80.00	46.11	51.90	9026010038600
0.1539	#23	3.91	80.00	46.04	51.90	9026010039100
0.1563	5/32	3.97	80.00	45.95	51.90	9026010039700
0.1571	#22	3.99	80.00	45.92	51.90	9026010039900
0.1575		4.00	84.00	49.00	55.00	9026010040000
0.1591	#21	4.04	84.00	48.94	55.00	9026010040400
0.1610	#20	4.09	84.00	48.87	55.00	9026010040900
0.1661	#19	4.22	84.00	48.67	55.00	9026010042200
0.1693	#18	4.30	84.00	48.55	55.00	9026010043000
0.1720	11/64	4.37	84.00	48.45	55.00	9026010043700
0.1728	#17	4.39	87.00	50.42	57.00	9026010043900
0.1772	#16	4.50	87.00	50.25	57.00	9026010045000
0.1799	#15	4.57	87.00	50.15	57.00	9026010045700
0.1819	#14	4.62	87.00	50.07	57.00	9026010046200
0.1850	#13	4.70	90.10	53.05	60.10	9026010047000
0.1874	3/16	4.76	90.10	52.96	60.10	9026010047600
0.1890	#12	4.80	90.10	52.90	60.10	9026010048000
0.1909	#11	4.85	90.10	52.83	60.10	9026010048500
0.1937	#10	4.92	93.20	55.82	63.20	9026010049200
0.1961	#9	4.98	93.20	55.73	63.20	9026010049800
0.1969		5.00	93.20	55.70	63.20	9026010050000
0.1992	#8	5.06	93.20	55.61	63.20	9026010050600
0.2012	#7	5.11	93.20	55.54	63.20	9026010051100
0.2031	13/64	5.16	93.20	55.46	63.20	9026010051600
0.2039	#6	5.18	96.30	57.43	65.20	9026010051800
0.2055	#5	5.22	96.30	57.37	65.20	9026010052200
0.2091	#4	5.31	96.30	57.24	65.20	9026010053100
0.2130	#3	5.41	96.30	57.09	65.20	9026010054100
0.2165		5.50	96.30	56.95	65.20	9026010055000
0.2189	7/32	5.56	96.30	56.86	65.20	9026010055600
0.2209	#2	5.61	99.40	59.89	68.30	9026010056100

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2280	#1	5.79	99.40	59.62	68.30	9026010057900
0.2339	A	5.94	99.40	59.39	68.30	9026010059400
0.2343	15/64	5.95	99.40	59.38	68.30	9026010059500
0.2362		6.00	103.40	62.40	71.40	9026010060000
0.2378	B	6.04	103.40	62.34	71.40	9026010060400
0.2421	C	6.15	103.40	62.18	71.40	9026010061500
0.2461	D	6.25	103.40	62.03	71.40	9026010062500
0.2500	1/4 E	6.35	103.40	61.88	71.40	9026010063500
0.2559		6.50	106.60	64.85	74.60	9026010065000
0.2571	F	6.53	106.60	64.81	74.60	9026010065300
0.2610	G	6.63	106.60	64.66	74.60	9026010066300
0.2657	17/64 H	6.75	106.60	64.48	74.60	9026010067500
0.2717	I	6.90	106.60	64.25	74.60	9026010069000
0.2756		7.00	106.60	64.10	74.60	9026010070000
0.2768	J	7.03	106.60	64.06	74.60	9026010070300
0.2811	9/32 K	7.14	109.70	65.99	76.70	9026010071400
0.2902	L	7.37	109.70	65.65	76.70	9026010073700
0.2949	M	7.49	112.80	68.47	79.70	9026010074900
0.2953		7.50	112.80	68.45	79.70	9026010075000
0.2969	19/64	7.54	112.80	68.39	79.70	9026010075400
0.3020	N	7.67	112.80	68.20	79.70	9026010076700
0.3126	5/16	7.94	115.90	70.89	82.80	9026010079400
0.3150		8.00	115.90	70.80	82.80	9026010080000
0.3161	O	8.03	115.90	70.76	82.80	9026010080300
0.3228	P	8.20	119.00	73.70	86.00	9026010082000
0.3280	21/64	8.33	119.00	73.51	86.00	9026010083300
0.3319	Q	8.43	123.10	76.46	89.10	9026010084300
0.3346		8.50	123.10	76.35	89.10	9026010085000
0.3390	R	8.61	123.10	76.19	89.10	9026010086100
0.3437	11/32	8.73	123.10	76.01	89.10	9026010087300
0.3480	S	8.84	126.10	77.84	91.10	9026010088400
0.3543		9.00	126.10	77.60	91.10	9026010090000
0.3579	T	9.09	126.10	77.47	91.10	9026010090900
0.3594	23/64	9.13	126.10	77.41	91.10	9026010091300
0.3677	U	9.34	129.20	80.19	94.20	9026010093400
0.3740		9.50	129.20	79.95	94.20	9026010095000
0.3748	3/8	9.52	129.20	79.92	94.20	9026010095200
0.3772	V	9.58	129.20	79.83	94.20	9026010095800
0.3858	W	9.80	132.40	82.70	97.40	9026010098000
0.3906	25/64	9.92	132.40	82.52	97.40	9026010099200
0.3937		10.00	132.40	82.40	97.40	9026010100000
0.3969	X	10.08	132.40	82.28	97.40	9026010100800

Jobber length drills

Series no. **2601**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4039	Y	10.26	135.50	85.11	100.50	**9026010102600**
0.4063	13/32	10.32	135.50	85.02	100.50	**9026010103200**
0.4130	Z	10.49	135.50	84.77	100.50	**9026010104900**
0.4134		10.50	135.50	84.75	100.50	**9026010105000**
0.4220	27/64	10.72	139.40	86.42	102.50	**9026010107200**
0.4331		11.00	142.50	89.10	105.60	**9026010110000**
0.4374	7/16	11.11	142.50	88.94	105.60	**9026010111100**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4528		11.50	145.60	91.45	108.70	**9026010115000**
0.4531	29/64	11.51	145.60	91.44	108.70	**9026010115100**
0.4689	15/32	11.91	148.80	94.84	112.70	**9026010119100**
0.4724		12.00	151.90	95.90	113.90	**9026010120000**
0.4843	31/64	12.30	151.90	95.45	113.90	**9026010123000**
0.4921		12.50	155.10	98.35	117.10	**9026010125000**
0.5000	1/2	12.70	155.10	98.05	117.10	**9026010127000**

Jobber length drills

Series no. **2602**

Tool material **Solid Carbide**

Surface **S**

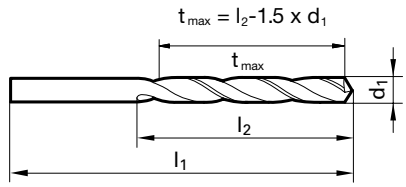
8xD Cutting depth · GT 100 Type · 130° Point angle · h8 Tolerance on Ø · Without Internal coolant · Cyl Shank form · R Cutting direction

P	Steel	●
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 3.17 • relieved cone • wide flutes • especially for drilling depths > 3xD

grey cast iron • steels up to 1000 N/mm² • Not recommended for: CrNi steels, stainless steels





Speeds and feeds information on pg. 540

Shank diameter = cut diameter

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1248	1/8	3.17	70.70	37.05	41.80	9026020031700
0.1260		3.20	70.70	37.00	41.80	9026020032000
0.1283	#30	3.26	70.70	36.91	41.80	9026020032600
0.1299		3.30	73.80	39.95	44.90	9026020033000
0.1339		3.40	73.80	39.80	44.90	9026020034000
0.1358	#29	3.45	73.80	39.73	44.90	9026020034500
0.1378		3.50	73.80	39.65	44.90	9026020035000
0.1406	9/64 #28	3.57	73.80	39.55	44.90	9026020035700
0.1441	#27	3.66	76.90	43.31	48.80	9026020036600
0.1469	#26	3.73	76.90	43.21	48.80	9026020037300
0.1496	#25	3.80	76.90	43.10	48.80	9026020038000
0.1520	#24	3.86	80.00	46.11	51.90	9026020038600
0.1539	#23	3.91	80.00	46.04	51.90	9026020039100
0.1563	5/32	3.97	80.00	45.95	51.90	9026020039700
0.1571	#22	3.99	80.00	45.92	51.90	9026020039900
0.1575		4.00	84.00	49.00	55.00	9026020040000
0.1591	#21	4.04	84.00	48.94	55.00	9026020040400
0.1610	#20	4.09	84.00	48.87	55.00	9026020040900
0.1661	#19	4.22	84.00	48.67	55.00	9026020042200
0.1693	#18	4.30	84.00	48.55	55.00	9026020043000
0.1720	11/64	4.37	84.00	48.45	55.00	9026020043700
0.1728	#17	4.39	87.00	50.42	57.00	9026020043900
0.1772	#16	4.50	87.00	50.25	57.00	9026020045000
0.1799	#15	4.57	87.00	50.15	57.00	9026020045700
0.1819	#14	4.62	87.00	50.07	57.00	9026020046200
0.1850	#13	4.70	90.10	53.05	60.10	9026020047000
0.1874	3/16	4.76	90.10	52.96	60.10	9026020047600
0.1890	#12	4.80	90.10	52.90	60.10	9026020048000
0.1909	#11	4.85	90.10	52.83	60.10	9026020048500
0.1937	#10	4.92	93.20	55.82	63.20	9026020049200
0.1961	#9	4.98	93.20	55.73	63.20	9026020049800
0.1969		5.00	93.20	55.70	63.20	9026020050000
0.1992	#8	5.06	93.20	55.61	63.20	9026020050600
0.2012	#7	5.11	93.20	55.54	63.20	9026020051100
0.2031	13/64	5.16	93.20	55.46	63.20	9026020051600
0.2039	#6	5.18	96.30	57.43	65.20	9026020051800
0.2055	#5	5.22	96.30	57.37	65.20	9026020052200
0.2091	#4	5.31	96.30	57.24	65.20	9026020053100
0.2130	#3	5.41	96.30	57.09	65.20	9026020054100
0.2165		5.50	96.30	56.95	65.20	9026020055000
0.2189	7/32	5.56	96.30	56.86	65.20	9026020055600
0.2209	#2	5.61	99.40	59.89	68.30	9026020056100

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2280	#1	5.79	99.40	59.62	68.30	9026020057900
0.2339	A	5.94	99.40	59.39	68.30	9026020059400
0.2343	15/64	5.95	99.40	59.38	68.30	9026020059500
0.2362		6.00	103.40	62.40	71.40	9026020060000
0.2378	B	6.04	103.40	62.34	71.40	9026020060400
0.2421	C	6.15	103.40	62.18	71.40	9026020061500
0.2461	D	6.25	103.40	62.03	71.40	9026020062500
0.2500	1/4 E	6.35	103.40	61.88	71.40	9026020063500
0.2559		6.50	106.60	64.85	74.60	9026020065000
0.2571	F	6.53	106.60	64.81	74.60	9026020065300
0.2610	G	6.63	106.60	64.66	74.60	9026020066300
0.2657	17/64 H	6.75	106.60	64.48	74.60	9026020067500
0.2717	I	6.90	106.60	64.25	74.60	9026020069000
0.2756		7.00	106.60	64.10	74.60	9026020070000
0.2768	J	7.03	106.60	64.06	74.60	9026020070300
0.2811	9/32 K	7.14	109.70	65.99	76.70	9026020071400
0.2902	L	7.37	109.70	65.65	76.70	9026020073700
0.2949	M	7.49	112.80	68.47	79.70	9026020074900
0.2953		7.50	112.80	68.45	79.70	9026020075000
0.2969	19/64	7.54	112.80	68.39	79.70	9026020075400
0.3020	N	7.67	112.80	68.20	79.70	9026020076700
0.3126	5/16	7.94	115.90	70.89	82.80	9026020079400
0.3150		8.00	115.90	70.80	82.80	9026020080000
0.3161	O	8.03	115.90	70.76	82.80	9026020080300
0.3228	P	8.20	119.00	73.70	86.00	9026020082000
0.3280	21/64	8.33	119.00	73.51	86.00	9026020083300
0.3319	Q	8.43	123.10	76.46	89.10	9026020084300
0.3346		8.50	123.10	76.35	89.10	9026020085000
0.3390	R	8.61	123.10	76.19	89.10	9026020086100
0.3437	11/32	8.73	123.10	76.01	89.10	9026020087300
0.3480	S	8.84	126.10	77.84	91.10	9026020088400
0.3543		9.00	126.10	77.60	91.10	9026020090000
0.3579	T	9.09	126.10	77.47	91.10	9026020090900
0.3594	23/64	9.13	126.10	77.41	91.10	9026020091300
0.3677	U	9.34	129.20	80.19	94.20	9026020093400
0.3740		9.50	129.20	79.95	94.20	9026020095000
0.3748	3/8	9.52	129.20	79.92	94.20	9026020095200
0.3772	V	9.58	129.20	79.83	94.20	9026020095800
0.3858	W	9.80	132.40	82.70	97.40	9026020098000
0.3906	25/64	9.92	132.40	82.52	97.40	9026020099200
0.3937		10.00	132.40	82.40	97.40	9026020100000
0.3969	X	10.08	132.40	82.28	97.40	9026020100800

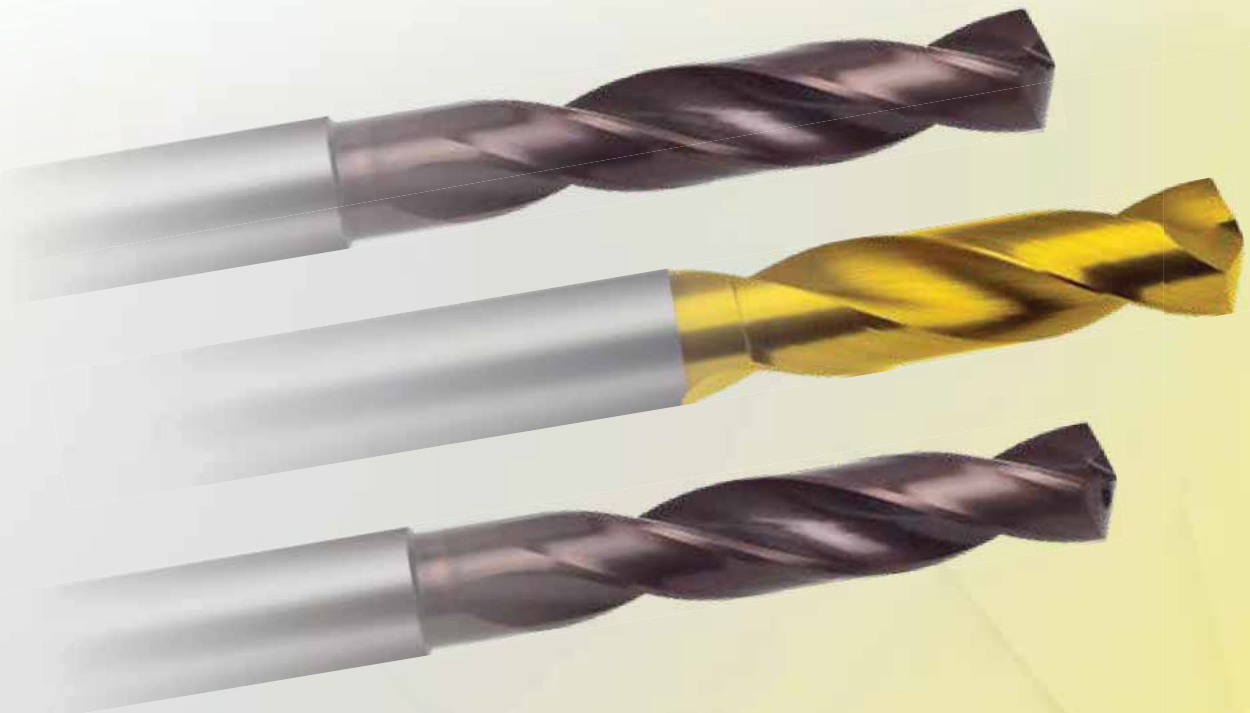
Jobber length drills

Series no. **2602**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4039	Y	10.26	135.50	85.11	100.50	**9026020102600**
0.4063	13/32	10.32	135.50	85.02	100.50	**9026020103200**
0.4130	Z	10.49	135.50	84.77	100.50	**9026020104900**
0.4134		10.50	135.50	84.75	100.50	**9026020105000**
0.4220	27/64	10.72	139.40	86.42	102.50	**9026020107200**
0.4331		11.00	142.50	89.10	105.60	**9026020110000**
0.4374	7/16	11.11	142.50	88.94	105.60	**9026020111100**

Diameter (d_1) inch	wire/ltr	mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4528		11.50	145.60	91.45	108.70	**9026020115000**
0.4531	29/64	11.51	145.60	91.44	108.70	**9026020115100**
0.4689	15/32	11.91	148.80	94.84	112.70	**9026020119100**
0.4724		12.00	151.90	95.90	113.90	**9026020120000**
0.4843	31/64	12.30	151.90	95.45	113.90	**9026020123000**
0.4921		12.50	155.10	98.35	117.10	**9026020125000**
0.5000	1/2	12.70	155.10	98.05	117.10	**9026020127000**

3xD CARBIDE RATIO DRILLS



3xD Ratio drills

Series no. **1702**

3xD	RT 100 F	140°	m7		Cyl	R
Cutting depth	Type	Point angle	Tolerance on Ø	Without Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: **S**

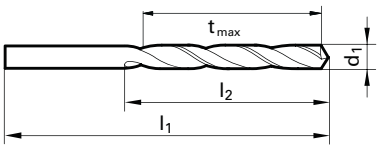
P	Steel	○
M	Stainless steel	●
K	Cast iron	○
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • main cutting edge form concave • optimized cutting geometry • sharp cutting edges

stainless/acid-/heat-resistant steels • Inconel, Hastelloy, Monel • brass, bronzes • aluminum and Al-alloys • magnesium and magnesium alloys • Titanium and Titanium alloys • sintered powder metals • high-alloyed steels

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 536

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	46.00	11.50	16.00	9017020030000
0.1220		3.10	49.00	13.35	18.00	9017020031000
0.1248	1/8	3.17	49.00	13.25	18.00	9017020031700
0.1260		3.20	49.00	13.20	18.00	9017020032000
0.1299		3.30	49.00	13.05	18.00	9017020033000
0.1339		3.40	52.00	14.90	20.00	9017020034000
0.1378		3.50	52.00	14.75	20.00	9017020035000
0.1406	9/64 #28	3.57	52.00	14.65	20.00	9017020035700
0.1417		3.60	52.00	14.60	20.00	9017020036000
0.1457		3.70	52.00	14.45	20.00	9017020037000
0.1496	#25	3.80	55.00	16.30	22.00	9017020038000
0.1535		3.90	55.00	16.15	22.00	9017020039000
0.1563	5/32	3.97	55.00	16.05	22.00	9017020039700
0.1575		4.00	55.00	16.00	22.00	9017020040000
0.1614		4.10	55.00	15.85	22.00	9017020041000
0.1654		4.20	55.00	15.70	22.00	9017020042000
0.1693	#18	4.30	58.00	17.55	24.00	9017020043000
0.1720	11/64	4.37	58.00	17.45	24.00	9017020043700
0.1732		4.40	58.00	17.40	24.00	9017020044000
0.1772	#16	4.50	58.00	17.25	24.00	9017020045000
0.1811		4.60	58.00	17.10	24.00	9017020046000
0.1850	#13	4.70	58.00	16.95	24.00	9017020047000
0.1874	3/16	4.76	62.00	18.86	26.00	9017020047600
0.1890	#12	4.80	62.00	18.80	26.00	9017020048000
0.1929		4.90	62.00	18.65	26.00	9017020049000
0.1969		5.00	62.00	18.50	26.00	9017020050000
0.2008		5.10	62.00	18.35	26.00	9017020051000
0.2031	13/64	5.16	62.00	18.26	26.00	9017020051600
0.2047		5.20	62.00	18.20	26.00	9017020052000
0.2087		5.30	62.00	18.05	26.00	9017020053000
0.2126		5.40	66.00	19.90	28.00	9017020054000
0.2165		5.50	66.00	19.75	28.00	9017020055000
0.2189	7/32	5.56	66.00	19.66	28.00	9017020055600
0.2205		5.60	66.00	19.60	28.00	9017020056000
0.2244		5.70	66.00	19.45	28.00	9017020057000
0.2283		5.80	66.00	19.30	28.00	9017020058000
0.2323		5.90	66.00	19.15	28.00	9017020059000
0.2343	15/64	5.95	66.00	19.08	28.00	9017020059500
0.2362		6.00	66.00	19.00	28.00	9017020060000
0.2402		6.10	70.00	21.85	31.00	9017020061000
0.2441		6.20	70.00	21.70	31.00	9017020062000
0.2480		6.30	70.00	21.55	31.00	9017020063000

Diameter (d1) inch	wire/ltr		mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2500	1/4	E	6.35	70.00	21.48	31.00	9017020063500
0.2520			6.40	70.00	21.40	31.00	9017020064000
0.2559			6.50	70.00	21.25	31.00	9017020065000
0.2598			6.60	70.00	21.10	31.00	9017020066000
0.2638			6.70	70.00	20.95	31.00	9017020067000
0.2657	17/64	H	6.75	74.00	23.88	34.00	9017020067500
0.2677			6.80	74.00	23.80	34.00	9017020068000
0.2717		I	6.90	74.00	23.65	34.00	9017020069000
0.2756			7.00	74.00	23.50	34.00	9017020070000
0.2795			7.10	74.00	23.35	34.00	9017020071000
0.2811	9/32	K	7.14	74.00	23.29	34.00	9017020071400
0.2835			7.20	74.00	23.20	34.00	9017020072000
0.2874			7.30	74.00	23.05	34.00	9017020073000
0.2913			7.40	74.00	22.90	34.00	9017020074000
0.2953			7.50	74.00	22.75	34.00	9017020075000
0.2969	19/64		7.54	79.00	25.69	37.00	9017020075400
0.2992			7.60	79.00	25.60	37.00	9017020076000
0.3031			7.70	79.00	25.45	37.00	9017020077000
0.3071			7.80	79.00	25.30	37.00	9017020078000
0.3110			7.90	79.00	25.15	37.00	9017020079000
0.3126	5/16		7.94	79.00	25.09	37.00	9017020079400
0.3150			8.00	79.00	25.00	37.00	9017020080000
0.3189			8.10	79.00	24.85	37.00	9017020081000
0.3228		P	8.20	79.00	24.70	37.00	9017020082000
0.3268			8.30	79.00	24.55	37.00	9017020083000
0.3280	21/64		8.33	79.00	24.51	37.00	9017020083300
0.3307			8.40	79.00	24.40	37.00	9017020084000
0.3346			8.50	79.00	24.25	37.00	9017020085000
0.3386			8.60	84.00	27.10	40.00	9017020086000
0.3425			8.70	84.00	26.95	40.00	9017020087000
0.3437	11/32		8.73	84.00	26.91	40.00	9017020087300
0.3465			8.80	84.00	26.80	40.00	9017020088000
0.3504			8.90	84.00	26.65	40.00	9017020089000
0.3543			9.00	84.00	26.50	40.00	9017020090000
0.3583			9.10	84.00	26.35	40.00	9017020091000
0.3594	23/64		9.13	84.00	26.31	40.00	9017020091300
0.3622			9.20	84.00	26.20	40.00	9017020092000
0.3661			9.30	84.00	26.05	40.00	9017020093000
0.3701			9.40	84.00	25.90	40.00	9017020094000
0.3740			9.50	84.00	25.75	40.00	9017020095000
0.3748	3/8		9.52	89.00	28.72	43.00	9017020095200
0.3780			9.60	89.00	28.60	43.00	9017020096000

3xD Ratio drills

Series no. **1702**

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3819		9.70	89.00	28.45	43.00	**9017020097000**
0.3858	W	9.80	89.00	28.30	43.00	**9017020098000**
0.3898		9.90	89.00	28.15	43.00	**9017020099000**
0.3906	25/64	9.92	89.00	28.12	43.00	**9017020099200**
0.3937		10.00	89.00	28.00	43.00	**9017020100000**
0.4016		10.20	89.00	27.70	43.00	**9017020102000**
0.4055		10.30	89.00	27.55	43.00	**9017020103000**
0.4063	13/32	10.32	89.00	27.52	43.00	**9017020103200**
0.4134		10.50	89.00	27.25	43.00	**9017020105000**
0.4213		10.70	95.00	30.95	47.00	**9017020107000**
0.4220	27/64	10.72	95.00	30.92	47.00	**9017020107200**
0.4252		10.80	95.00	30.80	47.00	**9017020108000**
0.4331		11.00	95.00	30.50	47.00	**9017020110000**
0.4374	7/16	11.11	95.00	30.34	47.00	**9017020111100**

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4528		11.50	95.00	29.75	47.00	**9017020115000**
0.4531	29/64	11.51	95.00	29.74	47.00	**9017020115100**
0.4646		11.80	95.00	29.30	47.00	**9017020118000**
0.4689	15/32	11.91	102.00	33.14	51.00	**9017020119100**
0.4724		12.00	102.00	33.00	51.00	**9017020120000**
0.4843	31/64	12.30	102.00	32.55	51.00	**9017020123000**
0.4921		12.50	102.00	32.25	51.00	**9017020125000**
0.5000	1/2	12.70	102.00	31.95	51.00	**9017020127000**
0.5118		13.00	102.00	31.50	51.00	**9017020130000**
0.5315		13.50	107.00	33.75	54.00	**9017020135000**
0.5512		14.00	107.00	33.00	54.00	**9017020140000**
0.5709		14.50	111.00	34.25	56.00	**9017020145000**
0.5906		15.00	111.00	33.50	56.00	**9017020150000**

3xD Ratio drills

Series no. **1242**

3xD	RT 100 U	140°	m7		Cyl	R
Cutting depth	Type	Point angle	Tolerance on Ø	Without Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: **S**

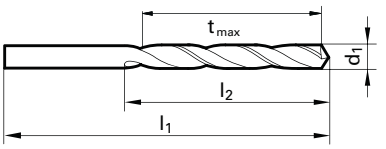
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • facet point grinding • main cutting edge form straight • optimized cutting geometry

structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • cast materials • bronze, brass • high-alloyed AlSi-alloys

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 534

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	46.00	11.50	16.00	9012420030000
0.1220		3.10	49.00	13.35	18.00	9012420031000
0.1248	1/8	3.17	49.00	13.25	18.00	9012420031700
0.1260		3.20	49.00	13.20	18.00	9012420032000
0.1299		3.30	49.00	13.05	18.00	9012420033000
0.1339		3.40	52.00	14.90	20.00	9012420034000
0.1378		3.50	52.00	14.75	20.00	9012420035000
0.1406	9/64 #28	3.57	52.00	14.65	20.00	9012420035700
0.1417		3.60	52.00	14.60	20.00	9012420036000
0.1457		3.70	52.00	14.45	20.00	9012420037000
0.1496	#25	3.80	55.00	16.30	22.00	9012420038000
0.1535		3.90	55.00	16.15	22.00	9012420039000
0.1563	5/32	3.97	55.00	16.05	22.00	9012420039700
0.1575		4.00	55.00	16.00	22.00	9012420040000
0.1614		4.10	55.00	15.85	22.00	9012420041000
0.1654		4.20	55.00	15.70	22.00	9012420042000
0.1693	#18	4.30	58.00	17.55	24.00	9012420043000
0.1720	11/64	4.37	58.00	17.45	24.00	9012420043700
0.1732		4.40	58.00	17.40	24.00	9012420044000
0.1772	#16	4.50	58.00	17.25	24.00	9012420045000
0.1811		4.60	58.00	17.10	24.00	9012420046000
0.1850	#13	4.70	58.00	16.95	24.00	9012420047000
0.1874	3/16	4.76	62.00	18.86	26.00	9012420047600
0.1890	#12	4.80	62.00	18.80	26.00	9012420048000
0.1929		4.90	62.00	18.65	26.00	9012420049000
0.1969		5.00	62.00	18.50	26.00	9012420050000
0.2008		5.10	62.00	18.35	26.00	9012420051000
0.2031	13/64	5.16	62.00	18.26	26.00	9012420051600
0.2047		5.20	62.00	18.20	26.00	9012420052000
0.2087		5.30	62.00	18.05	26.00	9012420053000
0.2126		5.40	66.00	19.90	28.00	9012420054000
0.2165		5.50	66.00	19.75	28.00	9012420055000
0.2189	7/32	5.56	66.00	19.66	28.00	9012420055600
0.2205		5.60	66.00	19.60	28.00	9012420056000
0.2244		5.70	66.00	19.45	28.00	9012420057000
0.2283		5.80	66.00	19.30	28.00	9012420058000
0.2323		5.90	66.00	19.15	28.00	9012420059000
0.2343	15/64	5.95	66.00	19.08	28.00	9012420059500
0.2362		6.00	66.00	19.00	28.00	9012420060000
0.2402		6.10	70.00	21.85	31.00	9012420061000
0.2441		6.20	70.00	21.70	31.00	9012420062000
0.2480		6.30	70.00	21.55	31.00	9012420063000

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2500	1/4 E	6.35	70.00	21.48	31.00	9012420063500
0.2520		6.40	70.00	21.40	31.00	9012420064000
0.2559		6.50	70.00	21.25	31.00	9012420065000
0.2598		6.60	70.00	21.10	31.00	9012420066000
0.2638		6.70	70.00	20.95	31.00	9012420067000
0.2657	17/64 H	6.75	74.00	23.88	34.00	9012420067500
0.2677		6.80	74.00	23.80	34.00	9012420068000
0.2717	I	6.90	74.00	23.65	34.00	9012420069000
0.2756		7.00	74.00	23.50	34.00	9012420070000
0.2795		7.10	74.00	23.35	34.00	9012420071000
0.2811	9/32 K	7.14	74.00	23.29	34.00	9012420071400
0.2835		7.20	74.00	23.20	34.00	9012420072000
0.2874		7.30	74.00	23.05	34.00	9012420073000
0.2913		7.40	74.00	22.90	34.00	9012420074000
0.2953		7.50	74.00	22.75	34.00	9012420075000
0.2969	19/64	7.54	79.00	25.69	37.00	9012420075400
0.2992		7.60	79.00	25.60	37.00	9012420076000
0.3031		7.70	79.00	25.45	37.00	9012420077000
0.3071		7.80	79.00	25.30	37.00	9012420078000
0.3110		7.90	79.00	25.15	37.00	9012420079000
0.3126	5/16	7.94	79.00	25.09	37.00	9012420079400
0.3150		8.00	79.00	25.00	37.00	9012420080000
0.3189		8.10	79.00	24.85	37.00	9012420081000
0.3228	P	8.20	79.00	24.70	37.00	9012420082000
0.3268		8.30	79.00	24.55	37.00	9012420083000
0.3280	21/64	8.33	79.00	24.51	37.00	9012420083300
0.3307		8.40	79.00	24.40	37.00	9012420084000
0.3346		8.50	79.00	24.25	37.00	9012420085000
0.3386		8.60	84.00	27.10	40.00	9012420086000
0.3425		8.70	84.00	26.95	40.00	9012420087000
0.3437	11/32	8.73	84.00	26.91	40.00	9012420087300
0.3465		8.80	84.00	26.80	40.00	9012420088000
0.3504		8.90	84.00	26.65	40.00	9012420089000
0.3543		9.00	84.00	26.50	40.00	9012420090000
0.3583		9.10	84.00	26.35	40.00	9012420091000
0.3594	23/64	9.13	84.00	26.31	40.00	9012420091300
0.3622		9.20	84.00	26.20	40.00	9012420092000
0.3661		9.30	84.00	26.05	40.00	9012420093000
0.3701		9.40	84.00	25.90	40.00	9012420094000
0.3740		9.50	84.00	25.75	40.00	9012420095000
0.3748	3/8	9.52	89.00	28.72	43.00	9012420095200
0.3780		9.60	89.00	28.60	43.00	9012420096000

3xD Ratio drills

Series no. **1242**

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3819		9.70	89.00	28.45	43.00	**9012420097000**
0.3858	W	9.80	89.00	28.30	43.00	**9012420098000**
0.3898		9.90	89.00	28.15	43.00	**9012420099000**
0.3906	25/64	9.92	89.00	28.12	43.00	**9012420099200**
0.3937		10.00	89.00	28.00	43.00	**9012420100000**
0.3976		10.10	89.00	27.85	43.00	**9012420101000**
0.4016		10.20	89.00	27.70	43.00	**9012420102000**
0.4055		10.30	89.00	27.55	43.00	**9012420103000**
0.4063	13/32	10.32	89.00	27.52	43.00	**9012420103200**
0.4094		10.40	89.00	27.40	43.00	**9012420104000**
0.4134		10.50	89.00	27.25	43.00	**9012420105000**
0.4173		10.60	89.00	27.10	43.00	**9012420106000**
0.4213		10.70	95.00	30.95	47.00	**9012420107000**
0.4220	27/64	10.72	95.00	30.92	47.00	**9012420107200**
0.4252		10.80	95.00	30.80	47.00	**9012420108000**
0.4291		10.90	95.00	30.65	47.00	**9012420109000**
0.4331		11.00	95.00	30.50	47.00	**9012420110000**
0.4370		11.10	95.00	30.35	47.00	**9012420111000**
0.4374	7/16	11.11	95.00	30.34	47.00	**9012420111100**
0.4409		11.20	95.00	30.20	47.00	**9012420112000**

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4449		11.30	95.00	30.05	47.00	**9012420113000**
0.4488		11.40	95.00	29.90	47.00	**9012420114000**
0.4528		11.50	95.00	29.75	47.00	**9012420115000**
0.4531	29/64	11.51	95.00	29.74	47.00	**9012420115100**
0.4567		11.60	95.00	29.60	47.00	**9012420116000**
0.4606		11.70	95.00	29.45	47.00	**9012420117000**
0.4646		11.80	95.00	29.30	47.00	**9012420118000**
0.4685		11.90	102.00	33.15	51.00	**9012420119000**
0.4689	15/32	11.91	102.00	33.14	51.00	**9012420119100**
0.4724		12.00	102.00	33.00	51.00	**9012420120000**
0.4921		12.50	102.00	32.25	51.00	**9012420125000**
0.5000	1/2	12.70	102.00	31.95	51.00	**9012420127000**
0.5118		13.00	102.00	31.50	51.00	**9012420130000**
0.5315		13.50	107.00	33.75	54.00	**9012420135000**
0.5512		14.00	107.00	33.00	54.00	**9012420140000**
0.5709		14.50	111.00	34.25	56.00	**9012420145000**
0.5906		15.00	111.00	33.50	56.00	**9012420150000**
0.6102		15.50	115.00	34.75	58.00	**9012420155000**
0.6299		16.00	115.00	34.00	58.00	**9012420160000**

3xD Ratio drills

Series no. **1184**

3xD	RT 100 U	140°	m7		HE	R
Cutting depth	Type	Point angle	Tolerance on Ø	Without Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: **S**

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

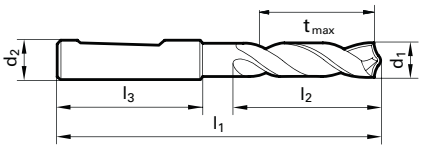
●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • facet point grinding • main cutting edge form straight • optimized cutting geometry

structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • cast materials • bronze, brass • high-alloyed AlSi-alloys

Speeds and feeds information on pg. 532

$t_{max} = l_2\text{-}1.5 \times d_1$





Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	62.00	15.50	20.00	9011840030000
0.1220		3.10	6.00	62.00	15.35	20.00	9011840031000
0.1248	1/8	3.17	6.00	62.00	15.25	20.00	9011840031700
0.1260		3.20	6.00	62.00	15.20	20.00	9011840032000
0.1299		3.30	6.00	62.00	15.05	20.00	9011840033000
0.1339		3.40	6.00	62.00	14.90	20.00	9011840034000
0.1378		3.50	6.00	62.00	14.75	20.00	9011840035000
0.1406	9/64 #28	3.57	6.00	62.00	14.65	20.00	9011840035700
0.1417		3.60	6.00	62.00	14.60	20.00	9011840036000
0.1457		3.70	6.00	62.00	14.45	20.00	9011840037000
0.1496	#25	3.80	6.00	66.00	18.30	24.00	9011840038000
0.1535		3.90	6.00	66.00	18.15	24.00	9011840039000
0.1563	5/32	3.97	6.00	66.00	18.05	24.00	9011840039700
0.1575		4.00	6.00	66.00	18.00	24.00	9011840040000
0.1614		4.10	6.00	66.00	17.85	24.00	9011840041000
0.1654		4.20	6.00	66.00	17.70	24.00	9011840042000
0.1693	#18	4.30	6.00	66.00	17.55	24.00	9011840043000
0.1720	11/64	4.37	6.00	66.00	17.45	24.00	9011840043700
0.1732		4.40	6.00	66.00	17.40	24.00	9011840044000
0.1772	#16	4.50	6.00	66.00	17.25	24.00	9011840045000
0.1811		4.60	6.00	66.00	17.10	24.00	9011840046000
0.1850	#13	4.70	6.00	66.00	16.95	24.00	9011840047000
0.1874	3/16	4.76	6.00	66.00	20.86	28.00	9011840047600
0.1890	#12	4.80	6.00	66.00	20.80	28.00	9011840048000
0.1929		4.90	6.00	66.00	20.65	28.00	9011840049000
0.1969		5.00	6.00	66.00	20.50	28.00	9011840050000
0.2008		5.10	6.00	66.00	20.35	28.00	9011840051000
0.2031	13/64	5.16	6.00	66.00	20.26	28.00	9011840051600
0.2047		5.20	6.00	66.00	20.20	28.00	9011840052000
0.2087		5.30	6.00	66.00	20.05	28.00	9011840053000
0.2126		5.40	6.00	66.00	19.90	28.00	9011840054000
0.2165		5.50	6.00	66.00	19.75	28.00	9011840055000
0.2189	7/32	5.56	6.00	66.00	19.66	28.00	9011840055600
0.2205		5.60	6.00	66.00	19.60	28.00	9011840056000
0.2244		5.70	6.00	66.00	19.45	28.00	9011840057000
0.2283		5.80	6.00	66.00	19.30	28.00	9011840058000
0.2323		5.90	6.00	66.00	19.15	28.00	9011840059000
0.2343	15/64	5.95	6.00	66.00	19.08	28.00	9011840059500
0.2362		6.00	6.00	66.00	19.00	28.00	9011840060000
0.2402		6.10	8.00	79.00	24.85	34.00	9011840061000
0.2441		6.20	8.00	79.00	24.70	34.00	9011840062000
0.2480		6.30	8.00	79.00	24.55	34.00	9011840063000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2500	1/4 E	6.35	8.00	79.00	24.48	34.00	9011840063500
0.2520		6.40	8.00	79.00	24.40	34.00	9011840064000
0.2559		6.50	8.00	79.00	24.25	34.00	9011840065000
0.2598		6.60	8.00	79.00	24.10	34.00	9011840066000
0.2638		6.70	8.00	79.00	23.95	34.00	9011840067000
0.2657	17/64 H	6.75	8.00	79.00	23.88	34.00	9011840067500
0.2677		6.80	8.00	79.00	23.80	34.00	9011840068000
0.2717	I	6.90	8.00	79.00	23.65	34.00	9011840069000
0.2756		7.00	8.00	79.00	23.50	34.00	9011840070000
0.2795		7.10	8.00	79.00	30.35	41.00	9011840071000
0.2811	9/32 K	7.14	8.00	79.00	30.29	41.00	9011840071400
0.2835		7.20	8.00	79.00	30.20	41.00	9011840072000
0.2874		7.30	8.00	79.00	30.05	41.00	9011840073000
0.2913		7.40	8.00	79.00	29.90	41.00	9011840074000
0.2953		7.50	8.00	79.00	29.75	41.00	9011840075000
0.2969	19/64	7.54	8.00	79.00	29.69	41.00	9011840075400
0.2992		7.60	8.00	79.00	29.60	41.00	9011840076000
0.3031		7.70	8.00	79.00	29.45	41.00	9011840077000
0.3071		7.80	8.00	79.00	29.30	41.00	9011840078000
0.3110		7.90	8.00	79.00	29.15	41.00	9011840079000
0.3126	5/16	7.94	8.00	79.00	29.09	41.00	9011840079400
0.3150		8.00	8.00	79.00	29.00	41.00	9011840080000
0.3189		8.10	10.00	89.00	34.85	47.00	9011840081000
0.3228	P	8.20	10.00	89.00	34.70	47.00	9011840082000
0.3268		8.30	10.00	89.00	34.55	47.00	9011840083000
0.3280	21/64	8.33	10.00	89.00	34.51	47.00	9011840083300
0.3307		8.40	10.00	89.00	34.40	47.00	9011840084000
0.3346		8.50	10.00	89.00	34.25	47.00	9011840085000
0.3386		8.60	10.00	89.00	34.10	47.00	9011840086000
0.3425		8.70	10.00	89.00	33.95	47.00	9011840087000
0.3437	11/32	8.73	10.00	89.00	33.91	47.00	9011840087300
0.3465		8.80	10.00	89.00	33.80	47.00	9011840088000
0.3504		8.90	10.00	89.00	33.65	47.00	9011840089000
0.3543		9.00	10.00	89.00	33.50	47.00	9011840090000
0.3583		9.10	10.00	89.00	33.35	47.00	9011840091000
0.3594	23/64	9.13	10.00	89.00	33.31	47.00	9011840091300
0.3622		9.20	10.00	89.00	33.20	47.00	9011840092000
0.3661		9.30	10.00	89.00	33.05	47.00	9011840093000
0.3701		9.40	10.00	89.00	32.90	47.00	9011840094000
0.3740		9.50	10.00	89.00	32.75	47.00	9011840095000
0.3748	3/8	9.52	10.00	89.00	32.72	47.00	9011840095200
0.3780		9.60	10.00	89.00	32.60	47.00	9011840096000

3xD Ratio drills

Series no. **1184**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3819		9.70	10.00	89.00	32.45	47.00	9011840097000
0.3858	W	9.80	10.00	89.00	32.30	47.00	9011840098000
0.3898		9.90	10.00	89.00	32.15	47.00	9011840099000
0.3906	25/64	9.92	10.00	89.00	32.12	47.00	9011840099200
0.3937		10.00	10.00	89.00	32.00	47.00	9011840100000
0.3976		10.10	12.00	102.00	39.85	55.00	9011840101000
0.4016		10.20	12.00	102.00	39.70	55.00	9011840102000
0.4055		10.30	12.00	102.00	39.55	55.00	9011840103000
0.4063	13/32	10.32	12.00	102.00	39.52	55.00	9011840103200
0.4094		10.40	12.00	102.00	39.40	55.00	9011840104000
0.4134		10.50	12.00	102.00	39.25	55.00	9011840105000
0.4173		10.60	12.00	102.00	39.10	55.00	9011840106000
0.4213		10.70	12.00	102.00	38.95	55.00	9011840107000
0.4220	27/64	10.72	12.00	102.00	38.92	55.00	9011840107200
0.4252		10.80	12.00	102.00	38.80	55.00	9011840108000
0.4291		10.90	12.00	102.00	38.65	55.00	9011840109000
0.4331		11.00	12.00	102.00	38.50	55.00	9011840110000
0.4370		11.10	12.00	102.00	38.35	55.00	9011840111000
0.4374	7/16	11.11	12.00	102.00	38.34	55.00	9011840111100
0.4409		11.20	12.00	102.00	38.20	55.00	9011840112000
0.4449		11.30	12.00	102.00	38.05	55.00	9011840113000
0.4488		11.40	12.00	102.00	37.90	55.00	9011840114000
0.4528		11.50	12.00	102.00	37.75	55.00	9011840115000
0.4531	29/64	11.51	12.00	102.00	37.74	55.00	9011840115100
0.4567		11.60	12.00	102.00	37.60	55.00	9011840116000
0.4606		11.70	12.00	102.00	37.45	55.00	9011840117000
0.4646		11.80	12.00	102.00	37.30	55.00	9011840118000
0.4685		11.90	12.00	102.00	37.15	55.00	9011840119000
0.4689	15/32	11.91	12.00	102.00	37.14	55.00	9011840119100
0.4724		12.00	12.00	102.00	37.00	55.00	9011840120000
0.4764		12.10	14.00	107.00	41.85	60.00	9011840121000
0.4803		12.20	14.00	107.00	41.70	60.00	9011840122000
0.4843	31/64	12.30	14.00	107.00	41.55	60.00	9011840123000
0.4882		12.40	14.00	107.00	41.40	60.00	9011840124000
0.4921		12.50	14.00	107.00	41.25	60.00	9011840125000
0.4961		12.60	14.00	107.00	41.10	60.00	9011840126000
0.5000	1/2	12.70	14.00	107.00	40.95	60.00	9011840127000
0.5039		12.80	14.00	107.00	40.80	60.00	9011840128000
0.5118		13.00	14.00	107.00	40.50	60.00	9011840130000
0.5157	33/64	13.10	14.00	107.00	40.35	60.00	9011840131000
0.5197		13.20	14.00	107.00	40.20	60.00	9011840132000
0.5236		13.30	14.00	107.00	40.05	60.00	9011840133000
0.5315		13.50	14.00	107.00	39.75	60.00	9011840135000
0.5354		13.60	14.00	107.00	39.60	60.00	9011840136000
0.5394		13.70	14.00	107.00	39.45	60.00	9011840137000
0.5433		13.80	14.00	107.00	39.30	60.00	9011840138000
0.5469	35/64	13.89	14.00	107.00	39.17	60.00	9011840138900

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.5472		13.90	14.00	107.00	39.15	60.00	9011840139000
0.5512		14.00	14.00	107.00	39.00	60.00	9011840140000
0.5591		14.20	16.00	115.00	43.70	65.00	9011840142000
0.5626	9/16	14.29	16.00	115.00	43.57	65.00	9011840142900
0.5630		14.30	16.00	115.00	43.55	65.00	9011840143000
0.5669		14.40	16.00	115.00	43.40	65.00	9011840144000
0.5709		14.50	16.00	115.00	43.25	65.00	9011840145000
0.5748		14.60	16.00	115.00	43.10	65.00	9011840146000
0.5787		14.70	16.00	115.00	42.95	65.00	9011840147000
0.5827		14.80	16.00	115.00	42.80	65.00	9011840148000
0.5906		15.00	16.00	115.00	42.50	65.00	9011840150000
0.5945		15.10	16.00	115.00	42.35	65.00	9011840151000
0.5984		15.20	16.00	115.00	42.20	65.00	9011840152000
0.6063		15.40	16.00	115.00	41.90	65.00	9011840154000
0.6094	39/64	15.48	16.00	115.00	41.78	65.00	9011840154800
0.6102		15.50	16.00	115.00	41.75	65.00	9011840155000
0.6142		15.60	16.00	115.00	41.60	65.00	9011840156000
0.6181		15.70	16.00	115.00	41.45	65.00	9011840157000
0.6220		15.80	16.00	115.00	41.30	65.00	9011840158000
0.6248	5/8	15.87	16.00	115.00	41.20	65.00	9011840158700
0.6260		15.90	16.00	115.00	41.15	65.00	9011840159000
0.6299		16.00	16.00	115.00	41.00	65.00	9011840160000
0.6339		16.10	18.00	123.00	48.85	73.00	9011840161000
0.6378		16.20	18.00	123.00	48.70	73.00	9011840162000
0.6406	41/64	16.27	18.00	123.00	48.60	73.00	9011840162700
0.6417		16.30	18.00	123.00	48.55	73.00	9011840163000
0.6496		16.50	18.00	123.00	48.25	73.00	9011840165000
0.6614		16.80	18.00	123.00	47.80	73.00	9011840168000
0.6693		17.00	18.00	123.00	47.50	73.00	9011840170000
0.6811		17.30	18.00	123.00	47.05	73.00	9011840173000
0.6874	11/16	17.46	18.00	123.00	46.81	73.00	9011840174600
0.6890		17.50	18.00	123.00	46.75	73.00	9011840175000
0.6969		17.70	18.00	123.00	46.45	73.00	9011840177000
0.7008		17.80	18.00	123.00	46.30	73.00	9011840178000
0.7031	45/64	17.86	18.00	123.00	46.21	73.00	9011840178600
0.7087		18.00	18.00	123.00	46.00	73.00	9011840180000
0.7126		18.10	20.00	131.00	51.85	79.00	9011840181000
0.7205		18.30	20.00	131.00	51.55	79.00	9011840183000
0.7283		18.50	20.00	131.00	51.25	79.00	9011840185000
0.7343	47/64	18.65	20.00	131.00	51.03	79.00	9011840186500
0.7480		19.00	20.00	131.00	50.50	79.00	9011840190000
0.7500	3/4	19.05	20.00	131.00	50.43	79.00	9011840190500
0.7559		19.20	20.00	131.00	50.20	79.00	9011840192000
0.7677		19.50	20.00	131.00	49.75	79.00	9011840195000
0.7717		19.60	20.00	131.00	49.60	79.00	9011840196000
0.7795		19.80	20.00	131.00	49.30	79.00	9011840198000
0.7874		20.00	20.00	131.00	49.00	79.00	9011840200000

3xD Ratio drills

Series no. **5514**

Tool material **Solid Carbide**

Surface **F**

3xD Cutting depth | RT 100 U Type | 140° Point angle | m7 Tolerance on Ø | Without Internal coolant | HA Shank form | R Cutting direction | GUHRING SELECT

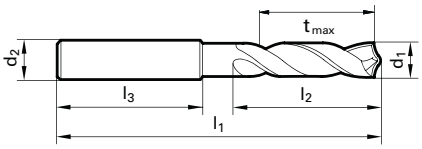
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • facet point grinding • main cutting edge form straight • optimized cutting geometry

structural and case hardened steels • free-cutting steels, heat treatable steels • steels (alloyed/unalloyed) up to 1200 N/mm² • cast materials • bronze, brass • high-alloyed AlSi-alloys

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 552

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	62.00	15.50	20.00	9055140030000
0.1220		3.10	6.00	62.00	15.35	20.00	9055140031000
0.1248	1/8	3.18	6.00	62.00	15.23	20.00	9055140031700
0.1260		3.20	6.00	62.00	15.20	20.00	9055140032000
0.1280		3.25	6.00	62.00	15.13	20.00	9055140032500
0.1299		3.30	6.00	62.00	15.05	20.00	9055140033000
0.1339		3.40	6.00	62.00	14.90	20.00	9055140034000
0.1378		3.50	6.00	62.00	14.75	20.00	9055140035000
0.1406	9/64 #28	3.57	6.00	62.00	14.65	20.00	9055140035700
0.1417		3.60	6.00	62.00	14.60	20.00	9055140036000
0.1457		3.70	6.00	62.00	14.45	20.00	9055140037000
0.1496	#25	3.80	6.00	66.00	18.30	24.00	9055140038000
0.1535		3.90	6.00	66.00	18.15	24.00	9055140039000
0.1563	5/32	3.97	6.00	66.00	18.05	24.00	9055140039700
0.1575		4.00	6.00	66.00	18.00	24.00	9055140040000
0.1591	#21	4.04	6.00	66.00	17.94	24.00	9055140040400
0.1614		4.10	6.00	66.00	17.85	24.00	9055140041000
0.1654		4.20	6.00	66.00	17.70	24.00	9055140042000
0.1693	#18	4.30	6.00	66.00	17.55	24.00	9055140043000
0.1720	11/64	4.37	6.00	66.00	17.45	24.00	9055140043700
0.1732		4.40	6.00	66.00	17.40	24.00	9055140044000
0.1772	#16	4.50	6.00	66.00	17.25	24.00	9055140045000
0.1811		4.60	6.00	66.00	17.10	24.00	9055140046000
0.1831		4.65	6.00	66.00	17.03	24.00	9055140046500
0.1850	#13	4.70	6.00	66.00	16.95	24.00	9055140047000
0.1874	3/16	4.76	6.00	66.00	20.86	28.00	9055140047600
0.1890	#12	4.80	6.00	66.00	20.80	28.00	9055140048000
0.1929		4.90	6.00	66.00	20.65	28.00	9055140049000
0.1969		5.00	6.00	66.00	20.50	28.00	9055140050000
0.2008		5.10	6.00	66.00	20.35	28.00	9055140051000
0.2012	#7	5.11	6.00	66.00	20.34	28.00	9055140051100
0.2031	13/64	5.16	6.00	66.00	20.26	28.00	9055140051600
0.2047		5.20	6.00	66.00	20.20	28.00	9055140052000
0.2067		5.25	6.00	66.00	20.13	28.00	9055140052500
0.2087		5.30	6.00	66.00	20.05	28.00	9055140053000
0.2126		5.40	6.00	66.00	19.90	28.00	9055140054000
0.2130	#3	5.41	6.00	66.00	19.89	28.00	9055140054100
0.2165		5.50	6.00	66.00	19.75	28.00	9055140055000
0.2185		5.55	6.00	66.00	19.68	28.00	9055140055500
0.2189	7/32	5.56	6.00	66.00	19.66	28.00	9055140055600
0.2205		5.60	6.00	66.00	19.60	28.00	9055140056000
0.2244		5.70	6.00	66.00	19.45	28.00	9055140057000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2283		5.80	6.00	66.00	19.30	28.00	9055140058000
0.2323		5.90	6.00	66.00	19.15	28.00	9055140059000
0.2343	15/64	5.95	6.00	66.00	19.08	28.00	9055140059500
0.2362		6.00	6.00	66.00	19.00	28.00	9055140060000
0.2402		6.10	8.00	79.00	24.85	34.00	9055140061000
0.2441		6.20	8.00	79.00	24.70	34.00	9055140062000
0.2480		6.30	8.00	79.00	24.55	34.00	9055140063000
0.2500	1/4 E	6.35	8.00	79.00	24.48	34.00	9055140063500
0.2520		6.40	8.00	79.00	24.40	34.00	9055140064000
0.2559		6.50	8.00	79.00	24.25	34.00	9055140065000
0.2571	F	6.53	8.00	79.00	24.21	34.00	9055140065300
0.2598		6.60	8.00	79.00	24.10	34.00	9055140066000
0.2638		6.70	8.00	79.00	23.95	34.00	9055140067000
0.2657	17/64 H	6.75	8.00	79.00	23.88	34.00	9055140067500
0.2677		6.80	8.00	79.00	23.80	34.00	9055140068000
0.2717	I	6.90	8.00	79.00	23.65	34.00	9055140069000
0.2756		7.00	8.00	79.00	23.50	34.00	9055140070000
0.2795		7.10	8.00	79.00	30.35	41.00	9055140071000
0.2811	9/32 K	7.14	8.00	79.00	30.29	41.00	9055140071400
0.2835		7.20	8.00	79.00	30.20	41.00	9055140072000
0.2874		7.30	8.00	79.00	30.05	41.00	9055140073000
0.2913		7.40	8.00	79.00	29.90	41.00	9055140074000
0.2953		7.50	8.00	79.00	29.75	41.00	9055140075000
0.2969	19/64	7.54	8.00	79.00	29.69	41.00	9055140075400
0.2992		7.60	8.00	79.00	29.60	41.00	9055140076000
0.3031		7.70	8.00	79.00	29.45	41.00	9055140077000
0.3071		7.80	8.00	79.00	29.30	41.00	9055140078000
0.3110		7.90	8.00	79.00	29.15	41.00	9055140079000
0.3125	5/16	7.94	8.00	79.00	29.09	41.00	9055140079400
0.3150		8.00	8.00	79.00	29.00	41.00	9055140080000
0.3189		8.10	10.00	89.00	34.85	47.00	9055140081000
0.3228	P	8.20	10.00	89.00	34.70	47.00	9055140082000
0.3268		8.30	10.00	89.00	34.55	47.00	9055140083000
0.3280	21/64	8.33	10.00	89.00	34.51	47.00	9055140083300
0.3307		8.40	10.00	89.00	34.40	47.00	9055140084000
0.3346		8.50	10.00	89.00	34.25	47.00	9055140085000
0.3386		8.60	10.00	89.00	34.10	47.00	9055140086000
0.3425		8.70	10.00	89.00	33.95	47.00	9055140087000
0.3437	11/32	8.73	10.00	89.00	33.91	47.00	9055140087300
0.3465		8.80	10.00	89.00	33.80	47.00	9055140088000
0.3504		8.90	10.00	89.00	33.65	47.00	9055140089000
0.3543		9.00	10.00	89.00	33.50	47.00	9055140090000

3xD Ratio drills

Series no. **5514**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3583		9.10	10.00	89.00	33.35	47.00	9055140091000
0.3594	23/64	9.13	10.00	89.00	33.31	47.00	9055140091300
0.3622		9.20	10.00	89.00	33.20	47.00	9055140092000
0.3642		9.25	10.00	89.00	33.13	47.00	9055140092500
0.3661		9.30	10.00	89.00	33.05	47.00	9055140093000
0.3677	U	9.34	10.00	89.00	32.99	47.00	9055140093400
0.3701		9.40	10.00	89.00	32.90	47.00	9055140094000
0.3740		9.50	10.00	89.00	32.75	47.00	9055140095000
0.3750	3/8	9.52	10.00	89.00	32.72	47.00	9055140095200
0.3780		9.60	10.00	89.00	32.60	47.00	9055140096000
0.3819		9.70	10.00	89.00	32.45	47.00	9055140097000
0.3858	W	9.80	10.00	89.00	32.30	47.00	9055140098000
0.3898		9.90	10.00	89.00	32.15	47.00	9055140099000
0.3906	25/64	9.92	10.00	89.00	32.12	47.00	9055140099200
0.3937		10.00	10.00	89.00	32.00	47.00	9055140100000
0.3976		10.10	12.00	102.00	39.85	55.00	9055140101000
0.4016		10.20	12.00	102.00	39.70	55.00	9055140102000
0.4055		10.30	12.00	102.00	39.55	55.00	9055140103000
0.4063	13/32	10.32	12.00	102.00	39.52	55.00	9055140103200
0.4094		10.40	12.00	102.00	39.40	55.00	9055140104000
0.4134		10.50	12.00	102.00	39.25	55.00	9055140105000
0.4173		10.60	12.00	102.00	39.10	55.00	9055140106000
0.4213		10.70	12.00	102.00	38.95	55.00	9055140107000
0.4220	27/64	10.72	12.00	102.00	38.92	55.00	9055140107200
0.4252		10.80	12.00	102.00	38.80	55.00	9055140108000
0.4291		10.90	12.00	102.00	38.65	55.00	9055140109000
0.4331		11.00	12.00	102.00	38.50	55.00	9055140110000
0.4370		11.10	12.00	102.00	38.35	55.00	9055140111000
0.4374	7/16	11.11	12.00	102.00	38.34	55.00	9055140111100
0.4409		11.20	12.00	102.00	38.20	55.00	9055140112000
0.4449		11.30	12.00	102.00	38.05	55.00	9055140113000
0.4488		11.40	12.00	102.00	37.90	55.00	9055140114000
0.4528		11.50	12.00	102.00	37.75	55.00	9055140115000
0.4531	29/64	11.51	12.00	102.00	37.74	55.00	9055140115100
0.4567		11.60	12.00	102.00	37.60	55.00	9055140116000
0.4606		11.70	12.00	102.00	37.45	55.00	9055140117000
0.4646		11.80	12.00	102.00	37.30	55.00	9055140118000
0.4685		11.90	12.00	102.00	37.15	55.00	9055140119000
0.4689	15/32	11.91	12.00	102.00	37.14	55.00	9055140119100
0.4724		12.00	12.00	102.00	37.00	55.00	9055140120000
0.4764		12.10	14.00	107.00	41.85	60.00	9055140121000
0.4803		12.20	14.00	107.00	41.70	60.00	9055140122000
0.4843	31/64	12.30	14.00	107.00	41.55	60.00	9055140123000
0.4882		12.40	14.00	107.00	41.40	60.00	9055140124000
0.4921		12.50	14.00	107.00	41.25	60.00	9055140125000
0.4961		12.60	14.00	107.00	41.10	60.00	9055140126000
0.5000	1/2	12.70	14.00	107.00	40.95	60.00	9055140127000
0.5039		12.80	14.00	107.00	40.80	60.00	9055140128000
0.5079		12.90	14.00	107.00	40.65	60.00	9055140129000
0.5118		13.00	14.00	107.00	40.50	60.00	9055140130000
0.5157	33/64	13.10	14.00	107.00	40.35	60.00	9055140131000
0.5197		13.20	14.00	107.00	40.20	60.00	9055140132000
0.5236		13.30	14.00	107.00	40.05	60.00	9055140133000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.5276		13.40	14.00	107.00	39.90	60.00	9055140134000
0.5311	17/32	13.49	14.00	107.00	39.77	60.00	9055140134900
0.5315		13.50	14.00	107.00	39.75	60.00	9055140135000
0.5354		13.60	14.00	107.00	39.60	60.00	9055140136000
0.5394		13.70	14.00	107.00	39.45	60.00	9055140137000
0.5433		13.80	14.00	107.00	39.30	60.00	9055140138000
0.5469	35/64	13.89	14.00	107.00	39.17	60.00	9055140138900
0.5472		13.90	14.00	107.00	39.15	60.00	9055140139000
0.5512		14.00	14.00	107.00	39.00	60.00	9055140140000
0.5551		14.10	16.00	115.00	43.85	65.00	9055140141000
0.5591		14.20	16.00	115.00	43.70	65.00	9055140142000
0.5626	9/16	14.29	16.00	115.00	43.57	65.00	9055140142900
0.5630		14.30	16.00	115.00	43.55	65.00	9055140143000
0.5669		14.40	16.00	115.00	43.40	65.00	9055140144000
0.5709		14.50	16.00	115.00	43.25	65.00	9055140145000
0.5748		14.60	16.00	115.00	43.10	65.00	9055140146000
0.5780	37/64	14.68	16.00	115.00	42.98	65.00	9055140146800
0.5787		14.70	16.00	115.00	42.95	65.00	9055140147000
0.5827		14.80	16.00	115.00	42.80	65.00	9055140148000
0.5866		14.90	16.00	115.00	42.65	65.00	9055140149000
0.5906		15.00	16.00	115.00	42.50	65.00	9055140150000
0.5937	19/32	15.08	16.00	115.00	42.38	65.00	9055140150800
0.5945		15.10	16.00	115.00	42.35	65.00	9055140151000
0.5984		15.20	16.00	115.00	42.20	65.00	9055140152000
0.6024		15.30	16.00	115.00	42.05	65.00	9055140153000
0.6063		15.40	16.00	115.00	41.90	65.00	9055140154000
0.6094	39/64	15.48	16.00	115.00	41.78	65.00	9055140154800
0.6102		15.50	16.00	115.00	41.75	65.00	9055140155000
0.6142		15.60	16.00	115.00	41.60	65.00	9055140156000
0.6181		15.70	16.00	115.00	41.45	65.00	9055140157000
0.6220		15.80	16.00	115.00	41.30	65.00	9055140158000
0.6250	5/8	15.87	16.00	115.00	41.20	65.00	9055140158700
0.6260		15.90	16.00	115.00	41.15	65.00	9055140159000
0.6299		16.00	16.00	115.00	41.00	65.00	9055140160000
0.6406	41/64	16.27	18.00	123.00	48.60	73.00	9055140162700
0.6496		16.50	18.00	123.00	48.25	73.00	9055140165000
0.6563	21/32	16.67	18.00	123.00	48.00	73.00	9055140166700
0.6693		17.00	18.00	123.00	47.50	73.00	9055140170000
0.6720	43/64	17.07	18.00	123.00	47.40	73.00	9055140170700
0.6874	11/16	17.46	18.00	123.00	46.81	73.00	9055140174600
0.6890		17.50	18.00	123.00	46.75	73.00	9055140175000
0.7031	45/64	17.86	18.00	123.00	46.21	73.00	9055140178600
0.7087		18.00	18.00	123.00	46.00	73.00	9055140180000
0.7189	23/32	18.26	20.00	131.00	51.61	79.00	9055140182600
0.7283		18.50	20.00	131.00	51.25	79.00	9055140185000
0.7480		19.00	20.00	131.00	50.50	79.00	9055140190000
0.7500	3/4	19.05	20.00	131.00	50.43	79.00	9055140190500
0.7579		19.25	20.00	131.00	50.13	79.00	9055140192500
0.7657	49/64	19.45	20.00	131.00	49.83	79.00	9055140194460
0.7677		19.50	20.00	131.00	49.75	79.00	9055140195000
0.7811	25/32	19.84	20.00	131.00	49.24	79.00	9055140198400
0.7874		20.00	20.00	131.00	49.00	79.00	9055140200000

3xD Ratio drills

Series no. **5741**

3xD	RT 100 US	140°	m7	Without Internal coolant	HA	R
Cutting depth	Type	Point angle	Tolerance on Ø		Shank form	Cutting direction

Tool material: **Solid Carbide**

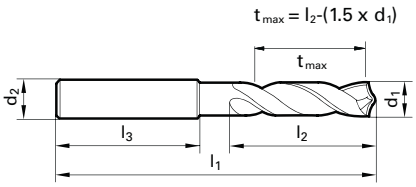
Surface: a

P	Steel	
M	Stainless steel	●
K	Cast iron	
N	Aluminum	
S	Titanium alloys	●
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • main cutting edge form concave • optimized cutting geometry

stainless/acid-/heat-resistant steels • alloyed and high tensile steels up to 1600 N/mm² • Inconel, Hastelloy, Monel • Titanium and Titanium alloys





Speeds and feeds information on pg. 562

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	62.00	15.50	20.00	9057410030000
0.1220		3.10	6.00	62.00	15.35	20.00	9057410031000
0.1248	1/8	3.17	6.00	62.00	15.25	20.00	9057410031700
0.1260		3.20	6.00	62.00	15.20	20.00	9057410032000
0.1280		3.25	6.00	62.00	15.13	20.00	9057410032500
0.1299		3.30	6.00	62.00	15.05	20.00	9057410033000
0.1339		3.40	6.00	62.00	14.90	20.00	9057410034000
0.1378		3.50	6.00	62.00	14.75	20.00	9057410035000
0.1406	9/64 #28	3.57	6.00	62.00	14.65	20.00	9057410035700
0.1417		3.60	6.00	62.00	14.60	20.00	9057410036000
0.1457		3.70	6.00	62.00	14.45	20.00	9057410037000
0.1496		3.80	6.00	66.00	18.30	24.00	9057410038000
0.1535	3 9/10	3.90	6.00	66.00	18.15	24.00	9057410039000
0.1563	5/32	3.97	6.00	66.00	18.05	24.00	9057410039700
0.1575		4.00	6.00	66.00	18.00	24.00	9057410040000
0.1614		4.10	6.00	66.00	17.85	24.00	9057410041000
0.1654		4.20	6.00	66.00	17.70	24.00	9057410042000
0.1693		4.30	6.00	66.00	17.55	24.00	9057410043000
0.1720	11/64	4.37	6.00	66.00	17.45	24.00	9057410043700
0.1732		4.40	6.00	66.00	17.40	24.00	9057410044000
0.1772		4.50	6.00	66.00	17.25	24.00	9057410045000
0.1811		4.60	6.00	66.00	17.10	24.00	9057410046000
0.1831		4.65	6.00	66.00	17.03	24.00	9057410046500
0.1850		4.70	6.00	66.00	16.95	24.00	9057410047000
0.1874	3/16	4.76	6.00	66.00	20.86	28.00	9057410047600
0.1890		4.80	6.00	66.00	20.80	28.00	9057410048000
0.1929		4.90	6.00	66.00	20.65	28.00	9057410049000
0.1969		5.00	6.00	66.00	20.50	28.00	9057410050000
0.2008		5.10	6.00	66.00	20.35	28.00	9057410051000
0.2031	13/64	5.16	6.00	66.00	20.26	28.00	9057410051600
0.2047		5.20	6.00	66.00	20.20	28.00	9057410052000
0.2087		5.30	6.00	66.00	20.05	28.00	9057410053000
0.2126		5.40	6.00	66.00	19.90	28.00	9057410054000
0.2165		5.50	6.00	66.00	19.75	28.00	9057410055000
0.2185		5.55	6.00	66.00	19.68	28.00	9057410055500
0.2189	7/32	5.56	6.00	66.00	19.66	28.00	9057410055600
0.2205		5.60	6.00	66.00	19.60	28.00	9057410056000
0.2244		5.70	6.00	66.00	19.45	28.00	9057410057000
0.2283		5.80	6.00	66.00	19.30	28.00	9057410058000
0.2323		5.90	6.00	66.00	19.15	28.00	9057410059000
0.2343	15/64	5.95	6.00	66.00	19.08	28.00	9057410059500

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2362		6.00	6.00	66.00	19.00	28.00	9057410060000
0.2402		6.10	8.00	79.00	24.85	34.00	9057410061000
0.2441		6.20	8.00	79.00	24.70	34.00	9057410062000
0.2480		6.30	8.00	79.00	24.55	34.00	9057410063000
0.2500	1/4 E	6.35	8.00	79.00	24.48	34.00	9057410063500
0.2520		6.40	8.00	79.00	24.40	34.00	9057410064000
0.2559		6.50	8.00	79.00	24.25	34.00	9057410065000
0.2598		6.60	8.00	79.00	24.10	34.00	9057410066000
0.2638		6.70	8.00	79.00	23.95	34.00	9057410067000
0.2657	17/64 H	6.75	8.00	79.00	23.88	34.00	9057410067500
0.2677		6.80	8.00	79.00	23.80	34.00	9057410068000
0.2717	I	6.90	8.00	79.00	23.65	34.00	9057410069000
0.2756		7.00	8.00	79.00	23.50	34.00	9057410070000
0.2795		7.10	8.00	79.00	30.35	41.00	9057410071000
0.2811	9/32 K	7.14	8.00	79.00	30.29	41.00	9057410071400
0.2835		7.20	8.00	79.00	30.20	41.00	9057410072000
0.2874		7.30	8.00	79.00	30.05	41.00	9057410073000
0.2913		7.40	8.00	79.00	29.90	41.00	9057410074000
0.2953		7.50	8.00	79.00	29.75	41.00	9057410075000
0.2969	19/64	7.54	8.00	79.00	29.69	41.00	9057410075400
0.2992		7.60	8.00	79.00	29.60	41.00	9057410076000
0.3031		7.70	8.00	79.00	29.45	41.00	9057410077000
0.3071		7.80	8.00	79.00	29.30	41.00	9057410078000
0.3110		7.90	8.00	79.00	29.15	41.00	9057410079000
0.3126	5/16	7.94	8.00	79.00	29.09	41.00	9057410079400
0.3150		8.00	8.00	79.00	29.00	41.00	9057410080000
0.3189		8.10	10.00	89.00	34.85	47.00	9057410081000
0.3228	P	8.20	10.00	89.00	34.70	47.00	9057410082000
0.3268		8.30	10.00	89.00	34.55	47.00	9057410083000
0.3280	21/64	8.33	10.00	89.00	34.51	47.00	9057410083300
0.3307		8.40	10.00	89.00	34.40	47.00	9057410084000
0.3346		8.50	10.00	89.00	34.25	47.00	9057410085000
0.3386		8.60	10.00	89.00	34.10	47.00	9057410086000
0.3425		8.70	10.00	89.00	33.95	47.00	9057410087000
0.3437	11/32	8.73	10.00	89.00	33.91	47.00	9057410087300
0.3465		8.80	10.00	89.00	33.80	47.00	9057410088000
0.3504		8.90	10.00	89.00	33.65	47.00	9057410089000
0.3543		9.00	10.00	89.00	33.50	47.00	9057410090000
0.3583		9.10	10.00	89.00	33.35	47.00	9057410091000
0.3594	23/64	9.13	10.00	89.00	33.31	47.00	9057410091300
0.3622		9.20	10.00	89.00	33.20	47.00	9057410092000

3xD Ratio drills

Series no. **5741**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3642		9.25	10.00	89.00	33.13	47.00	9057410092500
0.3661		9.30	10.00	89.00	33.05	47.00	9057410093000
0.3701		9.40	10.00	89.00	32.90	47.00	9057410094000
0.3740		9.50	10.00	89.00	32.75	47.00	9057410095000
0.3748	3/8	9.52	10.00	89.00	32.72	47.00	9057410095200
0.3780		9.60	10.00	89.00	32.60	47.00	9057410096000
0.3819		9.70	10.00	89.00	32.45	47.00	9057410097000
0.3858	W	9.80	10.00	89.00	32.30	47.00	9057410098000
0.3898		9.90	10.00	89.00	32.15	47.00	9057410099000
0.3906	25/64	9.92	10.00	89.00	32.12	47.00	9057410099200
0.3937		10.00	10.00	89.00	32.00	47.00	9057410100000
0.3976		10.10	12.00	102.00	39.85	55.00	9057410101000
0.4016		10.20	12.00	102.00	39.70	55.00	9057410102000
0.4055		10.30	12.00	102.00	39.55	55.00	9057410103000
0.4063	13/32	10.32	12.00	102.00	39.52	55.00	9057410103200
0.4094		10.40	12.00	102.00	39.40	55.00	9057410104000
0.4134		10.50	12.00	102.00	39.25	55.00	9057410105000
0.4173		10.60	12.00	102.00	39.10	55.00	9057410106000
0.4220	27/64	10.72	12.00	102.00	38.92	55.00	9057410107200
0.4252		10.80	12.00	102.00	38.80	55.00	9057410108000
0.4291		10.90	12.00	102.00	38.65	55.00	9057410109000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4331		11.00	12.00	102.00	38.50	55.00	9057410110000
0.4370		11.10	12.00	102.00	38.35	55.00	9057410111000
0.4374	7/16	11.11	12.00	102.00	38.34	55.00	9057410111100
0.4409		11.20	12.00	102.00	38.20	55.00	9057410112000
0.4449		11.30	12.00	102.00	38.05	55.00	9057410113000
0.4488		11.40	12.00	102.00	37.90	55.00	9057410114000
0.4528		11.50	12.00	102.00	37.75	55.00	9057410115000
0.4531	29/64	11.51	12.00	102.00	37.74	55.00	9057410115100
0.4567		11.60	12.00	102.00	37.60	55.00	9057410116000
0.4606		11.70	12.00	102.00	37.45	55.00	9057410117000
0.4646		11.80	12.00	102.00	37.30	55.00	9057410118000
0.4685		11.90	12.00	102.00	37.15	55.00	9057410119000
0.4689	15/32	11.91	12.00	102.00	37.14	55.00	9057410119100
0.4724		12.00	12.00	102.00	37.00	55.00	9057410120000
0.4764		12.10	14.00	107.00	41.85	60.00	9057410121000
0.4803		12.20	14.00	107.00	41.70	60.00	9057410122000
0.4843	31/64	12.30	14.00	107.00	41.55	60.00	9057410123000
0.4882		12.40	14.00	107.00	41.40	60.00	9057410124000
0.4921		12.50	14.00	107.00	41.25	60.00	9057410125000
0.4961		12.60	14.00	107.00	41.10	60.00	9057410126000
0.5000	1/2	12.70	14.00	107.00	40.95	60.00	9057410127000

3xD Ratio drills

Series no. **8524**

3xD	RT 100 HF	140°	m7	Without Internal coolant	HA	R
Cutting depth	Type	Point angle	Tolerance on Ø		Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: Y

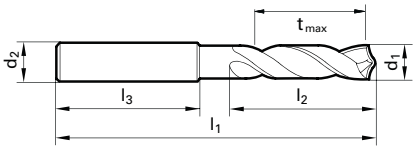
P	Steel	●
M	Stainless steel	
K	Cast iron	
N	Aluminum	
S	Titanium alloys	●
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • main cutting edge is slightly concave • optimized cutting geometry

alloyed and high tensile steels up to 1600 N/mm² • Inconel, Hastelloy, Monel • Titanium and Titanium alloys

$t_{max} = l_2-(1.5 \times d_1)$





Speeds and feeds information on pg. 575

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	62.00	15.50	20.00	9085240030000
0.1220		3.10	6.00	62.00	15.35	20.00	9085240031000
0.1248	1/8	3.17	6.00	62.00	15.25	20.00	9085240031700
0.1260		3.20	6.00	62.00	15.20	20.00	9085240032000
0.1280		3.25	6.00	62.00	15.13	20.00	9085240032500
0.1299		3.30	6.00	62.00	15.05	20.00	9085240033000
0.1339		3.40	6.00	62.00	14.90	20.00	9085240034000
0.1378		3.50	6.00	62.00	14.75	20.00	9085240035000
0.1406	9/64 #28	3.57	6.00	62.00	14.65	20.00	9085240035700
0.1417		3.60	6.00	62.00	14.60	20.00	9085240036000
0.1457		3.70	6.00	62.00	14.45	20.00	9085240037000
0.1496	#25	3.80	6.00	66.00	18.30	24.00	9085240038000
0.1535		3.90	6.00	66.00	18.15	24.00	9085240039000
0.1563	5/32	3.97	6.00	66.00	18.05	24.00	9085240039700
0.1575		4.00	6.00	66.00	18.00	24.00	9085240040000
0.1614		4.10	6.00	66.00	17.85	24.00	9085240041000
0.1654		4.20	6.00	66.00	17.70	24.00	9085240042000
0.1693	#18	4.30	6.00	66.00	17.55	24.00	9085240043000
0.1720	11/64	4.37	6.00	66.00	17.45	24.00	9085240043700
0.1732		4.40	6.00	66.00	17.40	24.00	9085240044000
0.1772	#16	4.50	6.00	66.00	17.25	24.00	9085240045000
0.1811		4.60	6.00	66.00	17.10	24.00	9085240046000
0.1831		4.65	6.00	66.00	17.03	24.00	9085240046500
0.1850	#13	4.70	6.00	66.00	16.95	24.00	9085240047000
0.1874	3/16	4.76	6.00	66.00	20.86	28.00	9085240047600
0.1890	#12	4.80	6.00	66.00	20.80	28.00	9085240048000
0.1929		4.90	6.00	66.00	20.65	28.00	9085240049000
0.1969		5.00	6.00	66.00	20.50	28.00	9085240050000
0.2008		5.10	6.00	66.00	20.35	28.00	9085240051000
0.2031	13/64	5.16	6.00	66.00	20.26	28.00	9085240051600
0.2047		5.20	6.00	66.00	20.20	28.00	9085240052000
0.2087		5.30	6.00	66.00	20.05	28.00	9085240053000
0.2126		5.40	6.00	66.00	19.90	28.00	9085240054000
0.2165		5.50	6.00	66.00	19.75	28.00	9085240055000
0.2185		5.55	6.00	66.00	19.68	28.00	9085240055500
0.2189	7/32	5.56	6.00	66.00	19.66	28.00	9085240055600
0.2205		5.60	6.00	66.00	19.60	28.00	9085240056000
0.2244		5.70	6.00	66.00	19.45	28.00	9085240057000
0.2283		5.80	6.00	66.00	19.30	28.00	9085240058000
0.2323		5.90	6.00	66.00	19.15	28.00	9085240059000
0.2343	15/64	5.95	6.00	66.00	19.08	28.00	9085240059500
0.2362		6.00	6.00	66.00	19.00	28.00	9085240060000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2402		6.10	8.00	79.00	24.85	34.00	9085240061000
0.2441		6.20	8.00	79.00	24.70	34.00	9085240062000
0.2480		6.30	8.00	79.00	24.55	34.00	9085240063000
0.2500	1/4 E	6.35	8.00	79.00	24.48	34.00	9085240063500
0.2520		6.40	8.00	79.00	24.40	34.00	9085240064000
0.2559		6.50	8.00	79.00	24.25	34.00	9085240065000
0.2598		6.60	8.00	79.00	24.10	34.00	9085240066000
0.2638		6.70	8.00	79.00	23.95	34.00	9085240067000
0.2657	17/64 H	6.75	8.00	79.00	23.88	34.00	9085240067500
0.2677		6.80	8.00	79.00	23.80	34.00	9085240068000
0.2717	I	6.90	8.00	79.00	23.65	34.00	9085240069000
0.2756		7.00	8.00	79.00	23.50	34.00	9085240070000
0.2795		7.10	8.00	79.00	30.35	41.00	9085240071000
0.2811	9/32 K	7.14	8.00	79.00	30.29	41.00	9085240071400
0.2835		7.20	8.00	79.00	30.20	41.00	9085240072000
0.2874		7.30	8.00	79.00	30.05	41.00	9085240073000
0.2913		7.40	8.00	79.00	29.90	41.00	9085240074000
0.2953		7.50	8.00	79.00	29.75	41.00	9085240075000
0.2969	19/64	7.54	8.00	79.00	29.69	41.00	9085240075400
0.2992		7.60	8.00	79.00	29.60	41.00	9085240076000
0.3031		7.70	8.00	79.00	29.45	41.00	9085240077000
0.3071		7.80	8.00	79.00	29.30	41.00	9085240078000
0.3110		7.90	8.00	79.00	29.15	41.00	9085240079000
0.3125	5/16	7.94	8.00	79.00	29.09	41.00	9085240079400
0.3150		8.00	8.00	79.00	29.00	41.00	9085240080000
0.3189		8.10	10.00	89.00	34.85	47.00	9085240081000
0.3228	P	8.20	10.00	89.00	34.70	47.00	9085240082000
0.3268		8.30	10.00	89.00	34.55	47.00	9085240083000
0.3280	21/64	8.33	10.00	89.00	34.51	47.00	9085240083300
0.3307		8.40	10.00	89.00	34.40	47.00	9085240084000
0.3346		8.50	10.00	89.00	34.25	47.00	9085240085000
0.3386		8.60	10.00	89.00	34.10	47.00	9085240086000
0.3425		8.70	10.00	89.00	33.95	47.00	9085240087000
0.3437	11/32	8.73	10.00	89.00	33.91	47.00	9085240087300
0.3465		8.80	10.00	89.00	33.80	47.00	9085240088000
0.3504		8.90	10.00	89.00	33.65	47.00	9085240089000
0.3543		9.00	10.00	89.00	33.50	47.00	9085240090000
0.3583		9.10	10.00	89.00	33.35	47.00	9085240091000
0.3594	23/64	9.13	10.00	89.00	33.31	47.00	9085240091300
0.3622		9.20	10.00	89.00	33.20	47.00	9085240092000
0.3642		9.25	10.00	89.00	33.13	47.00	9085240092500
0.3661		9.30	10.00	89.00	33.05	47.00	9085240093000

3xD Ratio drills

Series no. **8524**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3701		9.40	10.00	89.00	32.90	47.00	9085240094000
0.3740		9.50	10.00	89.00	32.75	47.00	9085240095000
0.3748	3/8	9.52	10.00	89.00	32.72	47.00	9085240095200
0.3780		9.60	10.00	89.00	32.60	47.00	9085240096000
0.3819		9.70	10.00	89.00	32.45	47.00	9085240097000
0.3858	W	9.80	10.00	89.00	32.30	47.00	9085240098000
0.3898		9.90	10.00	89.00	32.15	47.00	9085240099000
0.3906	25/64	9.92	10.00	89.00	32.12	47.00	9085240099200
0.3937		10.00	10.00	89.00	32.00	47.00	9085240100000
0.3976		10.10	12.00	102.00	39.85	55.00	9085240101000
0.4016		10.20	12.00	102.00	39.70	55.00	9085240102000
0.4055		10.30	12.00	102.00	39.55	55.00	9085240103000
0.4063	13/32	10.32	12.00	102.00	39.52	55.00	9085240103200
0.4094		10.40	12.00	102.00	39.40	55.00	9085240104000
0.4134		10.50	12.00	102.00	39.25	55.00	9085240105000
0.4173		10.60	12.00	102.00	39.10	55.00	9085240106000
0.4213		10.70	12.00	102.00	38.95	55.00	9085240107000
0.4220	27/64	10.72	12.00	102.00	38.92	55.00	9085240107200
0.4252		10.80	12.00	102.00	38.80	55.00	9085240108000
0.4291		10.90	12.00	102.00	38.65	55.00	9085240109000
0.4331		11.00	12.00	102.00	38.50	55.00	9085240110000
0.4370		11.10	12.00	102.00	38.35	55.00	9085240111000
0.4374	7/16	11.11	12.00	102.00	38.34	55.00	9085240111100
0.4409		11.20	12.00	102.00	38.20	55.00	9085240112000
0.4449		11.30	12.00	102.00	38.05	55.00	9085240113000
0.4488		11.40	12.00	102.00	37.90	55.00	9085240114000
0.4528		11.50	12.00	102.00	37.75	55.00	9085240115000
0.4531	29/64	11.51	12.00	102.00	37.74	55.00	9085240115100
0.4567		11.60	12.00	102.00	37.60	55.00	9085240116000
0.4606		11.70	12.00	102.00	37.45	55.00	9085240117000
0.4646		11.80	12.00	102.00	37.30	55.00	9085240118000
0.4685		11.90	12.00	102.00	37.15	55.00	9085240119000
0.4689	15/32	11.91	12.00	102.00	37.14	55.00	9085240119100
0.4724		12.00	12.00	102.00	37.00	55.00	9085240120000
0.4803		12.20	14.00	107.00	41.70	60.00	9085240122000
0.4843	31/64	12.30	14.00	107.00	41.55	60.00	9085240123000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4921		12.50	14.00	107.00	41.25	60.00	9085240125000
0.5000	1/2	12.70	14.00	107.00	40.95	60.00	9085240127000
0.5039		12.80	14.00	107.00	40.80	60.00	9085240128000
0.5118		13.00	14.00	107.00	40.50	60.00	9085240130000
0.5236		13.30	14.00	107.00	40.05	60.00	9085240133000
0.5311	17/32	13.49	14.00	107.00	39.77	60.00	9085240134900
0.5315		13.50	14.00	107.00	39.75	60.00	9085240135000
0.5394		13.70	14.00	107.00	39.45	60.00	9085240137000
0.5512		14.00	14.00	107.00	39.00	60.00	9085240140000
0.5591		14.20	16.00	115.00	43.70	65.00	9085240142000
0.5626	9/16	14.29	16.00	115.00	43.57	65.00	9085240142900
0.5630		14.30	16.00	115.00	43.55	65.00	9085240143000
0.5709		14.50	16.00	115.00	43.25	65.00	9085240145000
0.5787		14.70	16.00	115.00	42.95	65.00	9085240147000
0.5906		15.00	16.00	115.00	42.50	65.00	9085240150000
0.5984		15.20	16.00	115.00	42.20	65.00	9085240152000
0.6024		15.30	16.00	115.00	42.05	65.00	9085240153000
0.6102		15.50	16.00	115.00	41.75	65.00	9085240155000
0.6181		15.70	16.00	115.00	41.45	65.00	9085240157000
0.6248	5/8	15.87	16.00	115.00	41.20	65.00	9085240158700
0.6299		16.00	16.00	115.00	41.00	65.00	9085240160000
0.6417		16.30	18.00	123.00	48.55	73.00	9085240163000
0.6496		16.50	18.00	123.00	48.25	73.00	9085240165000
0.6654		16.90	18.00	123.00	47.65	73.00	9085240169000
0.6693		17.00	18.00	123.00	47.50	73.00	9085240170000
0.6811		17.30	18.00	123.00	47.05	73.00	9085240173000
0.6890		17.50	18.00	123.00	46.75	73.00	9085240175000
0.7087		18.00	18.00	123.00	46.00	73.00	9085240180000
0.7283		18.50	20.00	131.00	51.25	79.00	9085240185000
0.7441		18.90	20.00	131.00	50.65	79.00	9085240189000
0.7480		19.00	20.00	131.00	50.50	79.00	9085240190000
0.7500	3/4	19.05	20.00	131.00	50.43	79.00	9085240190500
0.7598		19.30	20.00	131.00	50.05	79.00	9085240193000
0.7677		19.50	20.00	131.00	49.75	79.00	9085240195000
0.7874		20.00	20.00	131.00	49.00	79.00	9085240200000

3xD Ratio drills

Series no. **5510**

Tool material **Solid Carbide**

Surface **F**

3xD	RT 100 U	140°	m7		HA	R	GUHRING SELECT
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction	

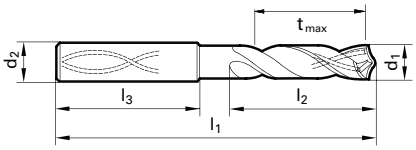
P	Steel	★
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

★ = 1st choice
● = Optimal suitability
○ = Limited suitability

web thinning ≥ Ø 3.000 • facet point grinding • main cutting edge form straight • optimized cutting geometry

structural and case hardened steels • free-cutting steels, heat treatable steels • steels (alloyed/unalloyed) up to 1200 N/mm² • cast materials • bronze, brass • high-alloyed AlSi-alloys

$t_{max} = l_2-(1.5 \times d_1)$





Speeds and feeds information on pg. 550

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	62.00	15.50	20.00	9055100030000
0.1220		3.10	6.00	62.00	15.35	20.00	9055100031000
0.1248	1/8	3.17	6.00	62.00	15.25	20.00	9055100031700
0.1260		3.20	6.00	62.00	15.20	20.00	9055100032000
0.1280		3.25	6.00	62.00	15.13	20.00	9055100032500
0.1299		3.30	6.00	62.00	15.05	20.00	9055100033000
0.1339		3.40	6.00	62.00	14.90	20.00	9055100034000
0.1378		3.50	6.00	62.00	14.75	20.00	9055100035000
0.1406	9/64	#28 3.57	6.00	62.00	14.65	20.00	9055100035700
0.1417		3.60	6.00	62.00	14.60	20.00	9055100036000
0.1457		3.70	6.00	62.00	14.45	20.00	9055100037000
0.1496		#25 3.80	6.00	66.00	18.30	24.00	9055100038000
0.1535		3.90	6.00	66.00	18.15	24.00	9055100039000
0.1563	5/32	3.97	6.00	66.00	18.05	24.00	9055100039700
0.1575		4.00	6.00	66.00	18.00	24.00	9055100040000
0.1591		#21 4.04	6.00	66.00	17.94	24.00	9055100040400
0.1614		4.10	6.00	66.00	17.85	24.00	9055100041000
0.1654		4.20	6.00	66.00	17.70	24.00	9055100042000
0.1693		4.30	6.00	66.00	17.55	24.00	9055100043000
0.1720	11/64	4.37	6.00	66.00	17.45	24.00	9055100043700
0.1732		4.40	6.00	66.00	17.40	24.00	9055100044000
0.1772		#16 4.50	6.00	66.00	17.25	24.00	9055100045000
0.1811		4.60	6.00	66.00	17.10	24.00	9055100046000
0.1831		4.65	6.00	66.00	17.03	24.00	9055100046500
0.1850		#13 4.70	6.00	66.00	16.95	24.00	9055100047000
0.1874	3/16	4.76	6.00	66.00	20.86	28.00	9055100047600
0.1890		#12 4.80	6.00	66.00	20.80	28.00	9055100048000
0.1929		4.90	6.00	66.00	20.65	28.00	9055100049000
0.1969		5.00	6.00	66.00	20.50	28.00	9055100050000
0.2008		5.10	6.00	66.00	20.35	28.00	9055100051000
0.2012		#7 5.11	6.00	66.00	20.34	28.00	9055100051100
0.2031	13/64	5.16	6.00	66.00	20.26	28.00	9055100051600
0.2047		5.20	6.00	66.00	20.20	28.00	9055100052000
0.2067		5.25	6.00	66.00	20.13	28.00	9055100052500
0.2087		5.30	6.00	66.00	20.05	28.00	9055100053000
0.2126		5.40	6.00	66.00	19.90	28.00	9055100054000
0.2130		#3 5.41	6.00	66.00	19.89	28.00	9055100054100
0.2165		5.50	6.00	66.00	19.75	28.00	9055100055000
0.2185		5.55	6.00	66.00	19.68	28.00	9055100055500
0.2189	7/32	5.56	6.00	66.00	19.66	28.00	9055100055600
0.2205		5.60	6.00	66.00	19.60	28.00	9055100056000
0.2244		5.70	6.00	66.00	19.45	28.00	9055100057000
0.2283		5.80	6.00	66.00	19.30	28.00	9055100058000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2323		5.90	6.00	66.00	19.15	28.00	9055100059000
0.2343	15/64	5.95	6.00	66.00	19.08	28.00	9055100059500
0.2362		6.00	6.00	66.00	19.00	28.00	9055100060000
0.2402		6.10	8.00	79.00	24.85	34.00	9055100061000
0.2441		6.20	8.00	79.00	24.70	34.00	9055100062000
0.2480		6.30	8.00	79.00	24.55	34.00	9055100063000
0.2500	1/4	E 6.35	8.00	79.00	24.48	34.00	9055100063500
0.2520		6.40	8.00	79.00	24.40	34.00	9055100064000
0.2559		6.50	8.00	79.00	24.25	34.00	9055100065000
0.2571		F 6.53	8.00	79.00	24.21	34.00	9055100065300
0.2598		6.60	8.00	79.00	24.10	34.00	9055100066000
0.2638		6.70	8.00	79.00	23.95	34.00	9055100067000
0.2657	17/64	H 6.75	8.00	79.00	23.88	34.00	9055100067500
0.2677		6.80	8.00	79.00	23.80	34.00	9055100068000
0.2717		I 6.90	8.00	79.00	23.65	34.00	9055100069000
0.2756		7.00	8.00	79.00	23.50	34.00	9055100070000
0.2795		7.10	8.00	79.00	30.35	41.00	9055100071000
0.2811	9/32	K 7.14	8.00	79.00	30.29	41.00	9055100071400
0.2835		7.20	8.00	79.00	30.20	41.00	9055100072000
0.2874		7.30	8.00	79.00	30.05	41.00	9055100073000
0.2913		7.40	8.00	79.00	29.90	41.00	9055100074000
0.2953		7.50	8.00	79.00	29.75	41.00	9055100075000
0.2969	19/64	7.54	8.00	79.00	29.69	41.00	9055100075400
0.2992		7.60	8.00	79.00	29.60	41.00	9055100076000
0.3031		7.70	8.00	79.00	29.45	41.00	9055100077000
0.3071		7.80	8.00	79.00	29.30	41.00	9055100078000
0.3110		7.90	8.00	79.00	29.15	41.00	9055100079000
0.3125	5/16	7.94	8.00	79.00	29.09	41.00	9055100079400
0.3150		8.00	8.00	79.00	29.00	41.00	9055100080000
0.3189		8.10	10.00	89.00	34.85	47.00	9055100081000
0.3228		P 8.20	10.00	89.00	34.70	47.00	9055100082000
0.3268		8.30	10.00	89.00	34.55	47.00	9055100083000
0.3280	21/64	8.33	10.00	89.00	34.51	47.00	9055100083300
0.3307		8.40	10.00	89.00	34.40	47.00	9055100084000
0.3346		8.50	10.00	89.00	34.25	47.00	9055100085000
0.3386		8.60	10.00	89.00	34.10	47.00	9055100086000
0.3425		8.70	10.00	89.00	33.95	47.00	9055100087000
0.3437	11/32	8.73	10.00	89.00	33.91	47.00	9055100087300
0.3465		8.80	10.00	89.00	33.80	47.00	9055100088000
0.3504		8.90	10.00	89.00	33.65	47.00	9055100089000
0.3543		9.00	10.00	89.00	33.50	47.00	9055100090000
0.3583		9.10	10.00	89.00	33.35	47.00	9055100091000
0.3594	23/64	9.13	10.00	89.00	33.31	47.00	9055100091300

3xD Ratio drills

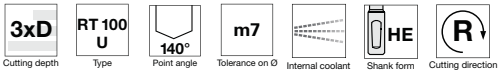
Series no. **5510**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3622		9.20	10.00	89.00	33.20	47.00	9055100092000
0.3642		9.25	10.00	89.00	33.13	47.00	9055100092500
0.3661		9.30	10.00	89.00	33.05	47.00	9055100093000
0.3677	U	9.34	10.00	89.00	32.99	47.00	9055100093400
0.3701		9.40	10.00	89.00	32.90	47.00	9055100094000
0.3740		9.50	10.00	89.00	32.75	47.00	9055100095000
0.3750	3/8	9.52	10.00	89.00	32.72	47.00	9055100095200
0.3780		9.60	10.00	89.00	32.60	47.00	9055100096000
0.3819		9.70	10.00	89.00	32.45	47.00	9055100097000
0.3858	W	9.80	10.00	89.00	32.30	47.00	9055100098000
0.3898		9.90	10.00	89.00	32.15	47.00	9055100099000
0.3906	25/64	9.92	10.00	89.00	32.12	47.00	9055100099200
0.3937		10.00	10.00	89.00	32.00	47.00	9055100100000
0.3976		10.10	12.00	102.00	39.85	55.00	9055100101000
0.4016		10.20	12.00	102.00	39.70	55.00	9055100102000
0.4055		10.30	12.00	102.00	39.55	55.00	9055100103000
0.4063	13/32	10.32	12.00	102.00	39.52	55.00	9055100103200
0.4094		10.40	12.00	102.00	39.40	55.00	9055100104000
0.4134		10.50	12.00	102.00	39.25	55.00	9055100105000
0.4173		10.60	12.00	102.00	39.10	55.00	9055100106000
0.4213		10.70	12.00	102.00	38.95	55.00	9055100107000
0.4220	27/64	10.72	12.00	102.00	38.92	55.00	9055100107200
0.4252		10.80	12.00	102.00	38.80	55.00	9055100108000
0.4291		10.90	12.00	102.00	38.65	55.00	9055100109000
0.4331		11.00	12.00	102.00	38.50	55.00	9055100110000
0.4370		11.10	12.00	102.00	38.35	55.00	9055100111000
0.4374	7/16	11.11	12.00	102.00	38.34	55.00	9055100111100
0.4409		11.20	12.00	102.00	38.20	55.00	9055100112000
0.4449		11.30	12.00	102.00	38.05	55.00	9055100113000
0.4488		11.40	12.00	102.00	37.90	55.00	9055100114000
0.4528		11.50	12.00	102.00	37.75	55.00	9055100115000
0.4531	29/64	11.51	12.00	102.00	37.74	55.00	9055100115100
0.4567		11.60	12.00	102.00	37.60	55.00	9055100116000
0.4606		11.70	12.00	102.00	37.45	55.00	9055100117000
0.4646		11.80	12.00	102.00	37.30	55.00	9055100118000
0.4685		11.90	12.00	102.00	37.15	55.00	9055100119000
0.4689	15/32	11.91	12.00	102.00	37.14	55.00	9055100119100
0.4724		12.00	12.00	102.00	37.00	55.00	9055100120000
0.4764		12.10	14.00	107.00	41.85	60.00	9055100121000
0.4803		12.20	14.00	107.00	41.70	60.00	9055100122000
0.4843	31/64	12.30	14.00	107.00	41.55	60.00	9055100123000
0.4882		12.40	14.00	107.00	41.40	60.00	9055100124000
0.4921		12.50	14.00	107.00	41.25	60.00	9055100125000
0.4961		12.60	14.00	107.00	41.10	60.00	9055100126000
0.5000	1/2	12.70	14.00	107.00	40.95	60.00	9055100127000
0.5039		12.80	14.00	107.00	40.80	60.00	9055100128000
0.5079		12.90	14.00	107.00	40.65	60.00	9055100129000
0.5118		13.00	14.00	107.00	40.50	60.00	9055100130000
0.5157	33/64	13.10	14.00	107.00	40.35	60.00	9055100131000
0.5197		13.20	14.00	107.00	40.20	60.00	9055100132000
0.5236		13.30	14.00	107.00	40.05	60.00	9055100133000
0.5276		13.40	14.00	107.00	39.90	60.00	9055100134000
0.5311	17/32	13.49	14.00	107.00	39.77	60.00	9055100134900
0.5315		13.50	14.00	107.00	39.75	60.00	9055100135000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.5354		13.60	14.00	107.00	39.60	60.00	9055100136000
0.5394		13.70	14.00	107.00	39.45	60.00	9055100137000
0.5433		13.80	14.00	107.00	39.30	60.00	9055100138000
0.5469	35/64	13.89	14.00	107.00	39.17	60.00	9055100138900
0.5472		13.90	14.00	107.00	39.15	60.00	9055100139000
0.5512		14.00	14.00	107.00	39.00	60.00	9055100140000
0.5551		14.10	16.00	115.00	43.85	65.00	9055100141000
0.5591		14.20	16.00	115.00	43.70	65.00	9055100142000
0.5626	9/16	14.29	16.00	115.00	43.57	65.00	9055100142900
0.5630		14.30	16.00	115.00	43.55	65.00	9055100143000
0.5669		14.40	16.00	115.00	43.40	65.00	9055100144000
0.5709		14.50	16.00	115.00	43.25	65.00	9055100145000
0.5748		14.60	16.00	115.00	43.10	65.00	9055100146000
0.5780	37/64	14.68	16.00	115.00	42.98	65.00	9055100146800
0.5787		14.70	16.00	115.00	42.95	65.00	9055100147000
0.5827		14.80	16.00	115.00	42.80	65.00	9055100148000
0.5866		14.90	16.00	115.00	42.65	65.00	9055100149000
0.5906		15.00	16.00	115.00	42.50	65.00	9055100150000
0.5937	19/32	15.08	16.00	115.00	42.38	65.00	9055100150800
0.5945		15.10	16.00	115.00	42.35	65.00	9055100151000
0.5984		15.20	16.00	115.00	42.20	65.00	9055100152000
0.6024		15.30	16.00	115.00	42.05	65.00	9055100153000
0.6063		15.40	16.00	115.00	41.90	65.00	9055100154000
0.6094	39/64	15.48	16.00	115.00	41.78	65.00	9055100154800
0.6102		15.50	16.00	115.00	41.75	65.00	9055100155000
0.6142		15.60	16.00	115.00	41.60	65.00	9055100156000
0.6181		15.70	16.00	115.00	41.45	65.00	9055100157000
0.6220		15.80	16.00	115.00	41.30	65.00	9055100158000
0.6250	5/8	15.87	16.00	115.00	41.20	65.00	9055100158700
0.6260		15.90	16.00	115.00	41.15	65.00	9055100159000
0.6299		16.00	16.00	115.00	41.00	65.00	9055100160000
0.6378		16.20	18.00	123.00	48.70	73.00	9055100162000
0.6406	41/64	16.27	18.00	123.00	48.60	73.00	9055100162700
0.6496		16.50	18.00	123.00	48.25	73.00	9055100165000
0.6563	21/32	16.67	18.00	123.00	48.00	73.00	9055100166700
0.6654		16.90	18.00	123.00	47.65	73.00	9055100169000
0.6693		17.00	18.00	123.00	47.50	73.00	9055100170000
0.6720	43/64	17.07	18.00	123.00	47.40	73.00	9055100170700
0.6874	11/16	17.46	18.00	123.00	46.81	73.00	9055100174600
0.6890		17.50	18.00	123.00	46.75	73.00	9055100175000
0.6929		17.60	18.00	123.00	46.60	73.00	9055100176000
0.6969		17.70	18.00	123.00	46.45	73.00	9055100177000
0.7031	45/64	17.86	18.00	123.00	46.21	73.00	9055100178600
0.7087		18.00	18.00	123.00	46.00	73.00	9055100180000
0.7189	23/32	18.26	20.00	131.00	51.61	79.00	9055100182600
0.7283		18.50	20.00	131.00	51.25	79.00	9055100185000
0.7441		18.90	20.00	131.00	50.65	79.00	9055100189000
0.7480		19.00	20.00	131.00	50.50	79.00	9055100190000
0.7500	3/4	19.05	20.00	131.00	50.43	79.00	9055100190500
0.7579		19.25	20.00	131.00	50.13	79.00	9055100192500
0.7657	49/64	19.45	20.00	131.00	49.83	79.00	9055100194460
0.7677		19.50	20.00	131.00	49.75	79.00	9055100195000
0.7811	25/32	19.84	20.00	131.00	49.24	79.00	9055100198400
0.7874		20.00	20.00	131.00	49.00	79.00	9055100200000

3xD Ratio drills

Series no. **5610**



Tool material **Solid Carbide**

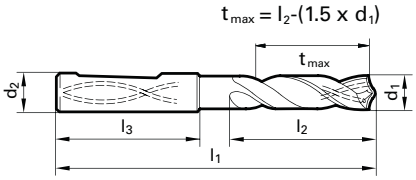
Surface **F**

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • facet point grinding • main cutting edge form straight • optimized cutting geometry

structural and case hardened steels • free-cutting steels, heat treatable steels • steels (alloyed/unalloyed) up to 1200 N/mm² • cast materials • bronze, brass • high-alloyed AlSi-alloys





Speeds and feeds information on pg. 558

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	62.00	15.50	20.00	9056100030000
0.1220		3.10	6.00	62.00	15.35	20.00	9056100031000
0.1248	1/8	3.17	6.00	62.00	15.25	20.00	9056100031700
0.1260		3.20	6.00	62.00	15.20	20.00	9056100032000
0.1280		3.25	6.00	62.00	15.13	20.00	9056100032500
0.1299		3.30	6.00	62.00	15.05	20.00	9056100033000
0.1339		3.40	6.00	62.00	14.90	20.00	9056100034000
0.1378		3.50	6.00	62.00	14.75	20.00	9056100035000
0.1406	9/64 #28	3.57	6.00	62.00	14.65	20.00	9056100035700
0.1417		3.60	6.00	62.00	14.60	20.00	9056100036000
0.1457		3.70	6.00	62.00	14.45	20.00	9056100037000
0.1496	#25	3.80	6.00	66.00	18.30	24.00	9056100038000
0.1535		3.90	6.00	66.00	18.15	24.00	9056100039000
0.1563	5/32	3.97	6.00	66.00	18.05	24.00	9056100039700
0.1575		4.00	6.00	66.00	18.00	24.00	9056100040000
0.1614		4.10	6.00	66.00	17.85	24.00	9056100041000
0.1654		4.20	6.00	66.00	17.70	24.00	9056100042000
0.1693	#18	4.30	6.00	66.00	17.55	24.00	9056100043000
0.1720	11/64	4.37	6.00	66.00	17.45	24.00	9056100043700
0.1732		4.40	6.00	66.00	17.40	24.00	9056100044000
0.1772	#16	4.50	6.00	66.00	17.25	24.00	9056100045000
0.1811		4.60	6.00	66.00	17.10	24.00	9056100046000
0.1831		4.65	6.00	66.00	17.03	24.00	9056100046500
0.1850		4.70	6.00	66.00	16.95	24.00	9056100047000
0.1874	3/16	4.76	6.00	66.00	20.86	28.00	9056100047600
0.1890	#12	4.80	6.00	66.00	20.80	28.00	9056100048000
0.1929		4.90	6.00	66.00	20.65	28.00	9056100049000
0.1969		5.00	6.00	66.00	20.50	28.00	9056100050000
0.2008		5.10	6.00	66.00	20.35	28.00	9056100051000
0.2031	13/64	5.16	6.00	66.00	20.26	28.00	9056100051600
0.2047		5.20	6.00	66.00	20.20	28.00	9056100052000
0.2087		5.30	6.00	66.00	20.05	28.00	9056100053000
0.2126		5.40	6.00	66.00	19.90	28.00	9056100054000
0.2165		5.50	6.00	66.00	19.75	28.00	9056100055000
0.2185		5.55	6.00	66.00	19.68	28.00	9056100055500
0.2189	7/32	5.56	6.00	66.00	19.66	28.00	9056100055600
0.2205		5.60	6.00	66.00	19.60	28.00	9056100056000
0.2244		5.70	6.00	66.00	19.45	28.00	9056100057000
0.2264		5.75	6.00	66.00	19.38	28.00	9056100057500
0.2283		5.80	6.00	66.00	19.30	28.00	9056100058000
0.2323		5.90	6.00	66.00	19.15	28.00	9056100059000
0.2343	15/64	5.95	6.00	66.00	19.08	28.00	9056100059500

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2362		6.00	6.00	66.00	19.00	28.00	9056100060000
0.2402		6.10	8.00	79.00	24.85	34.00	9056100061000
0.2441		6.20	8.00	79.00	24.70	34.00	9056100062000
0.2480		6.30	8.00	79.00	24.55	34.00	9056100063000
0.2500	1/4 E	6.35	8.00	79.00	24.48	34.00	9056100063500
0.2520		6.40	8.00	79.00	24.40	34.00	9056100064000
0.2559		6.50	8.00	79.00	24.25	34.00	9056100065000
0.2598		6.60	8.00	79.00	24.10	34.00	9056100066000
0.2638		6.70	8.00	79.00	23.95	34.00	9056100067000
0.2657	17/64 H	6.75	8.00	79.00	23.88	34.00	9056100067500
0.2677		6.80	8.00	79.00	23.80	34.00	9056100068000
0.2717	I	6.90	8.00	79.00	23.65	34.00	9056100069000
0.2756		7.00	8.00	79.00	23.50	34.00	9056100070000
0.2795		7.10	8.00	79.00	30.35	41.00	9056100071000
0.2811	9/32 K	7.14	8.00	79.00	30.29	41.00	9056100071400
0.2835		7.20	8.00	79.00	30.20	41.00	9056100072000
0.2874		7.30	8.00	79.00	30.05	41.00	9056100073000
0.2913		7.40	8.00	79.00	29.90	41.00	9056100074000
0.2953		7.50	8.00	79.00	29.75	41.00	9056100075000
0.2969	19/64	7.54	8.00	79.00	29.69	41.00	9056100075400
0.2992		7.60	8.00	79.00	29.60	41.00	9056100076000
0.3031		7.70	8.00	79.00	29.45	41.00	9056100077000
0.3071		7.80	8.00	79.00	29.30	41.00	9056100078000
0.3110		7.90	8.00	79.00	29.15	41.00	9056100079000
0.3126	5/16	7.94	8.00	79.00	29.09	41.00	9056100079400
0.3150		8.00	8.00	79.00	29.00	41.00	9056100080000
0.3189		8.10	10.00	89.00	34.85	47.00	9056100081000
0.3228	P	8.20	10.00	89.00	34.70	47.00	9056100082000
0.3268		8.30	10.00	89.00	34.55	47.00	9056100083000
0.3280	21/64	8.33	10.00	89.00	34.51	47.00	9056100083300
0.3307		8.40	10.00	89.00	34.40	47.00	9056100084000
0.3346		8.50	10.00	89.00	34.25	47.00	9056100085000
0.3386		8.60	10.00	89.00	34.10	47.00	9056100086000
0.3425		8.70	10.00	89.00	33.95	47.00	9056100087000
0.3437	11/32	8.73	10.00	89.00	33.91	47.00	9056100087300
0.3465		8.80	10.00	89.00	33.80	47.00	9056100088000
0.3504		8.90	10.00	89.00	33.65	47.00	9056100089000
0.3543		9.00	10.00	89.00	33.50	47.00	9056100090000
0.3583		9.10	10.00	89.00	33.35	47.00	9056100091000
0.3594	23/64	9.13	10.00	89.00	33.31	47.00	9056100091300
0.3622		9.20	10.00	89.00	33.20	47.00	9056100092000
0.3642		9.25	10.00	89.00	33.13	47.00	9056100092500

3xD Ratio drills

Series no. **5610**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3661		9.30	10.00	89.00	33.05	47.00	9056100093000
0.3701		9.40	10.00	89.00	32.90	47.00	9056100094000
0.3740		9.50	10.00	89.00	32.75	47.00	9056100095000
0.3748	3/8	9.52	10.00	89.00	32.72	47.00	9056100095200
0.3780		9.60	10.00	89.00	32.60	47.00	9056100096000
0.3819		9.70	10.00	89.00	32.45	47.00	9056100097000
0.3858	W	9.80	10.00	89.00	32.30	47.00	9056100098000
0.3898		9.90	10.00	89.00	32.15	47.00	9056100099000
0.3906	25/64	9.92	10.00	89.00	32.12	47.00	9056100099200
0.3937		10.00	10.00	89.00	32.00	47.00	9056100100000
0.3976		10.10	12.00	102.00	39.85	55.00	9056100101000
0.4016		10.20	12.00	102.00	39.70	55.00	9056100102000
0.4055		10.30	12.00	102.00	39.55	55.00	9056100103000
0.4063	13/32	10.32	12.00	102.00	39.52	55.00	9056100103200
0.4094		10.40	12.00	102.00	39.40	55.00	9056100104000
0.4134		10.50	12.00	102.00	39.25	55.00	9056100105000
0.4173		10.60	12.00	102.00	39.10	55.00	9056100106000
0.4213		10.70	12.00	102.00	38.95	55.00	9056100107000
0.4252		10.80	12.00	102.00	38.80	55.00	9056100108000
0.4291		10.90	12.00	102.00	38.65	55.00	9056100109000
0.4331		11.00	12.00	102.00	38.50	55.00	9056100110000
0.4370		11.10	12.00	102.00	38.35	55.00	9056100111000
0.4374	7/16	11.11	12.00	102.00	38.34	55.00	9056100111100
0.4409		11.20	12.00	102.00	38.20	55.00	9056100112000
0.4449		11.30	12.00	102.00	38.05	55.00	9056100113000
0.4488		11.40	12.00	102.00	37.90	55.00	9056100114000
0.4528		11.50	12.00	102.00	37.75	55.00	9056100115000
0.4567		11.60	12.00	102.00	37.60	55.00	9056100116000
0.4606		11.70	12.00	102.00	37.45	55.00	9056100117000
0.4646		11.80	12.00	102.00	37.30	55.00	9056100118000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4685		11.90	12.00	102.00	37.15	55.00	9056100119000
0.4689	15/32	11.91	12.00	102.00	37.14	55.00	9056100119100
0.4724		12.00	12.00	102.00	37.00	55.00	9056100120000
0.4764		12.10	14.00	107.00	41.85	60.00	9056100121000
0.4803		12.20	14.00	107.00	41.70	60.00	9056100122000
0.4921		12.50	14.00	107.00	41.25	60.00	9056100125000
0.5000	1/2	12.70	14.00	107.00	40.95	60.00	9056100127000
0.5118		13.00	14.00	107.00	40.50	60.00	9056100130000
0.5315		13.50	14.00	107.00	39.75	60.00	9056100135000
0.5394		13.70	14.00	107.00	39.45	60.00	9056100137000
0.5512		14.00	14.00	107.00	39.00	60.00	9056100140000
0.5551		14.10	16.00	115.00	43.85	65.00	9056100141000
0.5591		14.20	16.00	115.00	43.70	65.00	9056100142000
0.5626	9/16	14.29	16.00	115.00	43.57	65.00	9056100142900
0.5709		14.50	16.00	115.00	43.25	65.00	9056100145000
0.5787		14.70	16.00	115.00	42.95	65.00	9056100147000
0.5906		15.00	16.00	115.00	42.50	65.00	9056100150000
0.5984		15.20	16.00	115.00	42.20	65.00	9056100152000
0.6102		15.50	16.00	115.00	41.75	65.00	9056100155000
0.6181		15.70	16.00	115.00	41.45	65.00	9056100157000
0.6299		16.00	16.00	115.00	41.00	65.00	9056100160000
0.6496		16.50	18.00	123.00	48.25	73.00	9056100165000
0.6693		17.00	18.00	123.00	47.50	73.00	9056100170000
0.6890		17.50	18.00	123.00	46.75	73.00	9056100175000
0.7087		18.00	18.00	123.00	46.00	73.00	9056100180000
0.7283		18.50	20.00	131.00	51.25	79.00	9056100185000
0.7480		19.00	20.00	131.00	50.50	79.00	9056100190000
0.7677		19.50	20.00	131.00	49.75	79.00	9056100195000
0.7874		20.00	20.00	131.00	49.00	79.00	9056100200000

3xD Ratio drills

Series no. **8510**

3xD	RT 100 VA	140°	m7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: a

P	Steel	
M	Stainless steel	★
K	Cast iron	
N	Aluminum	
S	Titanium alloys	●
H	Hardened steel	

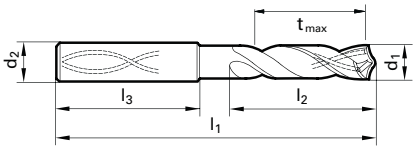
★ = 1st choice
● = Optimal suitability
○ = Limited suitability

web thinning ≥ Ø 3.000 • facet point grinding • main cutting edge form straight • optimized cutting geometry

stainless/acid-/heat-resistant steels • Titanium and Titanium alloys • Inconel, Hastelloy, Monel

Speeds and feeds information on pg. 573

$t_{max} = l_2-(1.5 \times d_1)$





Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	62.00	15.50	20.00	9085100030000
0.1220		3.10	6.00	62.00	15.35	20.00	9085100031000
0.1248	1/8	3.17	6.00	62.00	15.25	20.00	9085100031700
0.1260		3.20	6.00	62.00	15.20	20.00	9085100032000
0.1280		3.25	6.00	62.00	15.13	20.00	9085100032500
0.1299		3.30	6.00	62.00	15.05	20.00	9085100033000
0.1339		3.40	6.00	62.00	14.90	20.00	9085100034000
0.1378		3.50	6.00	62.00	14.75	20.00	9085100035000
0.1406	9/64 #28	3.57	6.00	62.00	14.65	20.00	9085100035700
0.1417		3.60	6.00	62.00	14.60	20.00	9085100036000
0.1457		3.70	6.00	62.00	14.45	20.00	9085100037000
0.1496	#25	3.80	6.00	66.00	18.30	24.00	9085100038000
0.1535		3.90	6.00	66.00	18.15	24.00	9085100039000
0.1563	5/32	3.97	6.00	66.00	18.05	24.00	9085100039700
0.1575		4.00	6.00	66.00	18.00	24.00	9085100040000
0.1614		4.10	6.00	66.00	17.85	24.00	9085100041000
0.1654		4.20	6.00	66.00	17.70	24.00	9085100042000
0.1693		4.30	6.00	66.00	17.55	24.00	9085100043000
0.1720	11/64	4.37	6.00	66.00	17.45	24.00	9085100043700
0.1732		4.40	6.00	66.00	17.40	24.00	9085100044000
0.1772	#16	4.50	6.00	66.00	17.25	24.00	9085100045000
0.1811		4.60	6.00	66.00	17.10	24.00	9085100046000
0.1831		4.65	6.00	66.00	17.03	24.00	9085100046500
0.1850		4.70	6.00	66.00	16.95	24.00	9085100047000
0.1874	3/16	4.76	6.00	66.00	20.86	28.00	9085100047600
0.1890	#12	4.80	6.00	66.00	20.80	28.00	9085100048000
0.1929		4.90	6.00	66.00	20.65	28.00	9085100049000
0.1969		5.00	6.00	66.00	20.50	28.00	9085100050000
0.2008		5.10	6.00	66.00	20.35	28.00	9085100051000
0.2031	13/64	5.16	6.00	66.00	20.26	28.00	9085100051600
0.2047		5.20	6.00	66.00	20.20	28.00	9085100052000
0.2087		5.30	6.00	66.00	20.05	28.00	9085100053000
0.2126		5.40	6.00	66.00	19.90	28.00	9085100054000
0.2165		5.50	6.00	66.00	19.75	28.00	9085100055000
0.2185		5.55	6.00	66.00	19.68	28.00	9085100055500
0.2189	7/32	5.56	6.00	66.00	19.66	28.00	9085100055600
0.2205		5.60	6.00	66.00	19.60	28.00	9085100056000
0.2244		5.70	6.00	66.00	19.45	28.00	9085100057000
0.2283		5.80	6.00	66.00	19.30	28.00	9085100058000
0.2323		5.90	6.00	66.00	19.15	28.00	9085100059000
0.2343	15/64	5.95	6.00	66.00	19.08	28.00	9085100059500
0.2362		6.00	6.00	66.00	19.00	28.00	9085100060000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2402		6.10	8.00	79.00	24.85	34.00	9085100061000
0.2441		6.20	8.00	79.00	24.70	34.00	9085100062000
0.2480		6.30	8.00	79.00	24.55	34.00	9085100063000
0.2500	1/4 E	6.35	8.00	79.00	24.48	34.00	9085100063500
0.2520		6.40	8.00	79.00	24.40	34.00	9085100064000
0.2559		6.50	8.00	79.00	24.25	34.00	9085100065000
0.2598		6.60	8.00	79.00	24.10	34.00	9085100066000
0.2638		6.70	8.00	79.00	23.95	34.00	9085100067000
0.2657	17/64 H	6.75	8.00	79.00	23.88	34.00	9085100067500
0.2677		6.80	8.00	79.00	23.80	34.00	9085100068000
0.2717	I	6.90	8.00	79.00	23.65	34.00	9085100069000
0.2756		7.00	8.00	79.00	23.50	34.00	9085100070000
0.2795		7.10	8.00	79.00	30.35	41.00	9085100071000
0.2811	9/32 K	7.14	8.00	79.00	30.29	41.00	9085100071400
0.2835		7.20	8.00	79.00	30.20	41.00	9085100072000
0.2874		7.30	8.00	79.00	30.05	41.00	9085100073000
0.2913		7.40	8.00	79.00	29.90	41.00	9085100074000
0.2953		7.50	8.00	79.00	29.75	41.00	9085100075000
0.2969	19/64	7.54	8.00	79.00	29.69	41.00	9085100075400
0.2992		7.60	8.00	79.00	29.60	41.00	9085100076000
0.3031		7.70	8.00	79.00	29.45	41.00	9085100077000
0.3071		7.80	8.00	79.00	29.30	41.00	9085100078000
0.3110		7.90	8.00	79.00	29.15	41.00	9085100079000
0.3126	5/16	7.94	8.00	79.00	29.09	41.00	9085100079400
0.3150		8.00	8.00	79.00	29.00	41.00	9085100080000
0.3189		8.10	10.00	89.00	34.85	47.00	9085100081000
0.3228	P	8.20	10.00	89.00	34.70	47.00	9085100082000
0.3268		8.30	10.00	89.00	34.55	47.00	9085100083000
0.3280	21/64	8.33	10.00	89.00	34.51	47.00	9085100083300
0.3307		8.40	10.00	89.00	34.40	47.00	9085100084000
0.3346		8.50	10.00	89.00	34.25	47.00	9085100085000
0.3386		8.60	10.00	89.00	34.10	47.00	9085100086000
0.3425		8.70	10.00	89.00	33.95	47.00	9085100087000
0.3437	11/32	8.73	10.00	89.00	33.91	47.00	9085100087300
0.3465		8.80	10.00	89.00	33.80	47.00	9085100088000
0.3504		8.90	10.00	89.00	33.65	47.00	9085100089000
0.3543		9.00	10.00	89.00	33.50	47.00	9085100090000
0.3583		9.10	10.00	89.00	33.35	47.00	9085100091000
0.3594	23/64	9.13	10.00	89.00	33.31	47.00	9085100091300
0.3622		9.20	10.00	89.00	33.20	47.00	9085100092000
0.3642		9.25	10.00	89.00	33.13	47.00	9085100092500
0.3661		9.30	10.00	89.00	33.05	47.00	9085100093000

3xD Ratio drills

Series no. **8510**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3701		9.40	10.00	89.00	32.90	47.00	9085100094000
0.3740		9.50	10.00	89.00	32.75	47.00	9085100095000
0.3748	3/8	9.52	10.00	89.00	32.72	47.00	9085100095200
0.3780		9.60	10.00	89.00	32.60	47.00	9085100096000
0.3819		9.70	10.00	89.00	32.45	47.00	9085100097000
0.3858	W	9.80	10.00	89.00	32.30	47.00	9085100098000
0.3898		9.90	10.00	89.00	32.15	47.00	9085100099000
0.3906	25/64	9.92	10.00	89.00	32.12	47.00	9085100099200
0.3937		10.00	10.00	89.00	32.00	47.00	9085100100000
0.3976		10.10	12.00	102.00	39.85	55.00	9085100101000
0.4016		10.20	12.00	102.00	39.70	55.00	9085100102000
0.4055		10.30	12.00	102.00	39.55	55.00	9085100103000
0.4063	13/32	10.32	12.00	102.00	39.52	55.00	9085100103200
0.4094		10.40	12.00	102.00	39.40	55.00	9085100104000
0.4134		10.50	12.00	102.00	39.25	55.00	9085100105000
0.4173		10.60	12.00	102.00	39.10	55.00	9085100106000
0.4213		10.70	12.00	102.00	38.95	55.00	9085100107000
0.4252		10.80	12.00	102.00	38.80	55.00	9085100108000
0.4291		10.90	12.00	102.00	38.65	55.00	9085100109000
0.4331		11.00	12.00	102.00	38.50	55.00	9085100110000
0.4370		11.10	12.00	102.00	38.35	55.00	9085100111000
0.4374	7/16	11.11	12.00	102.00	38.34	55.00	9085100111100
0.4409		11.20	12.00	102.00	38.20	55.00	9085100112000
0.4449		11.30	12.00	102.00	38.05	55.00	9085100113000
0.4488		11.40	12.00	102.00	37.90	55.00	9085100114000
0.4528		11.50	12.00	102.00	37.75	55.00	9085100115000
0.4567		11.60	12.00	102.00	37.60	55.00	9085100116000
0.4606		11.70	12.00	102.00	37.45	55.00	9085100117000
0.4646		11.80	12.00	102.00	37.30	55.00	9085100118000
0.4685		11.90	12.00	102.00	37.15	55.00	9085100119000
0.4689	15/32	11.91	12.00	102.00	37.14	55.00	9085100119100
0.4724		12.00	12.00	102.00	37.00	55.00	9085100120000
0.4803		12.20	14.00	107.00	41.70	60.00	9085100122000
0.4921		12.50	14.00	107.00	41.25	60.00	9085100125000
0.5000	1/2	12.70	14.00	107.00	40.95	60.00	9085100127000
0.5039		12.80	14.00	107.00	40.80	60.00	9085100128000
0.5118		13.00	14.00	107.00	40.50	60.00	9085100130000
0.5236		13.30	14.00	107.00	40.05	60.00	9085100133000
0.5315		13.50	14.00	107.00	39.75	60.00	9085100135000
0.5394		13.70	14.00	107.00	39.45	60.00	9085100137000
0.5512		14.00	14.00	107.00	39.00	60.00	9085100140000
0.5591		14.20	16.00	115.00	43.70	65.00	9085100142000
0.5626	9/16	14.29	16.00	115.00	43.57	65.00	9085100142900
0.5630		14.30	16.00	115.00	43.55	65.00	9085100143000
0.5709		14.50	16.00	115.00	43.25	65.00	9085100145000
0.5787		14.70	16.00	115.00	42.95	65.00	9085100147000
0.5906		15.00	16.00	115.00	42.50	65.00	9085100150000
0.5984		15.20	16.00	115.00	42.20	65.00	9085100152000
0.6024		15.30	16.00	115.00	42.05	65.00	9085100153000
0.6102		15.50	16.00	115.00	41.75	65.00	9085100155000
0.6181		15.70	16.00	115.00	41.45	65.00	9085100157000
0.6299		16.00	16.00	115.00	41.00	65.00	9085100160000
0.6417		16.30	18.00	123.00	48.55	73.00	9085100163000
0.6496		16.50	18.00	123.00	48.25	73.00	9085100165000
0.6654		16.90	18.00	123.00	47.65	73.00	9085100169000
0.6693		17.00	18.00	123.00	47.50	73.00	9085100170000
0.6811		17.30	18.00	123.00	47.05	73.00	9085100173000
0.6890		17.50	18.00	123.00	46.75	73.00	9085100175000
0.7087		18.00	18.00	123.00	46.00	73.00	9085100180000
0.7283		18.50	20.00	131.00	51.25	79.00	9085100185000
0.7441		18.90	20.00	131.00	50.65	79.00	9085100189000
0.7480		19.00	20.00	131.00	50.50	79.00	9085100190000
0.7500	3/4	19.05	20.00	131.00	50.43	79.00	9085100190500
0.7598		19.30	20.00	131.00	50.05	79.00	9085100193000
0.7677		19.50	20.00	131.00	49.75	79.00	9085100195000
0.7874		20.00	20.00	131.00	49.00	79.00	9085100200000

3xD Ratio drills

Series no. **8520**

3xD	RT 100 HF	140°	m7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: Y

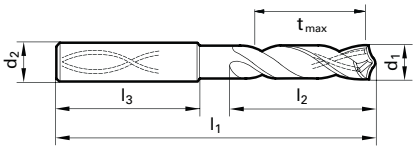
P	Steel	●
M	Stainless steel	
K	Cast iron	
N	Aluminum	
S	Titanium alloys	★
H	Hardened steel	○

★ = 1st choice
● = Optimal suitability
○ = Limited suitability

web thinning ≥ Ø 3.000 • relieved cone • main cutting edge is slightly concave • optimized cutting geometry

alloyed and high tensile steels up to 1600 N/mm² • Inconel, Hastelloy, Monel • Titanium and Titanium alloys

$t_{max} = l_2-(1.5 \times d_1)$





Speeds and feeds information on pg. 574

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	62.00	15.50	20.00	9085200030000
0.1220		3.10	6.00	62.00	15.35	20.00	9085200031000
0.1248	1/8	3.17	6.00	62.00	15.25	20.00	9085200031700
0.1260		3.20	6.00	62.00	15.20	20.00	9085200032000
0.1280		3.25	6.00	62.00	15.13	20.00	9085200032500
0.1299		3.30	6.00	62.00	15.05	20.00	9085200033000
0.1339		3.40	6.00	62.00	14.90	20.00	9085200034000
0.1378		3.50	6.00	62.00	14.75	20.00	9085200035000
0.1406	9/64 #28	3.57	6.00	62.00	14.65	20.00	9085200035700
0.1417		3.60	6.00	62.00	14.60	20.00	9085200036000
0.1457		3.70	6.00	62.00	14.45	20.00	9085200037000
0.1496	#25	3.80	6.00	66.00	18.30	24.00	9085200038000
0.1535		3.90	6.00	66.00	18.15	24.00	9085200039000
0.1563	5/32	3.97	6.00	66.00	18.05	24.00	9085200039700
0.1575		4.00	6.00	66.00	18.00	24.00	9085200040000
0.1614		4.10	6.00	66.00	17.85	24.00	9085200041000
0.1654		4.20	6.00	66.00	17.70	24.00	9085200042000
0.1693	#18	4.30	6.00	66.00	17.55	24.00	9085200043000
0.1720	11/64	4.37	6.00	66.00	17.45	24.00	9085200043700
0.1732		4.40	6.00	66.00	17.40	24.00	9085200044000
0.1772	#16	4.50	6.00	66.00	17.25	24.00	9085200045000
0.1811		4.60	6.00	66.00	17.10	24.00	9085200046000
0.1831		4.65	6.00	66.00	17.03	24.00	9085200046500
0.1850	#13	4.70	6.00	66.00	16.95	24.00	9085200047000
0.1874	3/16	4.76	6.00	66.00	20.86	28.00	9085200047600
0.1890	#12	4.80	6.00	66.00	20.80	28.00	9085200048000
0.1929		4.90	6.00	66.00	20.65	28.00	9085200049000
0.1969		5.00	6.00	66.00	20.50	28.00	9085200050000
0.2008		5.10	6.00	66.00	20.35	28.00	9085200051000
0.2031	13/64	5.16	6.00	66.00	20.26	28.00	9085200051600
0.2047		5.20	6.00	66.00	20.20	28.00	9085200052000
0.2087		5.30	6.00	66.00	20.05	28.00	9085200053000
0.2126		5.40	6.00	66.00	19.90	28.00	9085200054000
0.2165		5.50	6.00	66.00	19.75	28.00	9085200055000
0.2185		5.55	6.00	66.00	19.68	28.00	9085200055500
0.2189	7/32	5.56	6.00	66.00	19.66	28.00	9085200055600
0.2205		5.60	6.00	66.00	19.60	28.00	9085200056000
0.2244		5.70	6.00	66.00	19.45	28.00	9085200057000
0.2283		5.80	6.00	66.00	19.30	28.00	9085200058000
0.2323		5.90	6.00	66.00	19.15	28.00	9085200059000
0.2343	15/64	5.95	6.00	66.00	19.08	28.00	9085200059500
0.2362		6.00	6.00	66.00	19.00	28.00	9085200060000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2402		6.10	8.00	79.00	24.85	34.00	9085200061000
0.2441		6.20	8.00	79.00	24.70	34.00	9085200062000
0.2480		6.30	8.00	79.00	24.55	34.00	9085200063000
0.2500	1/4 E	6.35	8.00	79.00	24.48	34.00	9085200063500
0.2520		6.40	8.00	79.00	24.40	34.00	9085200064000
0.2559		6.50	8.00	79.00	24.25	34.00	9085200065000
0.2598		6.60	8.00	79.00	24.10	34.00	9085200066000
0.2638		6.70	8.00	79.00	23.95	34.00	9085200067000
0.2657	17/64 H	6.75	8.00	79.00	23.88	34.00	9085200067500
0.2677		6.80	8.00	79.00	23.80	34.00	9085200068000
0.2717	I	6.90	8.00	79.00	23.65	34.00	9085200069000
0.2756		7.00	8.00	79.00	23.50	34.00	9085200070000
0.2795		7.10	8.00	79.00	30.35	41.00	9085200071000
0.2811	9/32 K	7.14	8.00	79.00	30.29	41.00	9085200071400
0.2835		7.20	8.00	79.00	30.20	41.00	9085200072000
0.2874		7.30	8.00	79.00	30.05	41.00	9085200073000
0.2913		7.40	8.00	79.00	29.90	41.00	9085200074000
0.2953		7.50	8.00	79.00	29.75	41.00	9085200075000
0.2969	19/64	7.54	8.00	79.00	29.69	41.00	9085200075400
0.2992		7.60	8.00	79.00	29.60	41.00	9085200076000
0.3031		7.70	8.00	79.00	29.45	41.00	9085200077000
0.3071		7.80	8.00	79.00	29.30	41.00	9085200078000
0.3110		7.90	8.00	79.00	29.15	41.00	9085200079000
0.3126	5/16	7.94	8.00	79.00	29.09	41.00	9085200079400
0.3150		8.00	8.00	79.00	29.00	41.00	9085200080000
0.3189		8.10	10.00	89.00	34.85	47.00	9085200081000
0.3228	P	8.20	10.00	89.00	34.70	47.00	9085200082000
0.3268		8.30	10.00	89.00	34.55	47.00	9085200083000
0.3280	21/64	8.33	10.00	89.00	34.51	47.00	9085200083300
0.3307		8.40	10.00	89.00	34.40	47.00	9085200084000
0.3346		8.50	10.00	89.00	34.25	47.00	9085200085000
0.3386		8.60	10.00	89.00	34.10	47.00	9085200086000
0.3425		8.70	10.00	89.00	33.95	47.00	9085200087000
0.3437	11/32	8.73	10.00	89.00	33.91	47.00	9085200087300
0.3465		8.80	10.00	89.00	33.80	47.00	9085200088000
0.3504		8.90	10.00	89.00	33.65	47.00	9085200089000
0.3543		9.00	10.00	89.00	33.50	47.00	9085200090000
0.3583		9.10	10.00	89.00	33.35	47.00	9085200091000
0.3594	23/64	9.13	10.00	89.00	33.31	47.00	9085200091300
0.3622		9.20	10.00	89.00	33.20	47.00	9085200092000
0.3642		9.25	10.00	89.00	33.13	47.00	9085200092500
0.3661		9.30	10.00	89.00	33.05	47.00	9085200093000

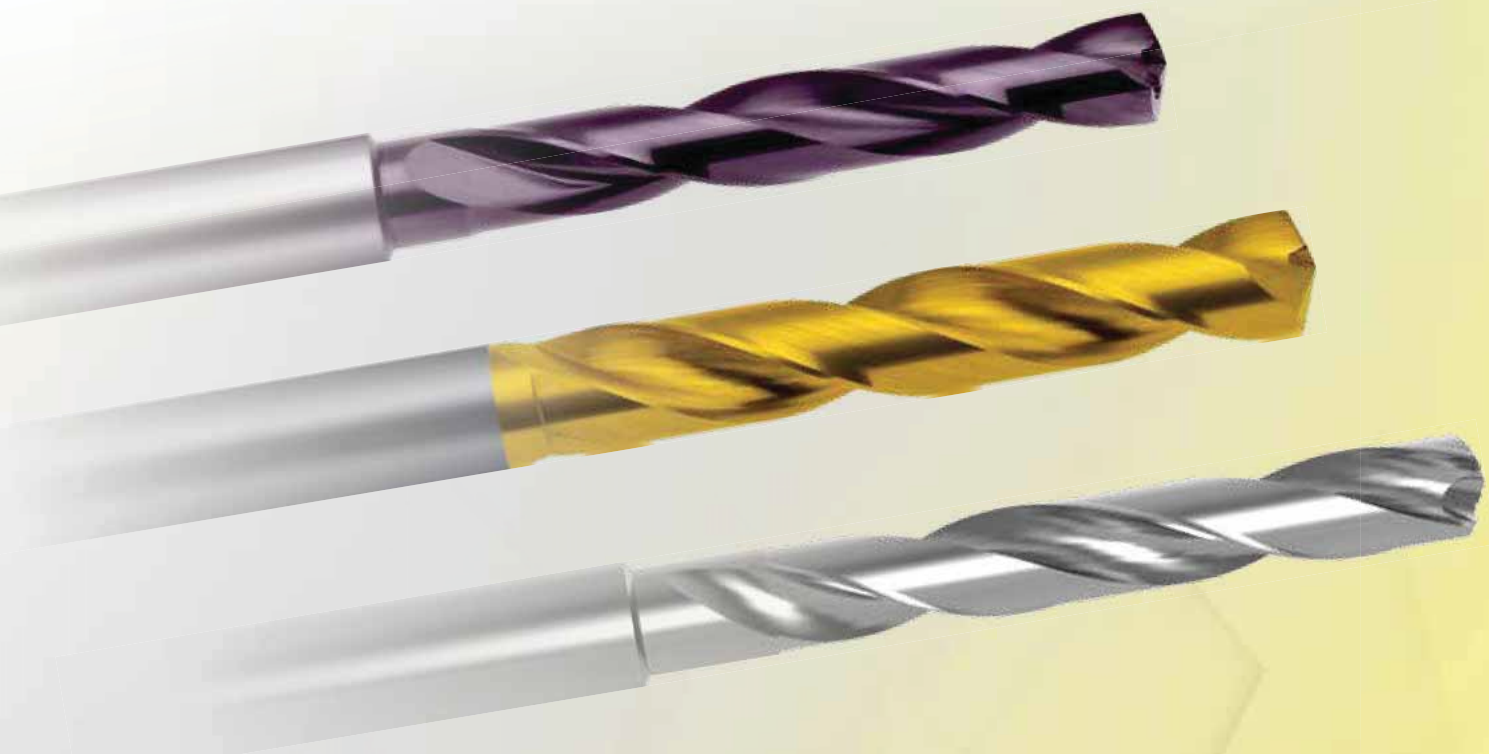
3xD Ratio drills

Series no. **8520**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3701		9.40	10.00	89.00	32.90	47.00	9085200094000
0.3740		9.50	10.00	89.00	32.75	47.00	9085200095000
0.3748	3/8	9.52	10.00	89.00	32.72	47.00	9085200095200
0.3780		9.60	10.00	89.00	32.60	47.00	9085200096000
0.3819		9.70	10.00	89.00	32.45	47.00	9085200097000
0.3858	W	9.80	10.00	89.00	32.30	47.00	9085200098000
0.3898		9.90	10.00	89.00	32.15	47.00	9085200099000
0.3906	25/64	9.92	10.00	89.00	32.12	47.00	9085200099200
0.3937		10.00	10.00	89.00	32.00	47.00	9085200100000
0.3976		10.10	12.00	102.00	39.85	55.00	9085200101000
0.4016		10.20	12.00	102.00	39.70	55.00	9085200102000
0.4055		10.30	12.00	102.00	39.55	55.00	9085200103000
0.4063	13/32	10.32	12.00	102.00	39.52	55.00	9085200103200
0.4094		10.40	12.00	102.00	39.40	55.00	9085200104000
0.4134		10.50	12.00	102.00	39.25	55.00	9085200105000
0.4173		10.60	12.00	102.00	39.10	55.00	9085200106000
0.4213		10.70	12.00	102.00	38.95	55.00	9085200107000
0.4220	27/64	10.72	12.00	102.00	38.92	55.00	9085200107200
0.4252		10.80	12.00	102.00	38.80	55.00	9085200108000
0.4291		10.90	12.00	102.00	38.65	55.00	9085200109000
0.4331		11.00	12.00	102.00	38.50	55.00	9085200110000
0.4370		11.10	12.00	102.00	38.35	55.00	9085200111000
0.4374	7/16	11.11	12.00	102.00	38.34	55.00	9085200111100
0.4409		11.20	12.00	102.00	38.20	55.00	9085200112000
0.4449		11.30	12.00	102.00	38.05	55.00	9085200113000
0.4488		11.40	12.00	102.00	37.90	55.00	9085200114000
0.4528		11.50	12.00	102.00	37.75	55.00	9085200115000
0.4531	29/64	11.51	12.00	102.00	37.74	55.00	9085200115100
0.4567		11.60	12.00	102.00	37.60	55.00	9085200116000
0.4606		11.70	12.00	102.00	37.45	55.00	9085200117000
0.4646		11.80	12.00	102.00	37.30	55.00	9085200118000
0.4685		11.90	12.00	102.00	37.15	55.00	9085200119000
0.4689	15/32	11.91	12.00	102.00	37.14	55.00	9085200119100
0.4724		12.00	12.00	102.00	37.00	55.00	9085200120000
0.4803		12.20	14.00	107.00	41.70	60.00	9085200122000
0.4843	31/64	12.30	14.00	107.00	41.55	60.00	9085200123000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4921		12.50	14.00	107.00	41.25	60.00	9085200125000
0.5000	1/2	12.70	14.00	107.00	40.95	60.00	9085200127000
0.5039		12.80	14.00	107.00	40.80	60.00	9085200128000
0.5118		13.00	14.00	107.00	40.50	60.00	9085200130000
0.5236		13.30	14.00	107.00	40.05	60.00	9085200133000
0.5311	17/32	13.49	14.00	107.00	39.77	60.00	9085200134900
0.5315		13.50	14.00	107.00	39.75	60.00	9085200135000
0.5394		13.70	14.00	107.00	39.45	60.00	9085200137000
0.5512		14.00	14.00	107.00	39.00	60.00	9085200140000
0.5591		14.20	16.00	115.00	43.70	65.00	9085200142000
0.5626	9/16	14.29	16.00	115.00	43.57	65.00	9085200142900
0.5630		14.30	16.00	115.00	43.55	65.00	9085200143000
0.5709		14.50	16.00	115.00	43.25	65.00	9085200145000
0.5787		14.70	16.00	115.00	42.95	65.00	9085200147000
0.5906		15.00	16.00	115.00	42.50	65.00	9085200150000
0.5984		15.20	16.00	115.00	42.20	65.00	9085200152000
0.6024		15.30	16.00	115.00	42.05	65.00	9085200153000
0.6102		15.50	16.00	115.00	41.75	65.00	9085200155000
0.6181		15.70	16.00	115.00	41.45	65.00	9085200157000
0.6248	5/8	15.87	16.00	115.00	41.20	65.00	9085200158700
0.6299		16.00	16.00	115.00	41.00	65.00	9085200160000
0.6417		16.30	18.00	123.00	48.55	73.00	9085200163000
0.6496		16.50	18.00	123.00	48.25	73.00	9085200165000
0.6654		16.90	18.00	123.00	47.65	73.00	9085200169000
0.6693		17.00	18.00	123.00	47.50	73.00	9085200170000
0.6811		17.30	18.00	123.00	47.05	73.00	9085200173000
0.6890		17.50	18.00	123.00	46.75	73.00	9085200175000
0.7087		18.00	18.00	123.00	46.00	73.00	9085200180000
0.7283		18.50	20.00	131.00	51.25	79.00	9085200185000
0.7441		18.90	20.00	131.00	50.65	79.00	9085200189000
0.7480		19.00	20.00	131.00	50.50	79.00	9085200190000
0.7500	3/4	19.05	20.00	131.00	50.43	79.00	9085200190500
0.7598		19.30	20.00	131.00	50.05	79.00	9085200193000
0.7677		19.50	20.00	131.00	49.75	79.00	9085200195000
0.7874		20.00	20.00	131.00	49.00	79.00	9085200200000

5xD CARBIDE RATIO DRILLS



5xD Ratio drills

Series no. **1243**

5xD	RT 100 U	140°	m7	Without Internal coolant	Cyl	R
Cutting depth	Type	Point angle	Tolerance on Ø		Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: **S**

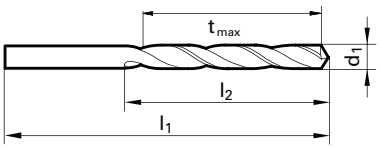
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 5.000 • facet point grinding • main cutting edge form straight • optimized cutting geometry

structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • cast materials • bronze, brass • high-alloyed AlSi-alloys

$t_{max} = l_2\text{-}1{,}5 \times d_1$





Speeds and feeds information on pg. 534

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1969		5.00	73.00	26.50	34.00	9012430050000
0.2008		5.10	76.00	30.35	38.00	9012430051000
0.2031	13/64	5.16	76.00	30.26	38.00	9012430051600
0.2047		5.20	76.00	30.20	38.00	9012430052000
0.2087		5.30	76.00	30.05	38.00	9012430053000
0.2126		5.40	76.00	29.90	38.00	9012430054000
0.2165		5.50	76.00	29.75	38.00	9012430055000
0.2189	7/32	5.56	81.00	32.66	41.00	9012430055600
0.2205		5.60	81.00	32.60	41.00	9012430056000
0.2244		5.70	81.00	32.45	41.00	9012430057000
0.2283		5.80	81.00	32.30	41.00	9012430058000
0.2323		5.90	81.00	32.15	41.00	9012430059000
0.2343	15/64	5.95	81.00	32.08	41.00	9012430059500
0.2362		6.00	81.00	32.00	41.00	9012430060000
0.2402		6.10	81.00	31.85	41.00	9012430061000
0.2441		6.20	81.00	31.70	41.00	9012430062000
0.2480		6.30	81.00	31.55	41.00	9012430063000
0.2500	1/4 E	6.35	81.00	31.48	41.00	9012430063500
0.2520		6.40	81.00	31.40	41.00	9012430064000
0.2559		6.50	81.00	31.25	41.00	9012430065000
0.2598		6.60	83.00	33.10	43.00	9012430066000
0.2638		6.70	83.00	32.95	43.00	9012430067000
0.2657	17/64 H	6.75	83.00	32.88	43.00	9012430067500
0.2677		6.80	83.00	32.80	43.00	9012430068000
0.2717	I	6.90	83.00	32.65	43.00	9012430069000
0.2756		7.00	83.00	32.50	43.00	9012430070000
0.2795		7.10	87.00	34.35	45.00	9012430071000
0.2811	9/32 K	7.14	87.00	34.29	45.00	9012430071400
0.2835		7.20	87.00	34.20	45.00	9012430072000
0.2874		7.30	87.00	34.05	45.00	9012430073000
0.2913		7.40	87.00	33.90	45.00	9012430074000
0.2953		7.50	87.00	33.75	45.00	9012430075000
0.2969	19/64	7.54	90.00	36.69	48.00	9012430075400
0.2992		7.60	90.00	36.60	48.00	9012430076000
0.3031		7.70	90.00	36.45	48.00	9012430077000
0.3071		7.80	90.00	36.30	48.00	9012430078000
0.3110		7.90	90.00	36.15	48.00	9012430079000
0.3126	5/16	7.94	90.00	36.09	48.00	9012430079400
0.3150		8.00	90.00	36.00	48.00	9012430080000
0.3189		8.10	96.00	40.85	53.00	9012430081000
0.3228	P	8.20	96.00	40.70	53.00	9012430082000
0.3268		8.30	96.00	40.55	53.00	9012430083000

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3280	21/64	8.33	96.00	40.51	53.00	9012430083300
0.3307		8.40	96.00	40.40	53.00	9012430084000
0.3346		8.50	96.00	40.25	53.00	9012430085000
0.3386		8.60	98.00	42.10	55.00	9012430086000
0.3425		8.70	98.00	41.95	55.00	9012430087000
0.3437	11/32	8.73	98.00	41.91	55.00	9012430087300
0.3465		8.80	98.00	41.80	55.00	9012430088000
0.3504		8.90	98.00	41.65	55.00	9012430089000
0.3543		9.00	98.00	41.50	55.00	9012430090000
0.3583		9.10	102.00	44.35	58.00	9012430091000
0.3594	23/64	9.13	102.00	44.31	58.00	9012430091300
0.3622		9.20	102.00	44.20	58.00	9012430092000
0.3661		9.30	102.00	44.05	58.00	9012430093000
0.3701		9.40	102.00	43.90	58.00	9012430094000
0.3740		9.50	102.00	43.75	58.00	9012430095000
0.3748	3/8	9.52	105.00	45.72	60.00	9012430095200
0.3780		9.60	105.00	45.60	60.00	9012430096000
0.3819		9.70	105.00	45.45	60.00	9012430097000
0.3858	W	9.80	105.00	45.30	60.00	9012430098000
0.3898		9.90	105.00	45.15	60.00	9012430099000
0.3906	25/64	9.92	105.00	45.12	60.00	9012430099200
0.3937		10.00	105.00	45.00	60.00	9012430100000
0.3976		10.10	112.00	50.85	66.00	9012430101000
0.4016		10.20	112.00	50.70	66.00	9012430102000
0.4055		10.30	112.00	50.55	66.00	9012430103000
0.4063	13/32	10.32	112.00	50.52	66.00	9012430103200
0.4094		10.40	112.00	50.40	66.00	9012430104000
0.4134		10.50	112.00	50.25	66.00	9012430105000
0.4173		10.60	114.00	52.10	68.00	9012430106000
0.4213		10.70	114.00	51.95	68.00	9012430107000
0.4220	27/64	10.72	114.00	51.92	68.00	9012430107200
0.4252		10.80	114.00	51.80	68.00	9012430108000
0.4291		10.90	114.00	51.65	68.00	9012430109000
0.4331		11.00	114.00	51.50	68.00	9012430110000
0.4370		11.10	118.00	54.35	71.00	9012430111000
0.4374	7/16	11.11	118.00	54.34	71.00	9012430111100
0.4409		11.20	118.00	54.20	71.00	9012430112000
0.4449		11.30	118.00	54.05	71.00	9012430113000
0.4488		11.40	118.00	53.90	71.00	9012430114000
0.4528		11.50	118.00	53.75	71.00	9012430115000
0.4531	29/64	11.51	121.00	55.74	73.00	9012430115100
0.4567		11.60	121.00	55.60	73.00	9012430116000

5xD Ratio drills

Series no. **1243**

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4606		11.70	121.00	55.45	73.00	**9012430117000**
0.4646		11.80	121.00	55.30	73.00	**9012430118000**
0.4685		11.90	121.00	55.15	73.00	**9012430119000**
0.4689	15/32	11.91	121.00	55.14	73.00	**9012430119100**
0.4724		12.00	121.00	55.00	73.00	**9012430120000**
0.4921		12.50	135.00	57.25	76.00	**9012430125000**
0.5000	1/2	12.70	137.00	58.95	78.00	**9012430127000**

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.5118		13.00	137.00	58.50	78.00	**9012430130000**
0.5315		13.50	144.00	63.75	84.00	**9012430135000**
0.5512		14.00	147.00	65.00	86.00	**9012430140000**
0.5709		14.50	151.00	67.25	89.00	**9012430145000**
0.5906		15.00	153.00	68.50	91.00	**9012430150000**
0.6102		15.50	157.00	70.75	94.00	**9012430155000**
0.6299		16.00	160.00	72.00	96.00	**9012430160000**

5xD Ratio drills

Series no. **5515**

5xD	RT 100 U	140°	m7		HA	R	
Cutting depth	Type	Point angle	Tolerance on Ø	Without Internal coolant	Shank form	Cutting direction	

Tool material: **Solid Carbide**

Surface: F

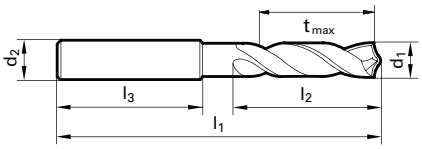
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • facet point grinding • main cutting edge form straight • optimized cutting geometry

structural and case hardened steels • free-cutting steels, heat treatable steels • steels (alloyed/unalloyed) up to 1200 N/mm² • cast materials • bronze, brass • high-alloyed AlSi-alloys

$t_{max} = l_2\text{-}1.5 \times d_1$





Speeds and feeds information on pg. 552

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	66.00	23.50	28.00	9055150030000
0.1220		3.10	6.00	66.00	23.35	28.00	9055150031000
0.1248	1/8	3.18	6.00	66.00	23.23	28.00	9055150031700
0.1260		3.20	6.00	66.00	23.20	28.00	9055150032000
0.1280		3.25	6.00	66.00	23.13	28.00	9055150032500
0.1299		3.30	6.00	66.00	23.05	28.00	9055150033000
0.1339		3.40	6.00	66.00	22.90	28.00	9055150034000
0.1378		3.50	6.00	66.00	22.75	28.00	9055150035000
0.1406	9/64	#28 3.57	6.00	66.00	22.65	28.00	9055150035700
0.1417		3.60	6.00	66.00	22.60	28.00	9055150036000
0.1457		3.70	6.00	66.00	22.45	28.00	9055150037000
0.1496		#25 3.80	6.00	74.00	30.30	36.00	9055150038000
0.1535		3.90	6.00	74.00	30.15	36.00	9055150039000
0.1563	5/32	3.97	6.00	74.00	30.05	36.00	9055150039700
0.1575		4.00	6.00	74.00	30.00	36.00	9055150040000
0.1614		4.10	6.00	74.00	29.85	36.00	9055150041000
0.1654		4.20	6.00	74.00	29.70	36.00	9055150042000
0.1693		4.30	6.00	74.00	29.55	36.00	9055150043000
0.1720	11/64	4.37	6.00	74.00	29.45	36.00	9055150043700
0.1732		4.40	6.00	74.00	29.40	36.00	9055150044000
0.1772		#16 4.50	6.00	74.00	29.25	36.00	9055150045000
0.1811		4.60	6.00	74.00	29.10	36.00	9055150046000
0.1831		4.65	6.00	74.00	29.03	36.00	9055150046500
0.1850		4.70	6.00	74.00	28.95	36.00	9055150047000
0.1874	3/16	4.76	6.00	82.00	36.86	44.00	9055150047600
0.1890		#12 4.80	6.00	82.00	36.80	44.00	9055150048000
0.1929		4.90	6.00	82.00	36.65	44.00	9055150049000
0.1969		5.00	6.00	82.00	36.50	44.00	9055150050000
0.2008		5.10	6.00	82.00	36.35	44.00	9055150051000
0.2031	13/64	5.16	6.00	82.00	36.26	44.00	9055150051600
0.2047		5.20	6.00	82.00	36.20	44.00	9055150052000
0.2067		5.25	6.00	82.00	36.13	44.00	9055150052500
0.2087		5.30	6.00	82.00	36.05	44.00	9055150053000
0.2126		5.40	6.00	82.00	35.90	44.00	9055150054000
0.2165		5.50	6.00	82.00	35.75	44.00	9055150055000
0.2185		5.55	6.00	82.00	35.68	44.00	9055150055500
0.2189	7/32	5.56	6.00	82.00	35.66	44.00	9055150055600
0.2205		5.60	6.00	82.00	35.60	44.00	9055150056000
0.2244		5.70	6.00	82.00	35.45	44.00	9055150057000
0.2283		5.80	6.00	82.00	35.30	44.00	9055150058000
0.2323		5.90	6.00	82.00	35.15	44.00	9055150059000
0.2343	15/64	5.95	6.00	82.00	35.08	44.00	9055150059500

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2362		6.00	6.00	82.00	35.00	44.00	9055150060000
0.2402		6.10	8.00	91.00	43.85	53.00	9055150061000
0.2441		6.20	8.00	91.00	43.70	53.00	9055150062000
0.2480		6.30	8.00	91.00	43.55	53.00	9055150063000
0.2500	1/4	E 6.35	8.00	91.00	43.48	53.00	9055150063500
0.2520		6.40	8.00	91.00	43.40	53.00	9055150064000
0.2559		6.50	8.00	91.00	43.25	53.00	9055150065000
0.2598		6.60	8.00	91.00	43.10	53.00	9055150066000
0.2638		6.70	8.00	91.00	42.95	53.00	9055150067000
0.2657	17/64	H 6.75	8.00	91.00	42.88	53.00	9055150067500
0.2677		6.80	8.00	91.00	42.80	53.00	9055150068000
0.2717		I 6.90	8.00	91.00	42.65	53.00	9055150069000
0.2756		7.00	8.00	91.00	42.50	53.00	9055150070000
0.2795		7.10	8.00	91.00	42.35	53.00	9055150071000
0.2811	9/32	K 7.14	8.00	91.00	42.29	53.00	9055150071400
0.2835		7.20	8.00	91.00	42.20	53.00	9055150072000
0.2874		7.30	8.00	91.00	42.05	53.00	9055150073000
0.2913		7.40	8.00	91.00	41.90	53.00	9055150074000
0.2953		7.50	8.00	91.00	41.75	53.00	9055150075000
0.2969	19/64	7.54	8.00	91.00	41.69	53.00	9055150075400
0.2992		7.60	8.00	91.00	41.60	53.00	9055150076000
0.3031		7.70	8.00	91.00	41.45	53.00	9055150077000
0.3071		7.80	8.00	91.00	41.30	53.00	9055150078000
0.3110		7.90	8.00	91.00	41.15	53.00	9055150079000
0.3125	5/16	7.94	8.00	91.00	41.09	53.00	9055150079400
0.3150		8.00	8.00	91.00	41.00	53.00	9055150080000
0.3189		8.10	10.00	103.00	48.85	61.00	9055150081000
0.3228		P 8.20	10.00	103.00	48.70	61.00	9055150082000
0.3268		8.30	10.00	103.00	48.55	61.00	9055150083000
0.3280	21/64	8.33	10.00	103.00	48.51	61.00	9055150083300
0.3307		8.40	10.00	103.00	48.40	61.00	9055150084000
0.3346		8.50	10.00	103.00	48.25	61.00	9055150085000
0.3386		8.60	10.00	103.00	48.10	61.00	9055150086000
0.3425		8.70	10.00	103.00	47.95	61.00	9055150087000
0.3437	11/32	8.73	10.00	103.00	47.91	61.00	9055150087300
0.3465		8.80	10.00	103.00	47.80	61.00	9055150088000
0.3504		8.90	10.00	103.00	47.65	61.00	9055150089000
0.3543		9.00	10.00	103.00	47.50	61.00	9055150090000
0.3583		9.10	10.00	103.00	47.35	61.00	9055150091000
0.3594	23/64	9.13	10.00	103.00	47.31	61.00	9055150091300
0.3622		9.20	10.00	103.00	47.20	61.00	9055150092000
0.3642		9.25	10.00	103.00	47.13	61.00	9055150092500

5xD Ratio drills

Series no. **5515**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3661		9.30	10.00	103.00	47.05	61.00	9055150093000
0.3701		9.40	10.00	103.00	46.90	61.00	9055150094000
0.3740		9.50	10.00	103.00	46.75	61.00	9055150095000
0.3750	3/8	9.52	10.00	103.00	46.72	61.00	9055150095200
0.3780		9.60	10.00	103.00	46.60	61.00	9055150096000
0.3819		9.70	10.00	103.00	46.45	61.00	9055150097000
0.3858	W	9.80	10.00	103.00	46.30	61.00	9055150098000
0.3898		9.90	10.00	103.00	46.15	61.00	9055150099000
0.3906	25/64	9.92	10.00	103.00	46.12	61.00	9055150099200
0.3937		10.00	10.00	103.00	46.00	61.00	9055150100000
0.3976		10.10	12.00	118.00	55.85	71.00	9055150101000
0.4016		10.20	12.00	118.00	55.70	71.00	9055150102000
0.4055		10.30	12.00	118.00	55.55	71.00	9055150103000
0.4063	13/32	10.32	12.00	118.00	55.52	71.00	9055150103200
0.4094		10.40	12.00	118.00	55.40	71.00	9055150104000
0.4134		10.50	12.00	118.00	55.25	71.00	9055150105000
0.4173		10.60	12.00	118.00	55.10	71.00	9055150106000
0.4213		10.70	12.00	118.00	54.95	71.00	9055150107000
0.4220	27/64	10.72	12.00	118.00	54.92	71.00	9055150107200
0.4252		10.80	12.00	118.00	54.80	71.00	9055150108000
0.4291		10.90	12.00	118.00	54.65	71.00	9055150109000
0.4331		11.00	12.00	118.00	54.50	71.00	9055150110000
0.4370		11.10	12.00	118.00	54.35	71.00	9055150111000
0.4374	7/16	11.11	12.00	118.00	54.34	71.00	9055150111100
0.4409		11.20	12.00	118.00	54.20	71.00	9055150112000
0.4449		11.30	12.00	118.00	54.05	71.00	9055150113000
0.4488		11.40	12.00	118.00	53.90	71.00	9055150114000
0.4528		11.50	12.00	118.00	53.75	71.00	9055150115000
0.4567		11.60	12.00	118.00	53.60	71.00	9055150116000
0.4606		11.70	12.00	118.00	53.45	71.00	9055150117000
0.4646		11.80	12.00	118.00	53.30	71.00	9055150118000
0.4685		11.90	12.00	118.00	53.15	71.00	9055150119000
0.4689	15/32	11.91	12.00	118.00	53.14	71.00	9055150119100
0.4724		12.00	12.00	118.00	53.00	71.00	9055150120000
0.4764		12.10	14.00	124.00	58.85	77.00	9055150121000
0.4803		12.20	14.00	124.00	58.70	77.00	9055150122000
0.4843	31/64	12.30	14.00	124.00	58.55	77.00	9055150123000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4882		12.40	14.00	124.00	58.40	77.00	9055150124000
0.4921		12.50	14.00	124.00	58.25	77.00	9055150125000
0.4961		12.60	14.00	124.00	58.10	77.00	9055150126000
0.5000	1/2	12.70	14.00	124.00	57.95	77.00	9055150127000
0.5118		13.00	14.00	124.00	57.50	77.00	9055150130000
0.5157	33/64	13.10	14.00	124.00	57.35	77.00	9055150131000
0.5197		13.20	14.00	124.00	57.20	77.00	9055150132000
0.5236		13.30	14.00	124.00	57.05	77.00	9055150133000
0.5315		13.50	14.00	124.00	56.75	77.00	9055150135000
0.5394		13.70	14.00	124.00	56.45	77.00	9055150137000
0.5433		13.80	14.00	124.00	56.30	77.00	9055150138000
0.5512		14.00	14.00	124.00	56.00	77.00	9055150140000
0.5551		14.10	16.00	133.00	61.85	83.00	9055150141000
0.5591		14.20	16.00	133.00	61.70	83.00	9055150142000
0.5626	9/16	14.29	16.00	133.00	61.57	83.00	9055150142900
0.5630		14.30	16.00	133.00	61.55	83.00	9055150143000
0.5669		14.40	16.00	133.00	61.40	83.00	9055150144000
0.5709		14.50	16.00	133.00	61.25	83.00	9055150145000
0.5787		14.70	16.00	133.00	60.95	83.00	9055150147000
0.5906		15.00	16.00	133.00	60.50	83.00	9055150150000
0.5945		15.10	16.00	133.00	60.35	83.00	9055150151000
0.5984		15.20	16.00	133.00	60.20	83.00	9055150152000
0.6102		15.50	16.00	133.00	59.75	83.00	9055150155000
0.6142		15.60	16.00	133.00	59.60	83.00	9055150156000
0.6181		15.70	16.00	133.00	59.45	83.00	9055150157000
0.6220		15.80	16.00	133.00	59.30	83.00	9055150158000
0.6250	5/8	15.87	16.00	133.00	59.20	83.00	9055150158700
0.6299		16.00	16.00	133.00	59.00	83.00	9055150160000
0.6496		16.50	18.00	143.00	68.25	93.00	9055150165000
0.6693		17.00	18.00	143.00	67.50	93.00	9055150170000
0.6890		17.50	18.00	143.00	66.75	93.00	9055150175000
0.7087		18.00	18.00	143.00	66.00	93.00	9055150180000
0.7283		18.50	20.00	153.00	73.25	101.00	9055150185000
0.7480		19.00	20.00	153.00	72.50	101.00	9055150190000
0.7677		19.50	20.00	153.00	71.75	101.00	9055150195000
0.7874		20.00	20.00	153.00	71.00	101.00	9055150200000

5xD Ratio drills

Series no. **1662**

Tool material **Solid Carbide**

Surface **S**

5xD	RT 100 F	140°	m7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

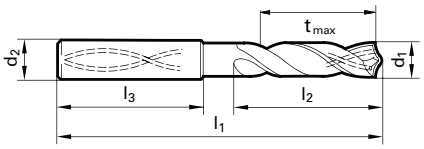
P	Steel	○
M	Stainless steel	○
K	Cast iron	○
N	Aluminum	○
S	Titanium alloys	●
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • main cutting edge form concave • optimized cutting geometry • sharp cutting edges

high-alloyed steels • stainless/acid-/heat-resistant steels • Inconel, Hastelloy, Monel • brass, bronzes • aluminum and Al-alloys • magnesium and magnesium alloys • Titanium and Titanium alloys • sintered powder metals

$t_{max} = l_2\text{-}1{,}5 \times d_1$





Speeds and feeds information on pg. 535

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	66.00	23.50	28.00	9016620030000
0.1220		3.10	6.00	66.00	23.35	28.00	9016620031000
0.1248	1/8	3.17	6.00	66.00	23.25	28.00	9016620031700
0.1260		3.20	6.00	66.00	23.20	28.00	9016620032000
0.1299		3.30	6.00	66.00	23.05	28.00	9016620033000
0.1339		3.40	6.00	66.00	22.90	28.00	9016620034000
0.1378		3.50	6.00	66.00	22.75	28.00	9016620035000
0.1406	9/64 #28	3.57	6.00	66.00	22.65	28.00	9016620035700
0.1417		3.60	6.00	66.00	22.60	28.00	9016620036000
0.1457		3.70	6.00	66.00	22.45	28.00	9016620037000
0.1496		3.80	6.00	74.00	30.30	36.00	9016620038000
0.1535		3.90	6.00	74.00	30.15	36.00	9016620039000
0.1563	5/32	3.97	6.00	74.00	30.05	36.00	9016620039700
0.1575		4.00	6.00	74.00	30.00	36.00	9016620040000
0.1614		4.10	6.00	74.00	29.85	36.00	9016620041000
0.1654		4.20	6.00	74.00	29.70	36.00	9016620042000
0.1693	#18	4.30	6.00	74.00	29.55	36.00	9016620043000
0.1720	11/64	4.37	6.00	74.00	29.45	36.00	9016620043700
0.1732		4.40	6.00	74.00	29.40	36.00	9016620044000
0.1772	#16	4.50	6.00	74.00	29.25	36.00	9016620045000
0.1811		4.60	6.00	74.00	29.10	36.00	9016620046000
0.1831		4.65	6.00	74.00	29.03	36.00	9016620046500
0.1850	#13	4.70	6.00	74.00	28.95	36.00	9016620047000
0.1874	3/16	4.76	6.00	82.00	36.86	44.00	9016620047600
0.1890	#12	4.80	6.00	82.00	36.80	44.00	9016620048000
0.1929		4.90	6.00	82.00	36.65	44.00	9016620049000
0.1969		5.00	6.00	82.00	36.50	44.00	9016620050000
0.2008		5.10	6.00	82.00	36.35	44.00	9016620051000
0.2031	13/64	5.16	6.00	82.00	36.26	44.00	9016620051600
0.2047		5.20	6.00	82.00	36.20	44.00	9016620052000
0.2087		5.30	6.00	82.00	36.05	44.00	9016620053000
0.2126		5.40	6.00	82.00	35.90	44.00	9016620054000
0.2165		5.50	6.00	82.00	35.75	44.00	9016620055000
0.2185		5.55	6.00	82.00	35.68	44.00	9016620055500
0.2189	7/32	5.56	6.00	82.00	35.66	44.00	9016620055600
0.2205		5.60	6.00	82.00	35.60	44.00	9016620056000
0.2185		5.65	6.00	82.00	35.53	44.00	9016620056500
0.2244		5.70	6.00	82.00	35.45	44.00	9016620057000
0.2283		5.80	6.00	82.00	35.30	44.00	9016620058000
0.2323		5.90	6.00	82.00	35.15	44.00	9016620059000
0.2343	15/64	5.95	6.00	82.00	35.08	44.00	9016620059500
0.2362		6.00	6.00	82.00	35.00	44.00	9016620060000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2402		6.10	8.00	91.00	43.85	53.00	9016620061000
0.2441		6.20	8.00	91.00	43.70	53.00	9016620062000
0.2480		6.30	8.00	91.00	43.55	53.00	9016620063000
0.2500	1/4 E	6.35	8.00	91.00	43.48	53.00	9016620063500
0.2520		6.40	8.00	91.00	43.40	53.00	9016620064000
0.2559		6.50	8.00	91.00	43.25	53.00	9016620065000
0.2598		6.60	8.00	91.00	43.10	53.00	9016620066000
0.2638		6.70	8.00	91.00	42.95	53.00	9016620067000
0.2657	17/64 H	6.75	8.00	91.00	42.88	53.00	9016620067500
0.2677		6.80	8.00	91.00	42.80	53.00	9016620068000
0.2717	I	6.90	8.00	91.00	42.65	53.00	9016620069000
0.2756		7.00	8.00	91.00	42.50	53.00	9016620070000
0.2795		7.10	8.00	91.00	42.35	53.00	9016620071000
0.2811	9/32 K	7.14	8.00	91.00	42.29	53.00	9016620071400
0.2835		7.20	8.00	91.00	42.20	53.00	9016620072000
0.2874		7.30	8.00	91.00	42.05	53.00	9016620073000
0.2913		7.40	8.00	91.00	41.90	53.00	9016620074000
0.2953		7.50	8.00	91.00	41.75	53.00	9016620075000
0.2969	19/64	7.54	8.00	91.00	41.69	53.00	9016620075400
0.2992		7.60	8.00	91.00	41.60	53.00	9016620076000
0.3031		7.70	8.00	91.00	41.45	53.00	9016620077000
0.3071		7.80	8.00	91.00	41.30	53.00	9016620078000
0.3110		7.90	8.00	91.00	41.15	53.00	9016620079000
0.3126	5/16	7.94	8.00	91.00	41.09	53.00	9016620079400
0.3150		8.00	8.00	91.00	41.00	53.00	9016620080000
0.3189		8.10	10.00	103.00	48.85	61.00	9016620081000
0.3228	P	8.20	10.00	103.00	48.70	61.00	9016620082000
0.3268		8.30	10.00	103.00	48.55	61.00	9016620083000
0.3280	21/64	8.33	10.00	103.00	48.51	61.00	9016620083300
0.3307		8.40	10.00	103.00	48.40	61.00	9016620084000
0.3346		8.50	10.00	103.00	48.25	61.00	9016620085000
0.3386		8.60	10.00	103.00	48.10	61.00	9016620086000
0.3425		8.70	10.00	103.00	47.95	61.00	9016620087000
0.3437	11/32	8.73	10.00	103.00	47.91	61.00	9016620087300
0.3465		8.80	10.00	103.00	47.80	61.00	9016620088000
0.3504		8.90	10.00	103.00	47.65	61.00	9016620089000
0.3543		9.00	10.00	103.00	47.50	61.00	9016620090000
0.3583		9.10	10.00	103.00	47.35	61.00	9016620091000
0.3594	23/64	9.13	10.00	103.00	47.31	61.00	9016620091300
0.3622		9.20	10.00	103.00	47.20	61.00	9016620092000
0.3642		9.25	10.00	103.00	47.13	61.00	9016620092500
0.3661		9.30	10.00	103.00	47.05	61.00	9016620093000

5xD Ratio drills

Series no. **1662**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3701		9.40	10.00	103.00	46.90	61.00	9016620094000
0.3740		9.50	10.00	103.00	46.75	61.00	9016620095000
0.3748	3/8	9.52	10.00	103.00	46.72	61.00	9016620095200
0.3780		9.60	10.00	103.00	46.60	61.00	9016620096000
0.3819		9.70	10.00	103.00	46.45	61.00	9016620097000
0.3858	W	9.80	10.00	103.00	46.30	61.00	9016620098000
0.3898		9.90	10.00	103.00	46.15	61.00	9016620099000
0.3906	25/64	9.92	10.00	103.00	46.12	61.00	9016620099200
0.3937		10.00	10.00	103.00	46.00	61.00	9016620100000
0.3976		10.10	12.00	118.00	55.85	71.00	9016620101000
0.4016		10.20	12.00	118.00	55.70	71.00	9016620102000
0.4063	13/32	10.32	12.00	118.00	55.52	71.00	9016620103200
0.4134		10.50	12.00	118.00	55.25	71.00	9016620105000
0.4213		10.70	12.00	118.00	54.95	71.00	9016620107000
0.4220	27/64	10.72	12.00	118.00	54.92	71.00	9016620107200
0.4252		10.80	12.00	118.00	54.80	71.00	9016620108000
0.4331		11.00	12.00	118.00	54.50	71.00	9016620110000
0.4370		11.10	12.00	118.00	54.35	71.00	9016620111000
0.4374	7/16	11.11	12.00	118.00	54.34	71.00	9016620111100
0.4409		11.20	12.00	118.00	54.20	71.00	9016620112000
0.4449		11.30	12.00	118.00	54.05	71.00	9016620113000
0.4488		11.40	12.00	118.00	53.90	71.00	9016620114000
0.4528		11.50	12.00	118.00	53.75	71.00	9016620115000
0.4531	29/64	11.51	12.00	118.00	53.74	71.00	9016620115100
0.4606		11.70	12.00	118.00	53.45	71.00	9016620117000
0.4646		11.80	12.00	118.00	53.30	71.00	9016620118000
0.4689	15/32	11.91	12.00	118.00	53.14	71.00	9016620119100
0.4724		12.00	12.00	118.00	53.00	71.00	9016620120000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4764		12.10	14.00	124.00	58.85	77.00	9016620121000
0.4803		12.20	14.00	124.00	58.70	77.00	9016620122000
0.4843	31/64	12.30	14.00	124.00	58.55	77.00	9016620123000
0.4921		12.50	14.00	124.00	58.25	77.00	9016620125000
0.5000	1/2	12.70	14.00	124.00	57.95	77.00	9016620127000
0.5039		12.80	14.00	124.00	57.80	77.00	9016620128000
0.5079		12.90	14.00	124.00	57.65	77.00	9016620129000
0.5118		13.00	14.00	124.00	57.50	77.00	9016620130000
0.5197		13.20	14.00	124.00	57.20	77.00	9016620132000
0.5236		13.30	14.00	124.00	57.05	77.00	9016620133000
0.5315		13.50	14.00	124.00	56.75	77.00	9016620135000
0.5433		13.80	14.00	124.00	56.30	77.00	9016620138000
0.5512		14.00	14.00	124.00	56.00	77.00	9016620140000
0.5551		14.10	16.00	133.00	61.85	83.00	9016620141000
0.5709		14.50	16.00	133.00	61.25	83.00	9016620145000
0.5709		14.60	16.00	133.00	61.10	83.00	9016620146000
0.5906		15.00	16.00	133.00	60.50	83.00	9016620150000
0.6024		15.30	16.00	133.00	60.05	83.00	9016620153000
0.6102		15.50	16.00	133.00	59.75	83.00	9016620155000
0.6220		15.80	16.00	133.00	59.30	83.00	9016620158000
0.6299		16.00	16.00	133.00	59.00	83.00	9016620160000
0.6496		16.50	18.00	143.00	68.25	93.00	9016620165000
0.6693		17.00	18.00	143.00	67.50	93.00	9016620170000
0.6890		17.50	18.00	143.00	66.75	93.00	9016620175000
0.7087		18.00	18.00	143.00	66.00	93.00	9016620180000
0.7480		19.00	20.00	153.00	72.50	101.00	9016620190000
0.7874		20.00	20.00	153.00	71.00	101.00	9016620200000

5xD Ratio drills

Series no. **1183**

5xD	RT 100 U	140°	m7		HE	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: **S**

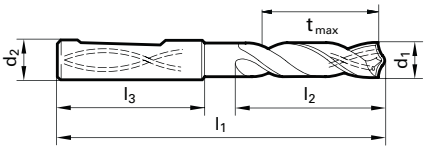
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.300 • facet point grinding • main cutting edge form straight • optimized cutting geometry

structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • cast materials • bronze, brass • high-alloyed AlSi-alloys

$t_{max} = l_2-(1.5 \times d_1)$





Speeds and feeds information on pg. 532

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	66.00	23.50	28.00	9011830030000
0.1220		3.10	6.00	66.00	23.35	28.00	9011830031000
0.1260		3.20	6.00	66.00	23.20	28.00	9011830032000
0.1299		3.30	6.00	66.00	23.05	28.00	9011830033000
0.1339		3.40	6.00	66.00	22.90	28.00	9011830034000
0.1378		3.50	6.00	66.00	22.75	28.00	9011830035000
0.1417		3.60	6.00	66.00	22.60	28.00	9011830036000
0.1457		3.70	6.00	66.00	22.45	28.00	9011830037000
0.1496	#25	3.80	6.00	74.00	30.30	36.00	9011830038000
0.1535		3.90	6.00	74.00	30.15	36.00	9011830039000
0.1575		4.00	6.00	74.00	30.00	36.00	9011830040000
0.1614		4.10	6.00	74.00	29.85	36.00	9011830041000
0.1654		4.20	6.00	74.00	29.70	36.00	9011830042000
0.1693	#18	4.30	6.00	74.00	29.55	36.00	9011830043000
0.1720	11/64	4.37	6.00	74.00	29.45	36.00	9011830043700
0.1732		4.40	6.00	74.00	29.40	36.00	9011830044000
0.1772	#16	4.50	6.00	74.00	29.25	36.00	9011830045000
0.1811		4.60	6.00	74.00	29.10	36.00	9011830046000
0.1831		4.65	6.00	74.00	29.03	36.00	9011830046500
0.1850	#13	4.70	6.00	74.00	28.95	36.00	9011830047000
0.1874	3/16	4.76	6.00	82.00	36.86	44.00	9011830047600
0.1890	#12	4.80	6.00	82.00	36.80	44.00	9011830048000
0.1929		4.90	6.00	82.00	36.65	44.00	9011830049000
0.1969		5.00	6.00	82.00	36.50	44.00	9011830050000
0.2008		5.10	6.00	82.00	36.35	44.00	9011830051000
0.2031	13/64	5.16	6.00	82.00	36.26	44.00	9011830051600
0.2047		5.20	6.00	82.00	36.20	44.00	9011830052000
0.2087		5.30	6.00	82.00	36.05	44.00	9011830053000
0.2126		5.40	6.00	82.00	35.90	44.00	9011830054000
0.2165		5.50	6.00	82.00	35.75	44.00	9011830055000
0.2189	7/32	5.56	6.00	82.00	35.66	44.00	9011830055600
0.2205		5.60	6.00	82.00	35.60	44.00	9011830056000
0.2244		5.70	6.00	82.00	35.45	44.00	9011830057000
0.2283		5.80	6.00	82.00	35.30	44.00	9011830058000
0.2323		5.90	6.00	82.00	35.15	44.00	9011830059000
0.2343	15/64	5.95	6.00	82.00	35.08	44.00	9011830059500
0.2362		6.00	6.00	82.00	35.00	44.00	9011830060000
0.2402		6.10	8.00	91.00	43.85	53.00	9011830061000
0.2441		6.20	8.00	91.00	43.70	53.00	9011830062000
0.2480		6.30	8.00	91.00	43.55	53.00	9011830063000
0.2500	1/4 E	6.35	8.00	91.00	43.48	53.00	9011830063500
0.2520		6.40	8.00	91.00	43.40	53.00	9011830064000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2559		6.50	8.00	91.00	43.25	53.00	9011830065000
0.2598		6.60	8.00	91.00	43.10	53.00	9011830066000
0.2638		6.70	8.00	91.00	42.95	53.00	9011830067000
0.2657	17/64 H	6.75	8.00	91.00	42.88	53.00	9011830067500
0.2677		6.80	8.00	91.00	42.80	53.00	9011830068000
0.2717	I	6.90	8.00	91.00	42.65	53.00	9011830069000
0.2756		7.00	8.00	91.00	42.50	53.00	9011830070000
0.2795		7.10	8.00	91.00	42.35	53.00	9011830071000
0.2811	9/32 K	7.14	8.00	91.00	42.29	53.00	9011830071400
0.2835		7.20	8.00	91.00	42.20	53.00	9011830072000
0.2874		7.30	8.00	91.00	42.05	53.00	9011830073000
0.2913		7.40	8.00	91.00	41.90	53.00	9011830074000
0.2953		7.50	8.00	91.00	41.75	53.00	9011830075000
0.2969	19/64	7.54	8.00	91.00	41.69	53.00	9011830075400
0.2992		7.60	8.00	91.00	41.60	53.00	9011830076000
0.3031		7.70	8.00	91.00	41.45	53.00	9011830077000
0.3071		7.80	8.00	91.00	41.30	53.00	9011830078000
0.3110		7.90	8.00	91.00	41.15	53.00	9011830079000
0.3125	5/16	7.94	8.00	91.00	41.09	53.00	9011830079400
0.3150		8.00	8.00	91.00	41.00	53.00	9011830080000
0.3189		8.10	10.00	103.00	48.85	61.00	9011830081000
0.3228	P	8.20	10.00	103.00	48.70	61.00	9011830082000
0.3268		8.30	10.00	103.00	48.55	61.00	9011830083000
0.3280	21/64	8.33	10.00	103.00	48.51	61.00	9011830083300
0.3307		8.40	10.00	103.00	48.40	61.00	9011830084000
0.3346		8.50	10.00	103.00	48.25	61.00	9011830085000
0.3386		8.60	10.00	103.00	48.10	61.00	9011830086000
0.3425		8.70	10.00	103.00	47.95	61.00	9011830087000
0.3437	11/32	8.73	10.00	103.00	47.91	61.00	9011830087300
0.3465		8.80	10.00	103.00	47.80	61.00	9011830088000
0.3504		8.90	10.00	103.00	47.65	61.00	9011830089000
0.3543		9.00	10.00	103.00	47.50	61.00	9011830090000
0.3583		9.10	10.00	103.00	47.35	61.00	9011830091000
0.3594	23/64	9.13	10.00	103.00	47.31	61.00	9011830091300
0.3622		9.20	10.00	103.00	47.20	61.00	9011830092000
0.3661		9.30	10.00	103.00	47.05	61.00	9011830093000
0.3701		9.40	10.00	103.00	46.90	61.00	9011830094000
0.3740		9.50	10.00	103.00	46.75	61.00	9011830095000
0.3750	3/8	9.52	10.00	103.00	46.72	61.00	9011830095200
0.3780		9.60	10.00	103.00	46.60	61.00	9011830096000
0.3819		9.70	10.00	103.00	46.45	61.00	9011830097000
0.3858	W	9.80	10.00	103.00	46.30	61.00	9011830098000

5xD Ratio drills

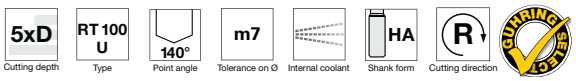
Series no. **1183**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3898		9.90	10.00	103.00	46.15	61.00	9011830099000
0.3906	25/64	9.92	10.00	103.00	46.12	61.00	9011830099200
0.3937		10.00	10.00	103.00	46.00	61.00	9011830100000
0.3976		10.10	12.00	118.00	55.85	71.00	9011830101000
0.4016		10.20	12.00	118.00	55.70	71.00	9011830102000
0.4055		10.30	12.00	118.00	55.55	71.00	9011830103000
0.4063	13/32	10.32	12.00	118.00	55.52	71.00	9011830103200
0.4094		10.40	12.00	118.00	55.40	71.00	9011830104000
0.4134		10.50	12.00	118.00	55.25	71.00	9011830105000
0.4173		10.60	12.00	118.00	55.10	71.00	9011830106000
0.4213		10.70	12.00	118.00	54.95	71.00	9011830107000
0.4220	27/64	10.72	12.00	118.00	54.92	71.00	9011830107200
0.4252		10.80	12.00	118.00	54.80	71.00	9011830108000
0.4291		10.90	12.00	118.00	54.65	71.00	9011830109000
0.4331		11.00	12.00	118.00	54.50	71.00	9011830110000
0.4370		11.10	12.00	118.00	54.35	71.00	9011830111000
0.4374	7/16	11.11	12.00	118.00	54.34	71.00	9011830111100
0.4409		11.20	12.00	118.00	54.20	71.00	9011830112000
0.4449		11.30	12.00	118.00	54.05	71.00	9011830113000
0.4488		11.40	12.00	118.00	53.90	71.00	9011830114000
0.4528		11.50	12.00	118.00	53.75	71.00	9011830115000
0.4531	29/64	11.51	12.00	118.00	53.74	71.00	9011830115100
0.4567		11.60	12.00	118.00	53.60	71.00	9011830116000
0.4606		11.70	12.00	118.00	53.45	71.00	9011830117000
0.4646		11.80	12.00	118.00	53.30	71.00	9011830118000
0.4685		11.90	12.00	118.00	53.15	71.00	9011830119000
0.4689	15/32	11.91	12.00	118.00	53.14	71.00	9011830119100
0.4724		12.00	12.00	118.00	53.00	71.00	9011830120000
0.4764		12.10	14.00	124.00	58.85	77.00	9011830121000
0.4803		12.20	14.00	124.00	58.70	77.00	9011830122000
0.4843	31/64	12.30	14.00	124.00	58.55	77.00	9011830123000
0.4882		12.40	14.00	124.00	58.40	77.00	9011830124000
0.4921		12.50	14.00	124.00	58.25	77.00	9011830125000
0.4961		12.60	14.00	124.00	58.10	77.00	9011830126000
0.5000	1/2	12.70	14.00	124.00	57.95	77.00	9011830127000
0.5039		12.80	14.00	124.00	57.80	77.00	9011830128000
0.5079		12.90	14.00	124.00	57.65	77.00	9011830129000
0.5118		13.00	14.00	124.00	57.50	77.00	9011830130000
0.5157	33/64	13.10	14.00	124.00	57.35	77.00	9011830131000
0.5197		13.20	14.00	124.00	57.20	77.00	9011830132000
0.5236		13.30	14.00	124.00	57.05	77.00	9011830133000
0.5276		13.40	14.00	124.00	56.90	77.00	9011830134000
0.5315		13.50	14.00	124.00	56.75	77.00	9011830135000
0.5354		13.60	14.00	124.00	56.60	77.00	9011830136000
0.5394		13.70	14.00	124.00	56.45	77.00	9011830137000
0.5433		13.80	14.00	124.00	56.30	77.00	9011830138000
0.5469	35/64	13.89	14.00	124.00	56.17	77.00	9011830138900
0.5472		13.90	14.00	124.00	56.15	77.00	9011830139000
0.5512		14.00	14.00	124.00	56.00	77.00	9011830140000
0.5551		14.10	16.00	133.00	61.85	83.00	9011830141000
0.5591		14.20	16.00	133.00	61.70	83.00	9011830142000
0.5626	9/16	14.29	16.00	133.00	61.57	83.00	9011830142900
0.5630		14.30	16.00	133.00	61.55	83.00	9011830143000
0.5669		14.40	16.00	133.00	61.40	83.00	9011830144000
0.5709		14.50	16.00	133.00	61.25	83.00	9011830145000
0.5748		14.60	16.00	133.00	61.10	83.00	9011830146000
0.5780	37/64	14.68	16.00	133.00	60.98	83.00	9011830146800
0.5787		14.70	16.00	133.00	60.95	83.00	9011830147000
0.5827		14.80	16.00	133.00	60.80	83.00	9011830148000
0.5866		14.90	16.00	133.00	60.65	83.00	9011830149000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.5906		15.00	16.00	133.00	60.50	83.00	9011830150000
0.5945		15.10	16.00	133.00	60.35	83.00	9011830151000
0.5984		15.20	16.00	133.00	60.20	83.00	9011830152000
0.6024		15.30	16.00	133.00	60.05	83.00	9011830153000
0.6063		15.40	16.00	133.00	59.90	83.00	9011830154000
0.6094	39/64	15.48	16.00	133.00	59.78	83.00	9011830154800
0.6102		15.50	16.00	133.00	59.75	83.00	9011830155000
0.6142		15.60	16.00	133.00	59.60	83.00	9011830156000
0.6181		15.70	16.00	133.00	59.45	83.00	9011830157000
0.6220		15.80	16.00	133.00	59.30	83.00	9011830158000
0.6250	5/8	15.87	16.00	133.00	59.20	83.00	9011830158700
0.6260		15.90	16.00	133.00	59.15	83.00	9011830159000
0.6299		16.00	16.00	133.00	59.00	83.00	9011830160000
0.6339		16.10	18.00	143.00	68.85	93.00	9011830161000
0.6378		16.20	18.00	143.00	68.70	93.00	9011830162000
0.6406	41/64	16.27	18.00	143.00	68.60	93.00	9011830162700
0.6417		16.30	18.00	143.00	68.55	93.00	9011830163000
0.6457		16.40	18.00	143.00	68.40	93.00	9011830164000
0.6496		16.50	18.00	143.00	68.25	93.00	9011830165000
0.6535		16.60	18.00	143.00	68.10	93.00	9011830166000
0.6575		16.70	18.00	143.00	67.95	93.00	9011830167000
0.6614		16.80	18.00	143.00	67.80	93.00	9011830168000
0.6654		16.90	18.00	143.00	67.65	93.00	9011830169000
0.6693		17.00	18.00	143.00	67.50	93.00	9011830170000
0.6720	43/64	17.07	18.00	143.00	67.40	93.00	9011830170700
0.6732		17.10	18.00	143.00	67.35	93.00	9011830171000
0.6772		17.20	18.00	143.00	67.20	93.00	9011830172000
0.6811		17.30	18.00	143.00	67.05	93.00	9011830173000
0.6850		17.40	18.00	143.00	66.90	93.00	9011830174000
0.6874	11/16	17.46	18.00	143.00	66.81	93.00	9011830174600
0.6890		17.50	18.00	143.00	66.75	93.00	9011830175000
0.6929		17.60	18.00	143.00	66.60	93.00	9011830176000
0.6969		17.70	18.00	143.00	66.45	93.00	9011830177000
0.7008		17.80	18.00	143.00	66.30	93.00	9011830178000
0.7031	45/64	17.86	18.00	143.00	66.21	93.00	9011830178600
0.7047		17.90	18.00	143.00	66.15	93.00	9011830179000
0.7087		18.00	18.00	143.00	66.00	93.00	9011830180000
0.7126		18.10	20.00	153.00	73.85	101.00	9011830181000
0.7165		18.20	20.00	153.00	73.70	101.00	9011830182000
0.7205		18.30	20.00	153.00	73.55	101.00	9011830183000
0.7244		18.40	20.00	153.00	73.40	101.00	9011830184000
0.7283		18.50	20.00	153.00	73.25	101.00	9011830185000
0.7323		18.60	20.00	153.00	73.10	101.00	9011830186000
0.7343	47/64	18.65	20.00	153.00	73.03	101.00	9011830186500
0.7362		18.70	20.00	153.00	72.95	101.00	9011830187000
0.7402		18.80	20.00	153.00	72.80	101.00	9011830188000
0.7441		18.90	20.00	153.00	72.65	101.00	9011830189000
0.7480		19.00	20.00	153.00	72.50	101.00	9011830190000
0.7500	3/4	19.05	20.00	153.00	72.43	101.00	9011830190500
0.7520		19.10	20.00	153.00	72.35	101.00	9011830191000
0.7559		19.20	20.00	153.00	72.20	101.00	9011830192000
0.7598		19.30	20.00	153.00	72.05	101.00	9011830193000
0.7657	49/64	19.45	20.00	153.00	71.83	101.00	9011830194500
0.7677		19.50	20.00	153.00	71.75	101.00	9011830195000
0.7717		19.60	20.00	153.00	71.60	101.00	9011830196000
0.7756		19.70	20.00	153.00	71.45	101.00	9011830197000
0.7795		19.80	20.00	153.00	71.30	101.00	9011830198000
0.7835		19.90	20.00	153.00	71.15	101.00	9011830199000
0.7874		20.00	20.00	153.00	71.00	101.00	9011830200000

5xD Ratio drills

Series no. **5511**



Tool material **Solid Carbide**

Surface **F**

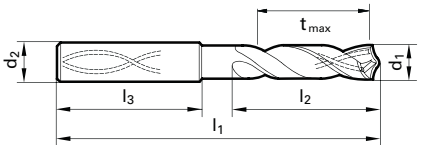
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • facet point grinding • main cutting edge form straight • optimized cutting geometry

structural and case hardened steels • free-cutting steels, heat treatable steels • steels (alloyed/unalloyed) up to 1200 N/mm² • cast materials • bronze, brass • high-alloyed AlSi-alloys

$t_{max} = l_2-(1.5 \times d_1)$





Speeds and feeds information on pg. 550

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	66.00	23.50	28.00	9055110030000
0.1220		3.10	6.00	66.00	23.35	28.00	9055110031000
0.1248	1/8	3.18	6.00	66.00	23.23	28.00	9055110031700
0.1260		3.20	6.00	66.00	23.20	28.00	9055110032000
0.1280		3.25	6.00	66.00	23.13	28.00	9055110032500
0.1299		3.30	6.00	66.00	23.05	28.00	9055110033000
0.1339		3.40	6.00	66.00	22.90	28.00	9055110034000
0.1378		3.50	6.00	66.00	22.75	28.00	9055110035000
0.1406	9/64	#28 3.57	6.00	66.00	22.65	28.00	9055110035700
0.1417		3.60	6.00	66.00	22.60	28.00	9055110036000
0.1457		3.70	6.00	66.00	22.45	28.00	9055110037000
0.1496		#25 3.80	6.00	74.00	30.30	36.00	9055110038000
0.1535		3.90	6.00	74.00	30.15	36.00	9055110039000
0.1563	5/32	3.97	6.00	74.00	30.05	36.00	9055110039700
0.1575		4.00	6.00	74.00	30.00	36.00	9055110040000
0.1591		#21 4.04	6.00	74.00	29.94	36.00	9055110040400
0.1614		4.10	6.00	74.00	29.85	36.00	9055110041000
0.1654		4.20	6.00	74.00	29.70	36.00	9055110042000
0.1693		#18 4.30	6.00	74.00	29.55	36.00	9055110043000
0.1720	11/64	4.37	6.00	74.00	29.45	36.00	9055110043700
0.1732		4.40	6.00	74.00	29.40	36.00	9055110044000
0.1772		#16 4.50	6.00	74.00	29.25	36.00	9055110045000
0.1811		4.60	6.00	74.00	29.10	36.00	9055110046000
0.1831		4.65	6.00	74.00	29.03	36.00	9055110046500
0.1850		#13 4.70	6.00	74.00	28.95	36.00	9055110047000
0.1874	3/16	4.76	6.00	82.00	36.86	44.00	9055110047600
0.1890		#12 4.80	6.00	82.00	36.80	44.00	9055110048000
0.1929		4.90	6.00	82.00	36.65	44.00	9055110049000
0.1969		5.00	6.00	82.00	36.50	44.00	9055110050000
0.2008		5.10	6.00	82.00	36.35	44.00	9055110051000
0.2012		#7 5.11	6.00	82.00	36.34	44.00	9055110051100
0.2031	13/64	5.16	6.00	82.00	36.26	44.00	9055110051600
0.2047		5.20	6.00	82.00	36.20	44.00	9055110052000
0.2067		5.25	6.00	82.00	36.13	44.00	9055110052500
0.2087		5.30	6.00	82.00	36.05	44.00	9055110053000
0.2126		5.40	6.00	82.00	35.90	44.00	9055110054000
0.2130		#3 5.41	6.00	82.00	35.89	44.00	9055110054100
0.2165		5.50	6.00	82.00	35.75	44.00	9055110055000
0.2185		5.55	6.00	82.00	35.68	44.00	9055110055500
0.2189	7/32	5.56	6.00	82.00	35.66	44.00	9055110055600
0.2205		5.60	6.00	82.00	35.60	44.00	9055110056000
0.2244		5.70	6.00	82.00	35.45	44.00	9055110057000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2283		5.80	6.00	82.00	35.30	44.00	9055110058000
0.2323		5.90	6.00	82.00	35.15	44.00	9055110059000
0.2343	15/64	5.95	6.00	82.00	35.08	44.00	9055110059500
0.2362		6.00	6.00	82.00	35.00	44.00	9055110060000
0.2402		6.10	8.00	91.00	43.85	53.00	9055110061000
0.2441		6.20	8.00	91.00	43.70	53.00	9055110062000
0.2480		6.30	8.00	91.00	43.55	53.00	9055110063000
0.2500	1/4	E 6.35	8.00	91.00	43.48	53.00	9055110063500
0.2520		6.40	8.00	91.00	43.40	53.00	9055110064000
0.2559		6.50	8.00	91.00	43.25	53.00	9055110065000
0.2571		F 6.53	8.00	91.00	43.21	53.00	9055110065300
0.2598		6.60	8.00	91.00	43.10	53.00	9055110066000
0.2638		6.70	8.00	91.00	42.95	53.00	9055110067000
0.2657	17/64	H 6.75	8.00	91.00	42.88	53.00	9055110067500
0.2677		6.80	8.00	91.00	42.80	53.00	9055110068000
0.2717		I 6.90	8.00	91.00	42.65	53.00	9055110069000
0.2756		7.00	8.00	91.00	42.50	53.00	9055110070000
0.2795		7.10	8.00	91.00	42.35	53.00	9055110071000
0.2811	9/32	K 7.14	8.00	91.00	42.29	53.00	9055110071400
0.2835		7.20	8.00	91.00	42.20	53.00	9055110072000
0.2874		7.30	8.00	91.00	42.05	53.00	9055110073000
0.2913		7.40	8.00	91.00	41.90	53.00	9055110074000
0.2953		7.50	8.00	91.00	41.75	53.00	9055110075000
0.2969	19/64	7.54	8.00	91.00	41.69	53.00	9055110075400
0.2992		7.60	8.00	91.00	41.60	53.00	9055110076000
0.3031		7.70	8.00	91.00	41.45	53.00	9055110077000
0.3071		7.80	8.00	91.00	41.30	53.00	9055110078000
0.3110		7.90	8.00	91.00	41.15	53.00	9055110079000
0.3125	5/16	7.94	8.00	91.00	41.09	53.00	9055110079400
0.3150		8.00	8.00	91.00	41.00	53.00	9055110080000
0.3189		8.10	10.00	103.00	48.85	61.00	9055110081000
0.3228		P 8.20	10.00	103.00	48.70	61.00	9055110082000
0.3268		8.30	10.00	103.00	48.55	61.00	9055110083000
0.3280	21/64	8.33	10.00	103.00	48.51	61.00	9055110083300
0.3307		8.40	10.00	103.00	48.40	61.00	9055110084000
0.3346		8.50	10.00	103.00	48.25	61.00	9055110085000
0.3386		8.60	10.00	103.00	48.10	61.00	9055110086000
0.3425		8.70	10.00	103.00	47.95	61.00	9055110087000
0.3437	11/32	8.73	10.00	103.00	47.91	61.00	9055110087300
0.3465		8.80	10.00	103.00	47.80	61.00	9055110088000
0.3504		8.90	10.00	103.00	47.65	61.00	9055110089000
0.3543		9.00	10.00	103.00	47.50	61.00	9055110090000

5xD Ratio drills

Series no. **5511**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3583		9.10	10.00	103.00	47.35	61.00	9055110091000
0.3594	23/64	9.13	10.00	103.00	47.31	61.00	9055110091300
0.3622		9.20	10.00	103.00	47.20	61.00	9055110092000
0.3642		9.25	10.00	103.00	47.13	61.00	9055110092500
0.3661		9.30	10.00	103.00	47.05	61.00	9055110093000
0.3677	U	9.34	10.00	103.00	46.99	61.00	9055110093400
0.3701		9.40	10.00	103.00	46.90	61.00	9055110094000
0.3740		9.50	10.00	103.00	46.75	61.00	9055110095000
0.3750	3/8	9.52	10.00	103.00	46.72	61.00	9055110095200
0.3780		9.60	10.00	103.00	46.60	61.00	9055110096000
0.3819		9.70	10.00	103.00	46.45	61.00	9055110097000
0.3858	W	9.80	10.00	103.00	46.30	61.00	9055110098000
0.3898		9.90	10.00	103.00	46.15	61.00	9055110099000
0.3906	25/64	9.92	10.00	103.00	46.12	61.00	9055110099200
0.3937		10.00	10.00	103.00	46.00	61.00	9055110100000
0.3976		10.10	12.00	118.00	55.85	71.00	9055110101000
0.4016		10.20	12.00	118.00	55.70	71.00	9055110102000
0.4055		10.30	12.00	118.00	55.55	71.00	9055110103000
0.4063	13/32	10.32	12.00	118.00	55.52	71.00	9055110103200
0.4094		10.40	12.00	118.00	55.40	71.00	9055110104000
0.4134		10.50	12.00	118.00	55.25	71.00	9055110105000
0.4173		10.60	12.00	118.00	55.10	71.00	9055110106000
0.4213		10.70	12.00	118.00	54.95	71.00	9055110107000
0.4220	27/64	10.72	12.00	118.00	54.92	71.00	9055110107200
0.4252		10.80	12.00	118.00	54.80	71.00	9055110108000
0.4291		10.90	12.00	118.00	54.65	71.00	9055110109000
0.4331		11.00	12.00	118.00	54.50	71.00	9055110110000
0.4370		11.10	12.00	118.00	54.35	71.00	9055110111000
0.4374	7/16	11.11	12.00	118.00	54.34	71.00	9055110111100
0.4409		11.20	12.00	118.00	54.20	71.00	9055110112000
0.4449		11.30	12.00	118.00	54.05	71.00	9055110113000
0.4488		11.40	12.00	118.00	53.90	71.00	9055110114000
0.4528		11.50	12.00	118.00	53.75	71.00	9055110115000
0.4531	29/64	11.51	12.00	118.00	53.74	71.00	9055110115100
0.4567		11.60	12.00	118.00	53.60	71.00	9055110116000
0.4606		11.70	12.00	118.00	53.45	71.00	9055110117000
0.4646		11.80	12.00	118.00	53.30	71.00	9055110118000
0.4685		11.90	12.00	118.00	53.15	71.00	9055110119000
0.4689	15/32	11.91	12.00	118.00	53.14	71.00	9055110119100
0.4724		12.00	12.00	118.00	53.00	71.00	9055110120000
0.4764		12.10	14.00	124.00	58.85	77.00	9055110121000
0.4803		12.20	14.00	124.00	58.70	77.00	9055110122000
0.4843	31/64	12.30	14.00	124.00	58.55	77.00	9055110123000
0.4882		12.40	14.00	124.00	58.40	77.00	9055110124000
0.4921		12.50	14.00	124.00	58.25	77.00	9055110125000
0.4961		12.60	14.00	124.00	58.10	77.00	9055110126000
0.5000	1/2	12.70	14.00	124.00	57.95	77.00	9055110127000
0.5039		12.80	14.00	124.00	57.80	77.00	9055110128000
0.5079		12.90	14.00	124.00	57.65	77.00	9055110129000
0.5118		13.00	14.00	124.00	57.50	77.00	9055110130000
0.5157	33/64	13.10	14.00	124.00	57.35	77.00	9055110131000
0.5197		13.20	14.00	124.00	57.20	77.00	9055110132000
0.5236		13.30	14.00	124.00	57.05	77.00	9055110133000
0.5276		13.40	14.00	124.00	56.90	77.00	9055110134000
0.5311	17/32	13.49	14.00	124.00	56.77	77.00	9055110134900
0.5315		13.50	14.00	124.00	56.75	77.00	9055110135000
0.5354		13.60	14.00	124.00	56.60	77.00	9055110136000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.5394		13.70	14.00	124.00	56.45	77.00	9055110137000
0.5433		13.80	14.00	124.00	56.30	77.00	9055110138000
0.5469	35/64	13.89	14.00	124.00	56.17	77.00	9055110138900
0.5472		13.90	14.00	124.00	56.15	77.00	9055110139000
0.5512		14.00	14.00	124.00	56.00	77.00	9055110140000
0.5551		14.10	16.00	133.00	61.85	83.00	9055110141000
0.5591		14.20	16.00	133.00	61.70	83.00	9055110142000
0.5626	9/16	14.29	16.00	133.00	61.57	83.00	9055110142900
0.5630		14.30	16.00	133.00	61.55	83.00	9055110143000
0.5669		14.40	16.00	133.00	61.40	83.00	9055110144000
0.5709		14.50	16.00	133.00	61.25	83.00	9055110145000
0.5748		14.60	16.00	133.00	61.10	83.00	9055110146000
0.5780	37/64	14.68	16.00	133.00	60.98	83.00	9055110146800
0.5787		14.70	16.00	133.00	60.95	83.00	9055110147000
0.5827		14.80	16.00	133.00	60.80	83.00	9055110148000
0.5866		14.90	16.00	133.00	60.65	83.00	9055110149000
0.5906		15.00	16.00	133.00	60.50	83.00	9055110150000
0.5937	19/32	15.08	16.00	133.00	60.38	83.00	9055110150800
0.5945		15.10	16.00	133.00	60.35	83.00	9055110151000
0.5984		15.20	16.00	133.00	60.20	83.00	9055110152000
0.6024		15.30	16.00	133.00	60.05	83.00	9055110153000
0.6063		15.40	16.00	133.00	59.90	83.00	9055110154000
0.6094	39/64	15.48	16.00	133.00	59.78	83.00	9055110154800
0.6102		15.50	16.00	133.00	59.75	83.00	9055110155000
0.6142		15.60	16.00	133.00	59.60	83.00	9055110156000
0.6181		15.70	16.00	133.00	59.45	83.00	9055110157000
0.6220		15.80	16.00	133.00	59.30	83.00	9055110158000
0.6250	5/8	15.87	16.00	133.00	59.20	83.00	9055110158700
0.6260		15.90	16.00	133.00	59.15	83.00	9055110159000
0.6299		16.00	16.00	133.00	59.00	83.00	9055110160000
0.6331		16.08	18.00	143.00	68.88	93.00	9055110160800
0.6406	41/64	16.27	18.00	143.00	68.60	93.00	9055110162700
0.6496		16.50	18.00	143.00	68.25	93.00	9055110165000
0.6563	21/32	16.67	18.00	143.00	68.00	93.00	9055110166700
0.6575		16.70	18.00	143.00	67.95	93.00	9055110167000
0.6654		16.90	18.00	143.00	67.65	93.00	9055110169000
0.6693		17.00	18.00	143.00	67.50	93.00	9055110170000
0.6720	43/64	17.07	18.00	143.00	67.40	93.00	9055110170700
0.6874	11/16	17.46	18.00	143.00	66.81	93.00	9055110174600
0.6890		17.50	18.00	143.00	66.75	93.00	9055110175000
0.6969		17.70	18.00	143.00	66.45	93.00	9055110177000
0.7031	45/64	17.86	18.00	143.00	66.21	93.00	9055110178600
0.7087		18.00	18.00	143.00	66.00	93.00	9055110180000
0.7283		18.50	20.00	153.00	73.25	101.00	9055110185000
0.7362		18.70	20.00	153.00	72.95	101.00	9055110187000
0.7441		18.90	20.00	153.00	72.65	101.00	9055110189000
0.7480		19.00	20.00	153.00	72.50	101.00	9055110190000
0.7500	3/4	19.05	20.00	153.00	72.43	101.00	9055110190500
0.7543		19.16	20.00	153.00	72.26	101.00	9055110191600
0.7579		19.25	20.00	153.00	72.13	101.00	9055110192500
0.7598		19.30	20.00	153.00	72.05	101.00	9055110193000
0.7657	49/64	19.45	20.00	153.00	71.83	101.00	9055110194460
0.7677		19.50	20.00	153.00	71.75	101.00	9055110195000
0.7756		19.70	20.00	153.00	71.45	101.00	9055110197000
0.7811	25/32	19.84	20.00	153.00	71.24	101.00	9055110198400
0.7874		20.00	20.00	153.00	71.00	101.00	9055110200000

5xD Ratio drills

Series no. **5611**

Tool material **Solid Carbide**

Surface **F**

5xD Cutting depth · RT 100 U Type · 140° Point angle · m7 Tolerance on Ø · Internal coolant · HE Shank form · R Cutting direction

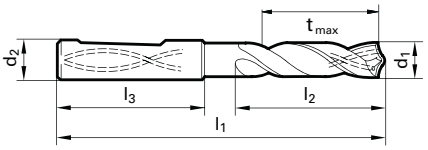
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • facet point grinding • main cutting edge form straight • optimized cutting geometry

structural and case hardened steels • free-cutting steels, heat treatable steels • steels (alloyed/unalloyed) up to 1200 N/mm² • cast materials • bronze, brass • high-alloyed AlSi-alloys

$t_{max} = l_2-(1.5 \times d_1)$





Speeds and feeds information on pg. 558

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	66.00	23.50	28.00	9056110030000
0.1220		3.10	6.00	66.00	23.35	28.00	9056110031000
0.1248	1/8	3.17	6.00	66.00	23.25	28.00	9056110031700
0.1260		3.20	6.00	66.00	23.20	28.00	9056110032000
0.1280		3.25	6.00	66.00	23.13	28.00	9056110032500
0.1299		3.30	6.00	66.00	23.05	28.00	9056110033000
0.1339		3.40	6.00	66.00	22.90	28.00	9056110034000
0.1378		3.50	6.00	66.00	22.75	28.00	9056110035000
0.1406	9/64	#28 3.57	6.00	66.00	22.65	28.00	9056110035700
0.1417		3.60	6.00	66.00	22.60	28.00	9056110036000
0.1457		3.70	6.00	66.00	22.45	28.00	9056110037000
0.1496		#25 3.80	6.00	74.00	30.30	36.00	9056110038000
0.1535		3.90	6.00	74.00	30.15	36.00	9056110039000
0.1563	5/32	3.97	6.00	74.00	30.05	36.00	9056110039700
0.1575		4.00	6.00	74.00	30.00	36.00	9056110040000
0.1614		4.10	6.00	74.00	29.85	36.00	9056110041000
0.1654		4.20	6.00	74.00	29.70	36.00	9056110042000
0.1693		#18 4.30	6.00	74.00	29.55	36.00	9056110043000
0.1720	11/64	4.37	6.00	74.00	29.45	36.00	9056110043700
0.1732		4.40	6.00	74.00	29.40	36.00	9056110044000
0.1772		#16 4.50	6.00	74.00	29.25	36.00	9056110045000
0.1811		4.60	6.00	74.00	29.10	36.00	9056110046000
0.1831		4.65	6.00	74.00	29.03	36.00	9056110046500
0.1850		#13 4.70	6.00	74.00	28.95	36.00	9056110047000
0.1874	3/16	4.76	6.00	82.00	36.86	44.00	9056110047600
0.1890		#12 4.80	6.00	82.00	36.80	44.00	9056110048000
0.1929		4.90	6.00	82.00	36.65	44.00	9056110049000
0.1969		5.00	6.00	82.00	36.50	44.00	9056110050000
0.2008		5.10	6.00	82.00	36.35	44.00	9056110051000
0.2031	13/64	5.16	6.00	82.00	36.26	44.00	9056110051600
0.2047		5.20	6.00	82.00	36.20	44.00	9056110052000
0.2087		5.30	6.00	82.00	36.05	44.00	9056110053000
0.2126		5.40	6.00	82.00	35.90	44.00	9056110054000
0.2165		5.50	6.00	82.00	35.75	44.00	9056110055000
0.2185		5.55	6.00	82.00	35.68	44.00	9056110055500
0.2189	7/32	5.56	6.00	82.00	35.66	44.00	9056110055600
0.2205		5.60	6.00	82.00	35.60	44.00	9056110056000
0.2244		5.70	6.00	82.00	35.45	44.00	9056110057000
0.2283		5.80	6.00	82.00	35.30	44.00	9056110058000
0.2323		5.90	6.00	82.00	35.15	44.00	9056110059000
0.2343	15/64	5.95	6.00	82.00	35.08	44.00	9056110059500
0.2362		6.00	6.00	82.00	35.00	44.00	9056110060000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2402		6.10	8.00	91.00	43.85	53.00	9056110061000
0.2441		6.20	8.00	91.00	43.70	53.00	9056110062000
0.2480		6.30	8.00	91.00	43.55	53.00	9056110063000
0.2500	1/4	E 6.35	8.00	91.00	43.48	53.00	9056110063500
0.2520		6.40	8.00	91.00	43.40	53.00	9056110064000
0.2559		6.50	8.00	91.00	43.25	53.00	9056110065000
0.2598		6.60	8.00	91.00	43.10	53.00	9056110066000
0.2638		6.70	8.00	91.00	42.95	53.00	9056110067000
0.2657	17/64	H 6.75	8.00	91.00	42.88	53.00	9056110067500
0.2677		6.80	8.00	91.00	42.80	53.00	9056110068000
0.2717		I 6.90	8.00	91.00	42.65	53.00	9056110069000
0.2756		7.00	8.00	91.00	42.50	53.00	9056110070000
0.2795		7.10	8.00	91.00	42.35	53.00	9056110071000
0.2811	9/32	K 7.14	8.00	91.00	42.29	53.00	9056110071400
0.2835		7.20	8.00	91.00	42.20	53.00	9056110072000
0.2874		7.30	8.00	91.00	42.05	53.00	9056110073000
0.2913		7.40	8.00	91.00	41.90	53.00	9056110074000
0.2953		7.50	8.00	91.00	41.75	53.00	9056110075000
0.2969	19/64	7.54	8.00	91.00	41.69	53.00	9056110075400
0.2992		7.60	8.00	91.00	41.60	53.00	9056110076000
0.3031		7.70	8.00	91.00	41.45	53.00	9056110077000
0.3071		7.80	8.00	91.00	41.30	53.00	9056110078000
0.3110		7.90	8.00	91.00	41.15	53.00	9056110079000
0.3126	5/16	7.94	8.00	91.00	41.09	53.00	9056110079400
0.3150		8.00	8.00	91.00	41.00	53.00	9056110080000
0.3189		8.10	10.00	103.00	48.85	61.00	9056110081000
0.3228		P 8.20	10.00	103.00	48.70	61.00	9056110082000
0.3268		8.30	10.00	103.00	48.55	61.00	9056110083000
0.3280	21/64	8.33	10.00	103.00	48.51	61.00	9056110083300
0.3307		8.40	10.00	103.00	48.40	61.00	9056110084000
0.3346		8.50	10.00	103.00	48.25	61.00	9056110085000
0.3386		8.60	10.00	103.00	48.10	61.00	9056110086000
0.3425		8.70	10.00	103.00	47.95	61.00	9056110087000
0.3437	11/32	8.73	10.00	103.00	47.91	61.00	9056110087300
0.3465		8.80	10.00	103.00	47.80	61.00	9056110088000
0.3504		8.90	10.00	103.00	47.65	61.00	9056110089000
0.3543		9.00	10.00	103.00	47.50	61.00	9056110090000
0.3583		9.10	10.00	103.00	47.35	61.00	9056110091000
0.3594	23/64	9.13	10.00	103.00	47.31	61.00	9056110091300
0.3622		9.20	10.00	103.00	47.20	61.00	9056110092000
0.3642		9.25	10.00	103.00	47.13	61.00	9056110092500
0.3661		9.30	10.00	103.00	47.05	61.00	9056110093000

5xD Ratio drills

Series no. **5611**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3701		9.40	10.00	103.00	46.90	61.00	9056110094000
0.3740		9.50	10.00	103.00	46.75	61.00	9056110095000
0.3748	3/8	9.52	10.00	103.00	46.72	61.00	9056110095200
0.3780		9.60	10.00	103.00	46.60	61.00	9056110096000
0.3819		9.70	10.00	103.00	46.45	61.00	9056110097000
0.3858	W	9.80	10.00	103.00	46.30	61.00	9056110098000
0.3898		9.90	10.00	103.00	46.15	61.00	9056110099000
0.3906	25/64	9.92	10.00	103.00	46.12	61.00	9056110099200
0.3937		10.00	10.00	103.00	46.00	61.00	9056110100000
0.3976		10.10	12.00	118.00	55.85	71.00	9056110101000
0.4016		10.20	12.00	118.00	55.70	71.00	9056110102000
0.4055		10.30	12.00	118.00	55.55	71.00	9056110103000
0.4063	13/32	10.32	12.00	118.00	55.52	71.00	9056110103200
0.4094		10.40	12.00	118.00	55.40	71.00	9056110104000
0.4134		10.50	12.00	118.00	55.25	71.00	9056110105000
0.4173		10.60	12.00	118.00	55.10	71.00	9056110106000
0.4213		10.70	12.00	118.00	54.95	71.00	9056110107000
0.4252		10.80	12.00	118.00	54.80	71.00	9056110108000
0.4291		10.90	12.00	118.00	54.65	71.00	9056110109000
0.4331		11.00	12.00	118.00	54.50	71.00	9056110110000
0.4370		11.10	12.00	118.00	54.35	71.00	9056110111000
0.4374	7/16	11.11	12.00	118.00	54.34	71.00	9056110111100
0.4409		11.20	12.00	118.00	54.20	71.00	9056110112000
0.4449		11.30	12.00	118.00	54.05	71.00	9056110113000
0.4488		11.40	12.00	118.00	53.90	71.00	9056110114000
0.4528		11.50	12.00	118.00	53.75	71.00	9056110115000
0.4567		11.60	12.00	118.00	53.60	71.00	9056110116000
0.4606		11.70	12.00	118.00	53.45	71.00	9056110117000
0.4646		11.80	12.00	118.00	53.30	71.00	9056110118000
0.4685		11.90	12.00	118.00	53.15	71.00	9056110119000
0.4689	15/32	11.91	12.00	118.00	53.14	71.00	9056110119100
0.4724		12.00	12.00	118.00	53.00	71.00	9056110120000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4764		12.10	14.00	124.00	58.85	77.00	9056110121000
0.4803		12.20	14.00	124.00	58.70	77.00	9056110122000
0.4921		12.50	14.00	124.00	58.25	77.00	9056110125000
0.5000	1/2	12.70	14.00	124.00	57.95	77.00	9056110127000
0.5118		13.00	14.00	124.00	57.50	77.00	9056110130000
0.5315		13.50	14.00	124.00	56.75	77.00	9056110135000
0.5394		13.70	14.00	124.00	56.45	77.00	9056110137000
0.5512		14.00	14.00	124.00	56.00	77.00	9056110140000
0.5551		14.10	16.00	133.00	61.85	83.00	9056110141000
0.5591		14.20	16.00	133.00	61.70	83.00	9056110142000
0.5626	9/16	14.29	16.00	133.00	61.57	83.00	9056110142900
0.5709		14.50	16.00	133.00	61.25	83.00	9056110145000
0.5787		14.70	16.00	133.00	60.95	83.00	9056110147000
0.5906		15.00	16.00	133.00	60.50	83.00	9056110150000
0.5984		15.20	16.00	133.00	60.20	83.00	9056110152000
0.6102		15.50	16.00	133.00	59.75	83.00	9056110155000
0.6181		15.70	16.00	133.00	59.45	83.00	9056110157000
0.6299		16.00	16.00	133.00	59.00	83.00	9056110160000
0.6496		16.50	18.00	143.00	68.25	93.00	9056110165000
0.6575		16.70	18.00	143.00	67.95	93.00	9056110167000
0.6693		17.00	18.00	143.00	67.50	93.00	9056110170000
0.6890		17.50	18.00	143.00	66.75	93.00	9056110175000
0.6969		17.70	18.00	143.00	66.45	93.00	9056110177000
0.7087		18.00	18.00	143.00	66.00	93.00	9056110180000
0.7283		18.50	20.00	153.00	73.25	101.00	9056110185000
0.7362		18.70	20.00	153.00	72.95	101.00	9056110187000
0.7480		19.00	20.00	153.00	72.50	101.00	9056110190000
0.7500	3/4	19.05	20.00	153.00	72.43	101.00	9056110190500
0.7677		19.50	20.00	153.00	71.75	101.00	9056110195000
0.7756		19.70	20.00	153.00	71.45	101.00	9056110197000
0.7874		20.00	20.00	153.00	71.00	101.00	9056110200000

5xD Ratio drills

Series no. **5759**



Tool material **Solid Carbide**

Surface **F**

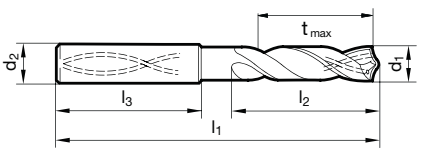
P	Steel	★
M	Stainless steel	○
K	Cast iron	○
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

★ = 1st choice
● = Optimal suitability
○ = Limited suitability

facet point grinding • main cutting edge form straight • optimized cutting geometry • maximum performance

structural and case hardened steels • free-cutting steels, heat-treatable steels • steels (alloyed/unalloyed) up to 1400 N/mm²

$t_{max} = l_2 - 1{,}5 \times d_1$





Speeds and feeds information on pg. 564

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	66.00	23.50	28.00	9057590030000
0.1220		3.10	6.00	66.00	23.35	28.00	9057590031000
0.1248	1/8	3.17	6.00	66.00	23.25	28.00	9057590031700
0.1260		3.20	6.00	66.00	23.20	28.00	9057590032000
0.1280		3.25	6.00	66.00	23.13	28.00	9057590032500
0.1299		3.30	6.00	66.00	23.05	28.00	9057590033000
0.1339		3.40	6.00	66.00	22.90	28.00	9057590034000
0.1378		3.50	6.00	66.00	22.75	28.00	9057590035000
0.1406	9/64	#28 3.57	6.00	66.00	22.65	28.00	9057590035700
0.1417		3.60	6.00	66.00	22.60	28.00	9057590036000
0.1457		3.70	6.00	66.00	22.45	28.00	9057590037000
0.1496		#25 3.80	6.00	74.00	30.30	36.00	9057590038000
0.1535		3.90	6.00	74.00	30.15	36.00	9057590039000
0.1563	5/32	3.97	6.00	74.00	30.05	36.00	9057590039700
0.1575		4.00	6.00	74.00	30.00	36.00	9057590040000
0.1591		#21 4.04	6.00	74.00	29.94	36.00	9057590040400
0.1614		4.10	6.00	74.00	29.85	36.00	9057590041000
0.1654		4.20	6.00	74.00	29.70	36.00	9057590042000
0.1693		#18 4.30	6.00	74.00	29.55	36.00	9057590043000
0.1720	11/64	4.37	6.00	74.00	29.45	36.00	9057590043700
0.1732		4.40	6.00	74.00	29.40	36.00	9057590044000
0.1772		#16 4.50	6.00	74.00	29.25	36.00	9057590045000
0.1811		4.60	6.00	74.00	29.10	36.00	9057590046000
0.1831		4.65	6.00	74.00	29.03	36.00	9057590046500
0.1850		#13 4.70	6.00	74.00	28.95	36.00	9057590047000
0.1874	3/16	4.76	6.00	82.00	36.86	44.00	9057590047600
0.1890		#12 4.80	6.00	82.00	36.80	44.00	9057590048000
0.1929		4.90	6.00	82.00	36.65	44.00	9057590049000
0.1969		5.00	6.00	82.00	36.50	44.00	9057590050000
0.2008		5.10	6.00	82.00	36.35	44.00	9057590051000
0.2012		#7 5.11	6.00	82.00	36.34	44.00	9057590051100
0.2031	13/64	5.16	6.00	82.00	36.26	44.00	9057590051600
0.2047		5.20	6.00	82.00	36.20	44.00	9057590052000
0.2087		5.30	6.00	82.00	36.05	44.00	9057590053000
0.2126		5.40	6.00	82.00	35.90	44.00	9057590054000
0.2130		#3 5.41	6.00	82.00	35.89	44.00	9057590054100
0.2165		5.50	6.00	82.00	35.75	44.00	9057590055000
0.2185		5.55	6.00	82.00	35.68	44.00	9057590055500
0.2189	7/32	5.56	6.00	82.00	35.66	44.00	9057590055600
0.2205		5.60	6.00	82.00	35.60	44.00	9057590056000
0.2224		5.65	6.00	82.00	35.53	44.00	9057590056500
0.2244		5.70	6.00	82.00	35.45	44.00	9057590057000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2283		5.80	6.00	82.00	35.30	44.00	9057590058000
0.2323		5.90	6.00	82.00	35.15	44.00	9057590059000
0.2343	15/64	5.95	6.00	82.00	35.08	44.00	9057590059500
0.2362		6.00	6.00	82.00	35.00	44.00	9057590060000
0.2402		6.10	8.00	91.00	43.85	53.00	9057590061000
0.2441		6.20	8.00	91.00	43.70	53.00	9057590062000
0.2480		6.30	8.00	91.00	43.55	53.00	9057590063000
0.2500	1/4	E 6.35	8.00	91.00	43.48	53.00	9057590063500
0.2520		6.40	8.00	91.00	43.40	53.00	9057590064000
0.2559		6.50	8.00	91.00	43.25	53.00	9057590065000
0.2571		F 6.53	8.00	91.00	43.21	53.00	9057590065300
0.2598		6.60	8.00	91.00	43.10	53.00	9057590066000
0.2638		6.70	8.00	91.00	42.95	53.00	9057590067000
0.2657	17/64	H 6.75	8.00	91.00	42.88	53.00	9057590067500
0.2677		6.80	8.00	91.00	42.80	53.00	9057590068000
0.2717		I 6.90	8.00	91.00	42.65	53.00	9057590069000
0.2756		7.00	8.00	91.00	42.50	53.00	9057590070000
0.2795		7.10	8.00	91.00	42.35	53.00	9057590071000
0.2811	9/32	K 7.14	8.00	91.00	42.29	53.00	9057590071400
0.2835		7.20	8.00	91.00	42.20	53.00	9057590072000
0.2874		7.30	8.00	91.00	42.05	53.00	9057590073000
0.2913		7.40	8.00	91.00	41.90	53.00	9057590074000
0.2953		7.50	8.00	91.00	41.75	53.00	9057590075000
0.2969	19/64	7.54	8.00	91.00	41.69	53.00	9057590075400
0.2972		7.55	8.00	91.00	41.68	53.00	9057590075500
0.2992		7.60	8.00	91.00	41.60	53.00	9057590076000
0.3012		7.65	8.00	91.00	41.53	53.00	9057590076500
0.3031		7.70	8.00	91.00	41.45	53.00	9057590077000
0.3071		7.80	8.00	91.00	41.30	53.00	9057590078000
0.3110		7.90	8.00	91.00	41.15	53.00	9057590079000
0.3125	5/16	7.94	8.00	91.00	41.09	53.00	9057590079400
0.3150		8.00	8.00	91.00	41.00	53.00	9057590080000
0.3189		8.10	10.00	103.00	48.85	61.00	9057590081000
0.3228		P 8.20	10.00	103.00	48.70	61.00	9057590082000
0.3268		8.30	10.00	103.00	48.55	61.00	9057590083000
0.3280	21/64	8.33	10.00	103.00	48.51	61.00	9057590083300
0.3307		8.40	10.00	103.00	48.40	61.00	9057590084000
0.3346		8.50	10.00	103.00	48.25	61.00	9057590085000
0.3386		8.60	10.00	103.00	48.10	61.00	9057590086000
0.3425		8.70	10.00	103.00	47.95	61.00	9057590087000
0.3437	11/32	8.73	10.00	103.00	47.91	61.00	9057590087300
0.3465		8.80	10.00	103.00	47.80	61.00	9057590088000

5xD Ratio drills

Series no. **5759**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3504		8.90	10.00	103.00	47.65	61.00	9057590089000
0.3543		9.00	10.00	103.00	47.50	61.00	9057590090000
0.3583		9.10	10.00	103.00	47.35	61.00	9057590091000
0.3594	23/64	9.13	10.00	103.00	47.31	61.00	9057590091300
0.3622		9.20	10.00	103.00	47.20	61.00	9057590092000
0.3642		9.25	10.00	103.00	47.13	61.00	9057590092500
0.3661		9.30	10.00	103.00	47.05	61.00	9057590093000
0.3677	U	9.34	10.00	103.00	46.99	61.00	9057590093400
0.3701		9.40	10.00	103.00	46.90	61.00	9057590094000
0.3740		9.50	10.00	103.00	46.75	61.00	9057590095000
0.3750	3/8	9.52	10.00	103.00	46.72	61.00	9057590095200
0.3760		9.55	10.00	103.00	46.68	61.00	9057590095500
0.3780		9.60	10.00	103.00	46.60	61.00	9057590096000
0.3819		9.70	10.00	103.00	46.45	61.00	9057590097000
0.3858	W	9.80	10.00	103.00	46.30	61.00	9057590098000
0.3898		9.90	10.00	103.00	46.15	61.00	9057590099000
0.3906	25/64	9.92	10.00	103.00	46.12	61.00	9057590099200
0.3937		10.00	10.00	103.00	46.00	61.00	9057590100000
0.3976		10.10	12.00	118.00	55.85	71.00	9057590101000
0.4016		10.20	12.00	118.00	55.70	71.00	9057590102000
0.4055		10.30	12.00	118.00	55.55	71.00	9057590103000
0.4063	13/32	10.32	12.00	118.00	55.52	71.00	9057590103200
0.4094		10.40	12.00	118.00	55.40	71.00	9057590104000
0.4134		10.50	12.00	118.00	55.25	71.00	9057590105000
0.4173		10.60	12.00	118.00	55.10	71.00	9057590106000
0.4213		10.70	12.00	118.00	54.95	71.00	9057590107000
0.4220	27/64	10.72	12.00	118.00	54.92	71.00	9057590107200
0.4252		10.80	12.00	118.00	54.80	71.00	9057590108000
0.4291		10.90	12.00	118.00	54.65	71.00	9057590109000
0.4331		11.00	12.00	118.00	54.50	71.00	9057590110000
0.4370		11.10	12.00	118.00	54.35	71.00	9057590111000
0.4374	7/16	11.11	12.00	118.00	54.34	71.00	9057590111100
0.4409		11.20	12.00	118.00	54.20	71.00	9057590112000
0.4449		11.30	12.00	118.00	54.05	71.00	9057590113000
0.4488		11.40	12.00	118.00	53.90	71.00	9057590114000
0.4528		11.50	12.00	118.00	53.75	71.00	9057590115000
0.4531	29/64	11.51	12.00	118.00	53.74	71.00	9057590115100
0.4547		11.55	12.00	118.00	53.68	71.00	9057590115500
0.4567		11.60	12.00	118.00	53.60	71.00	9057590116000
0.4606		11.70	12.00	118.00	53.45	71.00	9057590117000
0.4646		11.80	12.00	118.00	53.30	71.00	9057590118000
0.4685		11.90	12.00	118.00	53.15	71.00	9057590119000
0.4689	15/32	11.91	12.00	118.00	53.14	71.00	9057590119100
0.4724		12.00	12.00	118.00	53.00	71.00	9057590120000
0.4764		12.10	14.00	124.00	58.85	77.00	9057590121000
0.4803		12.20	14.00	124.00	58.70	77.00	9057590122000
0.4843	31/64	12.30	14.00	124.00	58.55	77.00	9057590123000
0.4882		12.40	14.00	124.00	58.40	77.00	9057590124000
0.4921		12.50	14.00	124.00	58.25	77.00	9057590125000
0.4961		12.60	14.00	124.00	58.10	77.00	9057590126000
0.5000	1/2	12.70	14.00	124.00	57.95	77.00	9057590127000
0.5039		12.80	14.00	124.00	57.80	77.00	9057590128000
0.5079		12.90	14.00	124.00	57.65	77.00	9057590129000
0.5118		13.00	14.00	124.00	57.50	77.00	9057590130000
0.5157	33/64	13.10	14.00	124.00	57.35	77.00	9057590131000
0.5197		13.20	14.00	124.00	57.20	77.00	9057590132000
0.5236		13.30	14.00	124.00	57.05	77.00	9057590133000
0.5276		13.40	14.00	124.00	56.90	77.00	9057590134000
0.5311	17/32	13.49	14.00	124.00	56.77	77.00	9057590134900

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.5315		13.50	14.00	124.00	56.75	77.00	9057590135000
0.5354		13.60	14.00	124.00	56.60	77.00	9057590136000
0.5394		13.70	14.00	124.00	56.45	77.00	9057590137000
0.5433		13.80	14.00	124.00	56.30	77.00	9057590138000
0.5469	35/64	13.89	14.00	124.00	56.17	77.00	9057590138900
0.5472		13.90	14.00	124.00	56.15	77.00	9057590139000
0.5512		14.00	14.00	124.00	56.00	77.00	9057590140000
0.5551		14.10	16.00	133.00	61.85	83.00	9057590141000
0.5591		14.20	16.00	133.00	61.70	83.00	9057590142000
0.5626	9/16	14.29	16.00	133.00	61.57	83.00	9057590142900
0.5669		14.40	16.00	133.00	61.40	83.00	9057590144000
0.5709		14.50	16.00	133.00	61.25	83.00	9057590145000
0.5748		14.60	16.00	133.00	61.10	83.00	9057590146000
0.5780	37/64	14.68	16.00	133.00	60.98	83.00	9057590146800
0.5787		14.70	16.00	133.00	60.95	83.00	9057590147000
0.5827		14.80	16.00	133.00	60.80	83.00	9057590148000
0.5866		14.90	16.00	133.00	60.65	83.00	9057590149000
0.5906		15.00	16.00	133.00	60.50	83.00	9057590150000
0.5937	19/32	15.08	16.00	133.00	60.38	83.00	9057590150800
0.5945		15.10	16.00	133.00	60.35	83.00	9057590151000
0.5984		15.20	16.00	133.00	60.20	83.00	9057590152000
0.6024		15.30	16.00	133.00	60.05	83.00	9057590153000
0.6063		15.40	16.00	133.00	59.90	83.00	9057590154000
0.6094	39/64	15.48	16.00	133.00	59.78	83.00	9057590154800
0.6102		15.50	16.00	133.00	59.75	83.00	9057590155000
0.6122		15.55	16.00	133.00	59.68	83.00	9057590155500
0.6142		15.60	16.00	133.00	59.60	83.00	9057590156000
0.6181		15.70	16.00	133.00	59.45	83.00	9057590157000
0.6220		15.80	16.00	133.00	59.30	83.00	9057590158000
0.6250	5/8	15.87	16.00	133.00	59.20	83.00	9057590158700
0.6260		15.90	16.00	133.00	59.15	83.00	9057590159000
0.6299		16.00	16.00	133.00	59.00	83.00	9057590160000
0.6406	41/64	16.27	18.00	143.00	68.60	93.00	9057590162700
0.6496		16.50	18.00	143.00	68.25	93.00	9057590165000
0.6563	21/32	16.67	18.00	143.00	68.00	93.00	9057590166700
0.6575		16.70	18.00	143.00	67.95	93.00	9057590167000
0.6654		16.90	18.00	143.00	67.65	93.00	9057590169000
0.6693		17.00	18.00	143.00	67.50	93.00	9057590170000
0.6720	43/64	17.07	18.00	143.00	67.40	93.00	9057590170700
0.6874	11/16	17.46	18.00	143.00	66.81	93.00	9057590174600
0.6890		17.50	18.00	143.00	66.75	93.00	9057590175000
0.6909		17.55	18.00	143.00	66.68	93.00	9057590175500
0.6969		17.70	18.00	143.00	66.45	93.00	9057590177000
0.7031	45/64	17.86	18.00	143.00	66.21	93.00	9057590178600
0.7087		18.00	18.00	143.00	66.00	93.00	9057590180000
0.7189	23/32	18.26	20.00	153.00	73.61	101.00	9057590182600
0.7283		18.50	20.00	153.00	73.25	101.00	9057590185000
0.7362		18.70	20.00	153.00	72.95	101.00	9057590187000
0.7441		18.90	20.00	153.00	72.65	101.00	9057590189000
0.7480		19.00	20.00	153.00	72.50	101.00	9057590190000
0.7500	3/4	19.05	20.00	153.00	72.43	101.00	9057590190500
0.7579		19.25	20.00	153.00	72.13	101.00	9057590192500
0.7598		19.30	20.00	153.00	72.05	101.00	9057590193000
0.7656		19.45	20.00	153.00	71.83	101.00	9057590194460
0.7677		19.50	20.00	153.00	71.75	101.00	9057590195000
0.7697		19.55	20.00	153.00	71.68	101.00	9057590195500
0.7756		19.70	20.00	153.00	71.45	101.00	9057590197000
0.7811	25/32	19.84	20.00	153.00	71.24	101.00	9057590198400
0.7874		20.00	20.00	153.00	71.00	101.00	9057590200000

5xD Ratio drills

Series no. **5768**

Tool material **Solid Carbide**

Surface

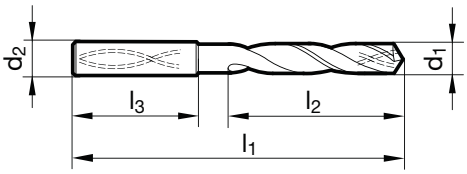
5xD Cutting depth | RT 100 Al Type | 140° Point angle | m7 Tolerance on Ø | Internal coolant | HA Shank form | R Cutting direction | NEW

P	Steel	
M	Stainless steel	
K	Cast iron	
N	Aluminum	★
S	Titanium alloys	
H	Hardened steel	

★ = 1st choice
● = Optimal suitability
○ = Limited suitability

relieved cone • main cutting edge is slightly concave • optimized cutting geometry • sharp cutting edges NEW

aluminum and Al-alloys • Al materials with high Si-content





Speeds and feeds information on pg. 563

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	66.00	23.50	28.00	9057680030000
0.1220		3.10	6.00	66.00	23.35	28.00	9057680031000
0.1248	1/8	3.17	6.00	66.00	23.25	28.00	9057680031700
0.1260		3.20	6.00	66.00	23.20	28.00	9057680032000
0.1280		3.25	6.00	66.00	23.13	28.00	9057680032500
0.1299		3.30	6.00	66.00	23.05	28.00	9057680033000
0.1339		3.40	6.00	66.00	22.90	28.00	9057680034000
0.1378		3.50	6.00	66.00	22.75	28.00	9057680035000
0.1406	9/64	3.57	6.00	66.00	22.65	28.00	9057680035700
0.1417		3.60	6.00	66.00	22.60	28.00	9057680036000
0.1457		3.70	6.00	66.00	22.45	28.00	9057680037000
0.1496		3.80	6.00	74.00	30.30	36.00	9057680038000
0.1535		3.90	6.00	74.00	30.15	36.00	9057680039000
0.1563	5/32	3.97	6.00	74.00	30.05	36.00	9057680039700
0.1575		4.00	6.00	74.00	30.00	36.00	9057680040000
0.1614		4.10	6.00	74.00	29.85	36.00	9057680041000
0.1654		4.20	6.00	74.00	29.70	36.00	9057680042000
0.1693		4.30	6.00	74.00	29.55	36.00	9057680043000
0.1720	11/64	4.37	6.00	74.00	29.45	36.00	9057680043700
0.1732		4.40	6.00	74.00	29.40	36.00	9057680044000
0.1772		4.50	6.00	74.00	29.25	36.00	9057680045000
0.1811		4.60	6.00	74.00	29.10	36.00	9057680046000
0.1831		4.65	6.00	74.00	29.03	36.00	9057680046500
0.1850		4.70	6.00	74.00	28.95	36.00	9057680047000
0.1874	3/16	4.76	6.00	82.00	36.86	44.00	9057680047600
0.1890		4.80	6.00	82.00	36.80	44.00	9057680048000
0.1929		4.90	6.00	82.00	36.65	44.00	9057680049000
0.1969		5.00	6.00	82.00	36.50	44.00	9057680050000
0.2008		5.10	6.00	82.00	36.35	44.00	9057680051000
0.2031	13/64	5.16	6.00	82.00	36.26	44.00	9057680051600
0.2047		5.20	6.00	82.00	36.20	44.00	9057680052000
0.2087		5.30	6.00	82.00	36.05	44.00	9057680053000
0.2126		5.40	6.00	82.00	35.90	44.00	9057680054000
0.2165		5.50	6.00	82.00	35.75	44.00	9057680055000
0.2185		5.55	6.00	82.00	35.68	44.00	9057680055500
0.2189	7/32	5.56	6.00	82.00	35.66	44.00	9057680055600
0.2205		5.60	6.00	82.00	35.60	44.00	9057680056000
0.2244		5.70	6.00	82.00	35.45	44.00	9057680057000
0.2283		5.80	6.00	82.00	35.30	44.00	9057680058000
0.2323		5.90	6.00	82.00	35.15	44.00	9057680059000
0.2343	15/64	5.95	6.00	82.00	35.08	44.00	9057680059500
0.2362		6.00	6.00	82.00	35.00	44.00	9057680060000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2402		6.10	8.00	91.00	43.85	53.00	9057680061000
0.2441		6.20	8.00	91.00	43.70	53.00	9057680062000
0.2480		6.30	8.00	91.00	43.55	53.00	9057680063000
0.2500	1/4 E	6.35	8.00	91.00	43.48	53.00	9057680063500
0.2520		6.40	8.00	91.00	43.40	53.00	9057680064000
0.2559		6.50	8.00	91.00	43.25	53.00	9057680065000
0.2598		6.60	8.00	91.00	43.10	53.00	9057680066000
0.2638		6.70	8.00	91.00	42.95	53.00	9057680067000
0.2657	17/64 H	6.75	8.00	91.00	42.88	53.00	9057680067500
0.2677		6.80	8.00	91.00	42.80	53.00	9057680068000
0.2717		6.90	8.00	91.00	42.65	53.00	9057680069000
0.2756		7.00	8.00	91.00	42.50	53.00	9057680070000
0.2795		7.10	8.00	91.00	42.35	53.00	9057680071000
0.2811	9/32 K	7.14	8.00	91.00	42.29	53.00	9057680071400
0.2835		7.20	8.00	91.00	42.20	53.00	9057680072000
0.2874		7.30	8.00	91.00	42.05	53.00	9057680073000
0.2913		7.40	8.00	91.00	41.90	53.00	9057680074000
0.2953		7.50	8.00	91.00	41.75	53.00	9057680075000
0.2969	19/64	7.54	8.00	91.00	41.69	53.00	9057680075400
0.2992		7.60	8.00	91.00	41.60	53.00	9057680076000
0.3031		7.70	8.00	91.00	41.45	53.00	9057680077000
0.3071		7.80	8.00	91.00	41.30	53.00	9057680078000
0.3110		7.90	8.00	91.00	41.15	53.00	9057680079000
0.3126	5/16	7.94	8.00	91.00	41.09	53.00	9057680079400
0.3150		8.00	8.00	91.00	41.00	53.00	9057680080000
0.3189		8.10	10.00	103.00	48.85	61.00	9057680081000
0.3228		8.20	10.00	103.00	48.70	61.00	9057680082000
0.3268		8.30	10.00	103.00	48.55	61.00	9057680083000
0.3280	21/64	8.33	10.00	103.00	48.51	61.00	9057680083300
0.3307		8.40	10.00	103.00	48.40	61.00	9057680084000
0.3346		8.50	10.00	103.00	48.25	61.00	9057680085000
0.3386		8.60	10.00	103.00	48.10	61.00	9057680086000
0.3425		8.70	10.00	103.00	47.95	61.00	9057680087000
0.3437	11/64	8.73	10.00	103.00	47.91	61.00	9057680087300
0.3465		8.80	10.00	103.00	47.80	61.00	9057680088000
0.3504		8.90	10.00	103.00	47.65	61.00	9057680089000
0.3543		9.00	10.00	103.00	47.50	61.00	9057680090000
0.3583		9.10	10.00	103.00	47.35	61.00	9057680091000
0.3594	23/64	9.13	10.00	103.00	47.31	61.00	9057680091300
0.3622		9.20	10.00	103.00	47.20	61.00	9057680092000
0.3642		9.25	10.00	103.00	47.13	61.00	9057680092500
0.3661		9.30	10.00	103.00	47.05	61.00	9057680093000

5xD Ratio drills

Series no. **5768**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3677		9.34	10.00	103.00	46.99	61.00	9057680093400
0.3701		9.40	10.00	103.00	46.90	61.00	9057680094000
0.3740		9.50	10.00	103.00	46.75	61.00	9057680095000
0.3748	3/8	9.52	10.00	103.00	46.72	61.00	9057680095200
0.3780		9.60	10.00	103.00	46.60	61.00	9057680096000
0.3819		9.70	10.00	103.00	46.45	61.00	9057680097000
0.3858		9.80	10.00	103.00	46.30	61.00	9057680098000
0.3898		9.90	10.00	103.00	46.15	61.00	9057680099000
0.3906	25/64	9.92	10.00	103.00	46.12	61.00	9057680099200
0.3937		10.00	10.00	103.00	46.00	61.00	9057680100000
0.3976		10.10	12.00	118.00	55.85	71.00	9057680101000
0.4016		10.20	12.00	118.00	55.70	71.00	9057680102000
0.4055		10.30	12.00	118.00	55.55	71.00	9057680103000
0.4063	13/32	10.32	12.00	118.00	55.52	71.00	9057680103200
0.4094		10.40	12.00	118.00	55.40	71.00	9057680104000
0.4134		10.50	12.00	118.00	55.25	71.00	9057680105000
0.4173		10.60	12.00	118.00	55.10	71.00	9057680106000
0.4213		10.70	12.00	118.00	54.95	71.00	9057680107000
0.4252		10.80	12.00	118.00	54.80	71.00	9057680108000
0.4291		10.90	12.00	118.00	54.65	71.00	9057680109000
0.4331		11.00	12.00	118.00	54.50	71.00	9057680110000
0.4370		11.10	12.00	118.00	54.35	71.00	9057680111000
0.4374	7/16	11.11	12.00	118.00	54.34	71.00	9057680111100
0.4409		11.20	12.00	118.00	54.20	71.00	9057680112000
0.4449		11.30	12.00	118.00	54.05	71.00	9057680113000
0.4488		11.40	12.00	118.00	53.90	71.00	9057680114000
0.4528		11.50	12.00	118.00	53.75	71.00	9057680115000
0.4567		11.60	12.00	118.00	53.60	71.00	9057680116000
0.4606		11.70	12.00	118.00	53.45	71.00	9057680117000
0.4646		11.80	12.00	118.00	53.30	71.00	9057680118000
0.4685		11.90	12.00	118.00	53.15	71.00	9057680119000
0.4689	15/32	11.91	12.00	118.00	53.14	71.00	9057680119100
0.4724		12.00	12.00	118.00	53.00	71.00	9057680120000
0.4764		12.10	14.00	124.00	58.85	77.00	9057680121000
0.4803		12.20	14.00	124.00	58.70	77.00	9057680122000
0.4921		12.50	14.00	124.00	58.25	77.00	9057680125000
0.4961		12.60	14.00	124.00	58.10	77.00	9057680126000
0.5000	1/2	12.70	14.00	124.00	57.95	77.00	9057680127000
0.5039		12.80	14.00	124.00	57.80	77.00	9057680128000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.5079		12.90	14.00	124.00	57.65	77.00	9057680129000
0.5118		13.00	14.00	124.00	57.50	77.00	9057680130000
0.5157	33/64	13.10	14.00	124.00	57.35	77.00	9057680131000
0.5236		13.30	14.00	124.00	57.05	77.00	9057680133000
0.5276		13.40	14.00	124.00	56.90	77.00	9057680134000
0.5315		13.50	14.00	124.00	56.75	77.00	9057680135000
0.5394		13.70	14.00	124.00	56.45	77.00	9057680137000
0.5433		13.80	14.00	124.00	56.30	77.00	9057680138000
0.5512		14.00	14.00	124.00	56.00	77.00	9057680140000
0.5551		14.10	16.00	133.00	61.85	83.00	9057680141000
0.5591		14.20	16.00	133.00	61.70	83.00	9057680142000
0.5626	9/16	14.29	16.00	133.00	61.57	83.00	9057680142900
0.5630		14.30	16.00	133.00	61.55	83.00	9057680143000
0.5669		14.40	16.00	133.00	61.40	83.00	9057680144000
0.5709		14.50	16.00	133.00	61.25	83.00	9057680145000
0.5787		14.70	16.00	133.00	60.95	83.00	9057680147000
0.5827		14.80	16.00	133.00	60.80	83.00	9057680148000
0.5906		15.00	16.00	133.00	60.50	83.00	9057680150000
0.5945		15.10	16.00	133.00	60.35	83.00	9057680151000
0.5984		15.20	16.00	133.00	60.20	83.00	9057680152000
0.6024		15.30	16.00	133.00	60.05	83.00	9057680153000
0.6102		15.50	16.00	133.00	59.75	83.00	9057680155000
0.6181		15.70	16.00	133.00	59.45	83.00	9057680157000
0.6220		15.80	16.00	133.00	59.30	83.00	9057680158000
0.6299		16.00	16.00	133.00	59.00	83.00	9057680160000
0.6496		16.50	18.00	143.00	68.25	93.00	9057680165000
0.6575		16.70	18.00	143.00	67.95	93.00	9057680167000
0.6654		16.90	18.00	143.00	67.65	93.00	9057680169000
0.6693		17.00	18.00	143.00	67.50	93.00	9057680170000
0.6890		17.50	18.00	143.00	66.75	93.00	9057680175000
0.6969		17.70	18.00	143.00	66.45	93.00	9057680177000
0.7087		18.00	18.00	143.00	66.00	93.00	9057680180000
0.7283		18.50	20.00	153.00	73.25	101.00	9057680185000
0.7441		18.90	20.00	153.00	72.65	101.00	9057680189000
0.7480		19.00	20.00	153.00	72.50	101.00	9057680190000
0.7500	3/4	19.05	20.00	153.00	72.43	101.00	9057680190500
0.7598		19.30	20.00	153.00	72.05	101.00	9057680193000
0.7677		19.50	20.00	153.00	71.75	101.00	9057680195000
0.7874		20.00	20.00	153.00	71.00	101.00	9057680200000

5xD Ratio drills

Series no. **5744**

Tool material **Solid Carbide**

Surface **a**

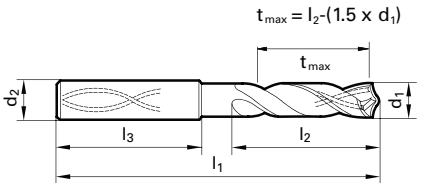
5xD Cutting depth · RT 100 US Type · 140° Point angle · m7 Tolerance on Ø · Internal coolant · HA Shank form · R Cutting direction

P	Steel	
M	Stainless steel	●
K	Cast iron	
N	Aluminum	
S	Titanium alloys	●
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • main cutting edge form concave • optimized cutting geometry

stainless/acid-/heat-resistant steels • alloyed and high tensile steels up to 1600 N/mm² • Inconel, Hastelloy, Monel • Titanium and Titanium alloys





Speeds and feeds information on pg. 562

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	66.00	23.50	28.00	9057440030000
0.1220		3.10	6.00	66.00	23.35	28.00	9057440031000
0.1248	1/8	3.17	6.00	66.00	23.25	28.00	9057440031700
0.1260		3.20	6.00	66.00	23.20	28.00	9057440032000
0.1280		3.25	6.00	66.00	23.13	28.00	9057440032500
0.1299		3.30	6.00	66.00	23.05	28.00	9057440033000
0.1339		3.40	6.00	66.00	22.90	28.00	9057440034000
0.1378		3.50	6.00	66.00	22.75	28.00	9057440035000
0.1406	9/64 #28	3.57	6.00	66.00	22.65	28.00	9057440035700
0.1417		3.60	6.00	66.00	22.60	28.00	9057440036000
0.1457		3.70	6.00	66.00	22.45	28.00	9057440037000
0.1496		3.80	6.00	74.00	30.30	36.00	9057440038000
0.1535		3.90	6.00	74.00	30.15	36.00	9057440039000
0.1563	5/32	3.97	6.00	74.00	30.05	36.00	9057440039700
0.1575		4.00	6.00	74.00	30.00	36.00	9057440040000
0.1614		4.10	6.00	74.00	29.85	36.00	9057440041000
0.1654		4.20	6.00	74.00	29.70	36.00	9057440042000
0.1693		4.30	6.00	74.00	29.55	36.00	9057440043000
0.1720	11/64	4.37	6.00	74.00	29.45	36.00	9057440043700
0.1732		4.40	6.00	74.00	29.40	36.00	9057440044000
0.1772		4.50	6.00	74.00	29.25	36.00	9057440045000
0.1811		4.60	6.00	74.00	29.10	36.00	9057440046000
0.1831		4.65	6.00	74.00	29.03	36.00	9057440046500
0.1850		4.70	6.00	74.00	28.95	36.00	9057440047000
0.1874	3/16	4.76	6.00	82.00	36.86	44.00	9057440047600
0.1890		4.80	6.00	82.00	36.80	44.00	9057440048000
0.1929		4.90	6.00	82.00	36.65	44.00	9057440049000
0.1969		5.00	6.00	82.00	36.50	44.00	9057440050000
0.2008		5.10	6.00	82.00	36.35	44.00	9057440051000
0.2031	13/64	5.16	6.00	82.00	36.26	44.00	9057440051600
0.2047		5.20	6.00	82.00	36.20	44.00	9057440052000
0.2087		5.30	6.00	82.00	36.05	44.00	9057440053000
0.2126		5.40	6.00	82.00	35.90	44.00	9057440054000
0.2165		5.50	6.00	82.00	35.75	44.00	9057440055000
0.2185		5.55	6.00	82.00	35.68	44.00	9057440055500
0.2189	7/32	5.56	6.00	82.00	35.66	44.00	9057440055600
0.2205		5.60	6.00	82.00	35.60	44.00	9057440056000
0.2244		5.70	6.00	82.00	35.45	44.00	9057440057000
0.2283		5.80	6.00	82.00	35.30	44.00	9057440058000
0.2323		5.90	6.00	82.00	35.15	44.00	9057440059000
0.2343	15/64	5.95	6.00	82.00	35.08	44.00	9057440059500
0.2362		6.00	6.00	82.00	35.00	44.00	9057440060000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2402		6.10	8.00	91.00	43.85	53.00	9057440061000
0.2441		6.20	8.00	91.00	43.70	53.00	9057440062000
0.2480		6.30	8.00	91.00	43.55	53.00	9057440063000
0.2500	1/4 E	6.35	8.00	91.00	43.48	53.00	9057440063500
0.2520		6.40	8.00	91.00	43.40	53.00	9057440064000
0.2559		6.50	8.00	91.00	43.25	53.00	9057440065000
0.2571	F	6.53	8.00	91.00	43.21	53.00	9057440065300
0.2598		6.60	8.00	91.00	43.10	53.00	9057440066000
0.2638		6.70	8.00	91.00	42.95	53.00	9057440067000
0.2657	17/64 H	6.75	8.00	91.00	42.88	53.00	9057440067500
0.2677		6.80	8.00	91.00	42.80	53.00	9057440068000
0.2717	I	6.90	8.00	91.00	42.65	53.00	9057440069000
0.2756		7.00	8.00	91.00	42.50	53.00	9057440070000
0.2795		7.10	8.00	91.00	42.35	53.00	9057440071000
0.2811	9/32 K	7.14	8.00	91.00	42.29	53.00	9057440071400
0.2835		7.20	8.00	91.00	42.20	53.00	9057440072000
0.2874		7.30	8.00	91.00	42.05	53.00	9057440073000
0.2913		7.40	8.00	91.00	41.90	53.00	9057440074000
0.2953		7.50	8.00	91.00	41.75	53.00	9057440075000
0.2969	19/64	7.54	8.00	91.00	41.69	53.00	9057440075400
0.2992		7.60	8.00	91.00	41.60	53.00	9057440076000
0.3031		7.70	8.00	91.00	41.45	53.00	9057440077000
0.3071		7.80	8.00	91.00	41.30	53.00	9057440078000
0.3110		7.90	8.00	91.00	41.15	53.00	9057440079000
0.3126	5/16	7.94	8.00	91.00	41.09	53.00	9057440079400
0.3150		8.00	8.00	91.00	41.00	53.00	9057440080000
0.3189		8.10	10.00	103.00	48.85	61.00	9057440081000
0.3228	P	8.20	10.00	103.00	48.70	61.00	9057440082000
0.3268		8.30	10.00	103.00	48.55	61.00	9057440083000
0.3280	21/64	8.33	10.00	103.00	48.51	61.00	9057440083300
0.3307		8.40	10.00	103.00	48.40	61.00	9057440084000
0.3346		8.50	10.00	103.00	48.25	61.00	9057440085000
0.3386		8.60	10.00	103.00	48.10	61.00	9057440086000
0.3425		8.70	10.00	103.00	47.95	61.00	9057440087000
0.3437	11/32	8.73	10.00	103.00	47.91	61.00	9057440087300
0.3465		8.80	10.00	103.00	47.80	61.00	9057440088000
0.3504		8.90	10.00	103.00	47.65	61.00	9057440089000
0.3543		9.00	10.00	103.00	47.50	61.00	9057440090000
0.3583		9.10	10.00	103.00	47.35	61.00	9057440091000
0.3594	23/64	9.13	10.00	103.00	47.31	61.00	9057440091300
0.3622		9.20	10.00	103.00	47.20	61.00	9057440092000
0.3642		9.25	10.00	103.00	47.13	61.00	9057440092500

5xD Ratio drills

Series no. **5744**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3661		9.30	10.00	103.00	47.05	61.00	9057440093000
0.3701		9.40	10.00	103.00	46.90	61.00	9057440094000
0.3740		9.50	10.00	103.00	46.75	61.00	9057440095000
0.3748	3/8	9.52	10.00	103.00	46.72	61.00	9057440095200
0.3780		9.60	10.00	103.00	46.60	61.00	9057440096000
0.3819		9.70	10.00	103.00	46.45	61.00	9057440097000
0.3858	W	9.80	10.00	103.00	46.30	61.00	9057440098000
0.3898		9.90	10.00	103.00	46.15	61.00	9057440099000
0.3906	25/64	9.92	10.00	103.00	46.12	61.00	9057440099200
0.3937		10.00	10.00	103.00	46.00	61.00	9057440100000
0.3976		10.10	12.00	118.00	55.85	71.00	9057440101000
0.4016		10.20	12.00	118.00	55.70	71.00	9057440102000
0.4055		10.30	12.00	118.00	55.55	71.00	9057440103000
0.4063	13/32	10.32	12.00	118.00	55.52	71.00	9057440103200
0.4094		10.40	12.00	118.00	55.40	71.00	9057440104000
0.4134		10.50	12.00	118.00	55.25	71.00	9057440105000
0.4173		10.60	12.00	118.00	55.10	71.00	9057440106000
0.4213		10.70	12.00	118.00	54.95	71.00	9057440107000
0.4220	27/64	10.72	12.00	118.00	54.92	71.00	9057440107200
0.4252		10.80	12.00	118.00	54.80	71.00	9057440108000
0.4291		10.90	12.00	118.00	54.65	71.00	9057440109000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4331		11.00	12.00	118.00	54.50	71.00	9057440110000
0.4370		11.10	12.00	118.00	54.35	71.00	9057440111000
0.4374	7/16	11.11	12.00	118.00	54.34	71.00	9057440111100
0.4409		11.20	12.00	118.00	54.20	71.00	9057440112000
0.4449		11.30	12.00	118.00	54.05	71.00	9057440113000
0.4488		11.40	12.00	118.00	53.90	71.00	9057440114000
0.4528		11.50	12.00	118.00	53.75	71.00	9057440115000
0.4567		11.60	12.00	118.00	53.60	71.00	9057440116000
0.4606		11.70	12.00	118.00	53.45	71.00	9057440117000
0.4646		11.80	12.00	118.00	53.30	71.00	9057440118000
0.4685		11.90	12.00	118.00	53.15	71.00	9057440119000
0.4689	15/32	11.91	12.00	118.00	53.14	71.00	9057440119100
0.4724		12.00	12.00	118.00	53.00	71.00	9057440120000
0.4764		12.10	14.00	124.00	58.85	77.00	9057440121000
0.4803		12.20	14.00	124.00	58.70	77.00	9057440122000
0.4843	31/64	12.30	14.00	124.00	58.55	77.00	9057440123000
0.4882		12.40	14.00	124.00	58.40	77.00	9057440124000
0.4921		12.50	14.00	124.00	58.25	77.00	9057440125000
0.4961		12.60	14.00	124.00	58.10	77.00	9057440126000
0.5000	1/2	12.70	14.00	124.00	57.95	77.00	9057440127000

5xD Ratio drills

Series no. **8511**

Tool material **Solid Carbide**

Surface **a**

5xD	RT 100 VA	140°	m7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

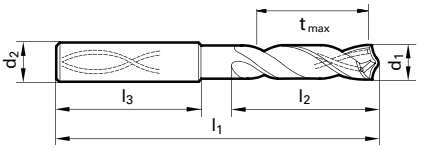
P	Steel	
M	Stainless steel	★
K	Cast iron	
N	Aluminum	
S	Titanium alloys	●
H	Hardened steel	

★ = 1st choice
● = Optimal suitability
○ = Limited suitability

web thinning ≥ Ø 3.000 • facet point grinding • main cutting edge form straight • optimized cutting geometry

stainless/acid-/heat-resistant steels • Titanium and Titanium alloys • Inconel, Hastelloy, Monel

$t_{max} = l_2-(1.5 \times d_1)$





Speeds and feeds information on pg. 573

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	66.00	23.50	28.00	9085110030000
0.1220		3.10	6.00	66.00	23.35	28.00	9085110031000
0.1248	1/8	3.17	6.00	66.00	23.25	28.00	9085110031700
0.1260		3.20	6.00	66.00	23.20	28.00	9085110032000
0.1280		3.25	6.00	66.00	23.13	28.00	9085110032500
0.1299		3.30	6.00	66.00	23.05	28.00	9085110033000
0.1339		3.40	6.00	66.00	22.90	28.00	9085110034000
0.1378		3.50	6.00	66.00	22.75	28.00	9085110035000
0.1406	9/64 #28	3.57	6.00	66.00	22.65	28.00	9085110035700
0.1417		3.60	6.00	66.00	22.60	28.00	9085110036000
0.1457		3.70	6.00	66.00	22.45	28.00	9085110037000
0.1496	#25	3.80	6.00	74.00	30.30	36.00	9085110038000
0.1535		3.90	6.00	74.00	30.15	36.00	9085110039000
0.1563	5/32	3.97	6.00	74.00	30.05	36.00	9085110039700
0.1575		4.00	6.00	74.00	30.00	36.00	9085110040000
0.1614		4.10	6.00	74.00	29.85	36.00	9085110041000
0.1654		4.20	6.00	74.00	29.70	36.00	9085110042000
0.1693	#18	4.30	6.00	74.00	29.55	36.00	9085110043000
0.1720	11/64	4.37	6.00	74.00	29.45	36.00	9085110043700
0.1732		4.40	6.00	74.00	29.40	36.00	9085110044000
0.1772	#16	4.50	6.00	74.00	29.25	36.00	9085110045000
0.1811		4.60	6.00	74.00	29.10	36.00	9085110046000
0.1831		4.65	6.00	74.00	29.03	36.00	9085110046500
0.1850	#13	4.70	6.00	74.00	28.95	36.00	9085110047000
0.1874	3/16	4.76	6.00	82.00	36.86	44.00	9085110047600
0.1890	#12	4.80	6.00	82.00	36.80	44.00	9085110048000
0.1929		4.90	6.00	82.00	36.65	44.00	9085110049000
0.1969		5.00	6.00	82.00	36.50	44.00	9085110050000
0.2008		5.10	6.00	82.00	36.35	44.00	9085110051000
0.2031	13/64	5.16	6.00	82.00	36.26	44.00	9085110051600
0.2047		5.20	6.00	82.00	36.20	44.00	9085110052000
0.2087		5.30	6.00	82.00	36.05	44.00	9085110053000
0.2126		5.40	6.00	82.00	35.90	44.00	9085110054000
0.2165		5.50	6.00	82.00	35.75	44.00	9085110055000
0.2185		5.55	6.00	82.00	35.68	44.00	9085110055500
0.2189	7/32	5.56	6.00	82.00	35.66	44.00	9085110055600
0.2205		5.60	6.00	82.00	35.60	44.00	9085110056000
0.2244		5.70	6.00	82.00	35.45	44.00	9085110057000
0.2283		5.80	6.00	82.00	35.30	44.00	9085110058000
0.2323		5.90	6.00	82.00	35.15	44.00	9085110059000
0.2343	15/64	5.95	6.00	82.00	35.08	44.00	9085110059500
0.2362		6.00	6.00	82.00	35.00	44.00	9085110060000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2402		6.10	8.00	91.00	43.85	53.00	9085110061000
0.2441		6.20	8.00	91.00	43.70	53.00	9085110062000
0.2480		6.30	8.00	91.00	43.55	53.00	9085110063000
0.2500	1/4 E	6.35	8.00	91.00	43.48	53.00	9085110063500
0.2520		6.40	8.00	91.00	43.40	53.00	9085110064000
0.2559		6.50	8.00	91.00	43.25	53.00	9085110065000
0.2598		6.60	8.00	91.00	43.10	53.00	9085110066000
0.2638		6.70	8.00	91.00	42.95	53.00	9085110067000
0.2657	17/64 H	6.75	8.00	91.00	42.88	53.00	9085110067500
0.2677		6.80	8.00	91.00	42.80	53.00	9085110068000
0.2717	I	6.90	8.00	91.00	42.65	53.00	9085110069000
0.2756		7.00	8.00	91.00	42.50	53.00	9085110070000
0.2795		7.10	8.00	91.00	42.35	53.00	9085110071000
0.2811	9/32 K	7.14	8.00	91.00	42.29	53.00	9085110071400
0.2835		7.20	8.00	91.00	42.20	53.00	9085110072000
0.2874		7.30	8.00	91.00	42.05	53.00	9085110073000
0.2913		7.40	8.00	91.00	41.90	53.00	9085110074000
0.2953		7.50	8.00	91.00	41.75	53.00	9085110075000
0.2969	19/64	7.54	8.00	91.00	41.69	53.00	9085110075400
0.2992		7.60	8.00	91.00	41.60	53.00	9085110076000
0.3031		7.70	8.00	91.00	41.45	53.00	9085110077000
0.3071		7.80	8.00	91.00	41.30	53.00	9085110078000
0.3110		7.90	8.00	91.00	41.15	53.00	9085110079000
0.3126	5/16	7.94	8.00	91.00	41.09	53.00	9085110079400
0.3150		8.00	8.00	91.00	41.00	53.00	9085110080000
0.3189		8.10	10.00	103.00	48.85	61.00	9085110081000
0.3228	P	8.20	10.00	103.00	48.70	61.00	9085110082000
0.3268		8.30	10.00	103.00	48.55	61.00	9085110083000
0.3280	21/64	8.33	10.00	103.00	48.51	61.00	9085110083300
0.3307		8.40	10.00	103.00	48.40	61.00	9085110084000
0.3346		8.50	10.00	103.00	48.25	61.00	9085110085000
0.3386		8.60	10.00	103.00	48.10	61.00	9085110086000
0.3425		8.70	10.00	103.00	47.95	61.00	9085110087000
0.3437	11/32	8.73	10.00	103.00	47.91	61.00	9085110087300
0.3465		8.80	10.00	103.00	47.80	61.00	9085110088000
0.3504		8.90	10.00	103.00	47.65	61.00	9085110089000
0.3543		9.00	10.00	103.00	47.50	61.00	9085110090000
0.3583		9.10	10.00	103.00	47.35	61.00	9085110091000
0.3594	23/64	9.13	10.00	103.00	47.31	61.00	9085110091300
0.3622		9.20	10.00	103.00	47.20	61.00	9085110092000
0.3642		9.25	10.00	103.00	47.13	61.00	9085110092500
0.3661		9.30	10.00	103.00	47.05	61.00	9085110093000

5xD Ratio drills

Series no. **8511**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3701		9.40	10.00	103.00	46.90	61.00	9085110094000
0.3740		9.50	10.00	103.00	46.75	61.00	9085110095000
0.3748	3/8	9.52	10.00	103.00	46.72	61.00	9085110095200
0.3780		9.60	10.00	103.00	46.60	61.00	9085110096000
0.3819		9.70	10.00	103.00	46.45	61.00	9085110097000
0.3858	W	9.80	10.00	103.00	46.30	61.00	9085110098000
0.3898		9.90	10.00	103.00	46.15	61.00	9085110099000
0.3906	25/64	9.92	10.00	103.00	46.12	61.00	9085110099200
0.3937		10.00	10.00	103.00	46.00	61.00	9085110100000
0.3976		10.10	12.00	118.00	55.85	71.00	9085110101000
0.4016		10.20	12.00	118.00	55.70	71.00	9085110102000
0.4055		10.30	12.00	118.00	55.55	71.00	9085110103000
0.4063	13/32	10.32	12.00	118.00	55.52	71.00	9085110103200
0.4094		10.40	12.00	118.00	55.40	71.00	9085110104000
0.4134		10.50	12.00	118.00	55.25	71.00	9085110105000
0.4173		10.60	12.00	118.00	55.10	71.00	9085110106000
0.4213		10.70	12.00	118.00	54.95	71.00	9085110107000
0.4252		10.80	12.00	118.00	54.80	71.00	9085110108000
0.4291		10.90	12.00	118.00	54.65	71.00	9085110109000
0.4331		11.00	12.00	118.00	54.50	71.00	9085110110000
0.4370		11.10	12.00	118.00	54.35	71.00	9085110111000
0.4374	7/16	11.11	12.00	118.00	54.34	71.00	9085110111100
0.4409		11.20	12.00	118.00	54.20	71.00	9085110112000
0.4449		11.30	12.00	118.00	54.05	71.00	9085110113000
0.4488		11.40	12.00	118.00	53.90	71.00	9085110114000
0.4528		11.50	12.00	118.00	53.75	71.00	9085110115000
0.4567		11.60	12.00	118.00	53.60	71.00	9085110116000
0.4606		11.70	12.00	118.00	53.45	71.00	9085110117000
0.4646		11.80	12.00	118.00	53.30	71.00	9085110118000
0.4685		11.90	12.00	118.00	53.15	71.00	9085110119000
0.4689	15/32	11.91	12.00	118.00	53.14	71.00	9085110119100
0.4724		12.00	12.00	118.00	53.00	71.00	9085110120000
0.4803		12.20	14.00	124.00	58.70	77.00	9085110122000
0.4921		12.50	14.00	124.00	58.25	77.00	9085110125000
0.5000	1/2	12.70	14.00	124.00	57.95	77.00	9085110127000
0.5039		12.80	14.00	124.00	57.80	77.00	9085110128000
0.5118		13.00	14.00	124.00	57.50	77.00	9085110130000
0.5236		13.30	14.00	124.00	57.05	77.00	9085110133000
0.5315		13.50	14.00	124.00	56.75	77.00	9085110135000
0.5394		13.70	14.00	124.00	56.45	77.00	9085110137000
0.5512		14.00	14.00	124.00	56.00	77.00	9085110140000
0.5591		14.20	16.00	133.00	61.70	83.00	9085110142000
0.5626	9/16	14.29	16.00	133.00	61.57	83.00	9085110142900
0.5630		14.30	16.00	133.00	61.55	83.00	9085110143000
0.5709		14.50	16.00	133.00	61.25	83.00	9085110145000
0.5787		14.70	16.00	133.00	60.95	83.00	9085110147000
0.5906		15.00	16.00	133.00	60.50	83.00	9085110150000
0.5984		15.20	16.00	133.00	60.20	83.00	9085110152000
0.6024		15.30	16.00	133.00	60.05	83.00	9085110153000
0.6102		15.50	16.00	133.00	59.75	83.00	9085110155000
0.6181		15.70	16.00	133.00	59.45	83.00	9085110157000
0.6299		16.00	16.00	133.00	59.00	83.00	9085110160000
0.6417		16.30	18.00	143.00	68.55	93.00	9085110163000
0.6496		16.50	18.00	143.00	68.25	93.00	9085110165000
0.6654		16.90	18.00	143.00	67.65	93.00	9085110169000
0.6693		17.00	18.00	143.00	67.50	93.00	9085110170000
0.6811		17.30	18.00	143.00	67.05	93.00	9085110173000
0.6890		17.50	18.00	143.00	66.75	93.00	9085110175000
0.7087		18.00	18.00	143.00	66.00	93.00	9085110180000
0.7283		18.50	20.00	153.00	73.25	101.00	9085110185000
0.7441		18.90	20.00	153.00	72.65	101.00	9085110189000
0.7480		19.00	20.00	153.00	72.50	101.00	9085110190000
0.7500	3/4	19.05	20.00	153.00	72.43	101.00	9085110190500
0.7598		19.30	20.00	153.00	72.05	101.00	9085110193000
0.7677		19.50	20.00	153.00	71.75	101.00	9085110195000
0.7874		20.00	20.00	153.00	71.00	101.00	9085110200000

5xD Ratio drills

Series no. **8521**

Tool material **Solid Carbide**

Surface Y

5xD Cutting depth · RT 100 HF Type · 140° Point angle · m7 Tolerance on Ø · Internal coolant · HA Shank form · R Cutting direction

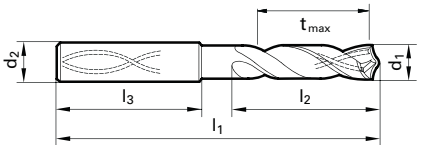
P	Steel	●
M	Stainless steel	
K	Cast iron	
N	Aluminum	
S	Titanium alloys	★
H	Hardened steel	○

★ = 1st choice
● = Optimal suitability
○ = Limited suitability

web thinning ≥ Ø 3.000 • relieved cone • main cutting edge is slightly concave • optimized cutting geometry

alloyed and high tensile steels up to 1600 N/mm² • Inconel, Hastelloy, Monel • Titanium and Titanium alloys

$t_{max} = l_2-(1.5 \times d_1)$





Speeds and feeds information on pg. 574

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	66.00	23.50	28.00	9085210030000
0.1220		3.10	6.00	66.00	23.35	28.00	9085210031000
0.1248	1/8	3.17	6.00	66.00	23.25	28.00	9085210031700
0.1260		3.20	6.00	66.00	23.20	28.00	9085210032000
0.1280		3.25	6.00	66.00	23.13	28.00	9085210032500
0.1299		3.30	6.00	66.00	23.05	28.00	9085210033000
0.1339		3.40	6.00	66.00	22.90	28.00	9085210034000
0.1378		3.50	6.00	66.00	22.75	28.00	9085210035000
0.1406	9/64 #28	3.57	6.00	66.00	22.65	28.00	9085210035700
0.1417		3.60	6.00	66.00	22.60	28.00	9085210036000
0.1457		3.70	6.00	66.00	22.45	28.00	9085210037000
0.1496	#25	3.80	6.00	74.00	30.30	36.00	9085210038000
0.1535		3.90	6.00	74.00	30.15	36.00	9085210039000
0.1563	5/32	3.97	6.00	74.00	30.05	36.00	9085210039700
0.1575		4.00	6.00	74.00	30.00	36.00	9085210040000
0.1614		4.10	6.00	74.00	29.85	36.00	9085210041000
0.1654		4.20	6.00	74.00	29.70	36.00	9085210042000
0.1693	#18	4.30	6.00	74.00	29.55	36.00	9085210043000
0.1720	11/64	4.37	6.00	74.00	29.45	36.00	9085210043700
0.1732		4.40	6.00	74.00	29.40	36.00	9085210044000
0.1772	#16	4.50	6.00	74.00	29.25	36.00	9085210045000
0.1811		4.60	6.00	74.00	29.10	36.00	9085210046000
0.1831		4.65	6.00	74.00	29.03	36.00	9085210046500
0.1850	#13	4.70	6.00	74.00	28.95	36.00	9085210047000
0.1874	3/16	4.76	6.00	82.00	36.86	44.00	9085210047600
0.1890	#12	4.80	6.00	82.00	36.80	44.00	9085210048000
0.1929		4.90	6.00	82.00	36.65	44.00	9085210049000
0.1969		5.00	6.00	82.00	36.50	44.00	9085210050000
0.2008		5.10	6.00	82.00	36.35	44.00	9085210051000
0.2031	13/64	5.16	6.00	82.00	36.26	44.00	9085210051600
0.2047		5.20	6.00	82.00	36.20	44.00	9085210052000
0.2087		5.30	6.00	82.00	36.05	44.00	9085210053000
0.2126		5.40	6.00	82.00	35.90	44.00	9085210054000
0.2165		5.50	6.00	82.00	35.75	44.00	9085210055000
0.2185		5.55	6.00	82.00	35.68	44.00	9085210055500
0.2189	7/32	5.56	6.00	82.00	35.66	44.00	9085210055600
0.2205		5.60	6.00	82.00	35.60	44.00	9085210056000
0.2244		5.70	6.00	82.00	35.45	44.00	9085210057000
0.2283		5.80	6.00	82.00	35.30	44.00	9085210058000
0.2323		5.90	6.00	82.00	35.15	44.00	9085210059000
0.2343	15/64	5.95	6.00	82.00	35.08	44.00	9085210059500
0.2362		6.00	6.00	82.00	35.00	44.00	9085210060000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2402		6.10	8.00	91.00	43.85	53.00	9085210061000
0.2441		6.20	8.00	91.00	43.70	53.00	9085210062000
0.2480		6.30	8.00	91.00	43.55	53.00	9085210063000
0.2500	1/4 E	6.35	8.00	91.00	43.48	53.00	9085210063500
0.2520		6.40	8.00	91.00	43.40	53.00	9085210064000
0.2559		6.50	8.00	91.00	43.25	53.00	9085210065000
0.2598		6.60	8.00	91.00	43.10	53.00	9085210066000
0.2638		6.70	8.00	91.00	42.95	53.00	9085210067000
0.2657	17/64 H	6.75	8.00	91.00	42.88	53.00	9085210067500
0.2677		6.80	8.00	91.00	42.80	53.00	9085210068000
0.2717	I	6.90	8.00	91.00	42.65	53.00	9085210069000
0.2756		7.00	8.00	91.00	42.50	53.00	9085210070000
0.2795		7.10	8.00	91.00	42.35	53.00	9085210071000
0.2811	9/32 K	7.14	8.00	91.00	42.29	53.00	9085210071400
0.2835		7.20	8.00	91.00	42.20	53.00	9085210072000
0.2874		7.30	8.00	91.00	42.05	53.00	9085210073000
0.2913		7.40	8.00	91.00	41.90	53.00	9085210074000
0.2953		7.50	8.00	91.00	41.75	53.00	9085210075000
0.2969	19/64	7.54	8.00	91.00	41.69	53.00	9085210075400
0.2992		7.60	8.00	91.00	41.60	53.00	9085210076000
0.3031		7.70	8.00	91.00	41.45	53.00	9085210077000
0.3071		7.80	8.00	91.00	41.30	53.00	9085210078000
0.3110		7.90	8.00	91.00	41.15	53.00	9085210079000
0.3126	5/16	7.94	8.00	91.00	41.09	53.00	9085210079400
0.3150		8.00	8.00	91.00	41.00	53.00	9085210080000
0.3189		8.10	10.00	103.00	48.85	61.00	9085210081000
0.3228	P	8.20	10.00	103.00	48.70	61.00	9085210082000
0.3268		8.30	10.00	103.00	48.55	61.00	9085210083000
0.3280	21/64	8.33	10.00	103.00	48.51	61.00	9085210083300
0.3307		8.40	10.00	103.00	48.40	61.00	9085210084000
0.3346		8.50	10.00	103.00	48.25	61.00	9085210085000
0.3386		8.60	10.00	103.00	48.10	61.00	9085210086000
0.3425		8.70	10.00	103.00	47.95	61.00	9085210087000
0.3437	11/32	8.73	10.00	103.00	47.91	61.00	9085210087300
0.3465		8.80	10.00	103.00	47.80	61.00	9085210088000
0.3504		8.90	10.00	103.00	47.65	61.00	9085210089000
0.3543		9.00	10.00	103.00	47.50	61.00	9085210090000
0.3583		9.10	10.00	103.00	47.35	61.00	9085210091000
0.3594	23/64	9.13	10.00	103.00	47.31	61.00	9085210091300
0.3622		9.20	10.00	103.00	47.20	61.00	9085210092000
0.3642		9.25	10.00	103.00	47.13	61.00	9085210092500
0.3661		9.30	10.00	103.00	47.05	61.00	9085210093000

5xD Ratio drills

Series no. **8521**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3701		9.40	10.00	103.00	46.90	61.00	9085210094000
0.3740		9.50	10.00	103.00	46.75	61.00	9085210095000
0.3748	3/8	9.52	10.00	103.00	46.72	61.00	9085210095200
0.3780		9.60	10.00	103.00	46.60	61.00	9085210096000
0.3819		9.70	10.00	103.00	46.45	61.00	9085210097000
0.3858	W	9.80	10.00	103.00	46.30	61.00	9085210098000
0.3898		9.90	10.00	103.00	46.15	61.00	9085210099000
0.3906	25/64	9.92	10.00	103.00	46.12	61.00	9085210099200
0.3937		10.00	10.00	103.00	46.00	61.00	9085210100000
0.3976		10.10	12.00	118.00	55.85	71.00	9085210101000
0.4016		10.20	12.00	118.00	55.70	71.00	9085210102000
0.4055		10.30	12.00	118.00	55.55	71.00	9085210103000
0.4063	13/32	10.32	12.00	118.00	55.52	71.00	9085210103200
0.4094		10.40	12.00	118.00	55.40	71.00	9085210104000
0.4134		10.50	12.00	118.00	55.25	71.00	9085210105000
0.4173		10.60	12.00	118.00	55.10	71.00	9085210106000
0.4213		10.70	12.00	118.00	54.95	71.00	9085210107000
0.4220	27/64	10.72	12.00	118.00	54.92	71.00	9085210107200
0.4252		10.80	12.00	118.00	54.80	71.00	9085210108000
0.4291		10.90	12.00	118.00	54.65	71.00	9085210109000
0.4331		11.00	12.00	118.00	54.50	71.00	9085210110000
0.4370		11.10	12.00	118.00	54.35	71.00	9085210111000
0.4374	7/16	11.11	12.00	118.00	54.34	71.00	9085210111100
0.4409		11.20	12.00	118.00	54.20	71.00	9085210112000
0.4449		11.30	12.00	118.00	54.05	71.00	9085210113000
0.4488		11.40	12.00	118.00	53.90	71.00	9085210114000
0.4528		11.50	12.00	118.00	53.75	71.00	9085210115000
0.4531	29/64	11.51	12.00	118.00	53.74	71.00	9085210115100
0.4567		11.60	12.00	118.00	53.60	71.00	9085210116000
0.4606		11.70	12.00	118.00	53.45	71.00	9085210117000
0.4646		11.80	12.00	118.00	53.30	71.00	9085210118000
0.4685		11.90	12.00	118.00	53.15	71.00	9085210119000
0.4689	15/32	11.91	12.00	118.00	53.14	71.00	9085210119100
0.4724		12.00	12.00	118.00	53.00	71.00	9085210120000
0.4803		12.20	14.00	124.00	58.70	77.00	9085210122000
0.4843	31/64	12.30	14.00	124.00	58.55	77.00	9085210123000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4921		12.50	14.00	124.00	58.25	77.00	9085210125000
0.5000	1/2	12.70	14.00	124.00	57.95	77.00	9085210127000
0.5039		12.80	14.00	124.00	57.80	77.00	9085210128000
0.5118		13.00	14.00	124.00	57.50	77.00	9085210130000
0.5236		13.30	14.00	124.00	57.05	77.00	9085210133000
0.5311	17/32	13.49	14.00	124.00	56.77	77.00	9085210134900
0.5315		13.50	14.00	124.00	56.75	77.00	9085210135000
0.5394		13.70	14.00	124.00	56.45	77.00	9085210137000
0.5512		14.00	14.00	124.00	56.00	77.00	9085210140000
0.5591		14.20	16.00	133.00	61.70	83.00	9085210142000
0.5626	9/16	14.29	16.00	133.00	61.57	83.00	9085210142900
0.5630		14.30	16.00	133.00	61.55	83.00	9085210143000
0.5709		14.50	16.00	133.00	61.25	83.00	9085210145000
0.5787		14.70	16.00	133.00	60.95	83.00	9085210147000
0.5906		15.00	16.00	133.00	60.50	83.00	9085210150000
0.5984		15.20	16.00	133.00	60.20	83.00	9085210152000
0.6024		15.30	16.00	133.00	60.05	83.00	9085210153000
0.6102		15.50	16.00	133.00	59.75	83.00	9085210155000
0.6181		15.70	16.00	133.00	59.45	83.00	9085210157000
0.6248	5/8	15.87	16.00	133.00	59.20	83.00	9085210158700
0.6299		16.00	16.00	133.00	59.00	83.00	9085210160000
0.6417		16.30	18.00	143.00	68.55	93.00	9085210163000
0.6496		16.50	18.00	143.00	68.25	93.00	9085210165000
0.6654		16.90	18.00	143.00	67.65	93.00	9085210169000
0.6693		17.00	18.00	143.00	67.50	93.00	9085210170000
0.6811		17.30	18.00	143.00	67.05	93.00	9085210173000
0.6890		17.50	18.00	143.00	66.75	93.00	9085210175000
0.7087		18.00	18.00	143.00	66.00	93.00	9085210180000
0.7283		18.50	20.00	153.00	73.25	101.00	9085210185000
0.7441		18.90	20.00	153.00	72.65	101.00	9085210189000
0.7480		19.00	20.00	153.00	72.50	101.00	9085210190000
0.7500	3/4	19.05	20.00	153.00	72.43	101.00	9085210190500
0.7598		19.30	20.00	153.00	72.05	101.00	9085210193000
0.7677		19.50	20.00	153.00	71.75	101.00	9085210195000
0.7874		20.00	20.00	153.00	71.00	101.00	9085210200000

5xD Ratio drills

Series no. **6501**

5xD	RT 100 R	m7		HA	R
Cutting depth	Type	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: **F**

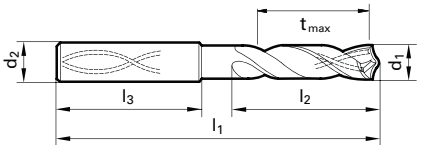
P	Steel	
M	Stainless steel	
K	Cast iron	★
N	Aluminum	
S	Titanium alloys	
H	Hardened steel	

★ = 1st choice
● = Optimal suitability
○ = Limited suitability

web thinning ≥ Ø 3.000 • patented radius point grind • main cutting edge form straight (after correction)

vermicular cast iron GGV and ADI, CDI • grey cast iron, malleable and spheroidal iron

$t_{max} = l_2-(1.5 \times d_1)$





Speeds and feeds information on pg. 569

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	66.00	23.50	28.00	9065010030000
0.1220		3.10	6.00	66.00	23.35	28.00	9065010031000
0.1248	1/8	3.17	6.00	66.00	23.25	28.00	9065010031700
0.1260		3.20	6.00	66.00	23.20	28.00	9065010032000
0.1280		3.25	6.00	66.00	23.13	28.00	9065010032500
0.1299		3.30	6.00	66.00	23.05	28.00	9065010033000
0.1339		3.40	6.00	66.00	22.90	28.00	9065010034000
0.1378		3.50	6.00	66.00	22.75	28.00	9065010035000
0.1406	9/64	#28 3.57	6.00	66.00	22.65	28.00	9065010035700
0.1417		3.60	6.00	66.00	22.60	28.00	9065010036000
0.1457		3.70	6.00	66.00	22.45	28.00	9065010037000
0.1496		#25 3.80	6.00	74.00	30.30	36.00	9065010038000
0.1535		3.90	6.00	74.00	30.15	36.00	9065010039000
0.1563	5/32	3.97	6.00	74.00	30.05	36.00	9065010039700
0.1575		4.00	6.00	74.00	30.00	36.00	9065010040000
0.1614		4.10	6.00	74.00	29.85	36.00	9065010041000
0.1654		4.20	6.00	74.00	29.70	36.00	9065010042000
0.1693		#18 4.30	6.00	74.00	29.55	36.00	9065010043000
0.1720	11/64	4.37	6.00	74.00	29.45	36.00	9065010043700
0.1732		4.40	6.00	74.00	29.40	36.00	9065010044000
0.1772		#16 4.50	6.00	74.00	29.25	36.00	9065010045000
0.1811		4.60	6.00	74.00	29.10	36.00	9065010046000
0.1831		4.65	6.00	74.00	29.03	36.00	9065010046500
0.1850		#13 4.70	6.00	74.00	28.95	36.00	9065010047000
0.1874	3/16	4.76	6.00	82.00	36.86	44.00	9065010047600
0.1890		#12 4.80	6.00	82.00	36.80	44.00	9065010048000
0.1929		4.90	6.00	82.00	36.65	44.00	9065010049000
0.1969		5.00	6.00	82.00	36.50	44.00	9065010050000
0.2008		5.10	6.00	82.00	36.35	44.00	9065010051000
0.2031	13/64	5.16	6.00	82.00	36.26	44.00	9065010051600
0.2047		5.20	6.00	82.00	36.20	44.00	9065010052000
0.2087		5.30	6.00	82.00	36.05	44.00	9065010053000
0.2126		5.40	6.00	82.00	35.90	44.00	9065010054000
0.2165		5.50	6.00	82.00	35.75	44.00	9065010055000
0.2185		5.55	6.00	82.00	35.68	44.00	9065010055500
0.2189	7/32	5.56	6.00	82.00	35.66	44.00	9065010055600
0.2205		5.60	6.00	82.00	35.60	44.00	9065010056000
0.2244		5.70	6.00	82.00	35.45	44.00	9065010057000
0.2283		5.80	6.00	82.00	35.30	44.00	9065010058000
0.2323		5.90	6.00	82.00	35.15	44.00	9065010059000
0.2343	15/64	5.95	6.00	82.00	35.08	44.00	9065010059500
0.2362		6.00	6.00	82.00	35.00	44.00	9065010060000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2402		6.10	8.00	91.00	43.85	53.00	9065010061000
0.2441		6.20	8.00	91.00	43.70	53.00	9065010062000
0.2480		6.30	8.00	91.00	43.55	53.00	9065010063000
0.2500	1/4	E 6.35	8.00	91.00	43.48	53.00	9065010063500
0.2520		6.40	8.00	91.00	43.40	53.00	9065010064000
0.2559		6.50	8.00	91.00	43.25	53.00	9065010065000
0.2598		6.60	8.00	91.00	43.10	53.00	9065010066000
0.2638		6.70	8.00	91.00	42.95	53.00	9065010067000
0.2657	17/64	H 6.75	8.00	91.00	42.88	53.00	9065010067500
0.2677		6.80	8.00	91.00	42.80	53.00	9065010068000
0.2717		I 6.90	8.00	91.00	42.65	53.00	9065010069000
0.2756		7.00	8.00	91.00	42.50	53.00	9065010070000
0.2795		7.10	8.00	91.00	42.35	53.00	9065010071000
0.2811	9/32	K 7.14	8.00	91.00	42.29	53.00	9065010071400
0.2835		7.20	8.00	91.00	42.20	53.00	9065010072000
0.2874		7.30	8.00	91.00	42.05	53.00	9065010073000
0.2913		7.40	8.00	91.00	41.90	53.00	9065010074000
0.2953		7.50	8.00	91.00	41.75	53.00	9065010075000
0.2969	19/64	7.54	8.00	91.00	41.69	53.00	9065010075400
0.2992		7.60	8.00	91.00	41.60	53.00	9065010076000
0.3031		7.70	8.00	91.00	41.45	53.00	9065010077000
0.3071		7.80	8.00	91.00	41.30	53.00	9065010078000
0.3110		7.90	8.00	91.00	41.15	53.00	9065010079000
0.3126	5/16	7.94	8.00	91.00	41.09	53.00	9065010079400
0.3150		8.00	8.00	91.00	41.00	53.00	9065010080000
0.3189		8.10	10.00	103.00	48.85	61.00	9065010081000
0.3228		P 8.20	10.00	103.00	48.70	61.00	9065010082000
0.3268		8.30	10.00	103.00	48.55	61.00	9065010083000
0.3280	21/64	8.33	10.00	103.00	48.51	61.00	9065010083300
0.3307		8.40	10.00	103.00	48.40	61.00	9065010084000
0.3346		8.50	10.00	103.00	48.25	61.00	9065010085000
0.3386		8.60	10.00	103.00	48.10	61.00	9065010086000
0.3425		8.70	10.00	103.00	47.95	61.00	9065010087000
0.3437	11/32	8.73	10.00	103.00	47.91	61.00	9065010087300
0.3465		8.80	10.00	103.00	47.80	61.00	9065010088000
0.3504		8.90	10.00	103.00	47.65	61.00	9065010089000
0.3543		9.00	10.00	103.00	47.50	61.00	9065010090000
0.3583		9.10	10.00	103.00	47.35	61.00	9065010091000
0.3594	23/64	9.13	10.00	103.00	47.31	61.00	9065010091300
0.3622		9.20	10.00	103.00	47.20	61.00	9065010092000
0.3642		9.25	10.00	103.00	47.13	61.00	9065010092500
0.3661		9.30	10.00	103.00	47.05	61.00	9065010093000

5xD Ratio drills

Series no. **6501**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3701		9.40	10.00	103.00	46.90	61.00	9065010094000
0.3740		9.50	10.00	103.00	46.75	61.00	9065010095000
0.3748	3/8	9.52	10.00	103.00	46.72	61.00	9065010095200
0.3780		9.60	10.00	103.00	46.60	61.00	9065010096000
0.3819		9.70	10.00	103.00	46.45	61.00	9065010097000
0.3858	W	9.80	10.00	103.00	46.30	61.00	9065010098000
0.3898		9.90	10.00	103.00	46.15	61.00	9065010099000
0.3906	25/64	9.92	10.00	103.00	46.12	61.00	9065010099200
0.3937		10.00	10.00	105.00	30.00	45.00	9065010100000
0.3976		10.10	12.00	118.00	55.85	71.00	9065010101000
0.4016		10.20	12.00	118.00	55.70	71.00	9065010102000
0.4055		10.30	12.00	118.00	55.55	71.00	9065010103000
0.4063	13/32	10.32	12.00	118.00	55.52	71.00	9065010103200
0.4094		10.40	12.00	118.00	55.40	71.00	9065010104000
0.4134		10.50	12.00	118.00	55.25	71.00	9065010105000
0.4173		10.60	12.00	118.00	55.10	71.00	9065010106000
0.4213		10.70	12.00	118.00	54.95	71.00	9065010107000
0.4220	27/64	10.72	12.00	118.00	54.92	71.00	9065010107200
0.4252		10.80	12.00	118.00	54.80	71.00	9065010108000
0.4291		10.90	12.00	118.00	54.65	71.00	9065010109000
0.4331		11.00	12.00	118.00	54.50	71.00	9065010110000
0.4370		11.10	12.00	118.00	54.35	71.00	9065010111000
0.4374	7/16	11.11	12.00	118.00	54.34	71.00	9065010111100
0.4409		11.20	12.00	118.00	54.20	71.00	9065010112000
0.4449		11.30	12.00	118.00	54.05	71.00	9065010113000
0.4488		11.40	12.00	118.00	53.90	71.00	9065010114000
0.4528		11.50	12.00	118.00	53.75	71.00	9065010115000
0.4567		11.60	12.00	118.00	53.60	71.00	9065010116000
0.4606		11.70	12.00	118.00	53.45	71.00	9065010117000
0.4646		11.80	12.00	118.00	53.30	71.00	9065010118000
0.4685		11.90	12.00	118.00	53.15	71.00	9065010119000
0.4689	15/32	11.91	12.00	118.00	53.14	71.00	9065010119100
0.4724		12.00	12.00	118.00	53.00	71.00	9065010120000
0.4764		12.10	14.00	124.00	58.85	77.00	9065010121000
0.4803		12.20	14.00	124.00	58.70	77.00	9065010122000
0.4843	31/64	12.30	14.00	124.00	58.55	77.00	9065010123000
0.4882		12.40	14.00	124.00	58.40	77.00	9065010124000
0.4921		12.50	14.00	124.00	58.25	77.00	9065010125000
0.4961		12.60	14.00	124.00	58.10	77.00	9065010126000
0.5000	1/2	12.70	14.00	124.00	57.95	77.00	9065010127000
0.5039		12.80	14.00	124.00	57.80	77.00	9065010128000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.5079		12.90	14.00	124.00	57.65	77.00	9065010129000
0.5118		13.00	14.00	124.00	57.50	77.00	9065010130000
0.5157	33/64	13.10	14.00	124.00	57.35	77.00	9065010131000
0.5236		13.30	14.00	124.00	57.05	77.00	9065010133000
0.5276		13.40	14.00	124.00	56.90	77.00	9065010134000
0.5315		13.50	14.00	124.00	56.75	77.00	9065010135000
0.5394		13.70	14.00	124.00	56.45	77.00	9065010137000
0.5433		13.80	14.00	124.00	56.30	77.00	9065010138000
0.5472		13.90	14.00	124.00	56.15	77.00	9065010139000
0.5512		14.00	14.00	107.00	39.00	60.00	9065010140000
0.5551		14.10	16.00	133.00	61.85	83.00	9065010141000
0.5591		14.20	16.00	133.00	61.70	83.00	9065010142000
0.5626	9/16	14.29	16.00	133.00	61.57	83.00	9065010142900
0.5630		14.30	16.00	133.00	61.55	83.00	9065010143000
0.5669		14.40	16.00	133.00	61.40	83.00	9065010144000
0.5709		14.50	16.00	133.00	61.25	83.00	9065010145000
0.5748		14.60	16.00	133.00	61.10	83.00	9065010146000
0.5787		14.70	16.00	133.00	60.95	83.00	9065010147000
0.5866		14.90	16.00	133.00	60.65	83.00	9065010149000
0.5906		15.00	16.00	133.00	60.50	83.00	9065010150000
0.5945		15.10	16.00	133.00	60.35	83.00	9065010151000
0.5984		15.20	16.00	133.00	60.20	83.00	9065010152000
0.6024		15.30	16.00	133.00	60.05	83.00	9065010153000
0.6063		15.40	16.00	133.00	59.90	83.00	9065010154000
0.6102		15.50	16.00	133.00	59.75	83.00	9065010155000
0.6142		15.60	16.00	133.00	59.60	83.00	9065010156000
0.6181		15.70	16.00	133.00	59.45	83.00	9065010157000
0.6220		15.80	16.00	133.00	59.30	83.00	9065010158000
0.6248	5/8	15.87	16.00	133.00	59.20	83.00	9065010158700
0.6260		15.90	16.00	133.00	59.15	83.00	9065010159000
0.6299		16.00	16.00	133.00	59.00	83.00	9065010160000
0.6496		16.50	18.00	143.00	68.25	93.00	9065010165000
0.6563	21/32	16.67	18.00	143.00	68.00	93.00	9065010166700
0.6693		17.00	18.00	143.00	67.50	93.00	9065010170000
0.6890		17.50	18.00	143.00	66.75	93.00	9065010175000
0.7087		18.00	18.00	143.00	66.00	93.00	9065010180000
0.7283		18.50	20.00	153.00	73.25	101.00	9065010185000
0.7480		19.00	20.00	153.00	72.50	101.00	9065010190000
0.7677		19.50	20.00	153.00	71.75	101.00	9065010195000
0.7874		20.00	20.00	153.00	71.00	101.00	9065010200000

5xD 3-flute drills

Series no. **1452**

5xD Cutting depth | GS 200 U Type | 150° Point angle | h7 Tolerance on Ø | Without Internal coolant | Cyl Shank form | R Cutting direction

Tool material: **Solid Carbide**

Surface: ◯

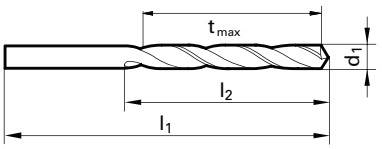
P	Steel	○
M	Stainless steel	
K	Cast iron	○
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • facet point grinding • for holes with high alignment accuracy • very good surface quality of hole • suitable for interrupted cutting

cast steel • alloyed/unalloyed steels up to 1000 N/mm²

$t_{max} = l_2\text{-}1{,}5 \times d_1$





Speeds and feeds information on pg. 535

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	46.00	17.50	22.00	9014520030000
0.1201	#31	3.05	49.00	19.43	24.00	9014520030500
0.1220		3.10	49.00	19.35	24.00	9014520031000
0.1248	1/8	3.17	49.00	19.25	24.00	9014520031700
0.1260		3.20	49.00	19.20	24.00	9014520032000
0.1299		3.30	49.00	19.05	24.00	9014520033000
0.1339		3.40	52.00	21.90	27.00	9014520034000
0.1358	#29	3.45	52.00	21.83	27.00	9014520034500
0.1378		3.50	52.00	21.75	27.00	9014520035000
0.1406	9/64 #28	3.57	52.00	21.65	27.00	9014520035700
0.1417		3.60	52.00	21.60	27.00	9014520036000
0.1457		3.70	52.00	21.45	27.00	9014520037000
0.1496	#25	3.80	55.00	24.30	30.00	9014520038000
0.1535		3.90	55.00	24.15	30.00	9014520039000
0.1563	5/32	3.97	55.00	24.05	30.00	9014520039700
0.1575		4.00	55.00	24.00	30.00	9014520040000
0.1614		4.10	55.00	23.85	30.00	9014520041000
0.1654		4.20	55.00	23.70	30.00	9014520042000
0.1693	#18	4.30	58.00	25.55	32.00	9014520043000
0.1720	11/64	4.37	58.00	25.45	32.00	9014520043700
0.1732		4.40	58.00	25.40	32.00	9014520044000
0.1772	#16	4.50	58.00	25.25	32.00	9014520045000
0.1811		4.60	58.00	25.10	32.00	9014520046000
0.1850	#13	4.70	58.00	24.95	32.00	9014520047000
0.1874	3/16	4.76	62.00	27.86	35.00	9014520047600
0.1890	#12	4.80	62.00	27.80	35.00	9014520048000
0.1929		4.90	62.00	27.65	35.00	9014520049000
0.1969		5.00	62.00	27.50	35.00	9014520050000
0.2008		5.10	62.00	27.35	35.00	9014520051000
0.2031	13/64	5.16	62.00	27.26	35.00	9014520051600
0.2047		5.20	62.00	27.20	35.00	9014520052000
0.2087		5.30	62.00	27.05	35.00	9014520053000
0.2126		5.40	66.00	30.90	39.00	9014520054000
0.2165		5.50	66.00	30.75	39.00	9014520055000
0.2189	7/32	5.56	66.00	30.66	39.00	9014520055600
0.2205		5.60	66.00	30.60	39.00	9014520056000
0.2244		5.70	66.00	30.45	39.00	9014520057000
0.2283		5.80	66.00	30.30	39.00	9014520058000
0.2323		5.90	66.00	30.15	39.00	9014520059000
0.2343	15/64	5.95	66.00	30.08	39.00	9014520059500
0.2362		6.00	66.00	30.00	39.00	9014520060000
0.2402		6.10	70.00	32.85	42.00	9014520061000

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2421	C	6.15	70.00	32.78	42.00	9014520061500
0.2441		6.20	70.00	32.70	42.00	9014520062000
0.2480		6.30	70.00	32.55	42.00	9014520063000
0.2500	1/4 E	6.35	70.00	32.48	42.00	9014520063500
0.2520		6.40	70.00	32.40	42.00	9014520064000
0.2559		6.50	70.00	32.25	42.00	9014520065000
0.2598		6.60	70.00	32.10	42.00	9014520066000
0.2638		6.70	70.00	31.95	42.00	9014520067000
0.2657	17/64 H	6.75	74.00	34.88	45.00	9014520067500
0.2677		6.80	74.00	34.80	45.00	9014520068000
0.2717	I	6.90	74.00	34.65	45.00	9014520069000
0.2756		7.00	74.00	34.50	45.00	9014520070000
0.2795		7.10	74.00	34.35	45.00	9014520071000
0.2811	9/32 K	7.14	74.00	34.29	45.00	9014520071400
0.2835		7.20	74.00	34.20	45.00	9014520072000
0.2874		7.30	74.00	34.05	45.00	9014520073000
0.2913		7.40	74.00	33.90	45.00	9014520074000
0.2953		7.50	74.00	33.75	45.00	9014520075000
0.2969	19/64	7.54	79.00	36.69	48.00	9014520075400
0.2992		7.60	79.00	36.60	48.00	9014520076000
0.3031		7.70	79.00	36.45	48.00	9014520077000
0.3071		7.80	79.00	36.30	48.00	9014520078000
0.3110		7.90	79.00	36.15	48.00	9014520079000
0.3126	5/16	7.94	79.00	36.09	48.00	9014520079400
0.3150		8.00	79.00	36.00	48.00	9014520080000
0.3189		8.10	79.00	35.85	48.00	9014520081000
0.3228	P	8.20	79.00	35.70	48.00	9014520082000
0.3268		8.30	79.00	35.55	48.00	9014520083000
0.3280	21/64	8.33	79.00	35.51	48.00	9014520083300
0.3307		8.40	79.00	35.40	48.00	9014520084000
0.3319	Q	8.43	79.00	35.36	48.00	9014520084300
0.3346		8.50	79.00	35.25	48.00	9014520085000
0.3386		8.60	84.00	39.10	52.00	9014520086000
0.3425		8.70	84.00	38.95	52.00	9014520087000
0.3437	11/32	8.73	84.00	38.91	52.00	9014520087300
0.3465		8.80	84.00	38.80	52.00	9014520088000
0.3504		8.90	84.00	38.65	52.00	9014520089000
0.3543		9.00	84.00	38.50	52.00	9014520090000
0.3583		9.10	84.00	38.35	52.00	9014520091000
0.3594	23/64	9.13	84.00	38.31	52.00	9014520091300
0.3622		9.20	84.00	38.20	52.00	9014520092000
0.3661		9.30	84.00	38.05	52.00	9014520093000

5xD 3-flute drills

Series no. **1452**

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3701		9.40	84.00	37.90	52.00	9014520094000
0.3740		9.50	84.00	37.75	52.00	9014520095000
0.3748	3/8	9.52	89.00	40.72	55.00	9014520095200
0.3780		9.60	89.00	40.60	55.00	9014520096000
0.3819		9.70	89.00	40.45	55.00	9014520097000
0.3858	W	9.80	89.00	40.30	55.00	9014520098000
0.3898		9.90	89.00	40.15	55.00	9014520099000
0.3906	25/64	9.92	89.00	40.12	55.00	9014520099200
0.3937		10.00	89.00	40.00	55.00	9014520100000
0.3976		10.10	89.00	39.85	55.00	9014520101000
0.4016		10.20	89.00	39.70	55.00	9014520102000
0.4055		10.30	89.00	39.55	55.00	9014520103000
0.4063	13/32	10.32	89.00	39.52	55.00	9014520103200
0.4094		10.40	89.00	39.40	55.00	9014520104000
0.4134		10.50	89.00	39.25	55.00	9014520105000
0.4173		10.60	89.00	39.10	55.00	9014520106000
0.4213		10.70	95.00	43.95	60.00	9014520107000
0.4220	27/64	10.72	95.00	43.92	60.00	9014520107200
0.4252		10.80	95.00	43.80	60.00	9014520108000
0.4291		10.90	95.00	43.65	60.00	9014520109000
0.4331		11.00	95.00	43.50	60.00	9014520110000
0.4370		11.10	95.00	43.35	60.00	9014520111000
0.4374	7/16	11.11	95.00	43.34	60.00	9014520111100
0.4409		11.20	95.00	43.20	60.00	9014520112000
0.4449		11.30	95.00	43.05	60.00	9014520113000
0.4488		11.40	95.00	42.90	60.00	9014520114000
0.4528		11.50	95.00	42.75	60.00	9014520115000
0.4531	29/64	11.51	95.00	42.74	60.00	9014520115100
0.4567		11.60	95.00	42.60	60.00	9014520116000
0.4606		11.70	95.00	42.45	60.00	9014520117000
0.4646		11.80	95.00	42.30	60.00	9014520118000
0.4685		11.90	102.00	47.15	65.00	9014520119000
0.4689	15/32	11.91	102.00	47.14	65.00	9014520119100
0.4724		12.00	102.00	47.00	65.00	9014520120000
0.4764		12.10	102.00	46.85	65.00	9014520121000
0.4803		12.20	102.00	46.70	65.00	9014520122000
0.4843	31/64	12.30	102.00	46.55	65.00	9014520123000
0.4882		12.40	102.00	46.40	65.00	9014520124000
0.4921		12.50	102.00	46.25	65.00	9014520125000
0.4961		12.60	102.00	46.10	65.00	9014520126000
0.5000	1/2	12.70	102.00	45.95	65.00	9014520127000
0.5039		12.80	102.00	45.80	65.00	9014520128000
0.5079		12.90	102.00	45.65	65.00	9014520129000
0.5118		13.00	102.00	45.50	65.00	9014520130000

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.5157	33/64	13.10	102.00	45.35	65.00	9014520131000
0.5197		13.20	102.00	45.20	65.00	9014520132000
0.5236		13.30	107.00	46.05	66.00	9014520133000
0.5276		13.40	107.00	45.90	66.00	9014520134000
0.5315		13.50	107.00	45.75	66.00	9014520135000
0.5354		13.60	107.00	45.60	66.00	9014520136000
0.5394		13.70	107.00	45.45	66.00	9014520137000
0.5433		13.80	107.00	45.30	66.00	9014520138000
0.5472		13.90	107.00	45.15	66.00	9014520139000
0.5512		14.00	107.00	45.00	66.00	9014520140000
0.5551		14.10	111.00	48.85	70.00	9014520141000
0.5591		14.20	111.00	48.70	70.00	9014520142000
0.5626	9/16	14.29	111.00	48.57	70.00	9014520142900
0.5630		14.30	111.00	48.55	70.00	9014520143000
0.5669		14.40	111.00	48.40	70.00	9014520144000
0.5709		14.50	111.00	48.25	70.00	9014520145000
0.5748		14.60	111.00	48.10	70.00	9014520146000
0.5787		14.70	111.00	47.95	70.00	9014520147000
0.5827		14.80	111.00	47.80	70.00	9014520148000
0.5866		14.90	111.00	47.65	70.00	9014520149000
0.5906		15.00	111.00	47.50	70.00	9014520150000
0.5945		15.10	115.00	50.35	73.00	9014520151000
0.5984		15.20	115.00	50.20	73.00	9014520152000
0.6024		15.30	115.00	50.05	73.00	9014520153000
0.6063		15.40	115.00	49.90	73.00	9014520154000
0.6102		15.50	115.00	49.75	73.00	9014520155000
0.6142		15.60	115.00	49.60	73.00	9014520156000
0.6181		15.70	115.00	49.45	73.00	9014520157000
0.6220		15.80	115.00	49.30	73.00	9014520158000
0.6248	5/8	15.87	115.00	49.20	73.00	9014520158700
0.6260		15.90	115.00	49.15	73.00	9014520159000
0.6299		16.00	115.00	49.00	73.00	9014520160000
0.6406	41/64	16.27	119.00	48.60	73.00	9014520162700
0.6496		16.50	119.00	48.25	73.00	9014520165000
0.6563	21/32	16.67	119.00	48.00	73.00	9014520166700
0.6693		17.00	119.00	47.50	73.00	9014520170000
0.6874	11/16	17.46	123.00	49.81	76.00	9014520174600
0.6890		17.50	123.00	49.75	76.00	9014520175000
0.7087		18.00	123.00	49.00	76.00	9014520180000
0.7283		18.50	127.00	48.25	76.00	9014520185000
0.7480		19.00	127.00	47.50	76.00	9014520190000
0.7500	3/4	19.05	131.00	50.43	79.00	9014520190500
0.7677		19.50	131.00	49.75	79.00	9014520195000
0.7874		20.00	131.00	49.00	79.00	9014520200000

5xD 3-flute drills

Series no. **609**

5xD Cutting depth | GS 200 U Type | 150° Point angle | h7 Tolerance on Ø | Without Internal coolant | Cyl Shank form | R Cutting direction

Tool material **Solid Carbide**

Surface **S**

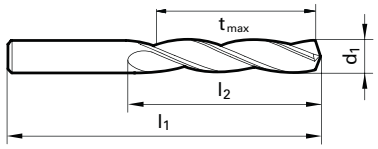
P	Steel	○
M	Stainless steel	
K	Cast iron	○
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • facet point grinding • for holes with high alignment accuracy • very good surface quality of hole • suitable for interrupted cutting

cast steel • alloyed/unalloyed steels up to 1000 N/mm²

$t_{max} = l_2\text{-}1{,}5 \times d_1$





Speeds and feeds information on pg. 511

Shank diameter = cut diameter

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	46.00	17.50	22.00	9006090030000
0.1220		3.10	49.00	19.35	24.00	9006090031000
0.1248	1/8	3.17	49.00	19.25	24.00	9006090031700
0.1260		3.20	49.00	19.20	24.00	9006090032000
0.1299		3.30	49.00	19.05	24.00	9006090033000
0.1339		3.40	52.00	21.90	27.00	9006090034000
0.1378		3.50	52.00	21.75	27.00	9006090035000
0.1406	9/64 #28	3.57	52.00	21.65	27.00	9006090035700
0.1417		3.60	52.00	21.60	27.00	9006090036000
0.1457		3.70	52.00	21.45	27.00	9006090037000
0.1496	#25	3.80	55.00	24.30	30.00	9006090038000
0.1535		3.90	55.00	24.15	30.00	9006090039000
0.1563	5/32	3.97	55.00	24.05	30.00	9006090039700
0.1575		4.00	55.00	24.00	30.00	9006090040000
0.1614		4.10	55.00	23.85	30.00	9006090041000
0.1654		4.20	55.00	23.70	30.00	9006090042000
0.1693	#18	4.30	58.00	25.55	32.00	9006090043000
0.1720	11/64	4.37	58.00	25.45	32.00	9006090043700
0.1732		4.40	58.00	25.40	32.00	9006090044000
0.1772	#16	4.50	58.00	25.25	32.00	9006090045000
0.1811		4.60	58.00	25.10	32.00	9006090046000
0.1850	#13	4.70	58.00	24.95	32.00	9006090047000
0.1874	3/16	4.76	62.00	27.86	35.00	9006090047600
0.1890	#12	4.80	62.00	27.80	35.00	9006090048000
0.1929		4.90	62.00	27.65	35.00	9006090049000
0.1969		5.00	62.00	27.50	35.00	9006090050000
0.2008		5.10	62.00	27.35	35.00	9006090051000
0.2031	13/64	5.16	62.00	27.26	35.00	9006090051600
0.2047		5.20	62.00	27.20	35.00	9006090052000
0.2087		5.30	62.00	27.05	35.00	9006090053000
0.2126		5.40	66.00	30.90	39.00	9006090054000
0.2165		5.50	66.00	30.75	39.00	9006090055000
0.2189	7/32	5.56	66.00	30.66	39.00	9006090055600
0.2205		5.60	66.00	30.60	39.00	9006090056000
0.2244		5.70	66.00	30.45	39.00	9006090057000
0.2283		5.80	66.00	30.30	39.00	9006090058000
0.2323		5.90	66.00	30.15	39.00	9006090059000
0.2343	15/64	5.95	66.00	30.08	39.00	9006090059500
0.2362		6.00	66.00	30.00	39.00	9006090060000
0.2402		6.10	70.00	32.85	42.00	9006090061000
0.2441		6.20	70.00	32.70	42.00	9006090062000
0.2480		6.30	70.00	32.55	42.00	9006090063000

Diameter (d1) inch	wire/ltr		mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2500	1/4	E	6.35	70.00	32.48	42.00	9006090063500
0.2520			6.40	70.00	32.40	42.00	9006090064000
0.2559			6.50	70.00	32.25	42.00	9006090065000
0.2598			6.60	70.00	32.10	42.00	9006090066000
0.2638			6.70	70.00	31.95	42.00	9006090067000
0.2657	17/64	H	6.75	74.00	34.88	45.00	9006090067500
0.2677			6.80	74.00	34.80	45.00	9006090068000
0.2717		I	6.90	74.00	34.65	45.00	9006090069000
0.2756			7.00	74.00	34.50	45.00	9006090070000
0.2795			7.10	74.00	34.35	45.00	9006090071000
0.2811	9/32	K	7.14	74.00	34.29	45.00	9006090071400
0.2835			7.20	74.00	34.20	45.00	9006090072000
0.2874			7.30	74.00	34.05	45.00	9006090073000
0.2913			7.40	74.00	33.90	45.00	9006090074000
0.2953			7.50	74.00	33.75	45.00	9006090075000
0.2969	19/64		7.54	79.00	36.69	48.00	9006090075400
0.2992			7.60	79.00	36.60	48.00	9006090076000
0.3031			7.70	79.00	36.45	48.00	9006090077000
0.3071			7.80	79.00	36.30	48.00	9006090078000
0.3110			7.90	79.00	36.15	48.00	9006090079000
0.3126	5/16		7.94	79.00	36.09	48.00	9006090079400
0.3150			8.00	79.00	36.00	48.00	9006090080000
0.3189			8.10	79.00	35.85	48.00	9006090081000
0.3228		P	8.20	79.00	35.70	48.00	9006090082000
0.3268			8.30	79.00	35.55	48.00	9006090083000
0.3280	21/64		8.33	79.00	35.51	48.00	9006090083300
0.3307			8.40	79.00	35.40	48.00	9006090084000
0.3346			8.50	79.00	35.25	48.00	9006090085000
0.3386			8.60	84.00	39.10	52.00	9006090086000
0.3425			8.70	84.00	38.95	52.00	9006090087000
0.3437	11/32		8.73	84.00	38.91	52.00	9006090087300
0.3465			8.80	84.00	38.80	52.00	9006090088000
0.3504			8.90	84.00	38.65	52.00	9006090089000
0.3543			9.00	84.00	38.50	52.00	9006090090000
0.3583			9.10	84.00	38.35	52.00	9006090091000
0.3594	23/64		9.13	84.00	38.31	52.00	9006090091300
0.3622			9.20	84.00	38.20	52.00	9006090092000
0.3661			9.30	84.00	38.05	52.00	9006090093000
0.3701			9.40	84.00	37.90	52.00	9006090094000
0.3740			9.50	84.00	37.75	52.00	9006090095000
0.3748	3/8		9.52	89.00	40.72	55.00	9006090095200
0.3780			9.60	89.00	40.60	55.00	9006090096000

5xD 3-flute drills

Series no. **609**

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3819		9.70	89.00	40.45	55.00	9006090097000
0.3858	W	9.80	89.00	40.30	55.00	9006090098000
0.3898		9.90	89.00	40.15	55.00	9006090099000
0.3906	25/64	9.92	89.00	40.12	55.00	9006090099200
0.3937		10.00	89.00	40.00	55.00	9006090100000
0.3976		10.10	89.00	39.85	55.00	9006090101000
0.4016		10.20	89.00	39.70	55.00	9006090102000
0.4055		10.30	89.00	39.55	55.00	9006090103000
0.4063	13/32	10.32	89.00	39.52	55.00	9006090103200
0.4094		10.40	89.00	39.40	55.00	9006090104000
0.4134		10.50	89.00	39.25	55.00	9006090105000
0.4173		10.60	89.00	39.10	55.00	9006090106000
0.4213		10.70	95.00	43.95	60.00	9006090107000
0.4220	27/64	10.72	95.00	43.92	60.00	9006090107200
0.4252		10.80	95.00	43.80	60.00	9006090108000
0.4291		10.90	95.00	43.65	60.00	9006090109000
0.4331		11.00	95.00	43.50	60.00	9006090110000
0.4370		11.10	95.00	43.35	60.00	9006090111000
0.4374	7/16	11.11	95.00	43.34	60.00	9006090111100
0.4409		11.20	95.00	43.20	60.00	9006090112000
0.4449		11.30	95.00	43.05	60.00	9006090113000
0.4488		11.40	95.00	42.90	60.00	9006090114000
0.4528		11.50	95.00	42.75	60.00	9006090115000
0.4531	29/64	11.51	95.00	42.74	60.00	9006090115100
0.4567		11.60	95.00	42.60	60.00	9006090116000
0.4606		11.70	95.00	42.45	60.00	9006090117000
0.4646		11.80	95.00	42.30	60.00	9006090118000
0.4685		11.90	102.00	47.15	65.00	9006090119000
0.4689	15/32	11.91	102.00	47.14	65.00	9006090119100
0.4724		12.00	102.00	47.00	65.00	9006090120000
0.4764		12.10	102.00	46.85	65.00	9006090121000
0.4803		12.20	102.00	46.70	65.00	9006090122000
0.4843	31/64	12.30	102.00	46.55	65.00	9006090123000
0.4882		12.40	102.00	46.40	65.00	9006090124000
0.4921		12.50	102.00	46.25	65.00	9006090125000
0.4961		12.60	102.00	46.10	65.00	9006090126000
0.5000	1/2	12.70	102.00	45.95	65.00	9006090127000
0.5039		12.80	102.00	45.80	65.00	9006090128000
0.5079		12.90	102.00	45.65	65.00	9006090129000

Diameter (d1) inch	wire/ltr	mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.5118		13.00	102.00	45.50	65.00	9006090130000
0.5157	33/64	13.10	102.00	45.35	65.00	9006090131000
0.5197		13.20	102.00	45.20	65.00	9006090132000
0.5236		13.30	107.00	46.05	66.00	9006090133000
0.5276		13.40	107.00	45.90	66.00	9006090134000
0.5315		13.50	107.00	45.75	66.00	9006090135000
0.5354		13.60	107.00	45.60	66.00	9006090136000
0.5394		13.70	107.00	45.45	66.00	9006090137000
0.5433		13.80	107.00	45.30	66.00	9006090138000
0.5472		13.90	107.00	45.15	66.00	9006090139000
0.5512		14.00	107.00	45.00	66.00	9006090140000
0.5551		14.10	111.00	48.85	70.00	9006090141000
0.5591		14.20	111.00	48.70	70.00	9006090142000
0.5626	9/16	14.29	111.00	48.57	70.00	9006090142900
0.5630		14.30	111.00	48.55	70.00	9006090143000
0.5669		14.40	111.00	48.40	70.00	9006090144000
0.5709		14.50	111.00	48.25	70.00	9006090145000
0.5748		14.60	111.00	48.10	70.00	9006090146000
0.5787		14.70	111.00	47.95	70.00	9006090147000
0.5827		14.80	111.00	47.80	70.00	9006090148000
0.5866		14.90	111.00	47.65	70.00	9006090149000
0.5906		15.00	111.00	47.50	70.00	9006090150000
0.5945		15.10	115.00	50.35	73.00	9006090151000
0.5984		15.20	115.00	50.20	73.00	9006090152000
0.6024		15.30	115.00	50.05	73.00	9006090153000
0.6063		15.40	115.00	49.90	73.00	9006090154000
0.6102		15.50	115.00	49.75	73.00	9006090155000
0.6142		15.60	115.00	49.60	73.00	9006090156000
0.6181		15.70	115.00	49.45	73.00	9006090157000
0.6220		15.80	115.00	49.30	73.00	9006090158000
0.6248	5/8	15.87	115.00	49.20	73.00	9006090158700
0.6260		15.90	115.00	49.15	73.00	9006090159000
0.6693		17.00	119.00	47.50	73.00	9006090170000
0.7087		18.00	123.00	49.00	76.00	9006090180000
0.7283		18.50	127.00	48.25	76.00	9006090185000
0.7480		19.00	127.00	47.50	76.00	9006090190000
0.7500	3/4	19.05	131.00	50.43	79.00	9006090190500
0.7677		19.50	131.00	49.75	79.00	9006090195000
0.7874		20.00	131.00	49.00	79.00	9006090200000

5xD 3-flute drills

Series no. **5518**

5xD Cutting depth | FT 200 G Type | 130° Point angle | m7 Tolerance on Ø | Without Internal coolant | HA Shank form | R Cutting direction

Tool material: **Solid Carbide**

Surface: ◯

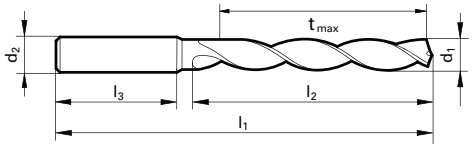
P	Steel	
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • spiro-point • wide flutes • optimal centering • suitable for interrupted cutting

cast iron • long chipping Al-alloys • brass, bronzes

$t_{max} = l_2\text{-}1{,}5 \times d_1$



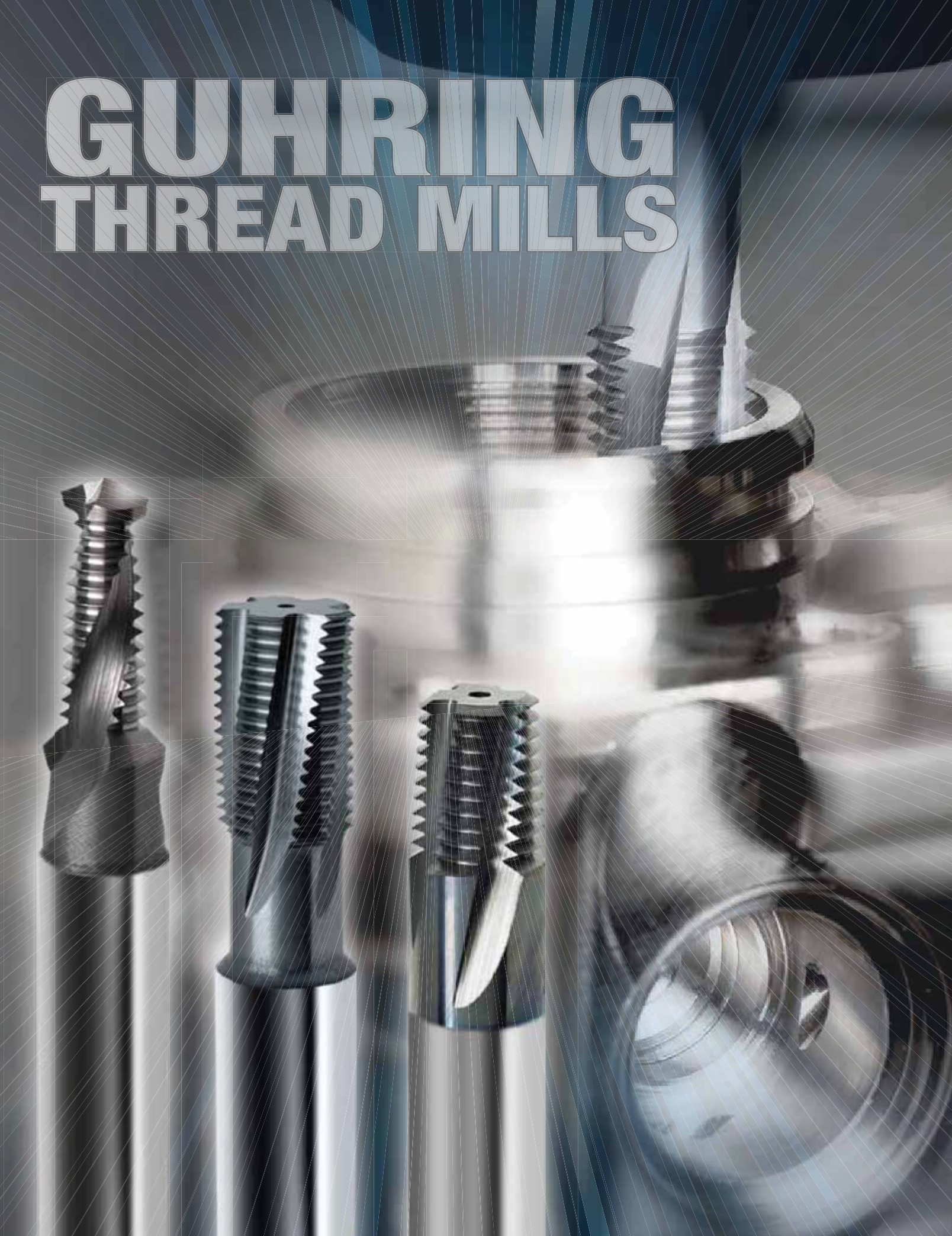


Speeds and feeds information on pg. 553

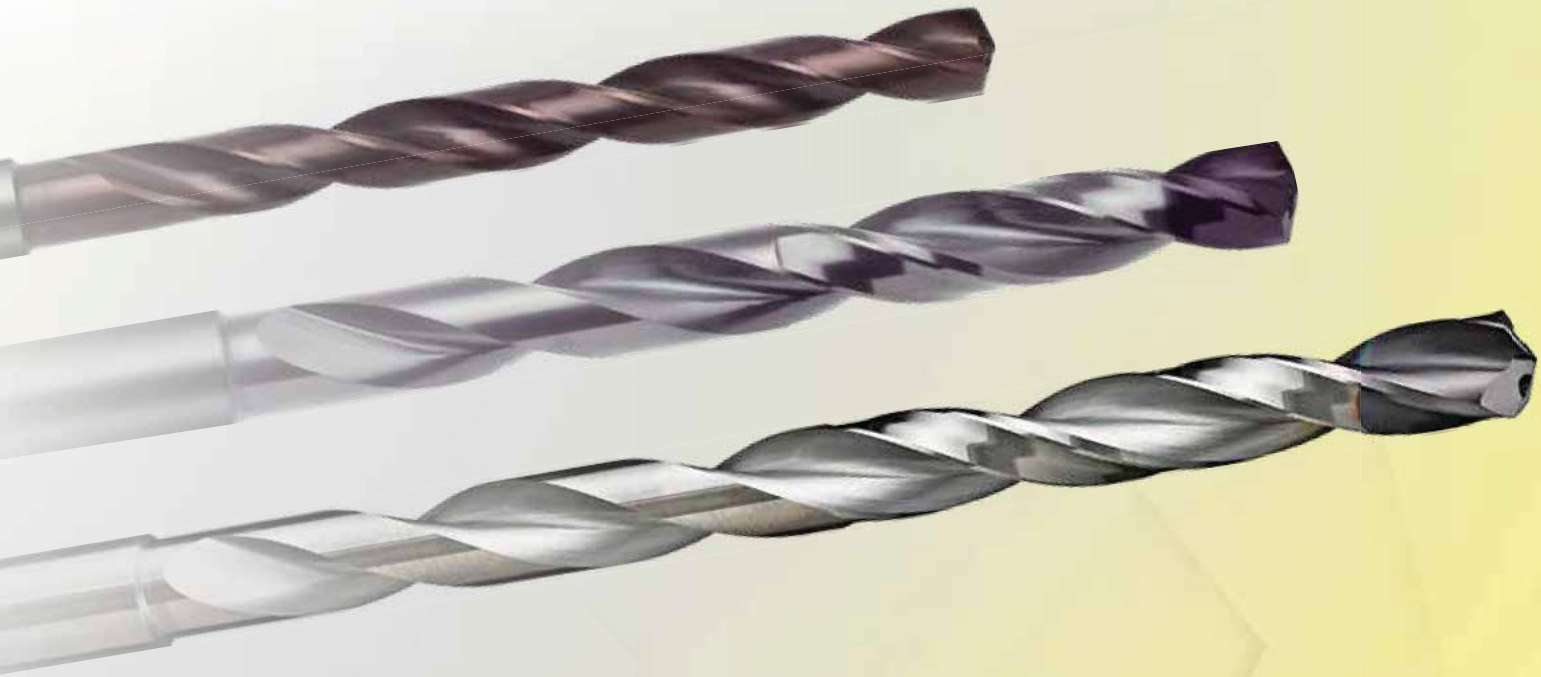
Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	66.00	23.50	28.00	9055180030000
0.1220		3.10	6.00	66.00	23.35	28.00	9055180031000
0.1260		3.20	6.00	66.00	23.20	28.00	9055180032000
0.1299		3.30	6.00	66.00	23.05	28.00	9055180033000
0.1378		3.50	6.00	66.00	22.75	28.00	9055180035000
0.1457		3.70	6.00	66.00	22.45	28.00	9055180037000
0.1496	#25	3.80	6.00	74.00	30.30	36.00	9055180038000
0.1575		4.00	6.00	74.00	30.00	36.00	9055180040000
0.1614		4.10	6.00	74.00	29.85	36.00	9055180041000
0.1654		4.20	6.00	74.00	29.70	36.00	9055180042000
0.1772	#16	4.50	6.00	74.00	29.25	36.00	9055180045000
0.1890	#12	4.80	6.00	82.00	36.80	44.00	9055180048000
0.1969		5.00	6.00	82.00	36.50	44.00	9055180050000
0.2008		5.10	6.00	82.00	36.35	44.00	9055180051000
0.2047		5.20	6.00	82.00	36.20	44.00	9055180052000
0.2087		5.30	6.00	82.00	36.05	44.00	9055180053000
0.2165		5.50	6.00	82.00	35.75	44.00	9055180055000
0.2283		5.80	6.00	82.00	35.30	44.00	9055180058000
0.2362		6.00	6.00	82.00	35.00	44.00	9055180060000
0.2402		6.10	8.00	91.00	43.85	53.00	9055180061000
0.2441		6.20	8.00	91.00	43.70	53.00	9055180062000
0.2520		6.40	8.00	91.00	43.40	53.00	9055180064000
0.2559		6.50	8.00	91.00	43.25	53.00	9055180065000
0.2638		6.70	8.00	91.00	42.95	53.00	9055180067000
0.2677		6.80	8.00	91.00	42.80	53.00	9055180068000
0.2717		6.90	8.00	91.00	42.65	53.00	9055180069000
0.2756		7.00	8.00	91.00	42.50	53.00	9055180070000
0.2795		7.10	8.00	91.00	42.35	53.00	9055180071000
0.2913		7.40	8.00	91.00	41.90	53.00	9055180074000
0.2953		7.50	8.00	91.00	41.75	53.00	9055180075000
0.3071		7.80	8.00	91.00	41.30	53.00	9055180078000
0.3150		8.00	8.00	91.00	41.00	53.00	9055180080000
0.3189		8.10	10.00	103.00	48.85	61.00	9055180081000
0.3228	P	8.20	10.00	103.00	48.70	61.00	9055180082000
0.3307		8.40	10.00	103.00	48.40	61.00	9055180084000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3346		8.50	10.00	103.00	48.25	61.00	9055180085000
0.3386		8.60	10.00	103.00	48.10	61.00	9055180086000
0.3425		8.70	10.00	103.00	47.95	61.00	9055180087000
0.3465		8.80	10.00	103.00	47.80	61.00	9055180088000
0.3543		9.00	10.00	103.00	47.50	61.00	9055180090000
0.3583		9.10	10.00	103.00	47.35	61.00	9055180091000
0.3740		9.50	10.00	103.00	46.75	61.00	9055180095000
0.3858	W	9.80	10.00	103.00	46.30	61.00	9055180098000
0.3937		10.00	10.00	103.00	46.00	61.00	9055180100000
0.3976		10.10	12.00	118.00	55.85	71.00	9055180101000
0.4016		10.20	12.00	118.00	55.70	71.00	9055180102000
0.4055		10.30	12.00	118.00	55.55	71.00	9055180103000
0.4134		10.50	12.00	118.00	55.25	71.00	9055180105000
0.4331		11.00	12.00	118.00	54.50	71.00	9055180110000
0.4409		11.20	12.00	118.00	54.20	71.00	9055180112000
0.4528		11.50	12.00	118.00	53.75	71.00	9055180115000
0.4646		11.80	12.00	118.00	53.30	71.00	9055180118000
0.4724		12.00	12.00	118.00	53.00	71.00	9055180120000
0.4764		12.10	14.00	124.00	58.85	77.00	9055180121000
0.4921		12.50	14.00	124.00	58.25	77.00	9055180125000
0.5118		13.00	14.00	124.00	57.50	77.00	9055180130000
0.5315		13.50	14.00	124.00	56.75	77.00	9055180135000
0.5512		14.00	14.00	124.00	56.00	77.00	9055180140000
0.5709		14.50	16.00	133.00	61.25	83.00	9055180145000
0.5906		15.00	16.00	133.00	60.50	83.00	9055180150000
0.6102		15.50	16.00	133.00	59.75	83.00	9055180155000
0.6299		16.00	16.00	133.00	59.00	83.00	9055180160000
0.6496		16.50	18.00	143.00	68.25	93.00	9055180165000
0.6693		17.00	18.00	143.00	67.50	93.00	9055180170000
0.6890		17.50	18.00	143.00	66.75	93.00	9055180175000
0.7087		18.00	18.00	143.00	66.00	93.00	9055180180000
0.7283		18.50	20.00	153.00	73.25	101.00	9055180185000
0.7480		19.00	20.00	153.00	72.50	101.00	9055180190000
0.7677		19.50	20.00	153.00	71.75	101.00	9055180195000
0.7874		20.00	20.00	153.00	71.00	101.00	9055180200000

GUHRING
THREAD MILLS



7xD, 8xD, 12xD CARBIDE RATIO DRILLS



7xD Ratio drills

Series no. **5512**

Tool material **Solid Carbide**

Surface **F**

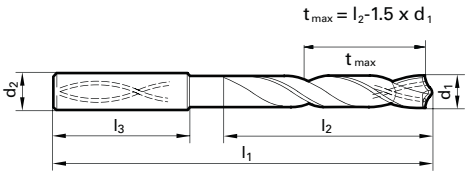
7xD	RT 100 U	140°	m7		HA	R	GUHRING SELECT
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction	

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • facet point grinding • main cutting edge form straight • optimized cutting geometry

structural and case hardened steels • free-cutting steels, heat treatable steels • steels (alloyed/unalloyed) up to 1200 N/mm² • cast materials • bronze, brass • high-alloyed AlSi-alloys





Speeds and feeds information on pg. 551

Diameter (d_1) inch	wire/ltr	mm	d_2 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1181		3.00	6.00	70.00	25.50	30.00	9055120030000
0.1220		3.10	6.00	70.00	25.35	30.00	9055120031000
0.1248	1/8	3.18	6.00	70.00	25.23	30.00	9055120031700
0.1260		3.20	6.00	70.00	25.20	30.00	9055120032000
0.1280		3.25	6.00	70.00	25.13	30.00	9055120032500
0.1299		3.30	6.00	70.00	25.05	30.00	9055120033000
0.1339		3.40	6.00	75.00	30.40	35.50	9055120034000
0.1378		3.50	6.00	75.00	30.25	35.50	9055120035000
0.1406	9/64	#28 3.57	6.00	75.00	30.15	35.50	9055120035700
0.1417		3.60	6.00	75.00	30.10	35.50	9055120036000
0.1457		3.70	6.00	75.00	29.95	35.50	9055120037000
0.1496		#25 3.80	6.00	75.00	31.80	37.50	9055120038000
0.1535		3.90	6.00	75.00	31.65	37.50	9055120039000
0.1563	5/32	3.97	6.00	75.00	31.55	37.50	9055120039700
0.1575		4.00	6.00	75.00	31.50	37.50	9055120040000
0.1591		#21 4.04	6.00	75.00	31.44	37.50	9055120040400
0.1614		4.10	6.00	75.00	31.35	37.50	9055120041000
0.1654		4.20	6.00	75.00	31.20	37.50	9055120042000
0.1693		#18 4.30	6.00	85.00	38.55	45.00	9055120043000
0.1720	11/64	4.37	6.00	85.00	38.45	45.00	9055120043700
0.1732		4.40	6.00	85.00	38.40	45.00	9055120044000
0.1772		#16 4.50	6.00	85.00	38.25	45.00	9055120045000
0.1811		4.60	6.00	85.00	38.10	45.00	9055120046000
0.1831		4.65	6.00	85.00	38.03	45.00	9055120046500
0.1850		#13 4.70	6.00	85.00	37.95	45.00	9055120047000
0.1874	3/16	4.76	6.00	90.00	42.86	50.00	9055120047600
0.1890		#12 4.80	6.00	90.00	42.80	50.00	9055120048000
0.1929		4.90	6.00	90.00	42.65	50.00	9055120049000
0.1969		5.00	6.00	90.00	42.50	50.00	9055120050000
0.2008		5.10	6.00	90.00	42.35	50.00	9055120051000
0.2012		#7 5.11	6.00	90.00	42.34	50.00	9055120051100
0.2031	13/64	5.16	6.00	90.00	42.26	50.00	9055120051600
0.2047		5.20	6.00	90.00	42.20	50.00	9055120052000
0.2067		5.25	6.00	90.00	42.13	50.00	9055120052500
0.2087		5.30	6.00	90.00	42.05	50.00	9055120053000
0.2126		5.40	6.00	97.00	48.90	57.00	9055120054000
0.2130		#3 5.41	6.00	97.00	48.89	57.00	9055120054100
0.2165		5.50	6.00	97.00	48.75	57.00	9055120055000
0.2189	7/32	5.56	6.00	97.00	48.66	57.00	9055120055600
0.2205		5.60	6.00	97.00	48.60	57.00	9055120056000
0.2244		5.70	6.00	97.00	48.45	57.00	9055120057000
0.2283		5.80	6.00	97.00	48.30	57.00	9055120058000

Diameter (d_1) inch	wire/ltr	mm	d_2 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2323		5.90	6.00	97.00	48.15	57.00	9055120059000
0.2343	15/64	5.95	6.00	97.00	48.08	57.00	9055120059500
0.2362		6.00	6.00	97.00	48.00	57.00	9055120060000
0.2402		6.10	8.00	106.00	56.85	66.00	9055120061000
0.2441		6.20	8.00	106.00	56.70	66.00	9055120062000
0.2480		6.30	8.00	106.00	56.55	66.00	9055120063000
0.2500	1/4	E 6.35	8.00	106.00	56.48	66.00	9055120063500
0.2520		6.40	8.00	106.00	56.40	66.00	9055120064000
0.2559		6.50	8.00	106.00	56.25	66.00	9055120065000
0.2571		F 6.53	8.00	106.00	56.21	66.00	9055120065300
0.2598		6.60	8.00	106.00	56.10	66.00	9055120066000
0.2638		6.70	8.00	106.00	55.95	66.00	9055120067000
0.2657	17/64	H 6.75	8.00	106.00	55.88	66.00	9055120067500
0.2677		6.80	8.00	106.00	55.80	66.00	9055120068000
0.2717		I 6.90	8.00	116.00	65.65	76.00	9055120069000
0.2756		7.00	8.00	116.00	65.50	76.00	9055120070000
0.2795		7.10	8.00	116.00	65.35	76.00	9055120071000
0.2811	9/32	K 7.14	8.00	116.00	65.29	76.00	9055120071400
0.2835		7.20	8.00	116.00	65.20	76.00	9055120072000
0.2874		7.30	8.00	116.00	65.05	76.00	9055120073000
0.2913		7.40	8.00	116.00	64.90	76.00	9055120074000
0.2953		7.50	8.00	116.00	64.75	76.00	9055120075000
0.2969	19/64	7.54	8.00	116.00	64.69	76.00	9055120075400
0.2992		7.60	8.00	116.00	64.60	76.00	9055120076000
0.3031		7.70	8.00	116.00	64.45	76.00	9055120077000
0.3071		7.80	8.00	116.00	64.30	76.00	9055120078000
0.3110		7.90	8.00	116.00	64.15	76.00	9055120079000
0.3125	5/16	7.94	8.00	116.00	64.09	76.00	9055120079400
0.3150		8.00	8.00	116.00	64.00	76.00	9055120080000
0.3189		8.10	10.00	131.00	74.85	87.00	9055120081000
0.3228		P 8.20	10.00	131.00	74.70	87.00	9055120082000
0.3268		8.30	10.00	131.00	74.55	87.00	9055120083000
0.3280	21/64	8.33	10.00	131.00	74.51	87.00	9055120083300
0.3307		8.40	10.00	131.00	74.40	87.00	9055120084000
0.3346		8.50	10.00	131.00	74.25	87.00	9055120085000
0.3386		8.60	10.00	131.00	74.10	87.00	9055120086000
0.3425		8.70	10.00	131.00	73.95	87.00	9055120087000
0.3437	11/32	8.73	10.00	131.00	73.91	87.00	9055120087300
0.3465		8.80	10.00	131.00	73.80	87.00	9055120088000
0.3504		8.90	10.00	131.00	73.65	87.00	9055120089000
0.3543		9.00	10.00	131.00	73.50	87.00	9055120090000
0.3583		9.10	10.00	139.00	81.35	95.00	9055120091000

7xD Ratio drills

Series no. **5512**

Diameter (d_1) inch	wire/ltr	mm	d_2 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3594	23/64	9.13	10.00	139.00	81.31	95.00	9055120091300
0.3622		9.20	10.00	139.00	81.20	95.00	9055120092000
0.3642		9.25	10.00	139.00	81.13	95.00	9055120092500
0.3661		9.30	10.00	139.00	81.05	95.00	9055120093000
0.3677	U	9.34	10.00	139.00	80.99	95.00	9055120093400
0.3701		9.40	10.00	139.00	80.90	95.00	9055120094000
0.3740		9.50	10.00	139.00	80.75	95.00	9055120095000
0.3750	3/8	9.52	10.00	139.00	80.72	95.00	9055120095200
0.3780		9.60	10.00	139.00	80.60	95.00	9055120096000
0.3819		9.70	10.00	139.00	80.45	95.00	9055120097000
0.3858	W	9.80	10.00	139.00	80.30	95.00	9055120098000
0.3898		9.90	10.00	139.00	80.15	95.00	9055120099000
0.3906	25/64	9.92	10.00	139.00	80.12	95.00	9055120099200
0.3937		10.00	10.00	139.00	80.00	95.00	9055120100000
0.3976		10.10	12.00	155.00	90.85	106.00	9055120101000
0.4016		10.20	12.00	155.00	90.70	106.00	9055120102000
0.4055		10.30	12.00	155.00	90.55	106.00	9055120103000
0.4063	13/32	10.32	12.00	155.00	90.52	106.00	9055120103200
0.4094		10.40	12.00	155.00	90.40	106.00	9055120104000
0.4134		10.50	12.00	155.00	90.25	106.00	9055120105000
0.4173		10.60	12.00	155.00	90.10	106.00	9055120106000
0.4213		10.70	12.00	155.00	89.95	106.00	9055120107000
0.4220	27/64	10.72	12.00	155.00	89.92	106.00	9055120107200
0.4252		10.80	12.00	155.00	89.80	106.00	9055120108000
0.4291		10.90	12.00	155.00	89.65	106.00	9055120109000
0.4331		11.00	12.00	155.00	89.50	106.00	9055120110000
0.4370		11.10	12.00	163.00	97.35	114.00	9055120111000
0.4374	7/16	11.11	12.00	163.00	97.34	114.00	9055120111100
0.4409		11.20	12.00	163.00	97.20	114.00	9055120112000
0.4449		11.30	12.00	163.00	97.05	114.00	9055120113000
0.4488		11.40	12.00	163.00	96.90	114.00	9055120114000
0.4528		11.50	12.00	163.00	96.75	114.00	9055120115000
0.4531	29/64	11.51	12.00	163.00	96.74	114.00	9055120115100
0.4567		11.60	12.00	163.00	96.60	114.00	9055120116000
0.4606		11.70	12.00	163.00	96.45	114.00	9055120117000
0.4646		11.80	12.00	163.00	96.30	114.00	9055120118000

Diameter (d_1) inch	wire/ltr	mm	d_2 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4685		11.90	12.00	163.00	96.15	114.00	9055120119000
0.4689	15/32	11.91	12.00	163.00	96.14	114.00	9055120119100
0.4724		12.00	12.00	163.00	96.00	114.00	9055120120000
0.4764		12.10	14.00	182.00	114.85	133.00	9055120121000
0.4803		12.20	14.00	182.00	114.70	133.00	9055120122000
0.4843	31/64	12.30	14.00	182.00	114.55	133.00	9055120123000
0.4921		12.50	14.00	182.00	114.25	133.00	9055120125000
0.5000	1/2	12.70	14.00	182.00	113.95	133.00	9055120127000
0.5118		13.00	14.00	182.00	113.50	133.00	9055120130000
0.5157	33/64	13.10	14.00	182.00	113.35	133.00	9055120131000
0.5311	17/32	13.49	14.00	182.00	112.77	133.00	9055120134900
0.5315		13.50	14.00	182.00	112.75	133.00	9055120135000
0.5469	35/64	13.89	14.00	182.00	112.17	133.00	9055120138900
0.5512		14.00	14.00	182.00	112.00	133.00	9055120140000
0.5551		14.10	16.00	204.00	130.85	152.00	9055120141000
0.5591		14.20	16.00	204.00	130.70	152.00	9055120142000
0.5626	9/16	14.29	16.00	204.00	130.57	152.00	9055120142900
0.5709		14.50	16.00	204.00	130.25	152.00	9055120145000
0.5906		15.00	16.00	204.00	129.50	152.00	9055120150000
0.5945		15.10	16.00	204.00	129.35	152.00	9055120151000
0.6094	39/64	15.48	16.00	204.00	128.78	152.00	9055120154800
0.6102		15.50	16.00	204.00	128.75	152.00	9055120155000
0.6250	5/8	15.87	16.00	204.00	128.20	152.00	9055120158700
0.6299		16.00	16.00	204.00	128.00	152.00	9055120160000
0.6496		16.50	18.00	223.00	146.25	171.00	9055120165000
0.6563	21/32	16.67	18.00	223.00	146.00	171.00	9055120166700
0.6654		16.90	18.00	223.00	145.65	171.00	9055120169000
0.6693		17.00	18.00	223.00	145.50	171.00	9055120170000
0.6890		17.50	18.00	223.00	144.75	171.00	9055120175000
0.7087		18.00	18.00	223.00	144.00	171.00	9055120180000
0.7283		18.50	20.00	244.00	162.25	190.00	9055120185000
0.7441		18.90	20.00	244.00	161.65	190.00	9055120189000
0.7480		19.00	20.00	244.00	161.50	190.00	9055120190000
0.7500	3/4	19.05	20.00	244.00	161.43	190.00	9055120190500
0.7677		19.50	20.00	244.00	160.75	190.00	9055120195000
0.7874		20.00	20.00	244.00	160.00	190.00	9055120200000

7xD Ratio drills

Series no. **5612**

7xD	RT 100 U	140°	m7		HE	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

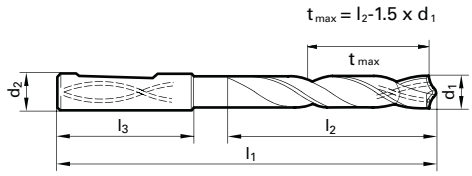
Surface: **F**

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • facet point grinding • main cutting edge form straight • optimized cutting geometry

structural and case hardened steels • free-cutting steels, heat treatable steels • steels (alloyed/unalloyed) up to 1200 N/mm² • cast materials • bronze, brass • high-alloyed AlSi-alloys





Speeds and feeds information on pg. 559

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	70.00	25.50	30.00	9056120030000
0.1220		3.10	6.00	70.00	25.35	30.00	9056120031000
0.1248	1/8	3.17	6.00	70.00	25.25	30.00	9056120031700
0.1260		3.20	6.00	70.00	25.20	30.00	9056120032000
0.1280		3.25	6.00	70.00	25.13	30.00	9056120032500
0.1299		3.30	6.00	70.00	25.05	30.00	9056120033000
0.1339		3.40	6.00	75.00	30.40	35.50	9056120034000
0.1378		3.50	6.00	75.00	30.25	35.50	9056120035000
0.1406	9/64 #28	3.57	6.00	75.00	30.15	35.50	9056120035700
0.1417		3.60	6.00	75.00	30.10	35.50	9056120036000
0.1457		3.70	6.00	75.00	29.95	35.50	9056120037000
0.1496	#25	3.80	6.00	75.00	31.80	37.50	9056120038000
0.1535		3.90	6.00	75.00	31.65	37.50	9056120039000
0.1563	5/32	3.97	6.00	75.00	31.55	37.50	9056120039700
0.1575		4.00	6.00	75.00	31.50	37.50	9056120040000
0.1614		4.10	6.00	75.00	31.35	37.50	9056120041000
0.1654		4.20	6.00	75.00	31.20	37.50	9056120042000
0.1693	#18	4.30	6.00	85.00	38.55	45.00	9056120043000
0.1720	11/64	4.37	6.00	85.00	38.45	45.00	9056120043700
0.1732		4.40	6.00	85.00	38.40	45.00	9056120044000
0.1772	#16	4.50	6.00	85.00	38.25	45.00	9056120045000
0.1811		4.60	6.00	85.00	38.10	45.00	9056120046000
0.1831		4.65	6.00	85.00	38.03	45.00	9056120046500
0.1850	#13	4.70	6.00	85.00	37.95	45.00	9056120047000
0.1874	3/16	4.76	6.00	90.00	42.86	50.00	9056120047600
0.1890		4.80	6.00	90.00	42.80	50.00	9056120048000
0.1929		4.90	6.00	90.00	42.65	50.00	9056120049000
0.1969		5.00	6.00	90.00	42.50	50.00	9056120050000
0.2008		5.10	6.00	90.00	42.35	50.00	9056120051000
0.2031	13/64	5.16	6.00	90.00	42.26	50.00	9056120051600
0.2047		5.20	6.00	90.00	42.20	50.00	9056120052000
0.2087		5.30	6.00	90.00	42.05	50.00	9056120053000
0.2126		5.40	6.00	97.00	48.90	57.00	9056120054000
0.2165		5.50	6.00	97.00	48.75	57.00	9056120055000
0.2244		5.70	6.00	97.00	48.45	57.00	9056120057000
0.2283		5.80	6.00	97.00	48.30	57.00	9056120058000
0.2323		5.90	6.00	97.00	48.15	57.00	9056120059000
0.2362		6.00	6.00	97.00	48.00	57.00	9056120060000
0.2441		6.20	8.00	106.00	56.70	66.00	9056120062000
0.2480		6.30	8.00	106.00	56.55	66.00	9056120063000
0.2500	1/4 E	6.35	8.00	106.00	56.48	66.00	9056120063500
0.2559		6.50	8.00	106.00	56.25	66.00	9056120065000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2598		6.60	8.00	106.00	56.10	66.00	9056120066000
0.2638		6.70	8.00	106.00	55.95	66.00	9056120067000
0.2677		6.80	8.00	106.00	55.80	66.00	9056120068000
0.2717	I	6.90	8.00	116.00	65.65	76.00	9056120069000
0.2756		7.00	8.00	116.00	65.50	76.00	9056120070000
0.2795		7.10	8.00	116.00	65.35	76.00	9056120071000
0.2835		7.20	8.00	116.00	65.20	76.00	9056120072000
0.2913		7.40	8.00	116.00	64.90	76.00	9056120074000
0.2953		7.50	8.00	116.00	64.75	76.00	9056120075000
0.2992		7.60	8.00	116.00	64.60	76.00	9056120076000
0.3031		7.70	8.00	116.00	64.45	76.00	9056120077000
0.3071		7.80	8.00	116.00	64.30	76.00	9056120078000
0.3150		8.00	8.00	116.00	64.00	76.00	9056120080000
0.3189		8.10	10.00	131.00	74.85	87.00	9056120081000
0.3228	P	8.20	10.00	131.00	74.70	87.00	9056120082000
0.3307		8.40	10.00	131.00	74.40	87.00	9056120084000
0.3346	21/64	8.50	10.00	131.00	74.25	87.00	9056120085000
0.3386		8.60	10.00	131.00	74.10	87.00	9056120086000
0.3425		8.70	10.00	131.00	73.95	87.00	9056120087000
0.3465		8.80	10.00	131.00	73.80	87.00	9056120088000
0.3543		9.00	10.00	131.00	73.50	87.00	9056120090000
0.3583		9.10	10.00	139.00	81.35	95.00	9056120091000
0.3622		9.20	10.00	139.00	81.20	95.00	9056120092000
0.3661		9.30	10.00	139.00	81.05	95.00	9056120093000
0.3701		9.40	10.00	139.00	80.90	95.00	9056120094000
0.3740		9.50	10.00	139.00	80.75	95.00	9056120095000
0.3748	3/8	9.52	10.00	139.00	80.72	95.00	9056120095200
0.3819		9.70	10.00	139.00	80.45	95.00	9056120097000
0.3858	W	9.80	10.00	139.00	80.30	95.00	9056120098000
0.3898		9.90	10.00	139.00	80.15	95.00	9056120099000
0.3937		10.00	10.00	139.00	80.00	95.00	9056120100000
0.4016		10.20	12.00	155.00	90.70	106.00	9056120102000
0.4055		10.30	12.00	155.00	90.55	106.00	9056120103000
0.4134		10.50	12.00	155.00	90.25	106.00	9056120105000
0.4252		10.80	12.00	155.00	89.80	106.00	9056120108000
0.4331		11.00	12.00	155.00	89.50	106.00	9056120110000
0.4409		11.20	12.00	163.00	97.20	114.00	9056120112000
0.4528		11.50	12.00	163.00	96.75	114.00	9056120115000
0.4646		11.80	12.00	163.00	96.30	114.00	9056120118000
0.4724		12.00	12.00	163.00	96.00	114.00	9056120120000
0.4764		12.10	14.00	182.00	114.85	133.00	9056120121000
0.4803		12.20	14.00	182.00	114.70	133.00	9056120122000

7xD Ratio drills

Series no. **5612**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4921		12.50	14.00	182.00	114.25	133.00	9056120125000
0.5000	1/2	12.70	14.00	182.00	113.95	133.00	9056120127000
0.5118		13.00	14.00	182.00	113.50	133.00	9056120130000
0.5315		13.50	14.00	182.00	112.75	133.00	9056120135000
0.5512		14.00	14.00	182.00	112.00	133.00	9056120140000
0.5551		14.10	16.00	204.00	130.85	152.00	9056120141000
0.5591		14.20	16.00	204.00	130.70	152.00	9056120142000
0.5709		14.50	16.00	204.00	130.25	152.00	9056120145000
0.5906		15.00	16.00	204.00	129.50	152.00	9056120150000
0.6102		15.50	16.00	204.00	128.75	152.00	9056120155000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.6299		16.00	16.00	204.00	128.00	152.00	9056120160000
0.6496		16.50	18.00	223.00	146.25	171.00	9056120165000
0.6693		17.00	18.00	223.00	145.50	171.00	9056120170000
0.6890		17.50	18.00	223.00	144.75	171.00	9056120175000
0.7087		18.00	18.00	223.00	144.00	171.00	9056120180000
0.7283		18.50	20.00	244.00	162.25	190.00	9056120185000
0.7480		19.00	20.00	244.00	161.50	190.00	9056120190000
0.7500	3/4	19.05	20.00	244.00	161.43	190.00	9056120190500
0.7677		19.50	20.00	244.00	160.75	190.00	9056120195000
0.7874		20.00	20.00	244.00	160.00	190.00	9056120200000

7xD Ratio drills

Series no. **5746**

7xD	RT 100 US	140°	m7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: a

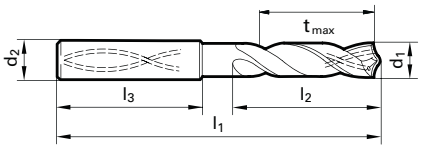
P	Steel	
M	Stainless steel	★
K	Cast iron	
N	Aluminum	
S	Titanium alloys	●
H	Hardened steel	○

★ = 1st choice
● = Optimal suitability
○ = Limited suitability

web thinning ≥ Ø 3.000 • relieved cone • main cutting edge form concave • optimized cutting geometry

stainless/acid-/heat-resistant steels • alloyed and high tensile steels up to 1600 N/mm² • Inconel, Hastelloy, Monel • Titanium and Titanium alloys

$t_{max} = l_2-(1.5 \times d_1)$





Speeds and feeds information on pg. 563

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	70.00	25.50	30.00	9057460030000
0.1220		3.10	6.00	70.00	25.35	30.00	9057460031000
0.1248	1/8	3.17	6.00	70.00	25.25	30.00	9057460031700
0.1260		3.20	6.00	70.00	25.20	30.00	9057460032000
0.1299		3.30	6.00	70.00	25.05	30.00	9057460033000
0.1339		3.40	6.00	75.00	30.40	35.50	9057460034000
0.1378		3.50	6.00	75.00	30.25	35.50	9057460035000
0.1406	9/64 #28	3.57	6.00	75.00	30.15	35.50	9057460035700
0.1417		3.60	6.00	75.00	30.10	35.50	9057460036000
0.1457		3.70	6.00	75.00	29.95	35.50	9057460037000
0.1496		3.80	6.00	75.00	31.80	37.50	9057460038000
0.1535		3.90	6.00	75.00	31.65	37.50	9057460039000
0.1563	5/32	3.97	6.00	75.00	31.55	37.50	9057460039700
0.1575		4.00	6.00	75.00	31.50	37.50	9057460040000
0.1614		4.10	6.00	75.00	31.35	37.50	9057460041000
0.1654		4.20	6.00	75.00	31.20	37.50	9057460042000
0.1693		4.30	6.00	85.00	38.55	45.00	9057460043000
0.1720	11/64	4.37	6.00	85.00	38.45	45.00	9057460043700
0.1732		4.40	6.00	85.00	38.40	45.00	9057460044000
0.1772		4.50	6.00	85.00	38.25	45.00	9057460045000
0.1811		4.60	6.00	85.00	38.10	45.00	9057460046000
0.1831		4.65	6.00	85.00	38.03	45.00	9057460046500
0.1850		4.70	6.00	85.00	37.95	45.00	9057460047000
0.1874	3/16	4.76	6.00	90.00	42.86	50.00	9057460047600
0.1890		4.80	6.00	90.00	42.80	50.00	9057460048000
0.1929		4.90	6.00	90.00	42.65	50.00	9057460049000
0.1969		5.00	6.00	90.00	42.50	50.00	9057460050000
0.2008		5.10	6.00	90.00	42.35	50.00	9057460051000
0.2031	13/64	5.16	6.00	90.00	42.26	50.00	9057460051600
0.2047		5.20	6.00	90.00	42.20	50.00	9057460052000
0.2087		5.30	6.00	90.00	42.05	50.00	9057460053000
0.2126		5.40	6.00	97.00	48.90	57.00	9057460054000
0.2165		5.50	6.00	97.00	48.75	57.00	9057460055000
0.2189	7/32	5.56	6.00	97.00	48.66	57.00	9057460055600
0.2244		5.70	6.00	97.00	48.45	57.00	9057460057000
0.2283		5.80	6.00	97.00	48.30	57.00	9057460058000
0.2323		5.90	6.00	97.00	48.15	57.00	9057460059000
0.2343	15/64	5.95	6.00	97.00	48.08	57.00	9057460059500
0.2362		6.00	6.00	97.00	48.00	57.00	9057460060000
0.2402		6.10	8.00	106.00	56.85	66.00	9057460061000
0.2441		6.20	8.00	106.00	56.70	66.00	9057460062000
0.2480		6.30	8.00	106.00	56.55	66.00	9057460063000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2500	1/4 E	6.35	8.00	106.00	56.48	66.00	9057460063500
0.2559		6.50	8.00	106.00	56.25	66.00	9057460065000
0.2571	F	6.53	8.00	106.00	56.21	66.00	9057460065300
0.2598		6.60	8.00	106.00	56.10	66.00	9057460066000
0.2638		6.70	8.00	106.00	55.95	66.00	9057460067000
0.2657	17/64 H	6.75	8.00	106.00	55.88	66.00	9057460067500
0.2677		6.80	8.00	106.00	55.80	66.00	9057460068000
0.2717	I	6.90	8.00	116.00	65.65	76.00	9057460069000
0.2756		7.00	8.00	116.00	65.50	76.00	9057460070000
0.2795		7.10	8.00	116.00	65.35	76.00	9057460071000
0.2811	9/32 K	7.14	8.00	116.00	65.29	76.00	9057460071400
0.2835		7.20	8.00	116.00	65.20	76.00	9057460072000
0.2874		7.30	8.00	116.00	65.05	76.00	9057460073000
0.2913		7.40	8.00	116.00	64.90	76.00	9057460074000
0.2953		7.50	8.00	116.00	64.75	76.00	9057460075000
0.2969	19/64	7.54	8.00	116.00	64.69	76.00	9057460075400
0.2992		7.60	8.00	116.00	64.60	76.00	9057460076000
0.3031		7.70	8.00	116.00	64.45	76.00	9057460077000
0.3071		7.80	8.00	116.00	64.30	76.00	9057460078000
0.3126	5/16	7.94	8.00	116.00	64.09	76.00	9057460079400
0.3150		8.00	8.00	116.00	64.00	76.00	9057460080000
0.3189		8.10	10.00	131.00	74.85	87.00	9057460081000
0.3228	P	8.20	10.00	131.00	74.70	87.00	9057460082000
0.3280	21/64	8.33	10.00	131.00	74.51	87.00	9057460083300
0.3307		8.40	10.00	131.00	74.40	87.00	9057460084000
0.3346		8.50	10.00	131.00	74.25	87.00	9057460085000
0.3386		8.60	10.00	131.00	74.10	87.00	9057460086000
0.3425		8.70	10.00	131.00	73.95	87.00	9057460087000
0.3437	11/32	8.73	10.00	131.00	73.91	87.00	9057460087300
0.3465		8.80	10.00	131.00	73.80	87.00	9057460088000
0.3543		9.00	10.00	131.00	73.50	87.00	9057460090000
0.3583		9.10	10.00	139.00	81.35	95.00	9057460091000
0.3594	23/64	9.13	10.00	139.00	81.31	95.00	9057460091300
0.3622		9.20	10.00	139.00	81.20	95.00	9057460092000
0.3661		9.30	10.00	139.00	81.05	95.00	9057460093000
0.3701		9.40	10.00	139.00	80.90	95.00	9057460094000
0.3740		9.50	10.00	139.00	80.75	95.00	9057460095000
0.3748	3/8	9.52	10.00	139.00	80.72	95.00	9057460095200
0.3819		9.70	10.00	139.00	80.45	95.00	9057460097000
0.3858	W	9.80	10.00	139.00	80.30	95.00	9057460098000
0.3898		9.90	10.00	139.00	80.15	95.00	9057460099000
0.3906	25/64	9.92	10.00	139.00	80.12	95.00	9057460099200

7xD Ratio drills

Series no. **5746**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3937		10.00	10.00	139.00	80.00	95.00	**9057460100000**
0.4016		10.20	12.00	155.00	90.70	106.00	**9057460102000**
0.4055		10.30	12.00	155.00	90.55	106.00	**9057460103000**
0.4063	13/32	10.32	12.00	155.00	90.52	106.00	**9057460103200**
0.4134		10.50	12.00	155.00	90.25	106.00	**9057460105000**
0.4220	27/64	10.72	12.00	155.00	89.92	106.00	**9057460107200**
0.4252		10.80	12.00	155.00	89.80	106.00	**9057460108000**
0.4331		11.00	12.00	155.00	89.50	106.00	**9057460110000**
0.4374	7/16	11.11	12.00	163.00	97.34	114.00	**9057460111100**
0.4409		11.20	12.00	163.00	97.20	114.00	**9057460112000**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4528		11.50	12.00	163.00	96.75	114.00	**9057460115000**
0.4646		11.80	12.00	163.00	96.30	114.00	**9057460118000**
0.4689	15/32	11.91	12.00	163.00	96.14	114.00	**9057460119100**
0.4724		12.00	12.00	163.00	96.00	114.00	**9057460120000**
0.4764		12.10	14.00	182.00	114.85	133.00	**9057460121000**
0.4803		12.20	14.00	182.00	114.70	133.00	**9057460122000**
0.4843	31/64	12.30	14.00	182.00	114.55	133.00	**9057460123000**
0.4921		12.50	14.00	182.00	114.25	133.00	**9057460125000**
0.5000	1/2	12.70	14.00	182.00	113.95	133.00	**9057460127000**

7xD Ratio drills

Series no. **8522**

7xD	RT 100 HF	140°	m7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: Y

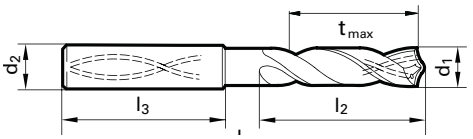
P	Steel	●
M	Stainless steel	
K	Cast iron	
N	Aluminum	
S	Titanium alloys	★
H	Hardened steel	○

★ = 1st choice
● = Optimal suitability
○ = Limited suitability

web thinning ≥ Ø 3.000 • relieved cone • main cutting edge is slightly concave • optimized cutting geometry

alloyed and high tensile steels up to 1600 N/mm² • Inconel, Hastelloy, Monel • Titanium and Titanium alloys

$t_{max} = l_2-(1.5 \times d_1)$





Speeds and feeds information on pg. 575

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	70.00	25.50	30.00	9085220030000
0.1248	1/8	3.17	6.00	70.00	25.25	30.00	9085220031700
0.1280		3.25	6.00	70.00	25.13	30.00	9085220032500
0.1299		3.30	6.00	70.00	25.05	30.00	9085220033000
0.1339		3.40	6.00	75.00	30.40	35.50	9085220034000
0.1378		3.50	6.00	75.00	30.25	35.50	9085220035000
0.1406	9/64	#28 3.57	6.00	75.00	30.15	35.50	9085220035700
0.1457		3.70	6.00	75.00	29.95	35.50	9085220037000
0.1563	5/32	3.97	6.00	75.00	31.55	37.50	9085220039700
0.1575		4.00	6.00	75.00	31.50	37.50	9085220040000
0.1654		4.20	6.00	75.00	31.20	37.50	9085220042000
0.1693		#18 4.30	6.00	85.00	38.55	45.00	9085220043000
0.1720	11/64	4.37	6.00	85.00	38.45	45.00	9085220043700
0.1772		4.50	6.00	85.00	38.25	45.00	9085220045000
0.1831		4.65	6.00	85.00	38.03	45.00	9085220046500
0.1874	3/16	4.76	6.00	90.00	42.86	50.00	9085220047600
0.1969		5.00	6.00	90.00	42.50	50.00	9085220050000
0.2008		5.10	6.00	90.00	42.35	50.00	9085220051000
0.2031	13/64	5.16	6.00	90.00	42.26	50.00	9085220051600
0.2047		5.20	6.00	90.00	42.20	50.00	9085220052000
0.2165		5.50	6.00	97.00	48.75	57.00	9085220055000
0.2185		5.55	6.00	97.00	48.68	57.00	9085220055500
0.2189	7/32	5.56	6.00	97.00	48.66	57.00	9085220055600
0.2343	15/64	5.95	6.00	97.00	48.08	57.00	9085220059500
0.2362		6.00	6.00	97.00	48.00	57.00	9085220060000
0.2500	1/4	E 6.35	8.00	106.00	56.48	66.00	9085220063500
0.2559		6.50	8.00	106.00	56.25	66.00	9085220065000
0.2571		F 6.53	8.00	106.00	56.21	66.00	9085220065300
0.2657	17/64	H 6.75	8.00	106.00	55.88	66.00	9085220067500
0.2677		6.80	8.00	106.00	55.80	66.00	9085220068000
0.2717		I 6.90	8.00	116.00	65.65	76.00	9085220069000
0.2756		7.00	8.00	116.00	65.50	76.00	9085220070000
0.2811	9/32	K 7.14	8.00	116.00	65.29	76.00	9085220071400
0.2913		7.40	8.00	116.00	64.90	76.00	9085220074000
0.2953		7.50	8.00	116.00	64.75	76.00	9085220075000
0.2969	19/64	7.54	8.00	116.00	64.69	76.00	9085220075400
0.3071		7.80	8.00	116.00	64.30	76.00	9085220078000
0.3126	5/16	7.94	8.00	116.00	64.09	76.00	9085220079400
0.3150		8.00	8.00	116.00	64.00	76.00	9085220080000
0.3280	21/64	8.33	10.00	131.00	74.51	87.00	9085220083300
0.3346		8.50	10.00	131.00	74.25	87.00	9085220085000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3386		8.60	10.00	131.00	74.10	87.00	9085220086000
0.3437	11/32	8.73	10.00	131.00	73.91	87.00	9085220087300
0.3465		8.80	10.00	131.00	73.80	87.00	9085220088000
0.3543		9.00	10.00	131.00	73.50	87.00	9085220090000
0.3594	23/64	9.13	10.00	139.00	81.31	95.00	9085220091300
0.3642		9.25	10.00	139.00	81.13	95.00	9085220092500
0.3677		U 9.34	10.00	139.00	80.99	95.00	9085220093400
0.3701		9.40	10.00	139.00	80.90	95.00	9085220094000
0.3740		9.50	10.00	139.00	80.75	95.00	9085220095000
0.3748	3/8	9.52	10.00	139.00	80.72	95.00	9085220095200
0.3906	25/64	9.92	10.00	139.00	80.12	95.00	9085220099200
0.3937		10.00	10.00	139.00	80.00	95.00	9085220100000
0.4015		10.20	12.00	155.00	90.70	106.00	9085220102000
0.4063	13/32	10.32	12.00	155.00	90.52	106.00	9085220103200
0.4094		10.40	12.00	155.00	90.40	106.00	9085220104000
0.4134		10.50	12.00	155.00	90.25	106.00	9085220105000
0.4252		10.80	12.00	155.00	89.80	106.00	9085220108000
0.4331		11.00	12.00	155.00	89.50	106.00	9085220110000
0.4374	7/16	11.11	12.00	163.00	97.34	114.00	9085220111100
0.4449		11.30	12.00	163.00	97.05	114.00	9085220113000
0.4488		11.40	12.00	163.00	96.90	114.00	9085220114000
0.4528		11.50	12.00	163.00	96.75	114.00	9085220115000
0.4531	29/64	11.51	12.00	163.00	96.74	114.00	9085220115100
0.4689	15/32	11.91	12.00	163.00	96.14	114.00	9085220119100
0.4724		12.00	12.00	163.00	96.00	114.00	9085220120000
0.4843	31/64	12.30	14.00	182.00	114.55	133.00	9085220123000
0.4921		12.50	14.00	182.00	114.25	133.00	9085220125000
0.5000	1/2	12.70	14.00	182.00	113.95	133.00	9085220127000
0.5118		13.00	14.00	182.00	113.50	133.00	9085220130000
0.5157	33/64	13.10	14.00	182.00	113.35	133.00	9085220131000
0.5311	17/32	13.49	14.00	182.00	112.77	133.00	9085220134900
0.5315		13.50	14.00	182.00	112.75	133.00	9085220135000
0.5512		14.00	14.00	182.00	112.00	133.00	9085220140000
0.5626	9/16	14.29	16.00	204.00	130.57	152.00	9085220142900
0.5709		14.50	16.00	204.00	130.25	152.00	9085220145000
0.5906		15.00	16.00	204.00	129.50	152.00	9085220150000
0.5945		15.10	16.00	204.00	129.35	152.00	9085220151000
0.6102		15.50	16.00	204.00	128.75	152.00	9085220155000
0.6248	5/8	15.87	16.00	204.00	128.20	152.00	9085220158700
0.6299		16.00	16.00	204.00	128.00	152.00	9085220160000

7xD Ratio drills

Series no. **6502**

7xD	RT 100 R	m7		HA	R
Cutting depth	Type	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: **F**

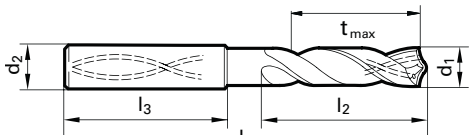
P	Steel	
M	Stainless steel	
K	Cast iron	★
N	Aluminum	
S	Titanium alloys	
H	Hardened steel	

★ = 1st choice
● = Optimal suitability
○ = Limited suitability

web thinning ≥ Ø 4.000 • patented radius point grind • main cutting edge form straight (after correction)

vermicular cast iron GGV and ADI, CDI • grey cast iron, malleable and spheroidal iron

$t_{max} = l_2-(1.5 \times d_1)$





Speeds and feeds information on pg. 570

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1575		4.00	6.00	75.00	31.50	38.00	9065020040000
0.1614		4.10	6.00	75.00	31.35	38.00	9065020041000
0.1654		4.20	6.00	75.00	31.20	38.00	9065020042000
0.1693	#18	4.30	6.00	85.00	38.55	45.00	9065020043000
0.1720	11/64	4.37	6.00	85.00	38.45	45.00	9065020043700
0.1732		4.40	6.00	85.00	38.40	45.00	9065020044000
0.1772	#16	4.50	6.00	85.00	38.25	45.00	9065020045000
0.1811		4.60	6.00	85.00	38.10	45.00	9065020046000
0.1831		4.65	6.00	85.00	38.03	45.00	9065020046500
0.1850	#13	4.70	6.00	85.00	37.95	45.00	9065020047000
0.1874	3/16	4.76	6.00	90.00	42.86	50.00	9065020047600
0.1890	#12	4.80	6.00	90.00	42.80	50.00	9065020048000
0.1929		4.90	6.00	90.00	42.65	50.00	9065020049000
0.1969		5.00	6.00	90.00	42.50	50.00	9065020050000
0.2008		5.10	6.00	90.00	42.35	50.00	9065020051000
0.2031	13/64	5.16	6.00	90.00	42.26	50.00	9065020051600
0.2047		5.20	6.00	90.00	42.20	50.00	9065020052000
0.2087		5.30	6.00	90.00	42.05	50.00	9065020053000
0.2126		5.40	6.00	97.00	48.90	57.00	9065020054000
0.2165		5.50	6.00	97.00	48.75	57.00	9065020055000
0.2185		5.55	6.00	97.00	48.68	57.00	9065020055500
0.2189	7/32	5.56	6.00	97.00	48.66	57.00	9065020055600
0.2205		5.60	6.00	97.00	48.60	57.00	9065020056000
0.2244		5.70	6.00	97.00	48.45	57.00	9065020057000
0.2283		5.80	6.00	97.00	48.30	57.00	9065020058000
0.2323		5.90	6.00	97.00	48.15	57.00	9065020059000
0.2343	15/64	5.95	6.00	97.00	48.08	57.00	9065020059500
0.2362		6.00	6.00	97.00	48.00	57.00	9065020060000
0.2402		6.10	8.00	106.00	56.85	66.00	9065020061000
0.2441		6.20	8.00	106.00	56.70	66.00	9065020062000
0.2480		6.30	8.00	106.00	56.55	66.00	9065020063000
0.2500	1/4 E	6.35	8.00	106.00	56.48	66.00	9065020063500
0.2520		6.40	8.00	106.00	56.40	66.00	9065020064000
0.2559		6.50	8.00	106.00	56.25	66.00	9065020065000
0.2598		6.60	8.00	106.00	56.10	66.00	9065020066000
0.2638		6.70	8.00	106.00	55.95	66.00	9065020067000
0.2657	17/64 H	6.75	8.00	106.00	55.88	66.00	9065020067500
0.2677		6.80	8.00	106.00	55.80	66.00	9065020068000
0.2717	I	6.90	8.00	116.00	65.65	76.00	9065020069000
0.2756		7.00	8.00	116.00	65.50	76.00	9065020070000
0.2795		7.10	8.00	116.00	65.35	76.00	9065020071000
0.2811	9/32 K	7.14	8.00	116.00	65.29	76.00	9065020071400

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2835		7.20	8.00	116.00	65.20	76.00	9065020072000
0.2874		7.30	8.00	116.00	65.05	76.00	9065020073000
0.2913		7.40	8.00	116.00	64.90	76.00	9065020074000
0.2953		7.50	8.00	116.00	64.75	76.00	9065020075000
0.2969	19/64	7.54	8.00	116.00	64.69	76.00	9065020075400
0.2992		7.60	8.00	116.00	64.60	76.00	9065020076000
0.3031		7.70	8.00	116.00	64.45	76.00	9065020077000
0.3071		7.80	8.00	116.00	64.30	76.00	9065020078000
0.3110		7.90	8.00	116.00	64.15	76.00	9065020079000
0.3126	5/16	7.94	8.00	116.00	64.09	76.00	9065020079400
0.3150		8.00	8.00	116.00	64.00	76.00	9065020080000
0.3189		8.10	10.00	131.00	74.85	87.00	9065020081000
0.3228	P	8.20	10.00	131.00	74.70	87.00	9065020082000
0.3268		8.30	10.00	131.00	74.55	87.00	9065020083000
0.3280	21/64	8.33	10.00	131.00	74.51	87.00	9065020083300
0.3307		8.40	10.00	131.00	74.40	87.00	9065020084000
0.3346		8.50	10.00	131.00	74.25	87.00	9065020085000
0.3386		8.60	10.00	131.00	74.10	87.00	9065020086000
0.3425		8.70	10.00	131.00	73.95	87.00	9065020087000
0.3437	11/32	8.73	10.00	131.00	73.91	87.00	9065020087300
0.3465		8.80	10.00	131.00	73.80	87.00	9065020088000
0.3504		8.90	10.00	131.00	73.65	87.00	9065020089000
0.3543		9.00	10.00	131.00	73.50	87.00	9065020090000
0.3583		9.10	10.00	139.00	81.35	95.00	9065020091000
0.3594	23/64	9.13	10.00	139.00	81.31	95.00	9065020091300
0.3622		9.20	10.00	139.00	81.20	95.00	9065020092000
0.3642		9.25	10.00	139.00	81.13	95.00	9065020092500
0.3661		9.30	10.00	139.00	81.05	95.00	9065020093000
0.3701		9.40	10.00	139.00	80.90	95.00	9065020094000
0.3740		9.50	10.00	139.00	80.75	95.00	9065020095000
0.3748	3/8	9.52	10.00	139.00	80.72	95.00	9065020095200
0.3780		9.60	10.00	139.00	80.60	95.00	9065020096000
0.3819		9.70	10.00	139.00	80.45	95.00	9065020097000
0.3858	W	9.80	10.00	139.00	80.30	95.00	9065020098000
0.3898		9.90	10.00	139.00	80.15	95.00	9065020099000
0.3906	25/64	9.92	10.00	139.00	80.12	95.00	9065020099200
0.3937		10.00	10.00	139.00	80.00	95.00	9065020100000
0.3976		10.10	12.00	155.00	90.85	106.00	9065020101000
0.4016		10.20	12.00	155.00	90.70	106.00	9065020102000
0.4055		10.30	12.00	155.00	90.55	106.00	9065020103000
0.4063	13/32	10.32	12.00	155.00	90.52	106.00	9065020103200
0.4094		10.40	12.00	155.00	90.40	106.00	9065020104000

7xD Ratio drills

Series no. **6502**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4134		10.50	12.00	155.00	90.25	106.00	9065020105000
0.4173		10.60	12.00	155.00	90.10	106.00	9065020106000
0.4213		10.70	12.00	155.00	89.95	106.00	9065020107000
0.4220	27/64	10.72	12.00	155.00	89.92	106.00	9065020107200
0.4252		10.80	12.00	155.00	89.80	106.00	9065020108000
0.4291		10.90	12.00	155.00	89.65	106.00	9065020109000
0.4331		11.00	12.00	155.00	89.50	106.00	9065020110000
0.4370		11.10	12.00	163.00	97.35	114.00	9065020111000
0.4374	7/16	11.11	12.00	163.00	97.34	114.00	9065020111100
0.4409		11.20	12.00	163.00	97.20	114.00	9065020112000
0.4449		11.30	12.00	163.00	97.05	114.00	9065020113000
0.4488		11.40	12.00	163.00	96.90	114.00	9065020114000
0.4528		11.50	12.00	163.00	96.75	114.00	9065020115000
0.4567		11.60	12.00	163.00	96.60	114.00	9065020116000
0.4606		11.70	12.00	163.00	96.45	114.00	9065020117000
0.4646		11.80	12.00	163.00	96.30	114.00	9065020118000
0.4685		11.90	12.00	163.00	96.15	114.00	9065020119000
0.4689	15/32	11.91	12.00	163.00	96.14	114.00	9065020119100
0.4724		12.00	12.00	163.00	96.00	114.00	9065020120000
0.4764		12.10	14.00	182.00	114.85	133.00	9065020121000
0.4803		12.20	14.00	182.00	114.70	133.00	9065020122000
0.4843	31/64	12.30	14.00	182.00	114.55	133.00	9065020123000
0.4882		12.40	14.00	182.00	114.40	133.00	9065020124000
0.4921		12.50	14.00	182.00	114.25	133.00	9065020125000
0.4961		12.60	14.00	182.00	114.10	133.00	9065020126000
0.5000	1/2	12.70	14.00	182.00	113.95	133.00	9065020127000
0.5039		12.80	14.00	182.00	113.80	133.00	9065020128000
0.5079		12.90	14.00	182.00	113.65	133.00	9065020129000
0.5118		13.00	14.00	182.00	113.50	133.00	9065020130000
0.5157	33/64	13.10	14.00	182.00	113.35	133.00	9065020131000
0.5236		13.30	14.00	182.00	113.05	133.00	9065020133000
0.5276		13.40	14.00	182.00	112.90	133.00	9065020134000
0.5315		13.50	14.00	182.00	112.75	133.00	9065020135000
0.5394		13.70	14.00	182.00	112.45	133.00	9065020137000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.5433		13.80	14.00	182.00	112.30	133.00	9065020138000
0.5472		13.90	14.00	182.00	112.15	133.00	9065020139000
0.5512		14.00	14.00	182.00	112.00	133.00	9065020140000
0.5551		14.10	16.00	204.00	130.85	152.00	9065020141000
0.5591		14.20	16.00	204.00	130.70	152.00	9065020142000
0.5626	9/16	14.29	16.00	204.00	130.57	152.00	9065020142900
0.5630		14.30	16.00	204.00	130.55	152.00	9065020143000
0.5669		14.40	16.00	204.00	130.40	152.00	9065020144000
0.5709		14.50	16.00	204.00	130.25	152.00	9065020145000
0.5748		14.60	16.00	204.00	130.10	152.00	9065020146000
0.5787		14.70	16.00	204.00	129.95	152.00	9065020147000
0.5866		14.90	16.00	204.00	129.65	152.00	9065020149000
0.5906		15.00	16.00	204.00	129.50	152.00	9065020150000
0.5945		15.10	16.00	204.00	129.35	152.00	9065020151000
0.5984		15.20	16.00	204.00	129.20	152.00	9065020152000
0.6024		15.30	16.00	204.00	129.05	152.00	9065020153000
0.6063		15.40	16.00	204.00	128.90	152.00	9065020154000
0.6102		15.50	16.00	204.00	128.75	152.00	9065020155000
0.6142		15.60	16.00	204.00	128.60	152.00	9065020156000
0.6181		15.70	16.00	204.00	128.45	152.00	9065020157000
0.6220		15.80	16.00	204.00	128.30	152.00	9065020158000
0.6248	5/8	15.87	16.00	204.00	128.20	152.00	9065020158700
0.6260		15.90	16.00	204.00	128.15	152.00	9065020159000
0.6299		16.00	16.00	204.00	128.00	152.00	9065020160000
0.6496		16.50	18.00	223.00	146.25	171.00	9065020165000
0.6563	21/32	16.67	18.00	223.00	146.00	171.00	9065020166700
0.6693		17.00	18.00	223.00	145.50	171.00	9065020170000
0.6890		17.50	18.00	223.00	144.75	171.00	9065020175000
0.7087		18.00	18.00	223.00	144.00	171.00	9065020180000
0.7283		18.50	20.00	244.00	162.25	190.00	9065020185000
0.7480		19.00	20.00	244.00	161.50	190.00	9065020190000
0.7677		19.50	20.00	244.00	160.75	190.00	9065020195000
0.7874		20.00	20.00	244.00	160.00	190.00	9065020200000

8xD Ratio drills

Series no. **5760**

Tool material **Solid Carbide**

Surface **F**

8xD	RT 100 S	140°	m7		HA	R	NEW
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction	

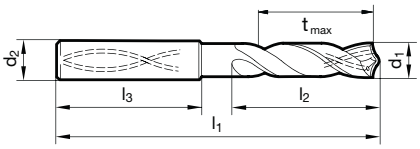
P	Steel	★
M	Stainless steel	○
K	Cast iron	○
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

★ = 1st choice
● = Optimal suitability
○ = Limited suitability

facet point grinding • main cutting edge form straight • optimized cutting geometry • maximum performance

structural and case hardened steels • free-cutting steels, heat-treatable steels • steels (alloyed/unalloyed) up to 1400 N/mm²

$t_{max} = l_2\text{-}1{,}5 \times d_1$





Speeds and feeds information on pg. 564

Diameter (d_1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l_2 mm	EDP #
0.1181		3.00	6.00	70.00	25.50	30.00	9057600030000
0.1220		3.10	6.00	70.00	25.35	30.00	9057600031000
0.1248	1/8	3.17	6.00	70.00	25.25	30.00	9057600031700
0.1260		3.20	6.00	70.00	25.20	30.00	9057600032000
0.1280		3.25	6.00	70.00	25.13	30.00	9057600032500
0.1299		3.30	6.00	70.00	25.05	30.00	9057600033000
0.1339		3.40	6.00	75.00	30.40	35.50	9057600034000
0.1378		3.50	6.00	75.00	30.25	35.50	9057600035000
0.1406	9/64 #28	3.57	6.00	75.00	30.15	35.50	9057600035700
0.1417		3.60	6.00	75.00	30.10	35.50	9057600036000
0.1457		3.70	6.00	75.00	29.95	35.50	9057600037000
0.1496	#25	3.80	6.00	75.00	31.80	37.50	9057600038000
0.1535		3.90	6.00	75.00	31.65	37.50	9057600039000
0.1563	5/32	3.97	6.00	75.00	31.55	37.50	9057600039700
0.1575		4.00	6.00	75.00	31.50	37.50	9057600040000
0.1591	#21	4.04	6.00	75.00	31.44	37.50	9057600040400
0.1614		4.10	6.00	75.00	31.35	37.50	9057600041000
0.1654		4.20	6.00	75.00	31.20	37.50	9057600042000
0.1693	#18	4.30	6.00	85.00	38.55	45.00	9057600043000
0.1720	11/64	4.37	6.00	85.00	38.45	45.00	9057600043700
0.1732		4.40	6.00	85.00	38.40	45.00	9057600044000
0.1772	#16	4.50	6.00	85.00	38.25	45.00	9057600045000
0.1811		4.60	6.00	85.00	38.10	45.00	9057600046000
0.1831		4.65	6.00	85.00	38.03	45.00	9057600046500
0.1850	#13	4.70	6.00	85.00	37.95	45.00	9057600047000
0.1874	3/16	4.76	6.00	90.00	42.86	50.00	9057600047600
0.1890	#12	4.80	6.00	90.00	42.80	50.00	9057600048000
0.1929		4.90	6.00	90.00	42.65	50.00	9057600049000
0.1969		5.00	6.00	90.00	42.50	50.00	9057600050000
0.2008		5.10	6.00	90.00	42.35	50.00	9057600051000
0.2012	#7	5.11	6.00	90.00	42.34	50.00	9057600051100
0.2031	13/64	5.16	6.00	90.00	42.26	50.00	9057600051600
0.2047		5.20	6.00	90.00	42.20	50.00	9057600052000
0.2087		5.30	6.00	90.00	42.05	50.00	9057600053000
0.2126		5.40	6.00	97.00	48.90	57.00	9057600054000
0.2130	#3	5.41	6.00	97.00	48.89	57.00	9057600054100
0.2165		5.50	6.00	97.00	48.75	57.00	9057600055000
0.2185		5.55	6.00	97.00	48.68	57.00	9057600055500
0.2189	7/32	5.56	6.00	97.00	48.66	57.00	9057600055600
0.2205		5.60	6.00	97.00	48.60	57.00	9057600056000
0.2244		5.70	6.00	97.00	48.45	57.00	9057600057000
0.2283		5.80	6.00	97.00	48.30	57.00	9057600058000

Diameter (d_1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l_2 mm	EDP #
0.2323		5.90	6.00	97.00	48.15	57.00	9057600059000
0.2343	15/64	5.95	6.00	97.00	48.08	57.00	9057600059500
0.2362		6.00	6.00	97.00	48.00	57.00	9057600060000
0.2402		6.10	8.00	106.00	56.85	66.00	9057600061000
0.2441		6.20	8.00	106.00	56.70	66.00	9057600062000
0.2480		6.30	8.00	106.00	56.55	66.00	9057600063000
0.2500	1/4 E	6.35	8.00	106.00	56.48	66.00	9057600063500
0.2520		6.40	8.00	106.00	56.40	66.00	9057600064000
0.2559		6.50	8.00	106.00	56.25	66.00	9057600065000
0.2571	F	6.53	8.00	106.00	56.21	66.00	9057600065300
0.2598		6.60	8.00	106.00	56.10	66.00	9057600066000
0.2638		6.70	8.00	106.00	55.95	66.00	9057600067000
0.2657	17/64 H	6.75	8.00	106.00	55.88	66.00	9057600067500
0.2677		6.80	8.00	106.00	55.80	66.00	9057600068000
0.2717	I	6.90	8.00	116.00	65.65	76.00	9057600069000
0.2756		7.00	8.00	116.00	65.50	76.00	9057600070000
0.2795		7.10	8.00	116.00	65.35	76.00	9057600071000
0.2811	9/32 K	7.14	8.00	116.00	65.29	76.00	9057600071400
0.2835		7.20	8.00	116.00	65.20	76.00	9057600072000
0.2874		7.30	8.00	116.00	65.05	76.00	9057600073000
0.2913		7.40	8.00	116.00	64.90	76.00	9057600074000
0.2953		7.50	8.00	116.00	64.75	76.00	9057600075000
0.2969	19/64	7.54	8.00	116.00	64.69	76.00	9057600075400
0.2992		7.60	8.00	116.00	64.60	76.00	9057600076000
0.3031		7.70	8.00	116.00	64.45	76.00	9057600077000
0.3071		7.80	8.00	116.00	64.30	76.00	9057600078000
0.3110		7.90	8.00	116.00	64.15	76.00	9057600079000
0.3125	5/16	7.94	8.00	116.00	64.09	76.00	9057600079400
0.3150		8.00	8.00	116.00	64.00	76.00	9057600080000
0.3189		8.10	10.00	131.00	74.85	87.00	9057600081000
0.3228	P	8.20	10.00	131.00	74.70	87.00	9057600082000
0.3268		8.30	10.00	131.00	74.55	87.00	9057600083000
0.3280	21/64	8.33	10.00	131.00	74.51	87.00	9057600083300
0.3307		8.40	10.00	131.00	74.40	87.00	9057600084000
0.3346		8.50	10.00	131.00	74.25	87.00	9057600085000
0.3386		8.60	10.00	131.00	74.10	87.00	9057600086000
0.3425		8.70	10.00	131.00	73.95	87.00	9057600087000
0.3437	11/32	8.73	10.00	131.00	73.91	87.00	9057600087300
0.3465		8.80	10.00	131.00	73.80	87.00	9057600088000
0.3504		8.90	10.00	131.00	73.65	87.00	9057600089000
0.3543		9.00	10.00	131.00	73.50	87.00	9057600090000
0.3583		9.10	10.00	139.00	81.35	95.00	9057600091000

8xD Ratio drills

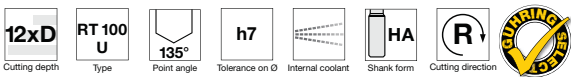
Series no. **5760**

Diameter (d_1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l_2 mm	EDP #
0.3594	23/64	9.13	10.00	139.00	81.31	95.00	9057600091300
0.3622		9.20	10.00	139.00	81.20	95.00	9057600092000
0.3642		9.25	10.00	139.00	81.13	95.00	9057600092500
0.3661		9.30	10.00	139.00	81.05	95.00	9057600093000
0.3677	U	9.34	10.00	139.00	80.99	95.00	9057600093400
0.3701		9.40	10.00	139.00	80.90	95.00	9057600094000
0.3740		9.50	10.00	139.00	80.75	95.00	9057600095000
0.3750	3/8	9.52	10.00	139.00	80.72	95.00	9057600095200
0.3780		9.60	10.00	139.00	80.60	95.00	9057600096000
0.3819		9.70	10.00	139.00	80.45	95.00	9057600097000
0.3858	W	9.80	10.00	139.00	80.30	95.00	9057600098000
0.3898		9.90	10.00	139.00	80.15	95.00	9057600099000
0.3906	25/64	9.92	10.00	139.00	80.12	95.00	9057600099200
0.3937		10.00	10.00	139.00	80.00	95.00	9057600100000
0.3976		10.10	12.00	155.00	90.85	106.00	9057600101000
0.4016		10.20	12.00	155.00	90.70	106.00	9057600102000
0.4055		10.30	12.00	155.00	90.55	106.00	9057600103000
0.4063	13/32	10.32	12.00	155.00	90.52	106.00	9057600103200
0.4094		10.40	12.00	155.00	90.40	106.00	9057600104000
0.4134		10.50	12.00	155.00	90.25	106.00	9057600105000
0.4173		10.60	12.00	155.00	90.10	106.00	9057600106000
0.4213		10.70	12.00	155.00	89.95	106.00	9057600107000
0.4220	27/64	10.72	12.00	155.00	89.92	106.00	9057600107200
0.4252		10.80	12.00	155.00	89.80	106.00	9057600108000
0.4291		10.90	12.00	155.00	89.65	106.00	9057600109000
0.4331		11.00	12.00	155.00	89.50	106.00	9057600110000
0.4370		11.10	12.00	163.00	97.35	114.00	9057600111000
0.4374	7/16	11.11	12.00	163.00	97.34	114.00	9057600111100
0.4409		11.20	12.00	163.00	97.20	114.00	9057600112000
0.4449		11.30	12.00	163.00	97.05	114.00	9057600113000
0.4488		11.40	12.00	163.00	96.90	114.00	9057600114000
0.4528		11.50	12.00	163.00	96.75	114.00	9057600115000
0.4531	29/64	11.51	12.00	163.00	96.74	114.00	9057600115100
0.4567		11.60	12.00	163.00	96.60	114.00	9057600116000
0.4606		11.70	12.00	163.00	96.45	114.00	9057600117000
0.4646		11.80	12.00	163.00	96.30	114.00	9057600118000
0.4685		11.90	12.00	163.00	96.15	114.00	9057600119000
0.4689	15/32	11.91	12.00	163.00	96.14	114.00	9057600119100

Diameter (d_1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l_2 mm	EDP #
0.4724		12.00	12.00	163.00	96.00	114.00	9057600120000
0.4764		12.10	14.00	182.00	114.85	133.00	9057600121000
0.4803		12.20	14.00	182.00	114.70	133.00	9057600122000
0.4843	31/64	12.30	14.00	182.00	114.55	133.00	9057600123000
0.4921		12.50	14.00	182.00	114.25	133.00	9057600125000
0.5000	1/2	12.70	14.00	182.00	113.95	133.00	9057600127000
0.5118		13.00	14.00	182.00	113.50	133.00	9057600130000
0.5157	33/64	13.10	14.00	182.00	113.35	133.00	9057600131000
0.5311	17/32	13.49	14.00	182.00	112.77	133.00	9057600134900
0.5315		13.50	14.00	182.00	112.75	133.00	9057600135000
0.5394		13.70	14.00	182.00	112.45	133.00	9057600137000
0.5469	35/64	13.89	14.00	182.00	112.17	133.00	9057600138900
0.5512		14.00	14.00	182.00	112.00	133.00	9057600140000
0.5551		14.10	16.00	204.00	130.85	152.00	9057600141000
0.5591		14.20	16.00	204.00	130.70	152.00	9057600142000
0.5626	9/16	14.29	16.00	204.00	130.57	152.00	9057600142900
0.5709		14.50	16.00	204.00	130.25	152.00	9057600145000
0.5787		14.70	16.00	204.00	129.95	152.00	9057600147000
0.5906		15.00	16.00	204.00	129.50	152.00	9057600150000
0.5945		15.10	16.00	204.00	129.35	152.00	9057600151000
0.6094	39/64	15.48	16.00	204.00	128.78	152.00	9057600154800
0.6102		15.50	16.00	204.00	128.75	152.00	9057600155000
0.6181		15.70	16.00	204.00	128.45	152.00	9057600157000
0.6250	5/8	15.87	16.00	204.00	128.20	152.00	9057600158700
0.6299		16.00	16.00	204.00	128.00	152.00	9057600160000
0.6496		16.50	18.00	223.00	146.25	171.00	9057600165000
0.6654		16.90	18.00	223.00	145.65	171.00	9057600169000
0.6693		17.00	18.00	223.00	145.50	171.00	9057600170000
0.6890		17.50	18.00	223.00	144.75	171.00	9057600175000
0.6969		17.70	18.00	223.00	144.45	171.00	9057600177000
0.7087		18.00	18.00	223.00	144.00	171.00	9057600180000
0.7283		18.50	20.00	244.00	162.25	190.00	9057600185000
0.7441		18.90	20.00	244.00	161.65	190.00	9057600189000
0.7480		19.00	20.00	244.00	161.50	190.00	9057600190000
0.7500	3/4	19.05	20.00	244.00	161.43	190.00	9057600190500
0.7677		19.50	20.00	244.00	160.75	190.00	9057600195000
0.7874		20.00	20.00	244.00	160.00	190.00	9057600200000

12xD Ratio drills

Series no. **5525**



Tool material **Solid Carbide**

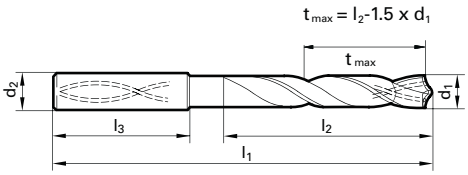
Surface **F**

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • facet point grinding • main cutting edge form straight • optimized cutting geometry

structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • cast materials • bronze, brass • high-alloyed AlSi-alloys





Speeds and feeds information on pg. 556

Diameter (d_1) inch	wire/ltr	mm	d_2 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.1181		3.00	6.00	90.00	45.50	50.00	9055250030000
0.1220		3.10	6.00	90.00	45.35	50.00	9055250031000
0.1248	1/8	3.17	6.00	90.00	45.25	50.00	9055250031700
0.1260		3.20	6.00	90.00	45.20	50.00	9055250032000
0.1280		3.25	6.00	90.00	45.13	50.00	9055250032500
0.1299		3.30	6.00	90.00	45.05	50.00	9055250033000
0.1339		3.40	6.00	90.00	44.90	50.00	9055250034000
0.1378		3.50	6.00	90.00	44.75	50.00	9055250035000
0.1406	9/64 #28	3.57	6.00	90.00	44.65	50.00	9055250035700
0.1417		3.60	6.00	90.00	44.60	50.00	9055250036000
0.1457		3.70	6.00	90.00	44.45	50.00	9055250037000
0.1496	#25	3.80	6.00	102.00	58.30	64.00	9055250038000
0.1535		3.90	6.00	102.00	58.15	64.00	9055250039000
0.1563	5/32	3.97	6.00	102.00	58.05	64.00	9055250039700
0.1575		4.00	6.00	102.00	58.00	64.00	9055250040000
0.1614		4.10	6.00	102.00	57.85	64.00	9055250041000
0.1654		4.20	6.00	102.00	57.70	64.00	9055250042000
0.1693	#18	4.30	6.00	102.00	57.55	64.00	9055250043000
0.1720	11/64	4.37	6.00	102.00	57.45	64.00	9055250043700
0.1732		4.40	6.00	102.00	57.40	64.00	9055250044000
0.1772	#16	4.50	6.00	102.00	57.25	64.00	9055250045000
0.1811		4.60	6.00	102.00	57.10	64.00	9055250046000
0.1831		4.65	6.00	102.00	57.03	64.00	9055250046500
0.1850		4.70	6.00	102.00	56.95	64.00	9055250047000
0.1874	3/16	4.76	6.00	116.00	70.86	78.00	9055250047600
0.1890		4.80	6.00	116.00	70.80	78.00	9055250048000
0.1929		4.90	6.00	116.00	70.65	78.00	9055250049000
0.1969		5.00	6.00	116.00	70.50	78.00	9055250050000
0.2008		5.10	6.00	116.00	70.35	78.00	9055250051000
0.2031	13/64	5.16	6.00	116.00	70.26	78.00	9055250051600
0.2047		5.20	6.00	116.00	70.20	78.00	9055250052000
0.2087		5.30	6.00	116.00	70.05	78.00	9055250053000
0.2126		5.40	6.00	116.00	69.90	78.00	9055250054000
0.2165		5.50	6.00	116.00	69.75	78.00	9055250055000
0.2189	7/32	5.56	6.00	116.00	69.66	78.00	9055250055600
0.2205		5.60	6.00	116.00	69.60	78.00	9055250056000
0.2244		5.70	6.00	116.00	69.45	78.00	9055250057000
0.2283		5.80	6.00	116.00	69.30	78.00	9055250058000
0.2323		5.90	6.00	116.00	69.15	78.00	9055250059000
0.2343	15/64	5.95	6.00	116.00	69.08	78.00	9055250059500
0.2362		6.00	6.00	116.00	69.00	78.00	9055250060000
0.2402		6.10	8.00	146.00	98.85	108.00	9055250061000

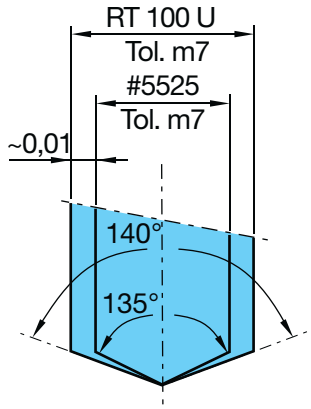
Diameter (d_1) inch	wire/ltr	mm	d_2 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.2441		6.20	8.00	146.00	98.70	108.00	9055250062000
0.2480		6.30	8.00	146.00	98.55	108.00	9055250063000
0.2500	1/4 E	6.35	8.00	146.00	98.48	108.00	9055250063500
0.2520		6.40	8.00	146.00	98.40	108.00	9055250064000
0.2559		6.50	8.00	146.00	98.25	108.00	9055250065000
0.2598		6.60	8.00	146.00	98.10	108.00	9055250066000
0.2638		6.70	8.00	146.00	97.95	108.00	9055250067000
0.2657	17/64 H	6.75	8.00	146.00	97.88	108.00	9055250067500
0.2677		6.80	8.00	146.00	97.80	108.00	9055250068000
0.2717		6.90	8.00	146.00	97.65	108.00	9055250069000
0.2756		7.00	8.00	146.00	97.50	108.00	9055250070000
0.2795		7.10	8.00	146.00	97.35	108.00	9055250071000
0.2811	9/32 K	7.14	8.00	146.00	97.29	108.00	9055250071400
0.2835		7.20	8.00	146.00	97.20	108.00	9055250072000
0.2874		7.30	8.00	146.00	97.05	108.00	9055250073000
0.2913		7.40	8.00	146.00	96.90	108.00	9055250074000
0.2953		7.50	8.00	146.00	96.75	108.00	9055250075000
0.2969	19/64	7.54	8.00	146.00	96.69	108.00	9055250075400
0.2992		7.60	8.00	146.00	96.60	108.00	9055250076000
0.3031		7.70	8.00	146.00	96.45	108.00	9055250077000
0.3071		7.80	8.00	146.00	96.30	108.00	9055250078000
0.3110		7.90	8.00	146.00	96.15	108.00	9055250079000
0.3126	5/16	7.94	8.00	146.00	96.09	108.00	9055250079400
0.3150		8.00	8.00	146.00	96.00	108.00	9055250080000
0.3189		8.10	10.00	162.00	107.85	120.00	9055250081000
0.3228		8.20	10.00	162.00	107.70	120.00	9055250082000
0.3268		8.30	10.00	162.00	107.55	120.00	9055250083000
0.3280	21/64	8.33	10.00	162.00	107.51	120.00	9055250083300
0.3307		8.40	10.00	162.00	107.40	120.00	9055250084000
0.3346		8.50	10.00	162.00	107.25	120.00	9055250085000
0.3386		8.60	10.00	162.00	107.10	120.00	9055250086000
0.3425		8.70	10.00	162.00	106.95	120.00	9055250087000
0.3437	11/32	8.73	10.00	162.00	106.91	120.00	9055250087300
0.3465		8.80	10.00	162.00	106.80	120.00	9055250088000
0.3504		8.90	10.00	162.00	106.65	120.00	9055250089000
0.3543		9.00	10.00	162.00	106.50	120.00	9055250090000
0.3583		9.10	10.00	162.00	106.35	120.00	9055250091000
0.3594	23/64	9.13	10.00	162.00	106.31	120.00	9055250091300
0.3622		9.20	10.00	162.00	106.20	120.00	9055250092000
0.3642		9.25	10.00	162.00	106.13	120.00	9055250092500
0.3661		9.30	10.00	162.00	106.05	120.00	9055250093000
0.3701		9.40	10.00	162.00	105.90	120.00	9055250094000

Diameter (d_1) inch	wire/ltr	mm	d_2 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.3740		9.50	10.00	162.00	105.75	120.00	9055250095000
0.3748	3/8	9.52	10.00	162.00	105.72	120.00	9055250095200
0.3780		9.60	10.00	162.00	105.60	120.00	9055250096000
0.3819		9.70	10.00	162.00	105.45	120.00	9055250097000
0.3858		9.80	10.00	162.00	105.30	120.00	9055250098000
0.3898		9.90	10.00	162.00	105.15	120.00	9055250099000
0.3906	25/64	9.92	10.00	162.00	105.12	120.00	9055250099200
0.3937		10.00	10.00	162.00	105.00	120.00	9055250100000
0.3976		10.10	12.00	204.00	140.85	156.00	9055250101000
0.4016		10.20	12.00	204.00	140.70	156.00	9055250102000
0.4055		10.30	12.00	204.00	140.55	156.00	9055250103000
0.4063	13/32	10.32	12.00	204.00	140.52	156.00	9055250103200
0.4134		10.50	12.00	204.00	140.25	156.00	9055250105000
0.4173		10.60	12.00	204.00	140.10	156.00	9055250106000
0.4213		10.70	12.00	204.00	139.95	156.00	9055250107000
0.4220	27/64	10.72	12.00	204.00	139.92	156.00	9055250107200
0.4252		10.80	12.00	204.00	139.80	156.00	9055250108000
0.4291		10.90	12.00	204.00	139.65	156.00	9055250109000
0.4331		11.00	12.00	204.00	139.50	156.00	9055250110000
0.4374	7/16	11.11	12.00	204.00	139.34	156.00	9055250111100
0.4528		11.50	12.00	204.00	138.75	156.00	9055250115000
0.4531	29/64	11.51	12.00	204.00	138.74	156.00	9055250115100
0.4689	15/32	11.91	12.00	204.00	138.14	156.00	9055250119100

Diameter (d_1) inch	wire/ltr	mm	d_2 mm	l_1 mm	t_{max} mm	l_2 mm	EDP #
0.4724		12.00	12.00	204.00	138.00	156.00	9055250120000
0.4843	31/64	12.30	14.00	230.00	163.55	182.00	9055250123000
0.4921		12.50	14.00	230.00	163.25	182.00	9055250125000
0.5000	1/2	12.70	14.00	230.00	162.95	182.00	9055250127000
0.5118		13.00	14.00	230.00	162.50	182.00	9055250130000
0.5311	17/32	13.49	14.00	230.00	161.77	182.00	9055250134900
0.5315		13.50	14.00	230.00	161.75	182.00	9055250135000
0.5469	35/64	13.89	14.00	230.00	161.17	182.00	9055250138900
0.5512		14.00	14.00	230.00	161.00	182.00	9055250140000
0.5709		14.50	16.00	260.00	186.25	208.00	9055250145000
0.5906		15.00	16.00	260.00	185.50	208.00	9055250150000
0.6094	39/64	15.48	16.00	260.00	184.78	208.00	9055250154800
0.6102		15.50	16.00	260.00	184.75	208.00	9055250155000
0.6299		16.00	16.00	260.00	184.00	208.00	9055250160000
0.6496		16.50	18.00	285.00	209.25	234.00	9055250165000
0.6693		17.00	18.00	285.00	208.50	234.00	9055250170000
0.6890		17.50	18.00	285.00	207.75	234.00	9055250175000
0.7087		18.00	18.00	285.00	207.00	234.00	9055250180000
0.7283		18.50	20.00	310.00	230.25	258.00	9055250185000
0.7480		19.00	20.00	310.00	229.50	258.00	9055250190000
0.7500	3/4	19.05	20.00	310.00	229.43	258.00	9055250190500
0.7677		19.50	20.00	310.00	228.75	258.00	9055250195000
0.7874		20.00	20.00	310.00	228.00	258.00	9055250200000

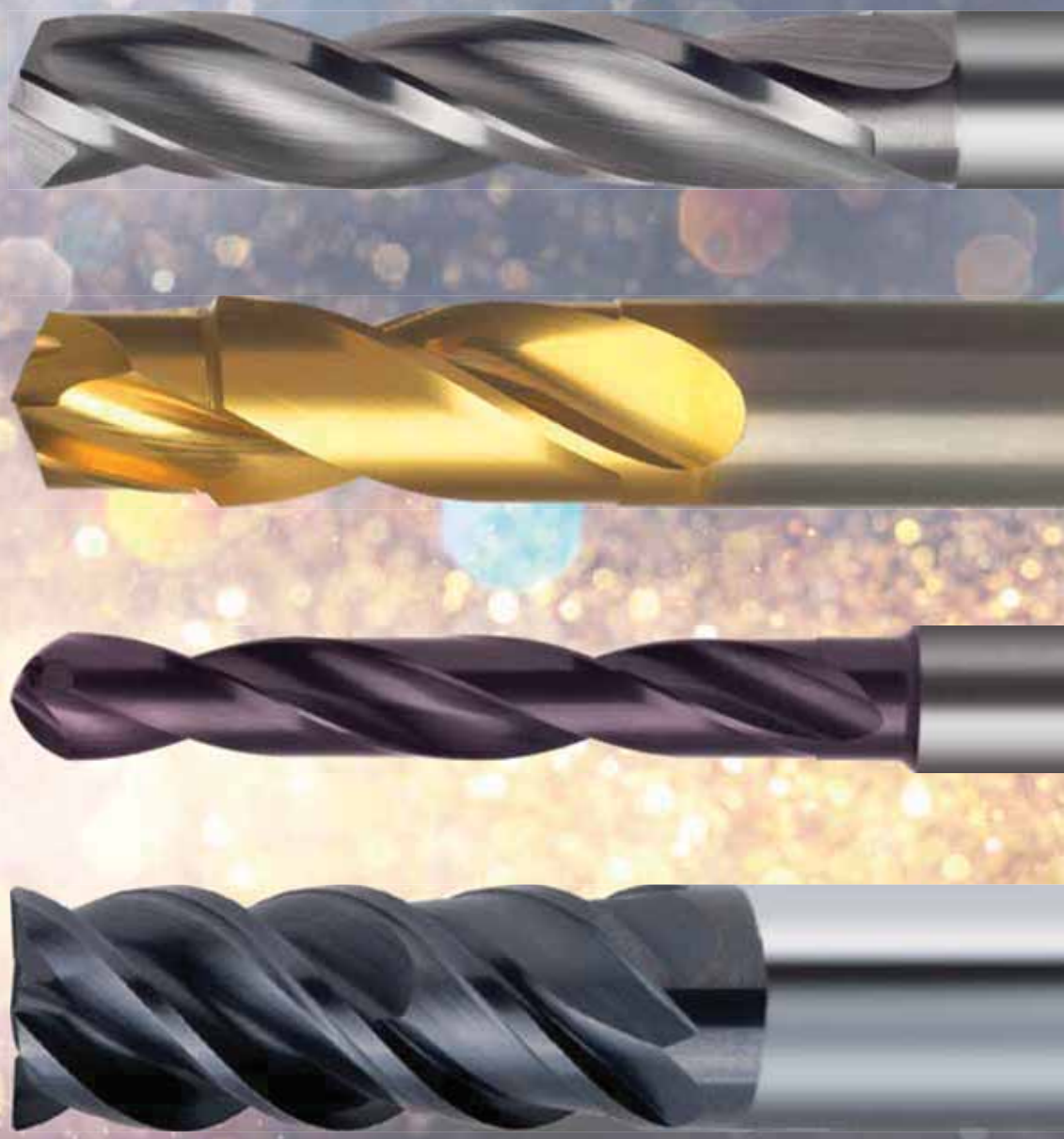
Pilot drilling

It is recommended to utilize a pilot drill for the series **5525** deep hole drill. Use series **5510**, or similar drill with m7 diameter tolerance and 140° point, to drill a minimum of 1xD deep. Then enter the pilot hole with the deep hole drill at max. 300RPM and 20IPM stopping shy of the bottom of the pilot hole. Start high pressure coolant and increase RPM to recommended operating speed. Drill at recommended feed rate to hole depth without pecking. Slow to max. 300RPM before retracting.



Tool Reconditioning

RE-GRINDING AND RE-COATING





CARBIDE STRAIGHT FLUTE DRILLS



RT 150 GG Ratio drills

Series no. **768**

4xD	RT 150 GG	120°	m7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: ◯

P	Steel	
M	Stainless steel	
K	Cast iron	○
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

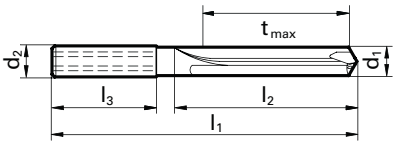
●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • close diameter tolerances • very good surface quality of hole • observe coolant pressure

aluminum and Al-alloys • Al materials with high Si-content



$t_{max} = l_2 - (1.5 \times d_1)$



Speeds and feeds information on pg. 525

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	66.00	19.50	24.00	9007680030000
0.1220		3.10	6.00	66.00	19.35	24.00	9007680031000
0.1260		3.20	6.00	66.00	19.20	24.00	9007680032000
0.1299		3.30	6.00	66.00	19.05	24.00	9007680033000
0.1339		3.40	6.00	66.00	18.90	24.00	9007680034000
0.1378		3.50	6.00	66.00	18.75	24.00	9007680035000
0.1417		3.60	6.00	66.00	18.60	24.00	9007680036000
0.1457		3.70	6.00	66.00	18.45	24.00	9007680037000
0.1496	#25	3.80	6.00	74.00	24.30	30.00	9007680038000
0.1535		3.90	6.00	74.00	24.15	30.00	9007680039000
0.1575		4.00	6.00	74.00	24.00	30.00	9007680040000
0.1614		4.10	6.00	74.00	23.85	30.00	9007680041000
0.1654		4.20	6.00	74.00	23.70	30.00	9007680042000
0.1693	#18	4.30	6.00	74.00	23.55	30.00	9007680043000
0.1732		4.40	6.00	74.00	23.40	30.00	9007680044000
0.1772	#16	4.50	6.00	74.00	23.25	30.00	9007680045000
0.1811		4.60	6.00	74.00	23.10	30.00	9007680046000
0.1850	#13	4.70	6.00	74.00	22.95	30.00	9007680047000
0.1890	#12	4.80	6.00	74.00	28.80	36.00	9007680048000
0.1929		4.90	6.00	74.00	28.65	36.00	9007680049000
0.1969		5.00	6.00	74.00	28.50	36.00	9007680050000
0.2008		5.10	6.00	74.00	28.35	36.00	9007680051000
0.2031	13/64	5.16	6.00	74.00	28.26	36.00	9007680051600
0.2047		5.20	6.00	74.00	28.20	36.00	9007680052000
0.2087		5.30	6.00	74.00	28.05	36.00	9007680053000
0.2126		5.40	6.00	74.00	27.90	36.00	9007680054000
0.2165		5.50	6.00	74.00	27.75	36.00	9007680055000
0.2189	7/32	5.56	6.00	74.00	27.66	36.00	9007680055600
0.2205		5.60	6.00	74.00	27.60	36.00	9007680056000
0.2244		5.70	6.00	74.00	27.45	36.00	9007680057000
0.2283		5.80	6.00	74.00	27.30	36.00	9007680058000
0.2323		5.90	6.00	74.00	27.15	36.00	9007680059000
0.2343	15/64	5.95	6.00	74.00	27.08	36.00	9007680059500
0.2362		6.00	6.00	74.00	27.00	36.00	9007680060000
0.2402		6.10	8.00	91.00	43.85	53.00	9007680061000
0.2441		6.20	8.00	91.00	43.70	53.00	9007680062000
0.2480		6.30	8.00	91.00	43.55	53.00	9007680063000
0.2500	1/4 E	6.35	8.00	91.00	43.48	53.00	9007680063500
0.2520		6.40	8.00	91.00	43.40	53.00	9007680064000
0.2559		6.50	8.00	91.00	43.25	53.00	9007680065000
0.2598		6.60	8.00	91.00	43.10	53.00	9007680066000
0.2638		6.70	8.00	91.00	42.95	53.00	9007680067000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2657	17/64 H	6.75	8.00	91.00	42.88	53.00	9007680067500
0.2677		6.80	8.00	91.00	42.80	53.00	9007680068000
0.2717	I	6.90	8.00	91.00	42.65	53.00	9007680069000
0.2756		7.00	8.00	91.00	42.50	53.00	9007680070000
0.2795		7.10	8.00	91.00	42.35	53.00	9007680071000
0.2811	9/32 K	7.14	8.00	91.00	42.29	53.00	9007680071400
0.2835		7.20	8.00	91.00	42.20	53.00	9007680072000
0.2874		7.30	8.00	91.00	42.05	53.00	9007680073000
0.2913		7.40	8.00	91.00	41.90	53.00	9007680074000
0.2953		7.50	8.00	91.00	41.75	53.00	9007680075000
0.2969	19/64	7.54	8.00	91.00	41.69	53.00	9007680075400
0.2992		7.60	8.00	91.00	41.60	53.00	9007680076000
0.3031		7.70	8.00	91.00	41.45	53.00	9007680077000
0.3071		7.80	8.00	91.00	41.30	53.00	9007680078000
0.3110		7.90	8.00	91.00	41.15	53.00	9007680079000
0.3126	5/16	7.94	8.00	91.00	41.09	53.00	9007680079400
0.3150		8.00	8.00	91.00	41.00	53.00	9007680080000
0.3189		8.10	10.00	103.00	48.85	61.00	9007680081000
0.3228	P	8.20	10.00	103.00	48.70	61.00	9007680082000
0.3268		8.30	10.00	103.00	48.55	61.00	9007680083000
0.3280	21/64	8.33	10.00	103.00	48.51	61.00	9007680083300
0.3307		8.40	10.00	103.00	48.40	61.00	9007680084000
0.3346		8.50	10.00	103.00	48.25	61.00	9007680085000
0.3386		8.60	10.00	103.00	48.10	61.00	9007680086000
0.3425		8.70	10.00	103.00	47.95	61.00	9007680087000
0.3437	11/32	8.73	10.00	103.00	47.91	61.00	9007680087300
0.3465		8.80	10.00	103.00	47.80	61.00	9007680088000
0.3504		8.90	10.00	103.00	47.65	61.00	9007680089000
0.3543		9.00	10.00	103.00	47.50	61.00	9007680090000
0.3583		9.10	10.00	103.00	47.35	61.00	9007680091000
0.3594	23/64	9.13	10.00	103.00	47.31	61.00	9007680091300
0.3622		9.20	10.00	103.00	47.20	61.00	9007680092000
0.3661		9.30	10.00	103.00	47.05	61.00	9007680093000
0.3701		9.40	10.00	103.00	46.90	61.00	9007680094000
0.3740		9.50	10.00	103.00	46.75	61.00	9007680095000
0.3748	3/8	9.52	10.00	103.00	46.72	61.00	9007680095200
0.3780		9.60	10.00	103.00	46.60	61.00	9007680096000
0.3819		9.70	10.00	103.00	46.45	61.00	9007680097000
0.3858	W	9.80	10.00	103.00	46.30	61.00	9007680098000
0.3898		9.90	10.00	103.00	46.15	61.00	9007680099000
0.3906	25/64	9.92	10.00	103.00	46.12	61.00	9007680099200
0.3937		10.00	10.00	103.00	46.00	61.00	9007680100000

RT 150 GG Ratio drills

Series no. **768**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.4016		10.20	12.00	118.00	55.70	71.00	9007680102000
0.4063	13/32	10.32	12.00	118.00	55.52	71.00	9007680103200
0.4134		10.50	12.00	118.00	55.25	71.00	9007680105000
0.4220	27/64	10.72	12.00	118.00	54.92	71.00	9007680107200
0.4331		11.00	12.00	118.00	54.50	71.00	9007680110000
0.4374	7/16	11.11	12.00	118.00	54.34	71.00	9007680111100
0.4409		11.20	12.00	118.00	54.20	71.00	9007680112000
0.4528		11.50	12.00	118.00	53.75	71.00	9007680115000
0.4531	29/64	11.51	12.00	118.00	53.74	71.00	9007680115100
0.4689	15/32	11.91	12.00	118.00	53.14	71.00	9007680119100
0.4724		12.00	12.00	118.00	53.00	71.00	9007680120000
0.4843	31/64	12.30	14.00	124.00	55.55	74.00	9007680123000
0.4921		12.50	14.00	124.00	55.25	74.00	9007680125000
0.5000	1/2	12.70	14.00	124.00	54.95	74.00	9007680127000
0.5118		13.00	14.00	124.00	54.50	74.00	9007680130000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.5315		13.50	14.00	124.00	53.75	74.00	9007680135000
0.5512		14.00	14.00	124.00	53.00	74.00	9007680140000
0.5709		14.50	16.00	133.00	61.25	83.00	9007680145000
0.5906		15.00	16.00	133.00	60.50	83.00	9007680150000
0.6102		15.50	16.00	133.00	59.75	83.00	9007680155000
0.6299		16.00	16.00	133.00	59.00	83.00	9007680160000
0.6496		16.50	18.00	143.00	68.25	93.00	9007680165000
0.6693		17.00	18.00	143.00	67.50	93.00	9007680170000
0.6890		17.50	18.00	143.00	66.75	93.00	9007680175000
0.7087		18.00	18.00	143.00	66.00	93.00	9007680180000
0.7283		18.50	20.00	153.00	73.25	101.00	9007680185000
0.7480		19.00	20.00	153.00	72.50	101.00	9007680190000
0.7677		19.50	20.00	153.00	71.75	101.00	9007680195000
0.7874		20.00	20.00	153.00	71.00	101.00	9007680200000

RT 150 GG Ratio drills

Series no. **6068**



Tool material **Solid Carbide**

Surface

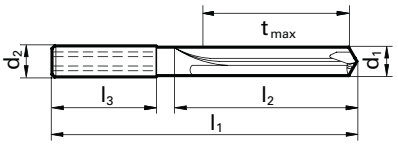
P	Steel	
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • facet point grinding • close diameter tolerances • very good surface quality of hole • observe optimal coolant pressure

grey cast iron, malleable and spheroidal iron

$t_{max} = l_2 - (1.5 \times d_1)$





Speeds and feeds information on pg. 565

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	66.00	19.50	24.00	9060680030000
0.1220		3.10	6.00	66.00	19.35	24.00	9060680031000
0.1260		3.20	6.00	66.00	19.20	24.00	9060680032000
0.1299		3.30	6.00	66.00	19.05	24.00	9060680033000
0.1339		3.40	6.00	66.00	18.90	24.00	9060680034000
0.1378		3.50	6.00	66.00	18.75	24.00	9060680035000
0.1417		3.60	6.00	66.00	18.60	24.00	9060680036000
0.1457		3.70	6.00	66.00	18.45	24.00	9060680037000
0.1496	#25	3.80	6.00	74.00	24.30	30.00	9060680038000
0.1535		3.90	6.00	74.00	24.15	30.00	9060680039000
0.1575		4.00	6.00	74.00	24.00	30.00	9060680040000
0.1654		4.20	6.00	74.00	23.70	30.00	9060680042000
0.1772	#16	4.50	6.00	74.00	23.25	30.00	9060680045000
0.1811		4.60	6.00	74.00	23.10	30.00	9060680046000
0.1890	#12	4.80	6.00	74.00	28.80	36.00	9060680048000
0.1969		5.00	6.00	74.00	28.50	36.00	9060680050000
0.2008		5.10	6.00	74.00	28.35	36.00	9060680051000
0.2031	13/64	5.16	6.00	74.00	28.26	36.00	9060680051600
0.2047		5.20	6.00	74.00	28.20	36.00	9060680052000
0.2087		5.30	6.00	74.00	28.05	36.00	9060680053000
0.2126		5.40	6.00	74.00	27.90	36.00	9060680054000
0.2165		5.50	6.00	74.00	27.75	36.00	9060680055000
0.2189	7/32	5.56	6.00	74.00	27.66	36.00	9060680055600
0.2205		5.60	6.00	74.00	27.60	36.00	9060680056000
0.2283		5.80	6.00	74.00	27.30	36.00	9060680058000
0.2362		6.00	6.00	74.00	27.00	36.00	9060680060000
0.2402		6.10	8.00	91.00	43.85	53.00	9060680061000
0.2441		6.20	8.00	91.00	43.70	53.00	9060680062000
0.2480		6.30	8.00	91.00	43.55	53.00	9060680063000
0.2500	1/4	E 6.35	8.00	91.00	43.48	53.00	9060680063500
0.2520		6.40	8.00	91.00	43.40	53.00	9060680064000
0.2559		6.50	8.00	91.00	43.25	53.00	9060680065000
0.2598		6.60	8.00	91.00	43.10	53.00	9060680066000
0.2657	17/64	H 6.75	8.00	91.00	42.88	53.00	9060680067500
0.2677		6.80	8.00	91.00	42.80	53.00	9060680068000
0.2717		I 6.90	8.00	91.00	42.65	53.00	9060680069000
0.2756		7.00	8.00	91.00	42.50	53.00	9060680070000
0.2795		7.10	8.00	91.00	42.35	53.00	9060680071000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2811	9/32	K 7.14	8.00	91.00	42.29	53.00	9060680071400
0.2835		7.20	8.00	91.00	42.20	53.00	9060680072000
0.2874		7.30	8.00	91.00	42.05	53.00	9060680073000
0.2913		7.40	8.00	91.00	41.90	53.00	9060680074000
0.2953		7.50	8.00	91.00	41.75	53.00	9060680075000
0.2969	19/64	7.54	8.00	91.00	41.69	53.00	9060680075400
0.3071		7.80	8.00	91.00	41.30	53.00	9060680078000
0.3150		8.00	8.00	91.00	41.00	53.00	9060680080000
0.3189		8.10	10.00	103.00	48.85	61.00	9060680081000
0.3228		P 8.20	10.00	103.00	48.70	61.00	9060680082000
0.3268		8.30	10.00	103.00	48.55	61.00	9060680083000
0.3307		8.40	10.00	103.00	48.40	61.00	9060680084000
0.3346		8.50	10.00	103.00	48.25	61.00	9060680085000
0.3386		8.60	10.00	103.00	48.10	61.00	9060680086000
0.3425		8.70	10.00	103.00	47.95	61.00	9060680087000
0.3437	11/32	8.73	10.00	103.00	47.91	61.00	9060680087300
0.3543		9.00	10.00	103.00	47.50	61.00	9060680090000
0.3594	23/64	9.13	10.00	103.00	47.31	61.00	9060680091300
0.3622		9.20	10.00	103.00	47.20	61.00	9060680092000
0.3661		9.30	10.00	103.00	47.05	61.00	9060680093000
0.3740		9.50	10.00	103.00	46.75	61.00	9060680095000
0.3748	3/8	9.52	10.00	103.00	46.72	61.00	9060680095200
0.3780		9.60	10.00	103.00	46.60	61.00	9060680096000
0.3819		9.70	10.00	103.00	46.45	61.00	9060680097000
0.3858		W 9.80	10.00	103.00	46.30	61.00	9060680098000
0.3906	25/64	9.92	10.00	103.00	46.12	61.00	9060680099200
0.3937		10.00	10.00	103.00	46.00	61.00	9060680100000
0.4016		10.20	12.00	118.00	55.70	71.00	9060680102000
0.4134		10.50	12.00	118.00	55.25	71.00	9060680105000
0.4220	27/64	10.72	12.00	118.00	54.92	71.00	9060680107200
0.4331		11.00	12.00	118.00	54.50	71.00	9060680110000
0.4374	7/16	11.11	12.00	118.00	54.34	71.00	9060680111100
0.4528		11.50	12.00	118.00	53.75	71.00	9060680115000
0.4724		12.00	12.00	118.00	53.00	71.00	9060680120000
0.4843	31/64	12.30	14.00	124.00	55.55	74.00	9060680123000
0.4921		12.50	14.00	124.00	55.25	74.00	9060680125000
0.5000	1/2	12.70	14.00	124.00	54.95	74.00	9060680127000
0.5118		13.00	14.00	124.00	54.50	74.00	9060680130000

RT 150 GG Ratio drills

Series no. **6068**

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.5315		13.50	14.00	124.00	53.75	74.00	9060680135000
0.5512		14.00	14.00	124.00	53.00	74.00	9060680140000
0.5709		14.50	16.00	133.00	61.25	83.00	9060680145000
0.5906		15.00	16.00	133.00	60.50	83.00	9060680150000
0.6102		15.50	16.00	133.00	59.75	83.00	9060680155000
0.6299		16.00	16.00	133.00	59.00	83.00	9060680160000
0.6496		16.50	18.00	143.00	68.25	93.00	9060680165000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.6693		17.00	18.00	143.00	67.50	93.00	9060680170000
0.6890		17.50	18.00	143.00	66.75	93.00	9060680175000
0.7087		18.00	18.00	143.00	66.00	93.00	9060680180000
0.7283		18.50	20.00	153.00	73.25	101.00	9060680185000
0.7480		19.00	20.00	153.00	72.50	101.00	9060680190000
0.7677		19.50	20.00	153.00	71.75	101.00	9060680195000
0.7874		20.00	20.00	153.00	71.00	101.00	9060680200000

RT 150 GG Ratio drills

Series no. **769**

7xD	RT 150 GG	120°	m7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: ◯

P	Steel	
M	Stainless steel	
K	Cast iron	○
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

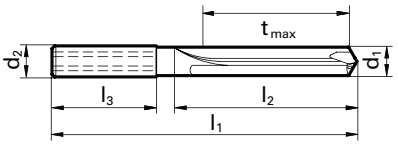
●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • close diameter tolerances • very good surface quality of hole • observe coolant pressure

aluminum and Al-alloys • Al materials with high Si-content



$t_{max} = l_2 - (1.5 \times d_1)$



Speeds and feeds information on pg. 526

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	74.00	27.50	32.00	9007690030000
0.1220		3.10	6.00	74.00	27.35	32.00	9007690031000
0.1260		3.20	6.00	74.00	27.20	32.00	9007690032000
0.1299		3.30	6.00	74.00	27.05	32.00	9007690033000
0.1339		3.40	6.00	74.00	28.90	34.00	9007690034000
0.1378		3.50	6.00	74.00	28.75	34.00	9007690035000
0.1417		3.60	6.00	74.00	28.60	34.00	9007690036000
0.1457		3.70	6.00	74.00	28.45	34.00	9007690037000
0.1496	#25	3.80	6.00	97.00	39.30	45.00	9007690038000
0.1535		3.90	6.00	97.00	39.15	45.00	9007690039000
0.1575		4.00	6.00	97.00	39.00	45.00	9007690040000
0.1614		4.10	6.00	97.00	38.85	45.00	9007690041000
0.1654		4.20	6.00	97.00	38.70	45.00	9007690042000
0.1693	#18	4.30	6.00	97.00	38.55	45.00	9007690043000
0.1732		4.40	6.00	97.00	38.40	45.00	9007690044000
0.1772	#16	4.50	6.00	97.00	38.25	45.00	9007690045000
0.1850	#13	4.70	6.00	97.00	37.95	45.00	9007690047000
0.1890	#12	4.80	6.00	97.00	49.80	57.00	9007690048000
0.1929		4.90	6.00	97.00	49.65	57.00	9007690049000
0.1969		5.00	6.00	97.00	49.50	57.00	9007690050000
0.2031	13/64	5.16	6.00	97.00	49.26	57.00	9007690051600
0.2165		5.50	6.00	97.00	48.75	57.00	9007690055000
0.2362		6.00	6.00	97.00	48.00	57.00	9007690060000
0.2500	1/4 E	6.35	8.00	116.00	66.48	76.00	9007690063500
0.2559		6.50	8.00	116.00	66.25	76.00	9007690065000
0.2677		6.80	8.00	116.00	65.80	76.00	9007690068000
0.2756		7.00	8.00	116.00	65.50	76.00	9007690070000
0.2811	9/32 K	7.14	8.00	116.00	65.29	76.00	9007690071400
0.2953		7.50	8.00	116.00	64.75	76.00	9007690075000
0.3071		7.80	8.00	116.00	64.30	76.00	9007690078000
0.3126	5/16	7.94	8.00	116.00	64.09	76.00	9007690079400
0.3150		8.00	8.00	116.00	64.00	76.00	9007690080000
0.3280	21/64	8.33	10.00	139.00	82.51	95.00	9007690083300
0.3346		8.50	10.00	139.00	82.25	95.00	9007690085000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3437	11/32	8.73	10.00	139.00	81.91	95.00	9007690087300
0.3543		9.00	10.00	139.00	81.50	95.00	9007690090000
0.3594	23/64	9.13	10.00	139.00	81.31	95.00	9007690091300
0.3740		9.50	10.00	139.00	80.75	95.00	9007690095000
0.3748	3/8	9.52	10.00	139.00	80.72	95.00	9007690095200
0.3937		10.00	10.00	139.00	80.00	95.00	9007690100000
0.4016		10.20	12.00	163.00	98.70	114.00	9007690102000
0.4063	13/32	10.32	12.00	163.00	98.52	114.00	9007690103200
0.4134		10.50	12.00	163.00	98.25	114.00	9007690105000
0.4220	27/64	10.72	12.00	163.00	97.92	114.00	9007690107200
0.4331		11.00	12.00	163.00	97.50	114.00	9007690110000
0.4374	7/16	11.11	12.00	163.00	97.34	114.00	9007690111100
0.4528		11.50	12.00	163.00	96.75	114.00	9007690115000
0.4531	29/64	11.51	12.00	163.00	96.74	114.00	9007690115100
0.4724		12.00	12.00	163.00	96.00	114.00	9007690120000
0.4843	31/64	12.30	14.00	182.00	114.55	133.00	9007690123000
0.4921		12.50	14.00	182.00	114.25	133.00	9007690125000
0.5000	1/2	12.70	14.00	182.00	113.95	133.00	9007690127000
0.5118		13.00	14.00	182.00	113.50	133.00	9007690130000
0.5315		13.50	14.00	182.00	112.75	133.00	9007690135000
0.5512		14.00	14.00	182.00	112.00	133.00	9007690140000
0.5709		14.50	16.00	204.00	130.25	152.00	9007690145000
0.5906		15.00	16.00	204.00	129.50	152.00	9007690150000
0.6102		15.50	16.00	204.00	128.75	152.00	9007690155000
0.6299		16.00	16.00	204.00	128.00	152.00	9007690160000
0.6496		16.50	18.00	223.00	146.25	171.00	9007690165000
0.6693		17.00	18.00	223.00	145.50	171.00	9007690170000
0.6890		17.50	18.00	223.00	144.75	171.00	9007690175000
0.7087		18.00	18.00	223.00	144.00	171.00	9007690180000
0.7283		18.50	20.00	244.00	162.25	190.00	9007690185000
0.7480		19.00	20.00	244.00	161.50	190.00	9007690190000
0.7677		19.50	20.00	244.00	160.75	190.00	9007690195000
0.7874		20.00	20.00	244.00	160.00	190.00	9007690200000

RT 150 GG Ratio drills

Series no. **6069**

7xD	RT 150 GG	130°	m7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: ◯

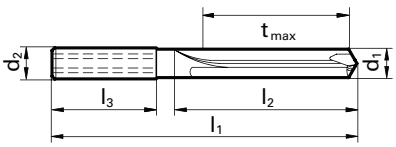
P	Steel	
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • facet point grinding • close diameter tolerances • very good surface quality of hole • observe optimal coolant pressure

grey cast iron, malleable and spheroidal iron

$t_{max} = l_2 - (1.5 \times d_1)$





Speeds and feeds information on pg. 565

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	74.00	27.50	32.00	9060690030000
0.1220		3.10	6.00	74.00	27.35	32.00	9060690031000
0.1260		3.20	6.00	74.00	27.20	32.00	9060690032000
0.1299		3.30	6.00	74.00	27.05	32.00	9060690033000
0.1339		3.40	6.00	74.00	28.90	34.00	9060690034000
0.1378		3.50	6.00	74.00	28.75	34.00	9060690035000
0.1417		3.60	6.00	74.00	28.60	34.00	9060690036000
0.1457		3.70	6.00	74.00	28.45	34.00	9060690037000
0.1496	#25	3.80	6.00	97.00	39.30	45.00	9060690038000
0.1535		3.90	6.00	97.00	39.15	45.00	9060690039000
0.1575		4.00	6.00	97.00	39.00	45.00	9060690040000
0.1614		4.10	6.00	97.00	38.85	45.00	9060690041000
0.1654		4.20	6.00	97.00	38.70	45.00	9060690042000
0.1693	#18	4.30	6.00	97.00	38.55	45.00	9060690043000
0.1732		4.40	6.00	97.00	38.40	45.00	9060690044000
0.1772	#16	4.50	6.00	97.00	38.25	45.00	9060690045000
0.1850	#13	4.70	6.00	97.00	37.95	45.00	9060690047000
0.1890	#12	4.80	6.00	97.00	49.80	57.00	9060690048000
0.1929		4.90	6.00	97.00	49.65	57.00	9060690049000
0.1969		5.00	6.00	97.00	49.50	57.00	9060690050000
0.2031	13/64	5.16	6.00	97.00	49.26	57.00	9060690051600
0.2165		5.50	6.00	97.00	48.75	57.00	9060690055000
0.2362		6.00	6.00	97.00	48.00	57.00	9060690060000
0.2500	1/4 E	6.35	8.00	116.00	66.48	76.00	9060690063500
0.2559		6.50	8.00	116.00	66.25	76.00	9060690065000
0.2677		6.80	8.00	116.00	65.80	76.00	9060690068000
0.2756		7.00	8.00	116.00	65.50	76.00	9060690070000
0.2811	9/32 K	7.14	8.00	116.00	65.29	76.00	9060690071400
0.2953		7.50	8.00	116.00	64.75	76.00	9060690075000
0.3071		7.80	8.00	116.00	64.30	76.00	9060690078000
0.3126	5/16	7.94	8.00	116.00	64.09	76.00	9060690079400
0.3150		8.00	8.00	116.00	64.00	76.00	9060690080000
0.3280	21/64	8.33	10.00	139.00	82.51	95.00	9060690083300
0.3346		8.50	10.00	139.00	82.25	95.00	9060690085000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3437	11/32	8.73	10.00	139.00	81.91	95.00	9060690087300
0.3543		9.00	10.00	139.00	81.50	95.00	9060690090000
0.3594	23/64	9.13	10.00	139.00	81.31	95.00	9060690091300
0.3740		9.50	10.00	139.00	80.75	95.00	9060690095000
0.3748	3/8	9.52	10.00	139.00	80.72	95.00	9060690095200
0.3937		10.00	10.00	139.00	80.00	95.00	9060690100000
0.4016		10.20	12.00	163.00	98.70	114.00	9060690102000
0.4063	13/32	10.32	12.00	163.00	98.52	114.00	9060690103200
0.4134		10.50	12.00	163.00	98.25	114.00	9060690105000
0.4220	27/64	10.72	12.00	163.00	97.92	114.00	9060690107200
0.4331		11.00	12.00	163.00	97.50	114.00	9060690110000
0.4374	7/16	11.11	12.00	163.00	97.34	114.00	9060690111100
0.4528		11.50	12.00	163.00	96.75	114.00	9060690115000
0.4531	29/64	11.51	12.00	163.00	96.74	114.00	9060690115100
0.4724		12.00	12.00	163.00	96.00	114.00	9060690120000
0.4843	31/64	12.30	14.00	182.00	114.55	133.00	9060690123000
0.4921		12.50	14.00	182.00	114.25	133.00	9060690125000
0.5000	1/2	12.70	14.00	182.00	113.95	133.00	9060690127000
0.5118		13.00	14.00	182.00	113.50	133.00	9060690130000
0.5315		13.50	14.00	182.00	112.75	133.00	9060690135000
0.5512		14.00	14.00	182.00	112.00	133.00	9060690140000
0.5709		14.50	16.00	204.00	130.25	152.00	9060690145000
0.5906		15.00	16.00	204.00	129.50	152.00	9060690150000
0.6102		15.50	16.00	204.00	128.75	152.00	9060690155000
0.6299		16.00	16.00	204.00	128.00	152.00	9060690160000
0.6496		16.50	18.00	223.00	146.25	171.00	9060690165000
0.6693		17.00	18.00	223.00	145.50	171.00	9060690170000
0.6890		17.50	18.00	223.00	144.75	171.00	9060690175000
0.7087		18.00	18.00	223.00	144.00	171.00	9060690180000
0.7283		18.50	20.00	244.00	162.25	190.00	9060690185000
0.7480		19.00	20.00	244.00	161.50	190.00	9060690190000
0.7677		19.50	20.00	244.00	160.75	190.00	9060690195000
0.7874		20.00	20.00	244.00	160.00	190.00	9060690200000

RT 150 GG Ratio drills

Series no. **5513**



Tool material **Solid Carbide**

Surface

P	Steel	
M	Stainless steel	
K	Cast iron	○
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

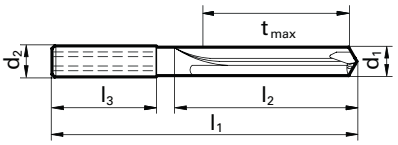
●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • close diameter tolerances • very good surface quality of hole • observe coolant pressure

aluminum and Al-alloys • Al materials with high Si-content



$t_{max} = l_2 - (1.5 \times d_1)$



Speeds and feeds information on pg. 551

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	91.00	37.50	42.00	9055130030000
0.1220		3.10	6.00	91.00	37.35	42.00	9055130031000
0.1248	1/8	3.17	6.00	91.00	37.25	42.00	9055130031700
0.1260		3.20	6.00	91.00	37.20	42.00	9055130032000
0.1280		3.25	6.00	91.00	37.13	42.00	9055130032500
0.1299		3.30	6.00	91.00	37.05	42.00	9055130033000
0.1339		3.40	6.00	91.00	42.90	48.00	9055130034000
0.1378		3.50	6.00	91.00	42.75	48.00	9055130035000
0.1406	9/64 #28	3.57	6.00	91.00	42.65	48.00	9055130035700
0.1417		3.60	6.00	91.00	42.60	48.00	9055130036000
0.1457	#25	3.70	6.00	91.00	42.45	48.00	9055130037000
0.1496	#25	3.80	6.00	121.00	71.30	77.00	9055130038000
0.1535		3.90	6.00	121.00	71.15	77.00	9055130039000
0.1563	5/32	3.97	6.00	121.00	71.05	77.00	9055130039700
0.1575		4.00	6.00	121.00	71.00	77.00	9055130040000
0.1654		4.20	6.00	121.00	70.70	77.00	9055130042000
0.1772	#16	4.50	6.00	121.00	70.25	77.00	9055130045000
0.1969		5.00	6.00	121.00	74.50	82.00	9055130050000
0.2165		5.50	6.00	121.00	73.75	82.00	9055130055000
0.2362		6.00	6.00	121.00	73.00	82.00	9055130060000
0.2500	1/4 E	6.35	8.00	146.00	96.48	106.00	9055130063500
0.2559		6.50	8.00	146.00	96.25	106.00	9055130065000
0.2677		6.80	8.00	146.00	95.80	106.00	9055130068000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2756		7.00	8.00	146.00	95.50	106.00	9055130070000
0.2953		7.50	8.00	146.00	94.75	106.00	9055130075000
0.3071		7.80	8.00	146.00	94.30	106.00	9055130078000
0.3150		8.00	8.00	146.00	94.00	106.00	9055130080000
0.3346		8.50	10.00	175.00	117.25	130.00	9055130085000
0.3543		9.00	10.00	175.00	116.50	130.00	9055130090000
0.3740		9.50	10.00	175.00	115.75	130.00	9055130095000
0.3748	3/8	9.52	10.00	175.00	115.72	130.00	9055130095200
0.3937		10.00	10.00	175.00	115.00	130.00	9055130100000
0.4016		10.20	12.00	209.00	143.70	159.00	9055130102000
0.4134		10.50	12.00	209.00	143.25	159.00	9055130105000
0.4331		11.00	12.00	209.00	142.50	159.00	9055130110000
0.4528		11.50	12.00	209.00	141.75	159.00	9055130115000
0.4724		12.00	12.00	209.00	141.00	159.00	9055130120000
0.4921		12.50	14.00	233.00	164.25	183.00	9055130125000
0.5000	1/2	12.70	14.00	233.00	163.95	183.00	9055130127000
0.5118		13.00	14.00	233.00	163.50	183.00	9055130130000
0.5315		13.50	14.00	233.00	162.75	183.00	9055130135000
0.5512		14.00	14.00	233.00	162.00	183.00	9055130140000
0.5709		14.50	16.00	260.00	185.25	207.00	9055130145000
0.5906		15.00	16.00	260.00	184.50	207.00	9055130150000
0.6102		15.50	16.00	260.00	183.75	207.00	9055130155000
0.6299		16.00	16.00	260.00	183.00	207.00	9055130160000

RT 150 GG Ratio drills

Series no. **6070**

10xD	RT 150 GG	130°	m7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: ◯

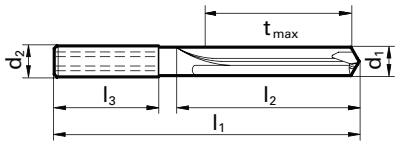
P	Steel	
M	Stainless steel	
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • facet point grinding • close diameter tolerances • very good surface quality of hole • observe optimal coolant pressure

grey cast iron, malleable and spheroidal iron

$t_{max} = l_2 - (1.5 \times d_1)$





Speeds and feeds information on pg. 566

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	91.00	37.50	42.00	9060700030000
0.1220		3.10	6.00	91.00	37.35	42.00	9060700031000
0.1260		3.20	6.00	91.00	37.20	42.00	9060700032000
0.1299		3.30	6.00	91.00	37.05	42.00	9060700033000
0.1339		3.40	6.00	91.00	42.90	48.00	9060700034000
0.1378		3.50	6.00	91.00	42.75	48.00	9060700035000
0.1417		3.60	6.00	91.00	42.60	48.00	9060700036000
0.1457		3.70	6.00	91.00	42.45	48.00	9060700037000
0.1496	#25	3.80	6.00	121.00	71.30	77.00	9060700038000
0.1535		3.90	6.00	121.00	71.15	77.00	9060700039000
0.1575		4.00	6.00	121.00	71.00	77.00	9060700040000
0.1614		4.10	6.00	121.00	70.85	77.00	9060700041000
0.1654		4.20	6.00	121.00	70.70	77.00	9060700042000
0.1693	#18	4.30	6.00	121.00	70.55	77.00	9060700043000
0.1732		4.40	6.00	121.00	70.40	77.00	9060700044000
0.1772	#16	4.50	6.00	121.00	70.25	77.00	9060700045000
0.1850	#13	4.70	6.00	121.00	69.95	77.00	9060700047000
0.1890	#12	4.80	6.00	121.00	74.80	82.00	9060700048000
0.1929		4.90	6.00	121.00	74.65	82.00	9060700049000
0.1969		5.00	6.00	121.00	74.50	82.00	9060700050000
0.2031	13/64	5.16	6.00	121.00	74.26	82.00	9060700051600
0.2165		5.50	6.00	121.00	73.75	82.00	9060700055000
0.2362		6.00	6.00	121.00	73.00	82.00	9060700060000
0.2500	1/4 E	6.35	8.00	146.00	96.48	106.00	9060700063500
0.2559		6.50	8.00	146.00	96.25	106.00	9060700065000
0.2677		6.80	8.00	146.00	95.80	106.00	9060700068000
0.2756		7.00	8.00	146.00	95.50	106.00	9060700070000
0.2811	9/32 K	7.14	8.00	146.00	95.29	106.00	9060700071400
0.2953		7.50	8.00	146.00	94.75	106.00	9060700075000
0.3071		7.80	8.00	146.00	94.30	106.00	9060700078000
0.3126	5/16	7.94	8.00	146.00	94.09	106.00	9060700079400
0.3150		8.00	8.00	146.00	94.00	106.00	9060700080000
0.3280	21/64	8.33	10.00	175.00	117.51	130.00	9060700083300
0.3346		8.50	10.00	175.00	117.25	130.00	9060700085000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3437	11/32	8.73	10.00	175.00	116.91	130.00	9060700087300
0.3543		9.00	10.00	175.00	116.50	130.00	9060700090000
0.3594	23/64	9.13	10.00	175.00	116.31	130.00	9060700091300
0.3740		9.50	10.00	175.00	115.75	130.00	9060700095000
0.3748	3/8	9.52	10.00	175.00	115.72	130.00	9060700095200
0.3937		10.00	10.00	175.00	115.00	130.00	9060700100000
0.4016		10.20	12.00	209.00	143.70	159.00	9060700102000
0.4063	13/32	10.32	12.00	209.00	143.52	159.00	9060700103200
0.4134		10.50	12.00	209.00	143.25	159.00	9060700105000
0.4220	27/64	10.72	12.00	209.00	142.92	159.00	9060700107200
0.4331		11.00	12.00	209.00	142.50	159.00	9060700110000
0.4374	7/16	11.11	12.00	209.00	142.34	159.00	9060700111100
0.4528		11.50	12.00	209.00	141.75	159.00	9060700115000
0.4531	29/64	11.51	12.00	209.00	141.74	159.00	9060700115100
0.4724		12.00	12.00	209.00	141.00	159.00	9060700120000
0.4843	31/64	12.30	14.00	233.00	164.55	183.00	9060700123000
0.4921		12.50	14.00	233.00	164.25	183.00	9060700125000
0.5000	1/2	12.70	14.00	233.00	163.95	183.00	9060700127000
0.5118		13.00	14.00	233.00	163.50	183.00	9060700130000
0.5315		13.50	14.00	233.00	162.75	183.00	9060700135000
0.5512		14.00	14.00	233.00	162.00	183.00	9060700140000
0.5709		14.50	16.00	260.00	185.25	207.00	9060700145000
0.5906		15.00	16.00	260.00	184.50	207.00	9060700150000
0.6102		15.50	16.00	260.00	183.75	207.00	9060700155000
0.6299		16.00	16.00	260.00	183.00	207.00	9060700160000
0.6496		16.50	18.00	284.00	206.25	231.00	9060700165000
0.6693		17.00	18.00	284.00	205.50	231.00	9060700170000
0.6890		17.50	18.00	284.00	204.75	231.00	9060700175000
0.7087		18.00	18.00	284.00	204.00	231.00	9060700180000
0.7283		18.50	20.00	308.00	227.25	255.00	9060700185000
0.7480		19.00	20.00	308.00	226.50	255.00	9060700190000
0.7677		19.50	20.00	308.00	225.75	255.00	9060700195000
0.7874		20.00	20.00	308.00	225.00	255.00	9060700200000

RT 150 GG Ratio drills

Series no. **773**

15xD	RT 150 GN	120°	m7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: ◯

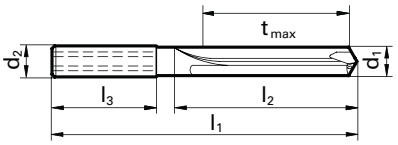
P	Steel	
M	Stainless steel	
K	Cast iron	●
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 5.000 • relieved cone • negative helix • for holes with high alignment accuracy • very good surface quality of hole • observe coolant pressure

aluminum and Al-alloys • Al materials with high Si-content • grey cast iron, malleable and spheroidal iron

$t_{max} = l_2 - (1.5 \times d_1)$





Speeds and feeds information on pg. 526

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1969		5.00	6.00	145.00	97.50	105.00	9007730050000
0.2362		6.00	6.00	145.00	96.00	105.00	9007730060000
0.3150		8.00	8.00	180.00	125.00	137.00	9007730080000
0.3543		9.00	10.00	217.00	156.50	170.00	9007730090000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3937		10.00	10.00	217.00	155.00	170.00	9007730100000
0.4331		11.00	12.00	258.00	188.50	205.00	9007730110000
0.4724		12.00	12.00	258.00	187.00	205.00	9007730120000
0.5512		14.00	14.00	290.00	215.00	236.00	9007730140000

RF100

diver

Drilling
Ramping
Finishing
Roughing
Slotting



3-fluted

- for less powerful machines & less stable clamping conditions
- for turning machines & driven tools
- specially for slotting with smaller milling cutter diameters
- with and without coolant through

4-fluted

- for stable machines & clamping
- high-performance milling with maximum cutting speeds
- with and without coolant through

4-fluted, short

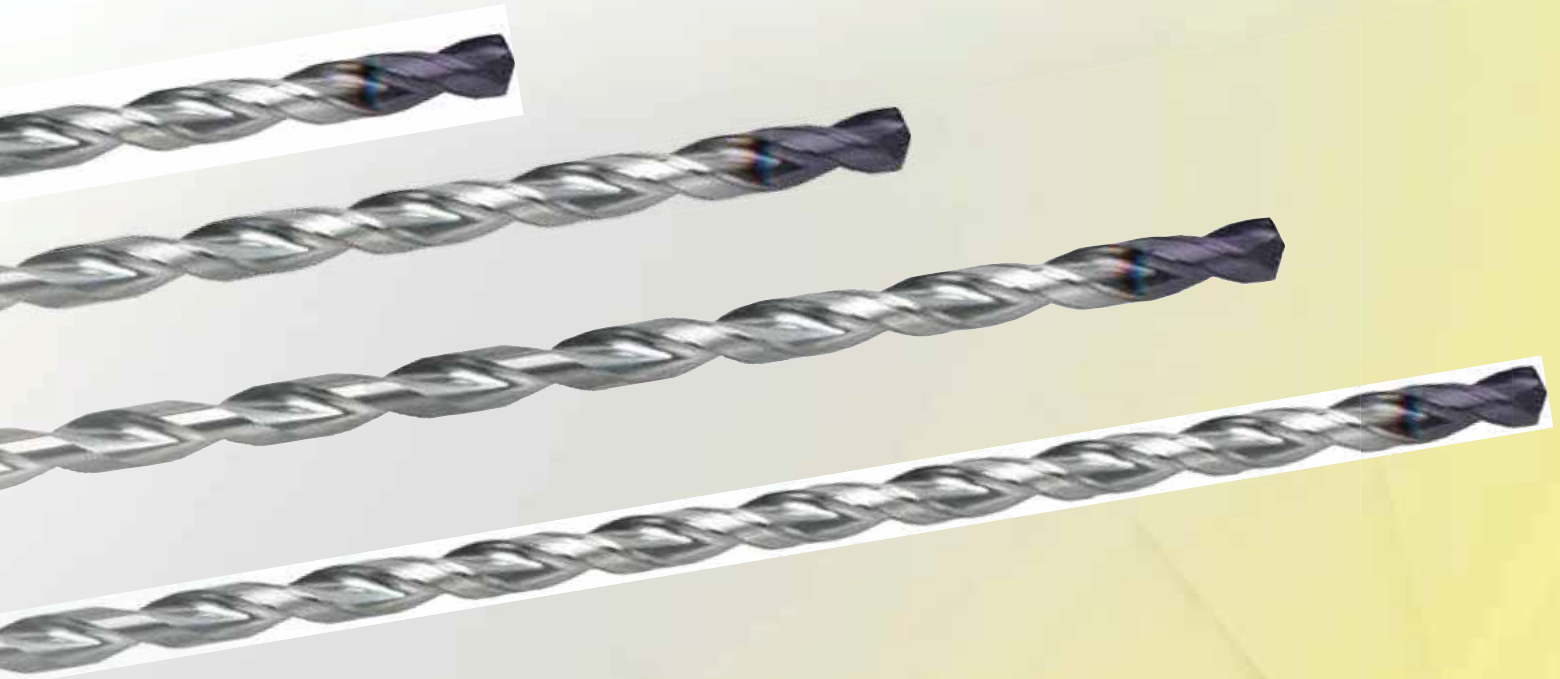
- for more stability when slotting
- up to 25 % higher feed rate
- reduced deflection
- without coolant through

4-fluted, corner radii

- for pocketing and slotting
- multiple radii per diameter
- up to 25 % higher feed rate
- without coolant through



CARBIDE DEEP HOLE DRILLS



RT 100 T deep hole drills

Series no. **6509**

15xD	RT 100 T	135°	h7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

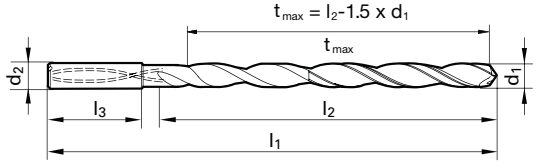
Surface: **A**

P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • main cutting edge form concave • optimized flute design • maximum diameter of coolant ducts • observe coolant pressure

structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials





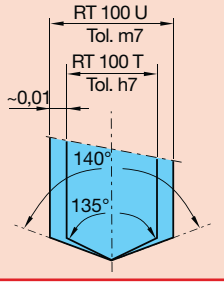
Speeds and feeds information on pg. 570

Sizes listed in red are new additions.

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.000	6.00	95.00	50.50	55.00	9065090030000
0.1220		3.100	6.00	106.00	62.35	67.00	9065090031000
0.1248	1/8	3.170	6.00	106.00	62.25	67.00	9065090031700
0.1260		3.200	6.00	106.00	62.20	67.00	9065090032000
0.1299		3.300	6.00	106.00	62.05	67.00	9065090033000
0.1378		3.500	6.00	116.00	70.75	76.00	9065090035000
0.1406	9/64 #28	3.570	6.00	116.00	70.65	76.00	9065090035700
0.1457		3.700	6.00	116.00	70.45	76.00	9065090037000
0.1496		3.800	6.00	116.00	70.30	76.00	9065090038000
0.1563	5/32	3.970	6.00	116.00	70.05	76.00	9065090039700
0.1575		4.000	6.00	116.00	70.00	76.00	9065090040000
0.1654		4.200	6.00	133.00	86.70	93.00	9065090042000
0.1693		4.300	6.00	133.00	86.55	93.00	9065090043000
0.1720	11/64	4.370	6.00	133.00	86.45	93.00	9065090043700
0.1772		4.500	6.00	133.00	86.25	93.00	9065090045000
0.1811		4.600	6.00	133.00	86.10	93.00	9065090046000
0.1874	3/16	4.760	6.00	133.00	85.86	93.00	9065090047600
0.1890	#12	4.800	6.00	133.00	85.80	93.00	9065090048000
0.1969		5.000	6.00	133.00	85.50	93.00	9065090050000
0.2008		5.100	6.00	150.00	102.35	110.00	9065090051000
0.2031	13/64	5.160	6.00	150.00	102.26	110.00	9065090051600
0.2130		5.410	6.00	150.00	101.89	110.00	9065090054100
0.2165		5.500	6.00	150.00	101.75	110.00	9065090055000
0.2189	7/32	5.560	6.00	150.00	101.66	110.00	9065090055600
0.2205		5.600	6.00	150.00	101.60	110.00	9065090056000
0.2283		5.800	6.00	150.00	101.30	110.00	9065090058000
0.2343	15/64	5.950	6.00	150.00	101.08	110.00	9065090059500
0.2362		6.000	6.00	150.00	101.00	110.00	9065090060000
0.2480		6.300	8.00	167.00	117.55	127.00	9065090063000
0.2500	1/4 E	6.350	8.00	167.00	117.48	127.00	9065090063500
0.2559		6.500	8.00	167.00	117.25	127.00	9065090065000
0.2657	17/64 H	6.750	8.00	167.00	116.88	127.00	9065090067500
0.2677		6.800	8.00	167.00	116.80	127.00	9065090068000
0.2756		7.000	8.00	167.00	116.50	127.00	9065090070000
0.2811	9/32 K	7.140	8.00	183.00	132.29	143.00	9065090071400
0.2953		7.500	8.00	183.00	131.75	143.00	9065090075000
0.2969	19/64	7.540	8.00	183.00	131.69	143.00	9065090075400
0.3071		7.800	8.00	183.00	131.30	143.00	9065090078000
0.3126	5/16	7.940	8.00	183.00	131.09	143.00	9065090079400
0.3150		8.000	8.00	183.00	131.00	143.00	9065090080000
0.3280	21/64	8.330	10.00	204.00	147.51	160.00	9065090083300
0.3346		8.500	10.00	204.00	147.25	160.00	9065090085000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3437	11/32	8.730	10.00	204.00	146.91	160.00	9065090087300
0.3465		8.800	10.00	204.00	146.80	160.00	9065090088000
0.3543		9.000	10.00	204.00	146.50	160.00	9065090090000
0.3594	23/64	9.130	10.00	221.00	163.31	177.00	9065090091300
0.3740		9.500	10.00	221.00	162.75	177.00	9065090095000
0.3748	3/8	9.520	10.00	221.00	162.72	177.00	9065090095200
0.3858		9.800	10.00	221.00	162.30	177.00	9065090098000
0.3906	25/64	9.920	10.00	221.00	162.12	177.00	9065090099200
0.3937		10.000	10.00	221.00	162.00	177.00	9065090100000
0.4016		10.200	12.00	247.00	182.70	198.00	9065090102000
0.4063	13/32	10.320	12.00	247.00	182.52	198.00	9065090103200
0.4134		10.500	12.00	247.00	182.25	198.00	9065090105000
0.4220	27/64	10.720	12.00	247.00	181.92	198.00	9065090107200
0.4331		11.000	12.00	247.00	181.50	198.00	9065090110000
0.4374	7/16	11.110	12.00	263.00	197.34	214.00	9065090111100
0.4531	29/64	11.510	12.00	263.00	196.74	214.00	9065090115100
0.4646		11.800	12.00	263.00	196.30	214.00	9065090118000
0.4689	15/32	11.910	12.00	263.00	196.14	214.00	9065090119100
0.4724		12.000	12.00	263.00	196.00	214.00	9065090120000
0.4843	31/64	12.300	14.00	297.00	229.55	248.00	9065090123000
0.4921		12.500	14.00	297.00	229.25	248.00	9065090125000
0.5000	1/2	12.700	14.00	297.00	228.95	248.00	9065090127000
0.5118		13.000	14.00	297.00	228.50	248.00	9065090130000
0.5157	33/64	13.100	14.00	297.00	228.35	248.00	9065090131000
0.5311	17/32	13.490	14.00	297.00	227.77	248.00	9065090134900
0.5469	35/64	13.890	14.00	297.00	227.17	248.00	9065090138900
0.5512		14.000	14.00	297.00	227.00	248.00	9065090140000
0.5626	0.5625	14.290	16.00	333.00	259.57	281.00	9065090142900
0.5906		15.000	16.00	333.00	258.50	281.00	9065090150000
0.6248	0.625	15.870	16.00	333.00	257.20	281.00	9065090158700
0.6299		16.000	16.00	333.00	257.00	281.00	9065090160000

RT100T deep hole drills must utilize a pilot hole. Deep hole drills must never operate at full speed without support in the pilot hole. Use series 5510, or similar drill with m7 diameter tolerance and 140° point, to drill a minimum of 1xD deep. Then enter the pilot hole with the deep hole drill at max. 300RPM and 20IPM stopping shy of the bottom of the pilot hole. Start high pressure coolant and increase RPM to recommended operating speed. Drill at recommended feed rate to hole depth without pecking. Slow to max. 300RPM before retracting.



RT 100 T deep hole drills

Series no. **6511**



Tool material: **Solid Carbide**

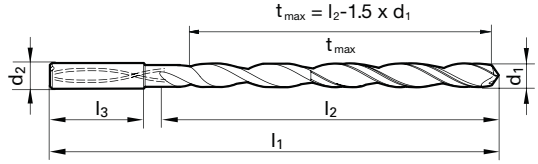
Surface: **A**

P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • main cutting edge form concave • optimized flute design • maximum diameter of coolant ducts • observe coolant pressure

structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials





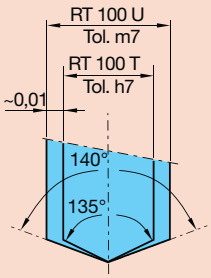
Speeds and feeds information on pg. 571

Sizes listed in red are new additions.

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.000	6.00	110.00	65.50	70.00	9065110030000
0.1220		3.100	6.00	123.00	78.35	83.00	9065110031000
0.1248	1/8	3.170	6.00	123.00	78.25	83.00	9065110031700
0.1260		3.200	6.00	123.00	78.20	83.00	9065110032000
0.1299		3.300	6.00	123.00	78.05	83.00	9065110033000
0.1378		3.500	6.00	136.00	90.75	96.00	9065110035000
0.1406	9/64 #28	3.570	6.00	136.00	90.65	96.00	9065110035700
0.1457		3.700	6.00	136.00	90.45	96.00	9065110037000
0.1496		3.800	6.00	136.00	90.30	96.00	9065110038000
0.1563	5/32	3.970	6.00	136.00	90.05	96.00	9065110039700
0.1575		4.000	6.00	136.00	90.00	96.00	9065110040000
0.1654		4.200	6.00	158.00	111.70	118.00	9065110042000
0.1693		4.300	6.00	158.00	111.55	118.00	9065110043000
0.1720	11/64	4.370	6.00	158.00	111.45	118.00	9065110043700
0.1772		4.500	6.00	158.00	111.25	118.00	9065110045000
0.1811		4.600	6.00	158.00	111.10	118.00	9065110046000
0.1874	3/16	4.760	6.00	158.00	110.86	118.00	9065110047600
0.1890	#12	4.800	6.00	158.00	110.80	118.00	9065110048000
0.1969		5.000	6.00	158.00	110.50	118.00	9065110050000
0.2008		5.100	6.00	180.00	132.35	140.00	9065110051000
0.2031	13/64	5.160	6.00	180.00	132.26	140.00	9065110051600
0.2130	#3	5.410	6.00	180.00	131.89	140.00	9065110054100
0.2165		5.500	6.00	180.00	131.75	140.00	9065110055000
0.2189	7/32	5.560	6.00	180.00	131.66	140.00	9065110055600
0.2283		5.800	6.00	180.00	131.30	140.00	9065110058000
0.2343	15/64	5.950	6.00	180.00	131.08	140.00	9065110059500
0.2362		6.000	6.00	180.00	131.00	140.00	9065110060000
0.2500	1/4 E	6.350	8.00	202.00	152.48	162.00	9065110063500
0.2559		6.500	8.00	202.00	152.25	162.00	9065110065000
0.2657	17/64 H	6.750	8.00	202.00	151.88	162.00	9065110067500
0.2677		6.800	8.00	202.00	151.80	162.00	9065110068000
0.2756		7.000	8.00	202.00	151.50	162.00	9065110070000
0.2811	9/32 K	7.140	8.00	223.00	172.29	183.00	9065110071400
0.2953		7.500	8.00	223.00	171.75	183.00	9065110075000
0.2969	19/64	7.540	8.00	223.00	171.69	183.00	9065110075400
0.3071		7.800	8.00	223.00	171.30	183.00	9065110078000
0.3126	5/16	7.940	8.00	223.00	171.09	183.00	9065110079400
0.3150		8.000	8.00	223.00	171.00	183.00	9065110080000
0.3280	21/64	8.330	10.00	249.00	192.51	205.00	9065110083300
0.3346		8.500	10.00	249.00	192.25	205.00	9065110085000
0.3437	11/32	8.730	10.00	249.00	191.91	205.00	9065110087300
0.3465		8.800	10.00	249.00	191.80	205.00	9065110088000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3543		9.000	10.00	249.00	191.50	205.00	9065110090000
0.3594	23/64	9.130	10.00	271.00	213.31	227.00	9065110091300
0.3748	3/8	9.520	10.00	271.00	212.72	227.00	9065110095200
0.3906	25/64	9.920	10.00	271.00	212.12	227.00	9065110099200
0.3937		10.000	10.00	271.00	212.00	227.00	9065110100000
0.4016		10.200	12.00	302.00	237.70	253.00	9065110102000
0.4063	13/32	10.320	12.00	302.00	237.52	253.00	9065110103200
0.4134		10.500	12.00	302.00	237.25	253.00	9065110105000
0.4220	27/64	10.720	12.00	302.00	236.92	253.00	9065110107200
0.4330		11.000	12.00	302.00	236.50	253.00	9065110110000
0.4374	7/16	11.110	12.00	323.00	257.34	274.00	9065110111100
0.4531	29/64	11.510	12.00	323.00	256.74	274.00	9065110115100
0.4646		11.800	12.00	323.00	256.30	274.00	9065110118000
0.4689	15/32	11.910	12.00	323.00	256.14	274.00	9065110119100
0.4724		12.000	12.00	323.00	256.00	274.00	9065110120000
0.4843	31/64	12.300	14.00	367.00	299.55	318.00	9065110123000
0.4921		12.500	14.00	367.00	299.25	318.00	9065110125000
0.5000	1/2	12.700	14.00	367.00	298.95	318.00	9065110127000
0.5118		13.000	14.00	367.00	298.50	318.00	9065110130000
0.5157	33/64	13.100	14.00	367.00	298.35	318.00	9065110131000
0.5311	17/32	13.490	14.00	367.00	297.77	318.00	9065110134900
0.5469	35/64	13.890	14.00	367.00	297.17	318.00	9065110138900
0.5512		14.000	14.00	367.00	297.00	318.00	9065110140000
0.5626	0.5625	14.290	16.00	413.00	339.57	361.00	9065110142900
0.5906		15.000	16.00	413.00	338.50	361.00	9065110150000
0.6248	0.625	15.870	16.00	413.00	337.20	361.00	9065110158700
0.6299		16.000	16.00	413.00	337.00	361.00	9065110160000

RT100T deep hole drills must utilize a pilot hole. Deep hole drills must never operate at full speed without support in the pilot hole. Use series 5510, or similar drill with m7 diameter tolerance and 140° point, to drill a minimum of 1xD deep. Then enter the pilot hole with the deep hole drill at max. 300RPM and 20IPM stopping shy of the bottom of the pilot hole. Start high pressure coolant and increase RPM to recommended operating speed. Drill at recommended feed rate to hole depth without pecking. Slow to max. 300RPM before retracting.



RT 100 T deep hole drills

Series no. **6512**

25xD	RT 100 T	135°	h7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: **A**

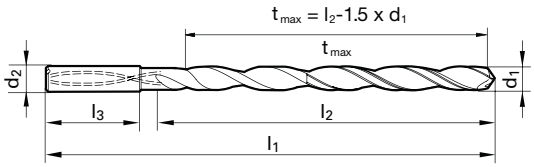
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • main cutting edge form concave • optimized flute design • maximum diameter of coolant ducts • observe coolant pressure

structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials





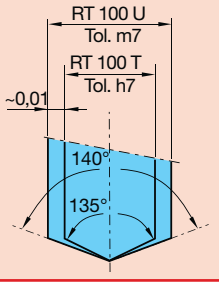
Speeds and feeds information on pg. 571

Sizes listed in red are new additions.

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	125.00	80.50	85.00	9065120030000
0.1220		3.10	6.00	141.00	96.35	101.00	9065120031000
0.1248	1/8	3.18	6.00	141.00	96.23	101.00	9065120031700
0.1260		3.20	6.00	141.00	96.20	101.00	9065120032000
0.1299		3.30	6.00	141.00	96.05	101.00	9065120033000
0.1378		3.50	6.00	156.00	110.75	116.00	9065120035000
0.1406	9/64 #28	3.57	6.00	156.00	110.65	116.00	9065120035700
0.1457		3.70	6.00	156.00	110.45	116.00	9065120037000
0.1496		3.80	6.00	156.00	110.30	116.00	9065120038000
0.1563	5/32	3.97	6.00	156.00	110.05	116.00	9065120039700
0.1575		4.00	6.00	156.00	110.00	116.00	9065120040000
0.1654		4.20	6.00	183.00	136.70	143.00	9065120042000
0.1693		4.30	6.00	183.00	136.55	143.00	9065120043000
0.1720	11/64	4.37	6.00	183.00	136.45	143.00	9065120043700
0.1772		4.50	6.00	183.00	136.25	143.00	9065120045000
0.1811		4.60	6.00	183.00	136.10	143.00	9065120046000
0.1874	3/16	4.76	6.00	183.00	135.86	143.00	9065120047600
0.1890	#12	4.80	6.00	183.00	135.80	143.00	9065120048000
0.1969		5.00	6.00	183.00	135.50	143.00	9065120050000
0.2008		5.10	6.00	210.00	162.35	170.00	9065120051000
0.2031	13/64	5.16	6.00	210.00	162.26	170.00	9065120051600
0.2130	#3	5.41	6.00	210.00	161.89	170.00	9065120054100
0.2165		5.50	6.00	210.00	161.75	170.00	9065120055000
0.2189	7/32	5.56	6.00	210.00	161.66	170.00	9065120055600
0.2283		5.80	6.00	210.00	161.30	170.00	9065120058000
0.2343	15/64	5.95	6.00	210.00	161.08	170.00	9065120059500
0.2362		6.00	6.00	210.00	161.00	170.00	9065120060000
0.2480		6.30	8.00	237.00	187.55	197.00	9065120063000
0.2500	1/4 E	6.35	8.00	237.00	187.48	197.00	9065120063500
0.2559		6.50	8.00	237.00	187.25	197.00	9065120065000
0.2657	17/64 H	6.75	8.00	237.00	186.88	197.00	9065120067500
0.2677		6.80	8.00	237.00	186.80	197.00	9065120068000
0.2756		7.00	8.00	237.00	186.50	197.00	9065120070000
0.2811	9/32 K	7.14	8.00	263.00	212.29	223.00	9065120071400
0.2953		7.50	8.00	263.00	211.75	223.00	9065120075000
0.2969	19/64	7.54	8.00	263.00	211.69	223.00	9065120075400
0.3125	5/16	7.94	8.00	263.00	211.09	223.00	9065120079400
0.3150		8.00	8.00	263.00	211.00	223.00	9065120080000
0.3280	21/64	8.33	10.00	294.00	237.51	250.00	9065120083300
0.3346		8.50	10.00	294.00	237.25	250.00	9065120085000
0.3437	11/32	8.73	10.00	294.00	236.91	250.00	9065120087300
0.3465		8.80	10.00	294.00	236.80	250.00	9065120088000

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3543		9.00	10.00	294.00	236.50	250.00	9065120090000
0.3594	23/64	9.13	10.00	321.00	263.31	277.00	9065120091300
0.3750	3/8	9.52	10.00	321.00	262.72	277.00	9065120095200
0.3906	25/64	9.92	10.00	321.00	262.12	277.00	9065120099200
0.3937		10.00	10.00	321.00	262.00	277.00	9065120100000
0.4063	13/32	10.32	12.00	359.00	294.52	310.00	9065120103200
0.4220	27/64	10.72	12.00	359.00	293.92	310.00	9065120107200
0.4331		11.00	12.00	359.00	293.50	310.00	9065120110000
0.4374	7/16	11.11	12.00	386.00	320.34	337.00	9065120111100
0.4531	29/64	11.51	12.00	386.00	319.74	337.00	9065120115100
0.4689	15.3200	11.91	12.00	386.00	319.14	337.00	9065120119100
0.4724		12.00	12.00	386.00	319.00	337.00	9065120120000
0.4843		12.30	14.00	437.00	369.55	388.00	9065120123000
0.5000		12.70	14.00	437.00	368.95	388.00	9065120127000
0.5118		13.00	14.00	437.00	368.50	388.00	9065120130000
0.5157		13.10	14.00	437.00	368.35	388.00	9065120131000
0.5311	17/32	13.49	14.00	437.00	367.77	388.00	9065120134900
0.5469	35/64	13.89	14.00	437.00	367.17	388.00	9065120138900
0.5512		14.00	14.00	437.00	367.00	388.00	9065120140000
0.5626	9/16	14.29	16.00	493.00	419.57	441.00	9065120142900
0.5906		15.00	16.00	493.00	418.50	441.00	9065120150000
0.6248	5/8	15.87	16.00	493.00	417.20	441.00	9065120158700
0.6299		16.00	16.00	493.00	417.00	441.00	9065120160000

RT100T deep hole drills must utilize a pilot hole. Deep hole drills must never operate at full speed without support in the pilot hole. Use series 5510, or similar drill with m7 diameter tolerance and 140° point, to drill a minimum of 1xD deep. Then enter the pilot hole with the deep hole drill at max. 300RPM and 20IPM stopping shy of the bottom of the pilot hole. Start high pressure coolant and increase RPM to recommended operating speed. Drill at recommended feed rate to hole depth without pecking. Slow to max. 300RPM before retracting.



RT 100 T deep hole drills

Series no. **6513**

30xD	RT 100 T	135°	h7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

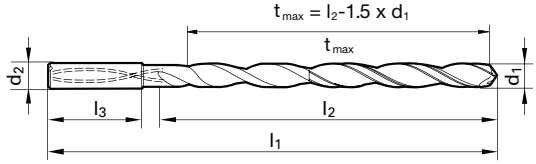
Surface: **A**

P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • main cutting edge form concave • optimized flute design • maximum diameter of coolant ducts • observe coolant pressure

structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials





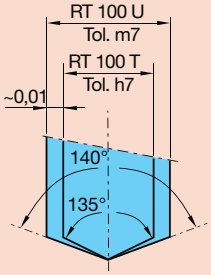
Speeds and feeds information on pg. 572

Sizes listed in red are new additions.

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	140.00	95.50	100.00	9065130030000
0.1220		3.10	6.00	158.00	113.35	118.00	9065130031000
0.1248	1/8	3.17	6.00	158.00	113.25	118.00	9065130031700
0.1260		3.20	6.00	158.00	113.20	118.00	9065130032000
0.1299		3.30	6.00	158.00	113.05	118.00	9065130033000
0.1378		3.50	6.00	176.00	130.75	136.00	9065130035000
0.1406	9/64 #28	3.57	6.00	176.00	130.65	136.00	9065130035700
0.1457		3.70	6.00	176.00	130.45	136.00	9065130037000
0.1496		3.80	6.00	176.00	130.30	136.00	9065130038000
0.1563	5/32	3.97	6.00	176.00	130.05	136.00	9065130039700
0.1575		4.00	6.00	176.00	130.00	136.00	9065130040000
0.1654		4.20	6.00	208.00	161.70	168.00	9065130042000
0.1720	11/64	4.37	6.00	208.00	161.45	168.00	9065130043700
0.1772		4.50	6.00	208.00	161.25	168.00	9065130045000
0.1874	3/16	4.76	6.00	208.00	160.86	168.00	9065130047600
0.1969		5.00	6.00	208.00	160.50	168.00	9065130050000
0.2008		5.10	6.00	240.00	192.35	200.00	9065130051000
0.2031	13/64	5.16	6.00	240.00	192.26	200.00	9065130051600
0.2130	#3	5.41	6.00	240.00	191.89	200.00	9065130054100
0.2165		5.50	6.00	240.00	191.75	200.00	9065130055000
0.2189	7/32	5.56	6.00	240.00	191.66	200.00	9065130055600
0.2343	15/64	5.95	6.00	240.00	191.08	200.00	9065130059500
0.2362		6.00	6.00	240.00	191.00	200.00	9065130060000
0.2480		6.30	8.00	272.00	222.55	232.00	9065130063000
0.2500	1/4 E	6.35	8.00	272.00	222.48	232.00	9065130063500
0.2559		6.50	8.00	272.00	222.25	232.00	9065130065000
0.2657	17/64 H	6.75	8.00	272.00	221.88	232.00	9065130067500
0.2677		6.80	8.00	272.00	221.80	232.00	9065130068000
0.2756		7.00	8.00	272.00	221.50	232.00	9065130070000
0.2811	9/32 K	7.14	8.00	303.00	252.29	263.00	9065130071400
0.2953		7.50	8.00	303.00	251.75	263.00	9065130075000
0.2969	19/64	7.54	8.00	303.00	251.69	263.00	9065130075400
0.3126	5/16	7.94	8.00	303.00	251.09	263.00	9065130079400
0.3150		8.00	8.00	303.00	251.00	263.00	9065130080000
0.3280	21/64	8.33	10.00	339.00	282.51	295.00	9065130083300
0.3346		8.50	10.00	339.00	282.25	295.00	9065130085000
0.3437	11/32	8.73	10.00	339.00	281.91	295.00	9065130087300
0.3465		8.80	10.00	339.00	281.80	295.00	9065130088000
0.3543		9.00	10.00	339.00	281.50	295.00	9065130090000
0.3594	23/64	9.13	10.00	371.00	313.31	327.00	9065130091300
0.3748	3/8	9.52	10.00	371.00	312.72	327.00	9065130095200

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.3906	25/64	9.92	10.00	371.00	312.12	327.00	9065130099200
0.3937		10.00	10.00	371.00	312.00	327.00	9065130100000
0.4063	13/32	10.32	12.00	412.00	347.52	363.00	9065130103200
0.4220	27/64	10.72	12.00	412.00	346.92	363.00	9065130107200
0.4331		11.00	12.00	412.00	346.50	363.00	9065130110000
0.4374	7/16	11.11	12.00	443.00	377.34	394.00	9065130111100
0.4531	29/64	11.51	12.00	443.00	376.74	394.00	9065130115100
0.4689	15/32	11.91	12.00	443.00	376.14	394.00	9065130119100
0.4724		12.00	12.00	443.00	376.00	394.00	9065130120000
0.4843		12.30	14.00	507.00	439.55	458.00	9065130123000
0.5000		12.70	14.00	507.00	438.95	458.00	9065130127000
0.5118		13.00	14.00	507.00	438.50	458.00	9065130130000
0.5157		13.10	14.00	507.00	438.35	458.00	9065130131000
0.5311	17/32	13.49	14.00	507.00	437.77	458.00	9065130134900
0.5469	35/64	13.89	14.00	507.00	437.17	458.00	9065130138900
0.5512		14.00	14.00	507.00	437.00	458.00	9065130140000

RT100T deep hole drills must utilize a pilot hole. Deep hole drills must never operate at full speed without support in the pilot hole. Use series 5510, or similar drill with m7 diameter tolerance and 140° point, to drill a minimum of 1xD deep. Then enter the pilot hole with the deep hole drill at max. 300RPM and 20IPM stopping shy of the bottom of the pilot hole. Start high pressure coolant and increase RPM to recommended operating speed. Drill at recommended feed rate to hole depth without pecking. Slow to max. 300RPM before retracting.



RT 100 T deep hole drills

Series no. **6514**

40xD	RT 100 T	135°	h7		HA	R
Cutting depth	Type	Point angle	Tolerance on Ø	Internal coolant	Shank form	Cutting direction

Tool material: **Solid Carbide**

Surface: **A**

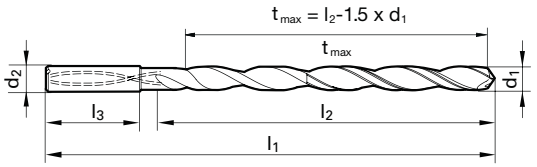
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 3.000 • relieved cone • main cutting edge form concave • optimized flute design • maximum diameter of coolant ducts • observe coolant pressure

structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • stainless steels • cast materials





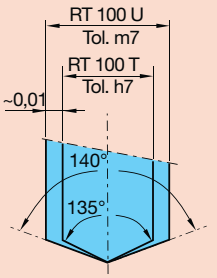
Speeds and feeds information on pg. 572

Sizes listed in red are new additions.

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.1181		3.00	6.00	170.00	125.50	130.00	9065140030000
0.1220		3.10	6.00	193.00	148.35	153.00	9065140031000
0.1248	1/8	3.17	6.00	193.00	148.25	153.00	9065140031700
0.1260		3.20	6.00	193.00	148.20	153.00	9065140032000
0.1299		3.30	6.00	193.00	148.05	153.00	9065140033000
0.1378		3.50	6.00	193.00	147.75	153.00	9065140035000
0.1406	9/64 #28	3.57	6.00	216.00	170.65	176.00	9065140035700
0.1496		3.80	6.00	216.00	170.30	176.00	9065140038000
0.1563	5/32	3.97	6.00	216.00	170.05	176.00	9065140039700
0.1575		4.00	6.00	216.00	170.00	176.00	9065140040000
0.1654		4.20	6.00	238.00	191.70	198.00	9065140042000
0.1720	11/64	4.37	6.00	238.00	191.45	198.00	9065140043700
0.1772		4.50	6.00	238.00	191.25	198.00	9065140045000
0.1874	3/16	4.76	6.00	258.00	210.86	218.00	9065140047600
0.1969		5.00	6.00	258.00	210.50	218.00	9065140050000
5.1000		5.10	6.00	280.00	232.35	240.00	9065140051000
0.2031	13/64	5.16	6.00	280.00	232.26	240.00	9065140051600
0.2129		5.41	6.00	280.00	231.89	240.00	9065140054100
0.2165		5.50	6.00	280.00	231.75	240.00	9065140055000
0.2189	7/32	5.56	6.00	300.00	251.66	260.00	9065140055600
0.2343	15/64	5.95	6.00	300.00	251.08	260.00	9065140059500
0.2362		6.00	6.00	300.00	251.00	260.00	9065140060000
0.2480		6.30	8.00	322.00	272.55	282.00	9065140063000
0.2500	1/4 E	6.35	8.00	322.00	272.48	282.00	9065140063500

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	t_{max} mm	l2 mm	EDP #
0.2559		6.50	8.00	322.00	272.25	282.00	9065140065000
0.2657	17/64 H	6.75	8.00	342.00	291.88	302.00	9065140067500
0.2677		6.80	8.00	342.00	291.80	302.00	9065140068000
0.2756		7.00	8.00	342.00	291.50	302.00	9065140070000
0.2811	9/32 K	7.14	8.00	363.00	312.29	323.00	9065140071400
0.2953		7.50	8.00	363.00	311.75	323.00	9065140075000
0.2969	19/64	7.54	8.00	383.00	331.69	343.00	9065140075400
0.3120	5/16	7.94	8.00	383.00	331.09	343.00	9065140079400
0.3150		8.00	8.00	383.00	331.00	343.00	9065140080000
0.3346		8.50	10.00	409.00	352.25	365.00	9065140085000
0.3543		9.00	10.00	429.00	372.50	386.00	9065140090000
0.3937		10.00	10.00	471.00	412.00	427.00	9065140100000

RT100T deep hole drills must utilize a pilot hole. Deep hole drills must never operate at full speed without support in the pilot hole. Use series 5510, or similar drill with m7 diameter tolerance and 140° point, to drill a minimum of 1xD deep. Then enter the pilot hole with the deep hole drill at max. 300RPM and 20IPM stopping shy of the bottom of the pilot hole. Start high pressure coolant and increase RPM to recommended operating speed. Drill at recommended feed rate to hole depth without pecking. Slow to max. 300RPM before retracting.



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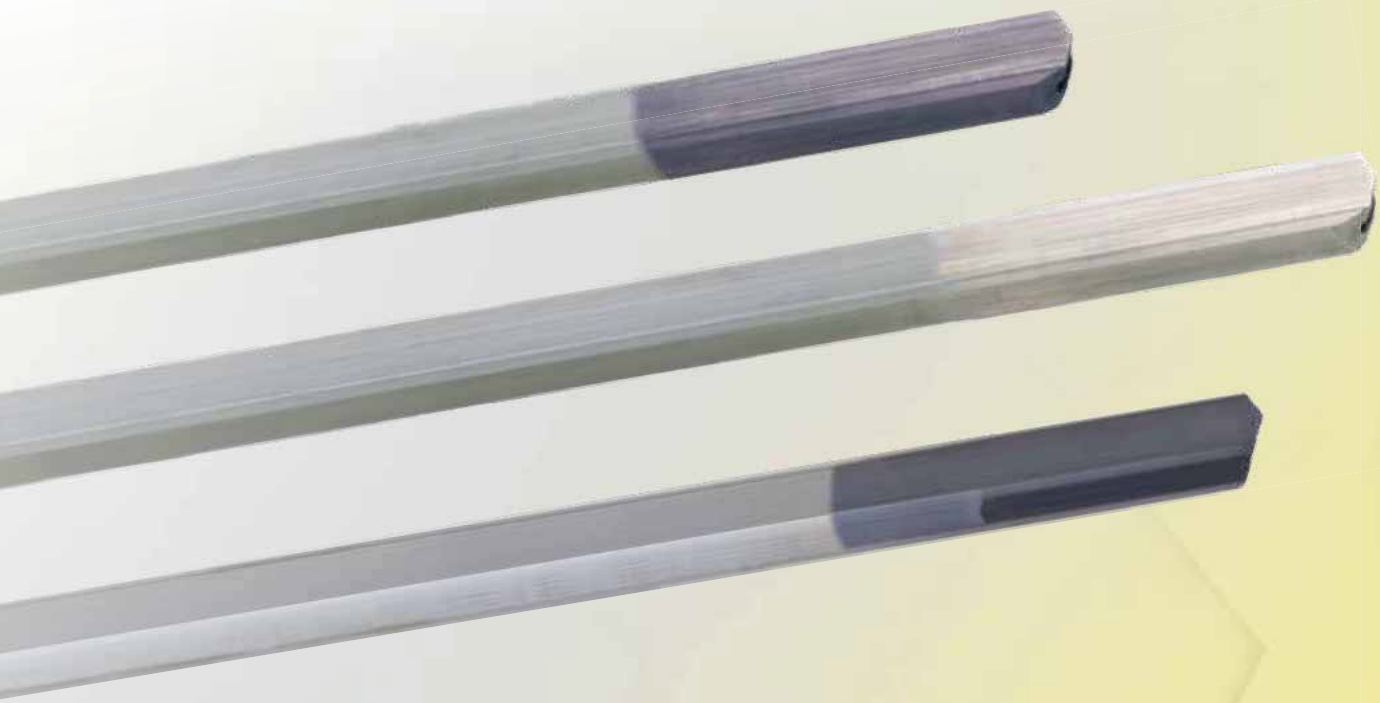
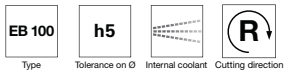


EB 100 solid carbide gun drills



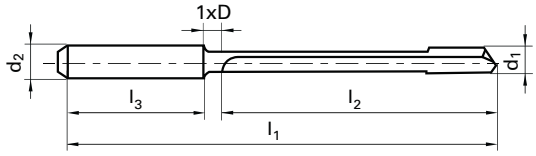
Tool material **Solid Carbide**

Surface a

P	Steel	●
M	Stainless steel	●
K	Cast iron	○
N	Aluminum	
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

head form G • solid carbide shank with tapered MQL shank end from d1 = 3 mm / d2 = 6 mm





Series 5646 - 25xD *Speeds and feeds on pg. 560*

Diameter (d1) inch	wire/ltr		mm	d2 mm	l1 mm	l2 mm	EDP #
0.0394			1.00	3.00	60.00	30.00	9056460010000
0.0591			1.50	4.00	80.00	50.00	9056460015000
0.0626	1/16		1.59	4.00	80.00	50.00	9056460015900
0.0780	5/64		1.98	4.00	100.00	70.00	9056460019800
0.0787			2.00	4.00	100.00	70.00	9056460020000
0.0937	3/32		2.38	4.00	100.00	70.00	9056460023800
0.0984			2.50	4.00	115.00	85.00	9056460025000
0.1094	7/64		2.78	4.00	115.00	85.00	9056460027800
0.1181			3.00	6.00	145.00	105.00	9056460030000
0.1248	1/8		3.18	6.00	145.00	105.00	9056460031700
0.1378			3.50	6.00	145.00	105.00	9056460035000
0.1406	9/64	#28	3.57	6.00	160.00	120.00	9056460035700
0.1563	5/32		3.97	6.00	160.00	120.00	9056460039700
0.1575			4.00	6.00	160.00	120.00	9056460040000
0.1720	11/64		4.37	6.00	220.00	180.00	9056460043700
0.1874	3/16		4.76	6.00	220.00	180.00	9056460047600
0.1969			5.00	6.00	220.00	180.00	9056460050000
0.2031	13/64		5.16	6.00	220.00	180.00	9056460051600
0.2189	7/32		5.56	6.00	220.00	180.00	9056460055600
0.2343	15/64		5.95	6.00	220.00	180.00	9056460059500
0.2362			6.00	6.00	220.00	180.00	9056460060000
0.2500	1/4	E	6.35	8.00	260.00	210.00	9056460063500
0.2657	17/64	H	6.75	8.00	260.00	210.00	9056460067500
0.2756			7.00	8.00	260.00	210.00	9056460070000
0.2811	9/32	K	7.14	8.00	285.00	240.00	9056460071400
0.2969	19/64		7.54	8.00	285.00	240.00	9056460075400
0.3125	5/16		7.94	8.00	285.00	240.00	9056460079400
0.3150			8.00	8.00	285.00	240.00	9056460080000
0.3543			9.00	10.00	350.00	300.00	9056460090000
0.3937			10.00	10.00	350.00	300.00	9056460100000
0.4331			11.00	12.00	420.00	360.00	9056460110000
0.4724			12.00	12.00	420.00	360.00	9056460120000

Series 5647 - 50xD *Speeds and feeds on pg. 561*

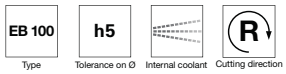
Diameter (d1) inch	wire/ltr		mm	d2 mm	l1 mm	l2 mm	EDP #
0.0394			1.00	3.00	85.00	55.00	9056470010000
0.0591			1.50	4.00	120.00	85.00	9056470015000
0.0626	1/16		1.59	4.00	120.00	85.00	9056470015900
0.0780	5/64		1.98	4.00	160.00	130.00	9056470019800
0.0787			2.00	4.00	160.00	130.00	9056470020000
0.0937	3/32		2.38	4.00	160.00	130.00	9056470023800
0.0984			2.50	4.00	185.00	155.00	9056470025000
0.1094	7/64		2.78	4.00	185.00	155.00	9056470027800
0.1181			3.00	6.00	230.00	190.00	9056470030000
0.1248	1/8		3.18	6.00	230.00	190.00	9056470031700
0.1378			3.50	6.00	230.00	190.00	9056470035000
0.1406	9/64	#28	3.57	6.00	260.00	220.00	9056470035700
0.1563	5/32		3.97	6.00	260.00	220.00	9056470039700
0.1575			4.00	6.00	260.00	220.00	9056470040000
0.1720	11/64		4.37	6.00	370.00	330.00	9056470043700
0.1874	3/16		4.76	6.00	370.00	330.00	9056470047600
0.1969			5.00	6.00	370.00	330.00	9056470050000
0.2031	13/64		5.16	6.00	370.00	330.00	9056470051600
0.2189	7/32		5.56	6.00	370.00	330.00	9056470055600
0.2343	15/64		5.95	6.00	370.00	330.00	9056470059500
0.2362			6.00	6.00	370.00	330.00	9056470060000
0.2500	1/4	E	6.35	8.00	430.00	385.00	9056470063500
0.2657	17/64	H	6.75	8.00	430.00	385.00	9056470067500
0.2756			7.00	8.00	430.00	385.00	9056470070000
0.2811	9/32	K	7.14	8.00	485.00	440.00	9056470071400
0.2969	19/64		7.54	8.00	485.00	440.00	9056470075400
0.3125	5/16		7.94	8.00	485.00	440.00	9056470079400
0.3150			8.00	8.00	485.00	440.00	9056470080000

Tech Tip:

Gun drills hold location to precise tolerances in extremely deep hole applications. Conventional gun drills consist of a steel body and driver with a brazed carbide head for extended tool life and performance. When applying standard gun drills some basic steps should be observed:

- If you're not drilling on a gun drilling machine supported by a bushing, you must drill a pilot hole using a drill with an m7 tolerance. Our series 5510 drill is suitable. The procedure is similar to the RT100T drills. Enter the pilot hole at low RPM and feed rate (example: 200 RPM at 20 in/min)
- Gun drills for drilling depths over 40xD should enter pilot hole in a counterclockwise direction.
- Continuous drilling without pecking is required.
- Switch off coolant supply after reaching maximum drilling depth. • Use a rapid withdrawal with a stationary spindle.

EB 100 solid carbide gun drills



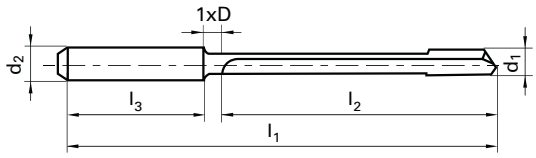
Tool material **Solid Carbide**

Surface **a**

P	Steel	●
M	Stainless steel	●
K	Cast iron	○
N	Aluminum	
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

head form G • solid carbide shank with tapered MQL shank end from d1 = 3 mm / d2 = 6 mm





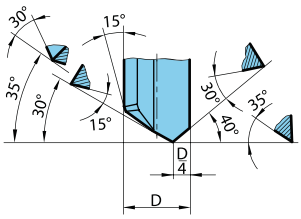
Speeds and feeds information on pg.

Series 5648 - 75xD *Speeds and feeds on pg. 561*

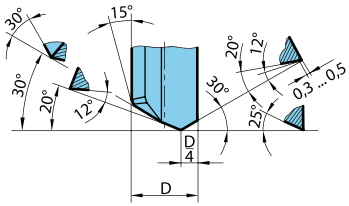
Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	l2 mm	EDP #
0.0394		1.00	3.00	110.00	80.00	9056480010000
0.0591		1.50	4.00	155.00	125.00	9056480015000
0.0626	1/16	1.59	4.00	155.00	125.00	9056480015900
0.0780	5/64	1.98	4.00	220.00	190.00	9056480019800
0.0787		2.00	4.00	220.00	190.00	9056480020000
0.0937	3/32	2.38	4.00	220.00	190.00	9056480023800
0.0984		2.50	4.00	255.00	220.00	9056480025000
0.1094	7/64	2.78	4.00	255.00	220.00	9056480027800
0.1181		3.00	6.00	320.00	280.00	9056480030000
0.1248	1/8	3.18	6.00	320.00	280.00	9056480031700
0.1378		3.50	6.00	320.00	280.00	9056480035000
0.1406	9/64 #28	3.57	6.00	360.00	320.00	9056480035700
0.1563	5/32	3.97	6.00	360.00	320.00	9056480039700
0.1575		4.00	6.00	360.00	320.00	9056480040000
0.1720	11/64	4.37	6.00	525.00	485.00	9056480043700
0.1874	3/16	4.76	6.00	525.00	485.00	9056480047600
0.1969		5.00	6.00	525.00	485.00	9056480050000
0.2031	13/64	5.16	6.00	525.00	485.00	9056480051600
0.2189	7/32	5.56	6.00	525.00	485.00	9056480055600
0.2343	15/64	5.95	6.00	525.00	485.00	9056480059500
0.2362		6.00	6.00	525.00	485.00	9056480060000

EB 100
Standard point grinds
(special point grinds on request)

Ø 2...4.00 mm

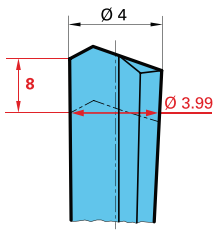


Ø > 4.01...20 mm



EB 100
Back taper ratio
1:800 (standard)

(dimensions in mm)



Tech Tip:

Gun drills hold location to precise tolerances in extremely deep hole applications. Conventional gun drills consist of a steel body and driver with a brazed carbide head for extended tool life and performance. When applying standard gun drills some basic steps should be observed:

- If you're not drilling on a gun drilling machine supported by a bushing, you must drill a pilot hole using a drill with an m7 tolerance. Our series 5510 drill is suitable. The procedure is similar to the RT100T drills. Enter the pilot hole at low RPM and feed rate (example: 200 RPM at 20 in/min)
- Gun drills for drilling depths over 40xD should enter pilot hole in a counterclockwise direction.
- Continuous drilling without pecking is required.
- Switch off coolant supply after reaching maximum drilling depth. • Use a rapid withdrawal with a stationary spindle.

EB 100 carbide gun drill w/ steel shanks

EB 100 (Type) | h5 (Tolerance on Ø) | Internal coolant | R (Cutting direction)

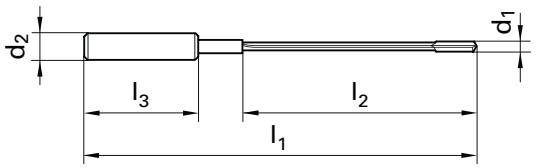
Tool material: **Solid Carbide**

Surface: ○

P	Steel	○
M	Stainless steel	○
K	Cast iron	○
N	Aluminum	●
S	Titanium alloys	●
H	Hardened steel	○

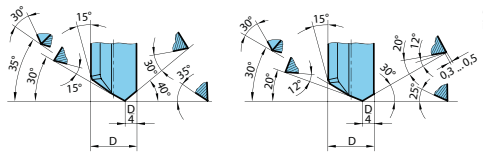
●=Optimal
○=Limited

flute lengths of 45, 80, 120 & 160 mm • head form G

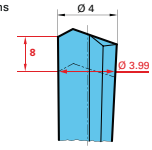


EB 100
Standard point grinds
(special point grinds on request)

Ø 2...4.00 mm | Ø > 4.01...20 mm



EB 100
Back taper ratio
(dimensions in mm)
1:800 (standard)





Speeds and feeds information on pg. 548

Series 5024 - 45mm flute length

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	l2 mm	EDP #
0.0472		1.20	4.00	90.00	45.00	9050240012000
0.0591		1.50	4.00	90.00	45.00	9050240015000
0.0626	1/16	1.59	4.00	90.00	45.00	9050240015900
0.0630		1.60	4.00	90.00	45.00	9050240016000
0.0780	5/64	1.98	4.00	90.00	45.00	9050240019800
0.0787		2.00	4.00	90.00	45.00	9050240020000
0.0984		2.50	10.00	100.00	45.00	9050240025000
0.1063		2.70	10.00	100.00	45.00	9050240027000
0.1181		3.00	10.00	100.00	45.00	9050240030000
0.1260		3.20	10.00	100.00	45.00	9050240032000

Series 5020 - 80mm flute length

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	l2 mm	EDP #
0.0472		1.20	4.00	125.00	80.00	9050200012000
0.0591		1.50	4.00	125.00	80.00	9050200015000
0.0626	1/16	1.59	4.00	125.00	80.00	9050200015900
0.0630		1.60	4.00	125.00	80.00	9050200016000
0.0780	5/64	1.98	4.00	125.00	80.00	9050200019800
0.0787		2.00	4.00	125.00	80.00	9050200020000
0.0984		2.50	10.00	135.00	80.00	9050200025000
0.1063		2.70	10.00	135.00	80.00	9050200027000
0.1181		3.00	10.00	135.00	80.00	9050200030000
0.1260		3.20	10.00	135.00	80.00	9050200032000
0.1378		3.50	10.00	135.00	80.00	9050200035000
0.1575		4.00	10.00	135.00	80.00	9050200040000
0.1654		4.20	10.00	135.00	80.00	9050200042000
0.1772	#16	4.50	10.00	135.00	80.00	9050200045000
0.1969		5.00	10.00	135.00	80.00	9050200050000

Series 5026 - 120mm flute length

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	l2 mm	EDP #
0.0591		1.50	4.00	165.00	120.00	9050260015000
0.0626	1/16	1.59	4.00	165.00	120.00	9050260015900
0.0630		1.60	4.00	165.00	120.00	9050260016000
0.0780	5/64	1.98	4.00	165.00	120.00	9050260019800
0.0787		2.00	4.00	165.00	120.00	9050260020000
0.0984		2.50	10.00	175.00	120.00	9050260025000
0.1063		2.70	10.00	175.00	120.00	9050260027000
0.1181		3.00	10.00	175.00	120.00	9050260030000
0.1260		3.20	10.00	175.00	120.00	9050260032000
0.1378		3.50	10.00	175.00	120.00	9050260035000
0.1575		4.00	10.00	175.00	120.00	9050260040000
0.1654		4.20	10.00	175.00	120.00	9050260042000
0.1772	#16	4.50	10.00	175.00	120.00	9050260045000
0.1969		5.00	10.00	175.00	120.00	9050260050000

Series 5021 - 160mm flute length

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	l2 mm	EDP #
0.0591		1.50	4.00	205.00	160.00	9050210015000
0.0626	1/16	1.59	4.00	205.00	160.00	9050210015900
0.0630		1.60	4.00	205.00	160.00	9050210016000
0.0780	5/64	1.98	4.00	205.00	160.00	9050210019800
0.0787		2.00	4.00	205.00	160.00	9050210020000
0.0984		2.50	10.00	215.00	160.00	9050210025000
0.1063		2.70	10.00	215.00	160.00	9050210027000
0.1181		3.00	10.00	215.00	160.00	9050210030000
0.1260		3.20	10.00	215.00	160.00	9050210032000
0.1378		3.50	10.00	215.00	160.00	9050210035000
0.1575		4.00	10.00	215.00	160.00	9050210040000
0.1654		4.20	10.00	215.00	160.00	9050210042000
0.1772	#16	4.50	10.00	215.00	160.00	9050210045000
0.1969		5.00	10.00	215.00	160.00	9050210050000
0.2362		6.00	16.00	225.00	160.00	9050210060000
0.3150		8.00	16.00	225.00	160.00	9050210080000

Tech Tip:

Gun drills hold location to precise tolerances in extremely deep hole applications. Conventional gun drills consist of a steel body and driver with a brazed carbide head for extended tool life and performance. When applying standard gun drills some basic steps should be observed:

- If you're not drilling on a gun drilling machine supported by a bushing, you must drill a pilot hole using a drill with an m7 tolerance. Our series 5510 drill is suitable. The procedure is similar to the RT100T drills. Enter the pilot hole at low RPM and feed rate (example: 200 RPM at 20 in/min)
- Gun drills for drilling depths over 40xD should enter pilot hole in a counterclockwise direction.
- Continuous drilling without pecking is required. • Switch off coolant supply after reaching maximum drilling depth. • Use a rapid withdrawal with a stationary spindle.

EB 80 single-fluted gun drills

EB 80 (Type) | h5 (Tolerance on Ø) | Internal coolant | R (Cutting direction)

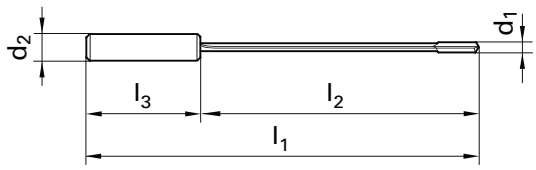
Tool material: **Solid Carbide**

Surface: C

P	Steel	○
M	Stainless steel	●
K	Cast iron	○
N	Aluminum	
S	Titanium alloys	●
H	Hardened steel	○

●=Optimal
○=Limited

head form G





Series 5641 - 40xD

Speeds and feeds on pg. 559

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	l2 mm	EDP #
0.1563	5/32	3.97	10.00	230.00	185.00	9056410039700
0.1575		4.00	12.00	230.00	185.00	9056410040000
0.1969		5.00	16.00	280.00	232.00	9056410050000
0.2030	13/64	5.16	16.00	280.00	232.00	9056410051560
0.2362		6.00	16.00	320.00	272.00	9056410060000
0.2500	1/4 E	6.35	16.00	340.00	292.00	9056410063500
0.2756		7.00	16.00	370.00	322.00	9056410070000
0.3125	5/16	7.94	16.00	420.00	372.00	9056410079380
0.3150		8.00	16.00	420.00	372.00	9056410080000
0.3543		9.00	16.00	450.00	402.00	9056410090000
0.3750	3/8	9.53	16.00	480.00	432.00	9056410095250
0.3937		10.00	20.00	510.00	460.00	9056410100000
0.4331		11.00	20.00	550.00	500.00	9056410110000
0.4375	7/16	11.11	20.00	550.00	500.00	9056410111130
0.4724		12.00	20.00	600.00	550.00	9056410120000
0.5000	1/2	12.70	20.00	635.00	585.00	9056410127000

Series 5642 - 80xD

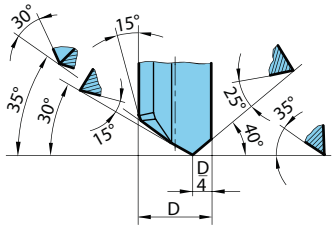
Speeds and feeds on pg. 560

Diameter (d1) inch	wire/ltr	mm	d2 mm	l1 mm	l2 mm	EDP #
0.1949		4.95	16.00	480.00	432.00	9056420049500
0.2010		5.11	16.00	480.00	432.00	9056420051060
0.2343	15/64	5.95	16.00	560.00	512.00	9056420059500
0.2480		6.30	16.00	590.00	542.00	9056420063000
0.2736		6.95	16.00	650.00	602.00	9056420069500
0.3106		7.89	16.00	740.00	692.00	9056420078880
0.3130		7.95	16.00	740.00	692.00	9056420079500
0.3524		8.95	16.00	820.00	772.00	9056420089500
0.3730		9.48	16.00	870.00	822.00	9056420094750
0.3917		9.95	20.00	910.00	860.00	9056420099500
0.4311		10.95	20.00	995.00	945.00	9056420109500
0.4356		11.06	20.00	995.00	945.00	9056420110630
0.4705		11.95	20.00	1080.00	1030.00	9056420119500
0.4980		12.65	20.00	1140.00	1090.00	9056420126500

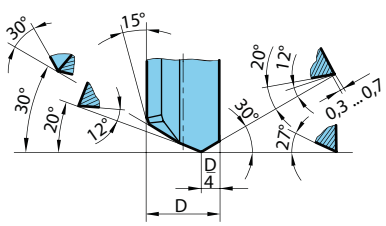
EB 80 standard point grinds

(special point grinds available)

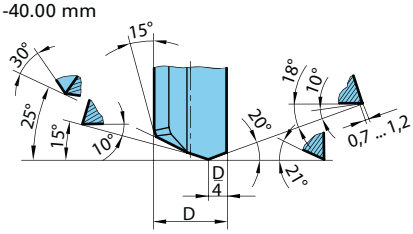
Ø 2.00-4.00 mm



Ø 4.01-20. 00 mm



Ø 20.01-40.00 mm



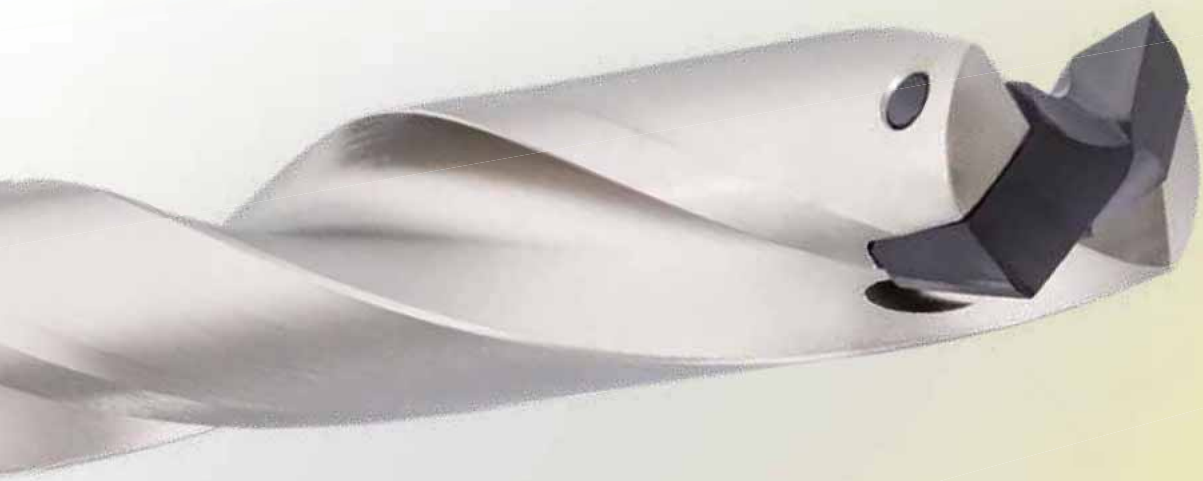
Tech Tip:

Gun drills hold location to precise tolerances in extremely deep hole applications. Conventional gun drills consist of a steel body and driver with a brazed carbide head for extended tool life and performance. When applying standard gun drills some basic steps should be observed:

- If you're not drilling on a gun drilling machine supported by a bushing, you must drill a pilot hole using a drill with an m7 tolerance. Our series 5510 drill is suitable. The procedure is similar to the RT100T drills. Enter the pilot hole at low RPM and feed rate (example: 200 RPM at 20 in/min)
- Gun drills for drilling depths over 40xD should enter pilot hole in a counterclockwise direction.
- Continuous drilling without pecking is required.
- Switch off coolant supply after reaching maximum drilling depth.
- Use a rapid withdrawal with a stationary spindle.



REPLACEABLE TIP DRILLS



HT 800 WP Replaceable Tip Drilling System

With the HT 800 WP interchangeable drilling system Guhring provides high-performance and cost-efficient drill bodies for hole diameters ranging from 11.00 to 40.0 mm.

The HT 800 WP drilling system is ideal for the production of large, highly accurate holes in various materials, making it suitable for energy, automotive, steel construction, and general machining industries.

EXTENDED TOOL LIFE

- interchangeable inserts perfectly adapted to the field of application regarding tool material, geometry and coating
- optimal machining results in steel, stainless steel, cast iron or aluminum

OPTIMAL CHIP EVACUATION

- special flute cross-section
- ultra-smooth surface finish

RIGID BODIES

- minimal diameter variances between body and insert reduce wear
- improved workpiece surfaces
- improved guidance of the tool increases the rigidity
- longer tool life



HIGHLY ACCURATE AND RIGID INSERT SEAT

- insert change possible in the machine
- holder remains clamped
- tool change and re-setting not required
- increased process reliability and reduced setup time

IDEAL COOLING LUBRICATION

- coolant ducts with maximum cross section
- exit from flute directly to cutting edge

The ideal insert for any material and application



Series # 4112



Series # 4113



Series # 4115



Series # 4114



Series # 4229

for pilot drilling



Series # 4111

HT 800 WP

The ideal body holder for any drilling depth and application

Series #	4105	4106	4107	4108	4109	4110
Drilling depth	1 x D	1,5 x D	3 x D	5 x D	7 x D	10 x D
Diameter	11.0 - 40.00	11.0 - 40.00	11.0 - 40.00	11.0 - 40.00	11.0 - 31.99	11.0 - 31.99
Shank	DIN 6535-HE	DIN 6535-HE	DIN 6535-HE	DIN 6535-HE	DIN 6535-HE	DIN 6535-HE

pilot drilling/ 45° countersinking



The series 4105 pilot drill body incorporates countersink inserts making it possible to machine a 45° chamfer while drilling the pilot hole.

HT 800 WP drill bodies

Series no. **4105**

HT 800 WP — Type
1xD — Cutting depth
Internal coolant
HE — Shank form

Tool material

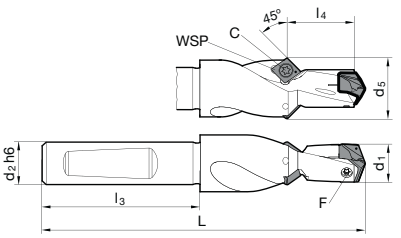
Surface Ni

P	Steel
M	Stainless steel
K	Cast iron
N	Aluminum
S	Titanium alloys
H	Hardened steel

●=Optimal
○=Limited

nickel- plated • especially high wear resistance • optimized flute design • optimized coolant duct exit • clamping screws art. no. 4071 and 6128 included • screwdriver art. no. 1612 included

for piloting and countersinking 45°

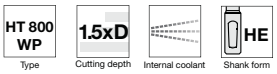




d1 mm	d2 h6 mm	d2 h6 frac.	d5 mm	L mm	l3 mm	l4 mm	WSP	C	F	Code no.	EDP #
11.00 - 11.99	12.000		17.00	81.00	45.00	12.00	CP..0502..	6128 2.000	4071 2.200	11.000	9041050110000
11.00 - 11.99	12.700	1/2	17.00	81.00	45.00	12.00	CP..0502..	6128 2.000	4071 2.200	11.005	9041050110050
12.00 - 12.99	12.000		18.00	84.00	45.00	13.00	CP..0502..	6128 2.000	4071 2.201	12.000	9041050120000
12.00 - 12.99	12.700	1/2	18.00	84.00	45.00	13.00	CP..0502..	6128 2.000	4071 2.201	12.005	9041050120050
13.00 - 13.99	14.000		18.00	86.00	45.00	14.00	CP..0502..	6128 2.000	4071 2.500	13.000	9041050130000
13.00 - 13.99	15.875	5/8	18.00	86.00	45.00	14.00	CP..0502..	6128 2.000	4071 2.500	13.005	9041050130050
14.00 - 15.99	16.000		18.00	93.00	48.00	16.00	CP..0502..	6128 2.000	4071 3.000	14.000	9041050140000
14.00 - 15.99	15.875	5/8	18.00	93.00	48.00	16.00	CP..0502..	6128 2.000	4071 3.000	14.005	9041050140050
16.00 - 17.99	18.000		20.00	99.00	48.00	18.00	CP..0602..	6128 2.500	4071 3.500	16.000	9041050160000
16.00 - 17.99	19.050	3/4	20.00	99.00	48.00	18.00	CP..0602..	6128 2.500	4071 3.500	16.005	9041050160050
18.00 - 19.99	20.000		22.00	106.00	50.00	20.00	CP..0602..	6128 2.500	4071 4.000	18.000	9041050180000
18.00 - 19.99	19.050	3/4	22.00	106.00	50.00	20.00	CP..0602..	6128 2.500	4071 4.000	18.005	9041050180050
20.00 - 21.99	25.000		24.00	117.00	56.00	22.00	CP..0602..	6128 2.500	4071 4.500	20.000	9041050200000
20.00 - 21.99	25.400	1	24.00	117.00	56.00	22.00	CP..0602..	6128 2.500	4071 4.500	20.005	9041050200050
22.00 - 23.99	25.000		26.00	122.00	56.00	24.00	CP..0602..	6128 2.500	4071 4.500	22.000	9041050220000
22.00 - 23.99	25.400	1	26.00	122.00	56.00	24.00	CP..0602..	6128 2.500	4071 4.500	22.005	9041050220050
24.00 - 25.99	25.000		28.00	128.00	56.00	26.00	CP..0602..	6128 2.500	4071 5.001	24.000	9041050240000
24.00 - 25.99	25.400	1	28.00	128.00	56.00	26.00	CP..0602..	6128 2.500	4071 5.001	24.005	9041050240050
26.00 - 27.99	32.000		32.00	142.00	60.00	28.00	CP..0602..	6128 2.500	4071 5.003	26.000	9041050260000
26.00 - 27.99	31.750	1 1/4	32.00	142.00	60.00	28.00	CP..0602..	6128 2.500	4071 5.003	26.005	9041050260050
28.00 - 29.99	32.000		34.00	147.00	60.00	30.00	CP..0602..	6128 2.500	4071 5.003	28.000	9041050280000
28.00 - 29.99	31.750	1 1/4	34.00	147.00	60.00	30.00	CP..0602..	6128 2.500	4071 5.003	28.005	9041050280050
30.00 - 31.99	32.000		38.00	152.00	60.00	32.00	CP..09T3..	6128 4.000	4071 6.000	30.000	9041050300000
30.00 - 31.99	31.750	1 1/4	38.00	152.00	60.00	32.00	CP..09T3..	6128 4.000	4071 6.000	30.005	9041050300050
32.00 - 35.99	32.000		42.00	163.00	60.00	36.00	CP..09T3..	6128 4.000	4071 6.001	32.000	9041050320000
32.00 - 35.99	31.750	1 1/4	42.00	163.00	60.00	36.00	CP..09T3..	6128 4.000	4071 6.001	32.005	9041050320050
36.00 - 40.00	32.000		46.00	173.00	60.00	40.00	CP..09T3..	6128 4.000	4071 6.002	36.000	9041050360000
36.00 - 40.00	31.750	1 1/4	46.00	173.00	60.00	40.00	CP..09T3..	6128 4.000	4071 6.002	36.005	9041050360050

HT 800 WP drill bodies

Series no. **4106**



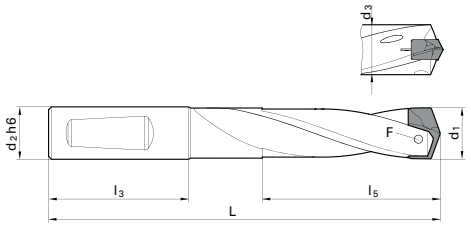
Tool material

Surface Ni

P	Steel
M	Stainless steel
K	Cast iron
N	Aluminum
S	Titanium alloys
H	Hardened steel

●=Optimal
○=Limited

nickel- plated • especially high wear resistance • optimized flute design • optimized coolant duct exit • clamping screws art. no. M 4071 included • screwdriver art. no. 1612 included





d1 mm	d2 h6 mm	d2 h6 frac.	d3 mm	L mm	l3 mm	l5 mm	F	Code no.	EDP #
11.00 - 11.49	12.000		10.70	84.00	45.00	19.30	4071 2.200	11.000	9041060110000
11.00 - 11.49	12.700	1/2	10.70	84.00	45.00	19.30	4071 2.200	11.005	9041060110050
11.50 - 11.99	12.000		11.20	85.00	45.00	20.10	4071 2.200	11.500	9041060115000
11.50 - 11.99	12.700	1/2	11.20	85.00	45.00	20.10	4071 2.200	11.505	9041060115050
12.00 - 12.49	12.000		11.70	87.00	45.00	21.00	4071 2.201	12.000	9041060120000
12.00 - 12.49	12.700	1/2	11.70	87.00	45.00	21.00	4071 2.201	12.005	9041060120050
12.50 - 12.99	14.000		12.20	89.00	45.00	21.90	4071 2.201	12.500	9041060125000
12.50 - 12.99	15.875	5/8	12.20	89.00	45.00	21.90	4071 2.201	12.505	9041060125050
13.00 - 13.49	14.000		12.70	90.00	45.00	22.60	4071 2.500	13.000	9041060130000
13.00 - 13.49	15.875	5/8	12.70	90.00	45.00	22.60	4071 2.500	13.005	9041060130050
13.50 - 13.99	14.000		13.20	92.00	45.00	23.60	4071 2.500	13.500	9041060135000
13.50 - 13.99	15.875	5/8	13.20	92.00	45.00	23.60	4071 2.500	13.505	9041060135050
14.00 - 14.49	14.000		13.70	93.00	45.00	24.50	4071 3.000	14.000	9041060140000
14.00 - 14.49	15.875	5/8	13.70	93.00	45.00	24.50	4071 3.000	14.005	9041060140050
14.50 - 14.99	16.000		14.20	98.00	48.00	25.30	4071 3.000	14.500	9041060145000
14.50 - 14.99	15.875	5/8	14.20	98.00	48.00	25.30	4071 3.000	14.505	9041060145050
15.00 - 15.49	16.000		14.70	100.00	48.00	26.10	4071 3.001	15.000	9041060150000
15.00 - 15.49	15.875	5/8	14.70	100.00	48.00	26.10	4071 3.001	15.005	9041060150050
15.50 - 15.99	16.000		15.20	101.00	48.00	27.00	4071 3.001	15.500	9041060155000
15.50 - 15.99	15.875	5/8	15.20	101.00	48.00	27.00	4071 3.001	15.505	9041060155050
16.00 - 16.49	16.000		15.70	102.00	48.00	27.80	4071 3.500	16.000	9041060160000
16.00 - 16.49	15.875	5/8	15.70	102.00	48.00	27.80	4071 3.500	16.005	9041060160050
16.50 - 16.99	18.000		16.20	105.00	48.00	28.70	4071 3.500	16.500	9041060165000
16.50 - 16.99	19.050	3/4	16.20	105.00	48.00	28.70	4071 3.500	16.505	9041060165050
17.00 - 17.49	18.000		16.70	106.00	48.00	29.60	4071 3.500	17.000	9041060170000
17.00 - 17.49	19.050	3/4	16.70	106.00	48.00	29.60	4071 3.500	17.005	9041060170050
17.50 - 17.99	18.000		17.20	107.00	48.00	30.40	4071 3.500	17.500	9041060175000
17.50 - 17.99	19.050	3/4	17.20	107.00	48.00	30.40	4071 3.500	17.505	9041060175050
18.00 - 18.49	18.000		17.70	109.00	48.00	31.20	4071 4.000	18.000	9041060180000
18.00 - 18.49	19.050	3/4	17.70	109.00	48.00	31.20	4071 4.000	18.005	9041060180050
18.50 - 18.99	20.000		18.20	113.00	50.00	32.10	4071 4.000	18.500	9041060185000
18.50 - 18.99	19.050	3/4	18.20	113.00	50.00	32.10	4071 4.000	18.505	9041060185050
19.00 - 19.49	20.000		18.70	114.00	50.00	32.90	4071 4.000	19.000	9041060190000
19.00 - 19.49	19.050	3/4	18.70	114.00	50.00	32.90	4071 4.000	19.005	9041060190050
19.50 - 19.99	20.000		19.20	116.00	50.00	33.70	4071 4.000	19.500	9041060195000
19.50 - 19.99	19.050	3/4	19.20	116.00	50.00	33.70	4071 4.000	19.505	9041060195050
20.00 - 20.49	20.000		19.70	117.00	50.00	34.60	4071 4.500	20.000	9041060200000
20.00 - 20.49	19.050	3/4	19.70	117.00	50.00	34.60	4071 4.500	20.005	9041060200050
20.50 - 20.99	25.000		20.20	128.00	56.00	35.50	4071 4.500	20.500	9041060205000
20.50 - 20.99	25.400	1	20.20	128.00	56.00	35.50	4071 4.500	20.505	9041060205050
21.00 - 21.49	25.000		20.70	129.00	56.00	36.40	4071 4.500	21.000	9041060210000
21.00 - 21.49	25.400	1	20.70	129.00	56.00	36.40	4071 4.500	21.005	9041060210050
21.50 - 21.99	25.000		21.20	130.00	56.00	37.20	4071 4.500	21.500	9041060215000

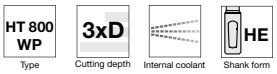
HT 800 WP drill bodies

Series no. **4106**

d1 mm	d2 h6 mm	d2 h6 frac.	d3 mm	L mm	l3 mm	l5 mm	F	Code no.	EDP #
21.50 - 21.99	25.400	1	21.20	130.00	56.00	37.20	4071 4.500	21.505	9041060215050
22.00 - 22.49	25.000		21.70	131.00	56.00	38.00	4071 5.000	22.000	9041060220000
22.00 - 22.49	25.400	1	21.70	131.00	56.00	38.00	4071 5.000	22.005	9041060220050
22.50 - 22.99	25.000		22.20	134.00	56.00	38.90	4071 5.000	22.500	9041060225000
22.50 - 22.99	25.400	1	22.20	134.00	56.00	38.90	4071 5.000	22.505	9041060225050
23.00 - 23.49	25.000		22.70	135.00	56.00	39.80	4071 5.000	23.000	9041060230000
23.00 - 23.49	25.400	1	22.70	135.00	56.00	39.80	4071 5.000	23.005	9041060230050
23.50 - 23.99	25.000		23.20	137.00	56.00	40.60	4071 5.000	23.500	9041060235000
23.50 - 23.99	25.400	1	23.20	137.00	56.00	40.60	4071 5.000	23.505	9041060235050
24.00 - 24.49	25.000		23.70	138.00	56.00	41.50	4071 5.001	24.000	9041060240000
24.00 - 24.49	25.400	1	23.70	138.00	56.00	41.50	4071 5.001	24.005	9041060240050
24.50 - 24.99	25.000		24.20	140.00	56.00	42.30	4071 5.001	24.500	9041060245000
24.50 - 24.99	25.400	1	24.20	140.00	56.00	42.30	4071 5.001	24.505	9041060245050
25.00 - 25.49	25.000		24.70	142.00	56.00	43.20	4071 5.001	25.000	9041060250000
25.00 - 25.49	25.400	1	24.70	142.00	56.00	43.20	4071 5.001	25.005	9041060250050
25.50 - 25.99	32.000		25.20	148.00	60.00	44.00	4071 5.001	25.500	9041060255000
25.50 - 25.99	31.750	1 1/4	25.20	148.00	60.00	44.00	4071 5.001	25.505	9041060255050
26.00 - 26.49	32.000		25.70	151.00	60.00	44.30	4071 5.003	26.000	9041060260000
26.00 - 26.49	31.750	1 1/4	25.70	151.00	60.00	44.30	4071 5.003	26.005	9041060260050
26.50 - 26.99	32.000		26.20	153.00	60.00	45.10	4071 5.003	26.500	9041060265000
26.50 - 26.99	31.750	1 1/4	26.20	153.00	60.00	45.10	4071 5.003	26.505	9041060265050
27.00 - 27.49	32.000		26.70	155.00	60.00	46.00	4071 5.003	27.000	9041060270000
27.00 - 27.49	31.750	1 1/4	26.70	155.00	60.00	46.00	4071 5.003	27.005	9041060270050
27.50 - 27.99	32.000		27.20	156.00	60.00	46.80	4071 5.003	27.500	9041060275000
27.50 - 27.99	31.750	1 1/4	27.20	156.00	60.00	46.80	4071 5.003	27.505	9041060275050
28.00 - 28.49	32.000		27.70	157.00	60.00	47.70	4071 5.003	28.000	9041060280000
28.00 - 28.49	31.750	1 1/4	27.70	157.00	60.00	47.70	4071 5.003	28.005	9041060280050
28.50 - 28.99	32.000		28.20	159.00	60.00	48.50	4071 5.003	28.500	9041060285000
28.50 - 28.99	31.750	1 1/4	28.20	159.00	60.00	48.50	4071 5.003	28.505	9041060285050
29.00 - 29.49	32.000		28.70	161.00	60.00	49.40	4071 5.003	29.000	9041060290000
29.00 - 29.49	31.750	1 1/4	28.70	161.00	60.00	49.40	4071 5.003	29.005	9041060290050
29.50 - 29.99	32.000		29.20	162.00	60.00	50.20	4071 5.003	29.500	9041060295000
29.50 - 29.99	31.750	1 1/4	29.20	162.00	60.00	50.20	4071 5.003	29.505	9041060295050
30.00 - 30.49	32.000		29.70	164.00	60.00	50.90	4071 6.000	30.000	9041060300000
30.00 - 30.49	31.750	1 1/4	29.70	164.00	60.00	50.90	4071 6.000	30.005	9041060300050
30.50 - 30.99	32.000		30.20	166.00	60.00	51.70	4071 6.000	30.500	9041060305000
30.50 - 30.99	31.750	1 1/4	30.20	166.00	60.00	51.70	4071 6.000	30.505	9041060305050
31.00 - 31.49	32.000		30.70	167.00	60.00	52.60	4071 6.000	31.000	9041060310000
31.00 - 31.49	31.750	1 1/4	30.70	167.00	60.00	52.60	4071 6.000	31.005	9041060310050
31.50 - 31.99	32.000		31.20	168.00	60.00	53.40	4071 6.000	31.500	9041060315000
31.50 - 31.99	31.750	1 1/4	31.20	168.00	60.00	53.40	4071 6.000	31.505	9041060315050
32.00 - 32.99	32.000		31.70	172.00	60.00	55.10	4071 6.001	32.000	9041060320000
32.00 - 32.99	31.750	1 1/4	31.70	172.00	60.00	55.10	4071 6.001	32.005	9041060320050
33.00 - 33.99	32.000		32.70	175.00	60.00	56.80	4071 6.001	33.000	9041060330000
33.00 - 33.99	31.750	1 1/4	32.70	175.00	60.00	56.80	4071 6.001	33.005	9041060330050
34.00 - 34.99	32.000		33.70	178.00	60.00	58.50	4071 6.001	34.000	9041060340000
34.00 - 34.99	31.750	1 1/4	33.70	178.00	60.00	58.50	4071 6.001	34.005	9041060340050
35.00 - 35.99	32.000		34.70	181.00	60.00	60.20	4071 6.001	35.000	9041060350000
35.00 - 35.99	31.750	1 1/4	34.70	181.00	60.00	60.20	4071 6.001	35.005	9041060350050
36.00 - 36.99	32.000		35.70	184.00	60.00	61.80	4071 6.002	36.000	9041060360000
36.00 - 36.99	31.750	1 1/4	35.70	184.00	60.00	61.80	4071 6.002	36.005	9041060360050
37.00 - 37.99	32.000		36.70	188.00	60.00	63.50	4071 6.002	37.000	9041060370000
37.00 - 37.99	31.750	1 1/4	36.70	188.00	60.00	63.50	4071 6.002	37.005	9041060370050
38.00 - 38.99	32.000		37.70	191.00	60.00	65.20	4071 6.002	38.000	9041060380000
38.00 - 38.99	31.750	1 1/4	37.70	191.00	60.00	65.20	4071 6.002	38.005	9041060380050
39.00 - 40.00	32.000		38.70	194.00	60.00	66.90	4071 6.002	39.000	9041060390000
39.00 - 40.00	31.750	1 1/4	38.70	194.00	60.00	66.90	4071 6.002	39.005	9041060390050

HT 800 WP drill bodies

Series no. **4107**



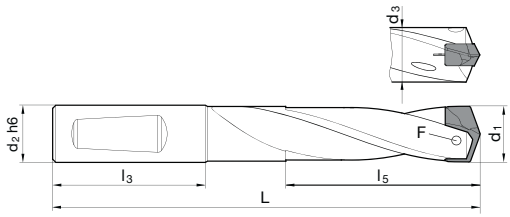
Tool material

Surface Ni

P	Steel
M	Stainless steel
K	Cast iron
N	Aluminum
S	Titanium alloys
H	Hardened steel

●=Optimal
○=Limited

nickel- plated • especially high wear resistance • optimized flute design • optimized coolant duct exit • clamping screws art. no. 4071 included • screwdriver art. no. 1612 included





d1 mm	d2 h6 mm	d2 h6 frac.	d3 mm	L mm	l3 mm	l5 mm	F	Code no.	EDP #
11.00 - 11.49	12.000		10.70	101.00	45.00	36.60	4071 2.200	11.000	9041070110000
11.00 - 11.49	12.700	1/2	10.70	101.00	45.00	36.60	4071 2.200	11.005	9041070110050
11.50 - 11.99	12.000		11.20	103.00	45.00	38.10	4071 2.200	11.500	9041070115000
11.50 - 11.99	12.700	1/2	11.20	103.00	45.00	38.10	4071 2.200	11.505	9041070115050
12.00 - 12.49	12.000		11.70	106.00	45.00	39.70	4071 2.201	12.000	9041070120000
12.00 - 12.49	12.700	1/2	11.70	106.00	45.00	39.70	4071 2.201	12.005	9041070120050
12.50 - 12.99	14.000		12.20	108.00	45.00	41.30	4071 2.201	12.500	9041070125000
12.50 - 12.99	15.875	5/8	12.20	108.00	45.00	41.30	4071 2.201	12.505	9041070125050
13.00 - 13.49	14.000		12.70	110.00	45.00	42.90	4071 2.500	13.000	9041070130000
13.00 - 13.49	15.875	5/8	12.70	110.00	45.00	42.90	4071 2.500	13.005	9041070130050
13.50 - 13.99	14.000		13.20	113.00	45.00	44.60	4071 2.500	13.500	9041070135000
13.50 - 13.99	15.875	5/8	13.20	113.00	45.00	44.60	4071 2.500	13.505	9041070135050
14.00 - 14.49	14.000		13.70	115.00	45.00	46.20	4071 3.000	14.000	9041070140000
14.00 - 14.49	15.875	5/8	13.70	115.00	45.00	46.20	4071 3.000	14.005	9041070140050
14.50 - 14.99	16.000		14.20	120.00	48.00	47.80	4071 3.000	14.500	9041070145000
14.50 - 14.99	15.875	5/8	14.20	120.00	48.00	47.80	4071 3.000	14.505	9041070145050
15.00 - 15.49	16.000		14.70	123.00	48.00	49.30	4071 3.001	15.000	9041070150000
15.00 - 15.49	15.875	5/8	14.70	123.00	48.00	49.30	4071 3.001	15.005	9041070150050
15.50 - 15.99	16.000		15.20	125.00	48.00	50.90	4071 3.001	15.500	9041070155000
15.50 - 15.99	15.875	5/8	15.20	125.00	48.00	50.90	4071 3.001	15.505	9041070155050
16.00 - 16.49	16.000		15.70	127.00	48.00	52.90	4071 3.500	16.000	9041070160000
16.00 - 16.49	15.875	5/8	15.70	127.00	48.00	52.90	4071 3.500	16.005	9041070160050
16.50 - 16.99	18.000		16.20	130.00	48.00	54.10	4071 3.500	16.500	9041070165000
16.50 - 16.99	19.050	3/4	16.20	130.00	48.00	54.10	4071 3.500	16.505	9041070165050
17.00 - 17.49	18.000		16.70	132.00	48.00	55.80	4071 3.500	17.000	9041070170000
17.00 - 17.49	19.050	3/4	16.70	132.00	48.00	55.80	4071 3.500	17.005	9041070170050
17.50 - 17.99	18.000		17.20	134.00	48.00	57.40	4071 3.500	17.500	9041070175000
17.50 - 17.99	19.050	3/4	17.20	134.00	48.00	57.40	4071 3.500	17.505	9041070175050
18.00 - 18.49	18.000		17.70	137.00	48.00	58.90	4071 4.000	18.000	9041070180000
18.00 - 18.49	19.050	3/4	17.70	137.00	48.00	58.90	4071 4.000	18.005	9041070180050
18.50 - 18.99	20.000		18.20	141.00	50.00	60.50	4071 4.000	18.500	9041070185000
18.50 - 18.99	19.050	3/4	18.20	141.00	50.00	60.50	4071 4.000	18.505	9041070185050
19.00 - 19.49	20.000		18.70	143.00	50.00	62.10	4071 4.000	19.000	9041070190000
19.00 - 19.49	19.050	3/4	18.70	143.00	50.00	62.10	4071 4.000	19.005	9041070190050
19.50 - 19.99	20.000		19.20	146.00	50.00	63.70	4071 4.000	19.500	9041070195000
19.50 - 19.99	19.050	3/4	19.20	146.00	50.00	63.70	4071 4.000	19.505	9041070195050
20.00 - 20.49	20.000		19.70	148.00	50.00	65.30	4071 4.500	20.000	9041070200000
20.00 - 20.49	19.050	3/4	19.70	148.00	50.00	65.30	4071 4.500	20.005	9041070200050
20.50 - 20.99	25.000		20.20	159.00	56.00	67.00	4071 4.500	20.500	9041070205000
20.50 - 20.99	25.400	1	20.20	159.00	56.00	67.00	4071 4.500	20.505	9041070205050
21.00 - 21.49	25.000		20.70	161.00	56.00	68.60	4071 4.500	21.000	9041070210000
21.00 - 21.49	25.400	1	20.70	161.00	56.00	68.60	4071 4.500	21.005	9041070210050
21.50 - 21.99	25.000		21.20	163.00	56.00	70.10	4071 4.500	21.500	9041070215000

HT 800 WP drill bodies

Series no. **4107**

d1 mm	d2 h6 mm	d2 h6 frac.	d3 mm	L mm	l3 mm	l5 mm	F	Code no.	EDP #
21.50 - 21.99	25.400	1	21.20	163.00	56.00	70.10	4071 4.500	21.505	9041070215050
22.00 - 22.49	25.000		21.70	165.00	56.00	71.70	4071 5.000	22.000	9041070220000
22.00 - 22.49	25.400	1	21.70	165.00	56.00	71.70	4071 5.000	22.005	9041070220050
22.50 - 22.99	25.000		22.20	168.00	56.00	73.30	4071 5.000	22.500	9041070225000
22.50 - 22.99	25.400	1	22.20	168.00	56.00	73.30	4071 5.000	22.505	9041070225050
23.00 - 23.49	25.000		22.70	170.00	56.00	74.90	4071 5.000	23.000	9041070230000
23.00 - 23.49	25.400	1	22.70	170.00	56.00	74.90	4071 5.000	23.005	9041070230050
23.50 - 23.99	25.000		23.20	173.00	56.00	76.50	4071 5.000	23.500	9041070235000
23.50 - 23.99	25.400	1	23.20	173.00	56.00	76.50	4071 5.000	23.505	9041070235050
24.00 - 24.49	25.000		23.70	175.00	56.00	78.10	4071 5.001	24.000	9041070240000
24.00 - 24.49	25.400	1	23.70	175.00	56.00	78.10	4071 5.001	24.005	9041070240050
24.50 - 24.99	25.000		24.20	177.00	56.00	79.70	4071 5.001	24.500	9041070245000
24.50 - 24.99	25.400	1	24.20	177.00	56.00	79.70	4071 5.001	24.505	9041070245050
25.00 - 25.49	25.000		24.70	180.00	56.00	81.30	4071 5.001	25.000	9041070250000
25.00 - 25.49	25.400	1	24.70	180.00	56.00	81.30	4071 5.001	25.005	9041070250050
25.50 - 25.99	32.000		25.20	187.00	60.00	82.90	4071 5.001	25.500	9041070255000
25.50 - 25.99	31.750	1 1/4	25.20	187.00	60.00	82.90	4071 5.001	25.505	9041070255050
26.00 - 26.49	32.000		25.70	191.00	60.00	84.00	4071 5.003	26.000	9041070260000
26.00 - 26.49	31.750	1 1/4	25.70	191.00	60.00	84.00	4071 5.003	26.005	9041070260050
26.50 - 26.99	32.000		26.20	193.00	60.00	86.10	4071 5.003	26.500	9041070265000
26.50 - 26.99	31.750	1 1/4	26.20	193.00	60.00	86.10	4071 5.003	26.505	9041070265050
27.00 - 27.49	32.000		26.70	196.00	60.00	87.20	4071 5.003	27.000	9041070270000
27.00 - 27.49	31.750	1 1/4	26.70	196.00	60.00	87.20	4071 5.003	27.005	9041070270050
27.50 - 27.99	32.000		27.20	198.00	60.00	88.90	4071 5.003	27.500	9041070275000
27.50 - 27.99	31.750	1 1/4	27.20	198.00	60.00	88.90	4071 5.003	27.505	9041070275050
28.00 - 28.49	32.000		27.70	200.00	60.00	90.50	4071 5.003	28.000	9041070280000
28.00 - 28.49	31.750	1 1/4	27.70	200.00	60.00	90.50	4071 5.003	28.005	9041070280050
28.50 - 28.99	32.000		28.20	202.00	60.00	92.50	4071 5.003	28.500	9041070285000
28.50 - 28.99	31.750	1 1/4	28.20	202.00	60.00	92.50	4071 5.003	28.505	9041070285050
29.00 - 29.49	32.000		28.70	205.00	60.00	94.60	4071 5.003	29.000	9041070290000
29.00 - 29.49	31.750	1 1/4	28.70	205.00	60.00	94.60	4071 5.003	29.005	9041070290050
29.50 - 29.99	32.000		29.20	207.00	60.00	95.10	4071 5.003	29.500	9041070295000
29.50 - 29.99	31.750	1 1/4	29.20	207.00	60.00	95.10	4071 5.003	29.505	9041070295050
30.00 - 30.49	32.000		29.70	210.00	60.00	96.70	4071 6.000	30.000	9041070300000
30.00 - 30.49	31.750	1 1/4	29.70	210.00	60.00	96.70	4071 6.000	30.005	9041070300050
30.50 - 30.99	32.000		30.20	212.00	60.00	98.30	4071 6.000	30.500	9041070305000
30.50 - 30.99	31.750	1 1/4	30.20	212.00	60.00	98.30	4071 6.000	30.505	9041070305050
31.00 - 31.49	32.000		30.70	214.00	60.00	99.80	4071 6.000	31.000	9041070310000
31.00 - 31.49	31.750	1 1/4	30.70	214.00	60.00	99.80	4071 6.000	31.005	9041070310050
31.50 - 31.99	32.000		31.20	216.00	60.00	101.40	4071 6.000	31.500	9041070315000
31.50 - 31.99	31.750	1 1/4	31.20	216.00	60.00	101.40	4071 6.000	31.505	9041070315050
32.00 - 32.99	32.000		31.70	221.00	60.00	104.60	4071 6.001	32.000	9041070320000
32.00 - 32.99	31.750	1 1/4	31.70	221.00	60.00	104.60	4071 6.001	32.005	9041070320050
33.00 - 33.99	32.000		32.70	226.00	60.00	107.80	4071 6.001	33.000	9041070330000
33.00 - 33.99	31.750	1 1/4	32.70	226.00	60.00	107.80	4071 6.001	33.005	9041070330050
34.00 - 34.99	32.000		33.70	230.00	60.00	111.00	4071 6.001	34.000	9041070340000
34.00 - 34.99	31.750	1 1/4	33.70	230.00	60.00	111.00	4071 6.001	34.005	9041070340050
35.00 - 35.99	32.000		34.70	235.00	60.00	114.20	4071 6.001	35.000	9041070350000
35.00 - 35.99	31.750	1 1/4	34.70	235.00	60.00	114.20	4071 6.001	35.005	9041070350050
36.00 - 36.99	32.000		35.70	240.00	60.00	117.30	4071 6.002	36.000	9041070360000
36.00 - 36.99	31.750	1 1/4	35.70	240.00	60.00	117.30	4071 6.002	36.005	9041070360050
37.00 - 37.99	32.000		36.70	245.00	60.00	120.50	4071 6.002	37.000	9041070370000
37.00 - 37.99	31.750	1 1/4	36.70	245.00	60.00	120.50	4071 6.002	37.005	9041070370050
38.00 - 38.99	32.000		37.70	249.00	60.00	123.70	4071 6.002	38.000	9041070380000
38.00 - 38.99	31.750	1 1/4	37.70	249.00	60.00	123.70	4071 6.002	38.005	9041070380050
39.00 - 40.00	32.000		38.70	254.00	60.00	126.90	4071 6.002	39.000	9041070390000
39.00 - 40.00	31.750	1 1/4	38.70	254.00	60.00	126.90	4071 6.002	39.005	9041070390050

HT 800 WP drill bodies

Series no. **4108**

HT 800 WP (Type) | 5xD (Cutting depth) | Internal coolant | HE (Shank form)

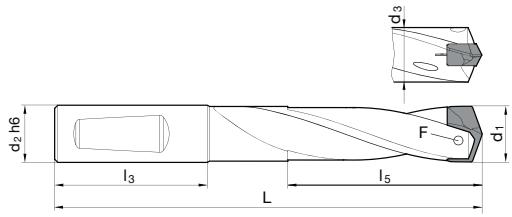
Tool material

Surface Ni

P	Steel
M	Stainless steel
K	Cast iron
N	Aluminum
S	Titanium alloys
H	Hardened steel

●=Optimal
○=Limited

nickel- plated • especially high wear resistance • optimized flute design • optimized coolant duct exit • clamping screws art. no. 4071 included • screwdriver art. no. 1612 included





d1 mm	d2 h6 mm	d2 h6 frac.	d3 mm	L mm	l3 mm	l5 mm	F	Code no.	EDP #
11.00 - 11.49	12.000		10.70	124.00	45.00	59.60	4071 2.200	11.000	9041080110000
11.00 - 11.49	12.700	1/2	10.70	124.00	45.00	59.60	4071 2.200	11.005	9041080110050
11.50 - 11.99	12.000		11.20	127.00	45.00	62.10	4071 2.200	11.500	9041080115000
11.50 - 11.99	12.700	1/2	11.20	127.00	45.00	62.10	4071 2.200	11.505	9041080115050
12.00 - 12.49	12.000		11.70	131.00	45.00	64.70	4071 2.201	12.000	9041080120000
12.00 - 12.49	12.700	1/2	11.70	131.00	45.00	64.70	4071 2.201	12.005	9041080120050
12.50 - 12.99	14.000		12.20	134.00	45.00	67.30	4071 2.201	12.500	9041080125000
12.50 - 12.99	15.875	5/8	12.20	134.00	45.00	67.30	4071 2.201	12.505	9041080125050
13.00 - 13.49	14.000		12.70	137.00	45.00	69.90	4071 2.500	13.000	9041080130000
13.00 - 13.49	15.875	5/8	12.70	137.00	45.00	69.90	4071 2.500	13.005	9041080130050
13.50 - 13.99	14.000		13.20	141.00	45.00	72.60	4071 2.500	13.500	9041080135000
13.50 - 13.99	15.875	5/8	13.20	141.00	45.00	72.60	4071 2.500	13.505	9041080135050
14.00 - 14.49	14.000		13.70	144.00	45.00	75.20	4071 3.000	14.000	9041080140000
14.00 - 14.49	15.875	5/8	13.70	144.00	45.00	75.20	4071 3.000	14.005	9041080140050
14.50 - 14.99	16.000		14.20	150.00	48.00	77.80	4071 3.000	14.500	9041080145000
14.50 - 14.99	15.875	5/8	14.20	150.00	48.00	77.80	4071 3.000	14.505	9041080145050
15.00 - 15.49	16.000		14.70	154.00	48.00	80.30	4071 3.001	15.000	9041080150000
15.00 - 15.49	15.875	5/8	14.70	154.00	48.00	80.30	4071 3.001	15.005	9041080150050
15.50 - 15.99	16.000		15.20	157.00	48.00	82.90	4071 3.001	15.500	9041080155000
15.50 - 15.99	15.875	5/8	15.20	157.00	48.00	82.90	4071 3.001	15.505	9041080155050
16.00 - 16.49	16.000		15.70	160.00	48.00	85.90	4071 3.500	16.000	9041080160000
16.00 - 16.49	15.875	5/8	15.70	160.00	48.00	85.90	4071 3.500	16.005	9041080160050
16.50 - 16.99	18.000		16.20	164.00	48.00	88.10	4071 3.500	16.500	9041080165000
16.50 - 16.99	19.050	3/4	16.20	164.00	48.00	88.10	4071 3.500	16.505	9041080165050
17.00 - 17.49	18.000		16.70	167.00	48.00	90.80	4071 3.500	17.000	9041080170000
17.00 - 17.49	19.050	3/4	16.70	167.00	48.00	90.80	4071 3.500	17.005	9041080170050
17.50 - 17.99	18.000		17.20	170.00	48.00	93.40	4071 3.500	17.500	9041080175000
17.50 - 17.99	19.050	3/4	17.20	170.00	48.00	93.40	4071 3.500	17.505	9041080175050
18.00 - 18.49	18.000		17.70	174.00	48.00	95.90	4071 4.000	18.000	9041080180000
18.00 - 18.49	19.050	3/4	17.70	174.00	48.00	95.90	4071 4.000	18.005	9041080180050
18.50 - 18.99	20.000		18.20	179.00	50.00	98.50	4071 4.000	18.500	9041080185000
18.50 - 18.99	19.050	3/4	18.20	179.00	50.00	98.50	4071 4.000	18.505	9041080185050
19.00 - 19.49	20.000		18.70	182.00	50.00	101.10	4071 4.000	19.000	9041080190000
19.00 - 19.49	19.050	3/4	18.70	182.00	50.00	101.10	4071 4.000	19.005	9041080190050
19.50 - 19.99	20.000		19.20	186.00	50.00	103.70	4071 4.000	19.500	9041080195000
19.50 - 19.99	19.050	3/4	19.20	186.00	50.00	103.70	4071 4.000	19.505	9041080195050
20.00 - 20.49	20.000		19.70	189.00	50.00	106.30	4071 4.500	20.000	9041080200000
20.00 - 20.49	19.050	3/4	19.70	189.00	50.00	106.30	4071 4.500	20.005	9041080200050
20.50 - 20.99	25.000		20.20	201.00	56.00	109.00	4071 4.500	20.500	9041080205000
20.50 - 20.99	25.400	1	20.20	201.00	56.00	109.00	4071 4.500	20.505	9041080205050
21.00 - 21.49	25.000		20.70	204.00	56.00	111.60	4071 4.500	21.000	9041080210000
21.00 - 21.49	25.400	1	20.70	204.00	56.00	111.60	4071 4.500	21.005	9041080210050
21.50 - 21.99	25.000		21.20	207.00	56.00	114.10	4071 4.500	21.500	9041080215000

HT 800 WP drill bodies

Series no. **4108**

d1 mm	d2 h6 mm	d2 h6 frac.	d3 mm	L mm	l3 mm	l5 mm	F	Code no.	EDP #
21.50 - 21.99	25.400	1	21.20	207.00	56.00	114.10	4071 4.500	21.505	9041080215050
22.00 - 22.49	25.000		21.70	210.00	56.00	116.70	4071 5.000	22.000	9041080220000
22.00 - 22.49	25.400	1	21.70	210.00	56.00	116.70	4071 5.000	22.005	9041080220050
22.50 - 22.99	25.000		22.20	214.00	56.00	119.30	4071 5.000	22.500	9041080225000
22.50 - 22.99	25.400	1	22.20	214.00	56.00	119.30	4071 5.000	22.505	9041080225050
23.00 - 23.49	25.000		22.70	217.00	56.00	121.90	4071 5.000	23.000	9041080230000
23.00 - 23.49	25.400	1	22.70	217.00	56.00	121.90	4071 5.000	23.005	9041080230050
23.50 - 23.99	25.000		23.20	221.00	56.00	124.50	4071 5.000	23.500	9041080235000
23.50 - 23.99	25.400	1	23.20	221.00	56.00	124.50	4071 5.000	23.505	9041080235050
24.00 - 24.49	25.000		23.70	224.00	56.00	127.10	4071 5.001	24.000	9041080240000
24.00 - 24.49	25.400	1	23.70	224.00	56.00	127.10	4071 5.001	24.005	9041080240050
24.50 - 24.99	25.000		24.20	227.00	56.00	129.70	4071 5.001	24.500	9041080245000
24.50 - 24.99	25.400	1	24.20	227.00	56.00	129.70	4071 5.001	24.505	9041080245050
25.00 - 25.49	25.000		24.70	231.00	56.00	132.30	4071 5.001	25.000	9041080250000
25.00 - 25.49	25.400	1	24.70	231.00	56.00	132.30	4071 5.001	25.005	9041080250050
25.50 - 25.99	32.000		25.20	239.00	60.00	134.90	4071 5.001	25.500	9041080255000
25.50 - 25.99	31.750	1 1/4	25.20	239.00	60.00	134.90	4071 5.001	25.505	9041080255050
26.00 - 26.49	32.000		25.70	244.00	60.00	137.00	4071 5.003	26.000	9041080260000
26.00 - 26.49	31.750	1 1/4	25.70	244.00	60.00	137.00	4071 5.003	26.005	9041080260050
26.50 - 26.99	32.000		26.20	247.00	60.00	140.00	4071 5.003	26.500	9041080265000
26.50 - 26.99	31.750	1 1/4	26.20	247.00	60.00	140.00	4071 5.003	26.505	9041080265050
27.00 - 27.49	32.000		26.70	251.00	60.00	142.00	4071 5.003	27.000	9041080270000
27.00 - 27.49	31.750	1 1/4	26.70	251.00	60.00	142.00	4071 5.003	27.005	9041080270050
27.50 - 27.99	32.000		27.20	254.00	60.00	144.80	4071 5.003	27.500	9041080275000
27.50 - 27.99	31.750	1 1/4	27.20	254.00	60.00	144.80	4071 5.003	27.505	9041080275050
28.00 - 28.49	32.000		27.70	257.00	60.00	147.40	4071 5.003	28.000	9041080280000
28.00 - 28.49	31.750	1 1/4	27.70	257.00	60.00	147.40	4071 5.003	28.005	9041080280050
28.50 - 28.99	32.000		28.20	260.00	60.00	150.40	4071 5.003	28.500	9041080285000
28.50 - 28.99	31.750	1 1/4	28.20	260.00	60.00	150.40	4071 5.003	28.505	9041080285050
29.00 - 29.49	32.000		28.70	264.00	60.00	153.50	4071 5.003	29.000	9041080290000
29.00 - 29.49	31.750	1 1/4	28.70	264.00	60.00	153.50	4071 5.003	29.005	9041080290050
29.50 - 29.99	32.000		29.20	267.00	60.00	155.10	4071 5.003	29.500	9041080295000
29.50 - 29.99	31.750	1 1/4	29.20	267.00	60.00	155.10	4071 5.003	29.505	9041080295050
30.00 - 30.49	32.000		29.70	271.00	60.00	157.60	4071 6.000	30.000	9041080300000
30.00 - 30.49	31.750	1 1/4	29.70	271.00	60.00	157.60	4071 6.000	30.005	9041080300050
30.50 - 30.99	32.000		30.20	274.00	60.00	160.20	4071 6.000	30.500	9041080305000
30.50 - 30.99	31.750	1 1/4	30.20	274.00	60.00	160.20	4071 6.000	30.505	9041080305050
31.00 - 31.49	32.000		30.70	277.00	60.00	162.80	4071 6.000	31.000	9041080310000
31.00 - 31.49	31.750	1 1/4	30.70	277.00	60.00	162.80	4071 6.000	31.005	9041080310050
31.50 - 31.99	32.000		31.20	280.00	60.00	165.40	4071 6.000	31.500	9041080315000
31.50 - 31.99	31.750	1 1/4	31.20	280.00	60.00	165.40	4071 6.000	31.505	9041080315050
32.00 - 32.99	32.000		31.70	287.00	60.00	170.60	4071 6.001	32.000	9041080320000
32.00 - 32.99	31.750	1 1/4	31.70	287.00	60.00	170.60	4071 6.001	32.005	9041080320050
33.00 - 33.99	32.000		32.70	294.00	60.00	175.80	4071 6.001	33.000	9041080330000
33.00 - 33.99	31.750	1 1/4	32.70	294.00	60.00	175.80	4071 6.001	33.005	9041080330050
34.00 - 34.99	32.000		33.70	300.00	60.00	181.00	4071 6.001	34.000	9041080340000
34.00 - 34.99	31.750	1 1/4	33.70	300.00	60.00	181.00	4071 6.001	34.005	9041080340050
35.00 - 35.99	32.000		34.70	307.00	60.00	186.20	4071 6.001	35.000	9041080350000
35.00 - 35.99	31.750	1 1/4	34.70	307.00	60.00	186.20	4071 6.001	35.005	9041080350050
36.00 - 36.99	32.000		35.70	314.00	60.00	191.30	4071 6.002	36.000	9041080360000
36.00 - 36.99	31.750	1 1/4	35.70	314.00	60.00	191.30	4071 6.002	36.005	9041080360050
37.00 - 37.99	32.000		36.70	321.00	60.00	196.50	4071 6.002	37.000	9041080370000
37.00 - 37.99	31.750	1 1/4	36.70	321.00	60.00	196.50	4071 6.002	37.005	9041080370050
38.00 - 38.99	32.000		37.70	327.00	60.00	201.70	4071 6.002	38.000	9041080380000
38.00 - 38.99	31.750	1 1/4	37.70	327.00	60.00	201.70	4071 6.002	38.005	9041080380050
39.00 - 40.00	32.000		38.70	334.00	60.00	206.90	4071 6.002	39.000	9041080390000
39.00 - 40.00	31.750	1 1/4	38.70	334.00	60.00	206.90	4071 6.002	39.005	9041080390050

HT 800 WP drill bodies

Series no. **4109**

HT 800 WP (Type) | 7xD (Cutting depth) | Internal coolant | HE (Shank form)

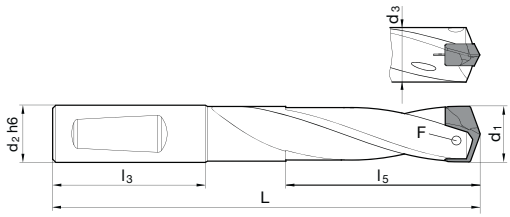
Tool material

Surface Ni

P	Steel
M	Stainless steel
K	Cast iron
N	Aluminum
S	Titanium alloys
H	Hardened steel

●=Optimal
○=Limited

nickel- plated • especially high wear resistance • optimized flute design • optimized coolant duct exit • clamping screws art. no. 4071 included • screwdriver art. no. 1612 included





d1 mm	d2 h6 mm	d2 h6 frac.	d3 mm	L mm	l3 mm	l5 mm	F	Code no.	EDP #
11.00 - 11.49	12.000		10.70	147.00	45.00	82.60	4071 2.200	11.000	9041090110000
11.00 - 11.49	12.700	1/2	10.70	147.00	45.00	82.60	4071 2.200	11.005	9041090110050
11.50 - 11.99	12.000		11.20	151.00	45.00	86.10	4071 2.200	11.500	9041090115000
11.50 - 11.99	12.700	1/2	11.20	151.00	45.00	86.10	4071 2.200	11.505	9041090115050
12.00 - 12.49	12.000		11.70	156.00	45.00	89.70	4071 2.201	12.000	9041090120000
12.00 - 12.49	12.700	1/2	11.70	156.00	45.00	89.70	4071 2.201	12.005	9041090120050
12.50 - 12.99	14.000		12.20	160.00	45.00	93.30	4071 2.201	12.500	9041090125000
12.50 - 12.99	15.875	5/8	12.20	160.00	45.00	93.30	4071 2.201	12.505	9041090125050
13.00 - 13.49	14.000		12.70	164.00	45.00	96.90	4071 2.500	13.000	9041090130000
13.00 - 13.49	15.875	5/8	12.70	164.00	45.00	96.90	4071 2.500	13.005	9041090130050
13.50 - 13.99	14.000		13.20	169.00	45.00	100.60	4071 2.500	13.500	9041090135000
13.50 - 13.99	15.875	5/8	13.20	169.00	45.00	100.60	4071 2.500	13.505	9041090135050
14.00 - 14.49	14.000		13.70	173.00	45.00	104.20	4071 3.000	14.000	9041090140000
14.00 - 14.49	15.875	5/8	13.70	173.00	45.00	104.20	4071 3.000	14.005	9041090140050
14.50 - 14.99	16.000		14.20	180.00	48.00	107.80	4071 3.000	14.500	9041090145000
14.50 - 14.99	15.875	5/8	14.20	180.00	48.00	107.80	4071 3.000	14.505	9041090145050
15.00 - 15.49	16.000		14.70	185.00	48.00	111.30	4071 3.001	15.000	9041090150000
15.00 - 15.49	15.875	5/8	14.70	185.00	48.00	111.30	4071 3.001	15.005	9041090150050
15.50 - 15.99	16.000		15.20	189.00	48.00	114.90	4071 3.001	15.500	9041090155000
15.50 - 15.99	15.875	5/8	15.20	189.00	48.00	114.90	4071 3.001	15.505	9041090155050
16.00 - 16.49	16.000		15.70	193.00	48.00	118.90	4071 3.500	16.000	9041090160000
16.00 - 16.49	15.875	5/8	15.70	193.00	48.00	118.90	4071 3.500	16.005	9041090160050
16.50 - 16.99	18.000		16.20	198.00	48.00	122.10	4071 3.500	16.500	9041090165000
16.50 - 16.99	19.050	3/4	16.20	198.00	48.00	122.10	4071 3.500	16.505	9041090165050
17.00 - 17.49	18.000		16.70	202.00	48.00	125.80	4071 3.500	17.000	9041090170000
17.00 - 17.49	19.050	3/4	16.70	202.00	48.00	125.80	4071 3.500	17.005	9041090170050
17.50 - 17.99	18.000		17.20	206.00	48.00	129.40	4071 3.500	17.500	9041090175000
17.50 - 17.99	19.050	3/4	17.20	206.00	48.00	129.40	4071 3.500	17.505	9041090175050
18.00 - 18.49	18.000		17.70	211.00	48.00	132.90	4071 4.000	18.000	9041090180000
18.00 - 18.49	19.050	3/4	17.70	211.00	48.00	132.90	4071 4.000	18.005	9041090180050
18.50 - 18.99	20.000		18.20	217.00	50.00	136.50	4071 4.000	18.500	9041090185000
18.50 - 18.99	19.050	3/4	18.20	217.00	50.00	136.50	4071 4.000	18.505	9041090185050
19.00 - 19.49	20.000		18.70	221.00	50.00	140.10	4071 4.000	19.000	9041090190000
19.00 - 19.49	19.050	3/4	18.70	221.00	50.00	140.10	4071 4.000	19.005	9041090190050
19.50 - 19.99	20.000		19.20	226.00	50.00	143.70	4071 4.000	19.500	9041090195000
19.50 - 19.99	19.050	3/4	19.20	226.00	50.00	143.70	4071 4.000	19.505	9041090195050
20.00 - 20.49	20.000		19.70	230.00	50.00	147.30	4071 4.500	20.000	9041090200000
20.00 - 20.49	19.050	3/4	19.70	230.00	50.00	147.30	4071 4.500	20.005	9041090200050
20.50 - 20.99	25.000		20.20	243.00	56.00	151.00	4071 4.500	20.500	9041090205000
20.50 - 20.99	25.400	1	20.20	243.00	56.00	151.00	4071 4.500	20.505	9041090205050
21.00 - 21.49	25.000		20.70	247.00	56.00	154.60	4071 4.500	21.000	9041090210000
21.00 - 21.49	25.400	1	20.70	247.00	56.00	154.60	4071 4.500	21.005	9041090210050
21.50 - 21.99	25.000		21.20	251.00	56.00	158.10	4071 4.500	21.500	9041090215000

HT 800 WP drill bodies

Series no. **4109**

d1 mm	d2 h6 mm	d2 h6 frac.	d3 mm	L mm	l3 mm	l5 mm	F	Code no.	EDP #
21.50 - 21.99	25.400	1	21.20	251.00	56.00	158.10	4071 4.500	21.505	9041090215050
22.00 - 22.49	25.000		21.70	255.00	56.00	161.70	4071 5.000	22.000	9041090220000
22.00 - 22.49	25.400	1	21.70	255.00	56.00	161.70	4071 5.000	22.005	9041090220050
22.50 - 22.99	25.000		22.20	260.00	56.00	165.30	4071 5.000	22.500	9041090225000
22.50 - 22.99	25.400	1	22.20	260.00	56.00	165.30	4071 5.000	22.505	9041090225050
23.00 - 23.49	25.000		22.70	264.00	56.00	168.90	4071 5.000	23.000	9041090230000
23.00 - 23.49	25.400	1	22.70	264.00	56.00	168.90	4071 5.000	23.005	9041090230050
23.50 - 23.99	25.000		23.20	269.00	56.00	172.50	4071 5.000	23.500	9041090235000
23.50 - 23.99	25.400	1	23.20	269.00	56.00	172.50	4071 5.000	23.505	9041090235050
24.00 - 24.49	25.000		23.70	273.00	56.00	176.10	4071 5.001	24.000	9041090240000
24.00 - 24.49	25.400	1	23.70	273.00	56.00	176.10	4071 5.001	24.005	9041090240050
24.50 - 24.99	25.000		24.20	277.00	56.00	179.70	4071 5.001	24.500	9041090245000
24.50 - 24.99	25.400	1	24.20	277.00	56.00	179.70	4071 5.001	24.505	9041090245050
25.00 - 25.49	25.000		24.70	282.00	56.00	183.30	4071 5.001	25.000	9041090250000
25.00 - 25.49	25.400	1	24.70	282.00	56.00	183.30	4071 5.001	25.005	9041090250050
25.50 - 25.99	32.000		25.20	291.00	60.00	186.90	4071 5.001	25.500	9041090255000
25.50 - 25.99	31.750	1 1/4	25.20	291.00	60.00	186.90	4071 5.001	25.505	9041090255050
26.00 - 26.49	32.000		25.70	297.00	60.00	190.00	4071 5.003	26.000	9041090260000
26.00 - 26.49	31.750	1 1/4	25.70	297.00	60.00	190.00	4071 5.003	26.005	9041090260050
26.50 - 26.99	32.000		26.20	301.00	60.00	194.00	4071 5.003	26.500	9041090265000
26.50 - 26.99	31.750	1 1/4	26.20	301.00	60.00	194.00	4071 5.003	26.505	9041090265050
27.00 - 27.49	32.000		26.70	306.00	60.00	197.20	4071 5.003	27.000	9041090270000
27.00 - 27.49	31.750	1 1/4	26.70	306.00	60.00	197.20	4071 5.003	27.005	9041090270050
27.50 - 27.99	32.000		27.20	310.00	60.00	200.80	4071 5.003	27.500	9041090275000
27.50 - 27.99	31.750	1 1/4	27.20	310.00	60.00	200.80	4071 5.003	27.505	9041090275050
28.00 - 28.49	32.000		27.70	314.00	60.00	204.40	4071 5.003	28.000	9041090280000
28.00 - 28.49	31.750	1 1/4	27.70	314.00	60.00	204.40	4071 5.003	28.005	9041090280050
28.50 - 28.99	32.000		28.20	318.00	60.00	208.40	4071 5.003	28.500	9041090285000
28.50 - 28.99	31.750	1 1/4	28.20	318.00	60.00	208.40	4071 5.003	28.505	9041090285050
29.00 - 29.49	32.000		28.70	323.00	60.00	212.50	4071 5.003	29.000	9041090290000
29.00 - 29.49	31.750	1 1/4	28.70	323.00	60.00	212.50	4071 5.003	29.005	9041090290050
29.50 - 29.99	32.000		29.20	327.00	60.00	215.10	4071 5.003	29.500	9041090295000
29.50 - 29.99	31.750	1 1/4	29.20	327.00	60.00	215.10	4071 5.003	29.505	9041090295050
30.00 - 30.49	32.000		29.70	332.00	60.00	218.60	4071 6.000	30.000	9041090300000
30.00 - 30.49	31.750	1 1/4	29.70	332.00	60.00	218.60	4071 6.000	30.005	9041090300050
30.50 - 30.99	32.000		30.20	336.00	60.00	222.20	4071 6.000	30.500	9041090305000
30.50 - 30.99	31.750	1 1/4	30.20	336.00	60.00	222.20	4071 6.000	30.505	9041090305050
31.00 - 31.49	32.000		30.70	340.00	60.00	225.80	4071 6.000	31.000	9041090310000
31.00 - 31.49	31.750	1 1/4	30.70	340.00	60.00	225.80	4071 6.000	31.005	9041090310050
31.50 - 31.99	32.000		31.20	344.00	60.00	229.40	4071 6.000	31.500	9041090315000
31.50 - 31.99	31.750	1 1/4	31.20	344.00	60.00	229.40	4071 6.000	31.505	9041090315050

HT 800 WP drill bodies

Series no. **4110**

HT 800 WP (Type) | 10xD (Cutting depth) | Internal coolant | HE (Shank form)

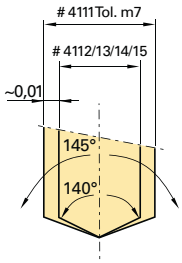
Tool material

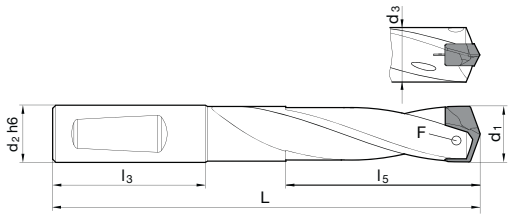
Surface Ni

P	Steel
M	Stainless steel
K	Cast iron
N	Aluminum
S	Titanium alloys
H	Hardened steel

●=Optimal
○=Limited

nickel- plated • especially high wear resistance • optimized flute design • optimized coolant duct exit • clamping screws art. no. 4071 included • screwdriver art. no. 1612 included







Drilling depths over 7xD will typically require piloting operation using shorter drill body series 4105 or 4106, and series 4111 insert.

d1 mm	d2 h6 mm	d2 h6 frac.	d3 mm	L mm	l3 mm	l5 mm	F	Code no.	EDP #
11.00 - 11.49	12.000		10.70	182.00	45.00	117.10	4071 2.200	11.000	9041100110000
11.00 - 11.49	12.700	1/2	10.70	182.00	45.00	117.10	4071 2.200	11.005	9041100110050
11.50 - 11.99	12.000		11.20	187.00	45.00	122.10	4071 2.200	11.500	9041100115000
11.50 - 11.99	12.700	1/2	11.20	187.00	45.00	122.10	4071 2.200	11.505	9041100115050
12.00 - 12.49	12.000		11.70	194.00	45.00	127.20	4071 2.201	12.000	9041100120000
12.00 - 12.49	12.700	1/2	11.70	194.00	45.00	127.20	4071 2.201	12.005	9041100120050
12.50 - 12.99	14.000		12.20	199.00	45.00	132.30	4071 2.201	12.500	9041100125000
12.50 - 12.99	15.875	5/8	12.20	199.00	45.00	132.30	4071 2.201	12.505	9041100125050
13.00 - 13.49	14.000		12.70	205.00	45.00	137.50	4071 2.500	13.000	9041100130000
13.00 - 13.49	15.875	5/8	12.70	205.00	45.00	137.50	4071 2.500	13.005	9041100130050
13.50 - 13.99	14.000		13.20	211.00	45.00	142.50	4071 2.500	13.500	9041100135000
13.50 - 13.99	15.875	5/8	13.20	211.00	45.00	142.50	4071 2.500	13.505	9041100135050
14.00 - 14.49	14.000		13.70	217.00	45.00	147.70	4071 3.000	14.000	9041100140000
14.00 - 14.49	15.875	5/8	13.70	217.00	45.00	147.70	4071 3.000	14.005	9041100140050
14.50 - 14.99	16.000		14.20	225.00	48.00	152.80	4071 3.000	14.500	9041100145000
14.50 - 14.99	15.875	5/8	14.20	225.00	48.00	152.80	4071 3.000	14.505	9041100145050
15.00 - 15.49	16.000		14.70	232.00	48.00	157.80	4071 3.001	15.000	9041100150000
15.00 - 15.49	15.875	5/8	14.70	232.00	48.00	157.80	4071 3.001	15.005	9041100150050
15.50 - 15.99	16.000		15.20	237.00	48.00	162.90	4071 3.001	15.500	9041100155000
15.50 - 15.99	15.875	5/8	15.20	237.00	48.00	162.90	4071 3.001	15.505	9041100155050
16.00 - 16.49	16.000		15.70	243.00	48.00	168.00	4071 3.500	16.000	9041100160000
16.00 - 16.49	15.875	5/8	15.70	243.00	48.00	168.00	4071 3.500	16.005	9041100160050
16.50 - 16.99	18.000		16.20	249.00	48.00	173.10	4071 3.500	16.500	9041100165000
16.50 - 16.99	19.050	3/4	16.20	249.00	48.00	173.10	4071 3.500	16.505	9041100165050
17.00 - 17.49	18.000		16.70	255.00	48.00	178.30	4071 3.500	17.000	9041100170000
17.00 - 17.49	19.050	3/4	16.70	255.00	48.00	178.30	4071 3.500	17.005	9041100170050
17.50 - 17.99	18.000		17.20	260.00	48.00	183.50	4071 3.500	17.500	9041100175000
17.50 - 17.99	19.050	3/4	17.20	260.00	48.00	183.50	4071 3.500	17.505	9041100175050
18.00 - 18.49	18.000		17.70	267.00	48.00	188.40	4071 4.000	18.000	9041100180000
18.00 - 18.49	19.050	3/4	17.70	267.00	48.00	188.40	4071 4.000	18.005	9041100180050
18.50 - 18.99	20.000		18.20	274.00	50.00	193.50	4071 4.000	18.500	9041100185000
18.50 - 18.99	19.050	3/4	18.20	274.00	50.00	193.50	4071 4.000	18.505	9041100185050
19.00 - 19.49	20.000		18.70	280.00	50.00	198.70	4071 4.000	19.000	9041100190000
19.00 - 19.49	19.050	3/4	18.70	280.00	50.00	198.70	4071 4.000	19.005	9041100190050
19.50 - 19.99	20.000		19.20	286.00	50.00	203.70	4071 4.000	19.500	9041100195000
19.50 - 19.99	19.050	3/4	19.20	286.00	50.00	203.70	4071 4.000	19.505	9041100195050
20.00 - 20.49	20.000		19.70	292.00	50.00	208.90	4071 4.500	20.000	9041100200000
20.00 - 20.49	19.050	3/4	19.70	292.00	50.00	208.90	4071 4.500	20.005	9041100200050
20.50 - 20.99	25.000		20.20	306.00	56.00	214.00	4071 4.500	20.500	9041100205000
20.50 - 20.99	25.400	1	20.20	306.00	56.00	214.00	4071 4.500	20.505	9041100205050
21.00 - 21.49	25.000		20.70	312.00	56.00	219.10	4071 4.500	21.000	9041100210000
21.00 - 21.49	25.400	1	20.70	312.00	56.00	219.10	4071 4.500	21.005	9041100210050
21.50 - 21.99	25.000		21.20	317.00	56.00	224.20	4071 4.500	21.500	9041100215000

HT 800 WP drill bodies

Series no. **4110**

d1 mm	d2 h6 mm	d2 h6 frac.	d3 mm	L mm	l3 mm	l5 mm	F	Code no.	EDP #
21.50 - 21.99	25.400	1	21.20	317.00	56.00	224.20	4071 4.500	21.505	9041100215050
22.00 - 22.49	25.000		21.70	323.00	56.00	229.30	4071 5.000	22.000	9041100220000
22.00 - 22.49	25.400	1	21.70	323.00	56.00	229.30	4071 5.000	22.005	9041100220050
22.50 - 22.99	25.000		22.20	329.00	56.00	234.40	4071 5.000	22.500	9041100225000
22.50 - 22.99	25.400	1	22.20	329.00	56.00	234.40	4071 5.000	22.505	9041100225050
23.00 - 23.49	25.000		22.70	335.00	56.00	239.50	4071 5.000	23.000	9041100230000
23.00 - 23.49	25.400	1	22.70	335.00	56.00	239.50	4071 5.000	23.005	9041100230050
23.50 - 23.99	25.000		23.20	341.00	56.00	244.60	4071 5.000	23.500	9041100235000
23.50 - 23.99	25.400	1	23.20	341.00	56.00	244.60	4071 5.000	23.505	9041100235050
24.00 - 24.49	25.000		23.70	347.00	56.00	249.70	4071 5.001	24.000	9041100240000
24.00 - 24.49	25.400	1	23.70	347.00	56.00	249.70	4071 5.001	24.005	9041100240050
24.50 - 24.99	25.000		24.20	352.00	56.00	254.80	4071 5.001	24.500	9041100245000
24.50 - 24.99	25.400	1	24.20	352.00	56.00	254.80	4071 5.001	24.505	9041100245050
25.00 - 25.49	25.000		24.70	359.00	56.00	259.90	4071 5.001	25.000	9041100250000
25.00 - 25.49	25.400	1	24.70	359.00	56.00	259.90	4071 5.001	25.005	9041100250050
25.50 - 25.99	32.000		25.20	369.00	60.00	265.00	4071 5.001	25.500	9041100255000
25.50 - 25.99	31.750	1 1/4	25.20	369.00	60.00	265.00	4071 5.001	25.505	9041100255050
26.00 - 26.49	32.000		25.70	377.00	60.00	270.00	4071 5.003	26.000	9041100260000
26.00 - 26.49	31.750	1 1/4	25.70	377.00	60.00	270.00	4071 5.003	26.005	9041100260050
26.50 - 26.99	32.000		26.20	382.00	60.00	275.00	4071 5.003	26.500	9041100265000
26.50 - 26.99	31.750	1 1/4	26.20	382.00	60.00	275.00	4071 5.003	26.505	9041100265050
27.00 - 27.49	32.000		26.70	388.00	60.00	280.10	4071 5.003	27.000	9041100270000
27.00 - 27.49	31.750	1 1/4	26.70	388.00	60.00	280.10	4071 5.003	27.005	9041100270050
27.50 - 27.99	32.000		27.20	394.00	60.00	285.20	4071 5.003	27.500	9041100275000
27.50 - 27.99	31.750	1 1/4	27.20	394.00	60.00	285.20	4071 5.003	27.505	9041100275050
28.00 - 28.49	32.000		27.70	400.00	60.00	290.30	4071 5.003	28.000	9041100280000
28.00 - 28.49	31.750	1 1/4	27.70	400.00	60.00	290.30	4071 5.003	28.005	9041100280050
28.50 - 28.99	32.000		28.20	405.00	60.00	295.40	4071 5.003	28.500	9041100285000
28.50 - 28.99	31.750	1 1/4	28.20	405.00	60.00	295.40	4071 5.003	28.505	9041100285050
29.00 - 29.49	32.000		28.70	412.00	60.00	300.50	4071 5.003	29.000	9041100290000
29.00 - 29.49	31.750	1 1/4	28.70	412.00	60.00	300.50	4071 5.003	29.005	9041100290050
29.50 - 29.99	32.000		29.20	418.00	60.00	305.60	4071 5.003	29.500	9041100295000
29.50 - 29.99	31.750	1 1/4	29.20	418.00	60.00	305.60	4071 5.003	29.505	9041100295050
30.00 - 30.49	32.000		29.70	424.00	60.00	310.60	4071 6.000	30.000	9041100300000
30.00 - 30.49	31.750	1 1/4	29.70	424.00	60.00	310.60	4071 6.000	30.005	9041100300050
30.50 - 30.99	32.000		30.20	429.00	60.00	315.70	4071 6.000	30.500	9041100305000
30.50 - 30.99	31.750	1 1/4	30.20	429.00	60.00	315.70	4071 6.000	30.505	9041100305050
31.00 - 31.49	32.000		30.70	435.00	60.00	320.80	4071 6.000	31.000	9041100310000
31.00 - 31.49	31.750	1 1/4	30.70	435.00	60.00	320.80	4071 6.000	31.005	9041100310050
31.50 - 31.99	32.000		31.20	441.00	60.00	325.90	4071 6.000	31.500	9041100315000
31.50 - 31.99	31.750	1 1/4	31.20	441.00	60.00	325.90	4071 6.000	31.505	9041100315050

HT 800 WP drill inserts

Series no. **4111**

HT 800 WP (Type) | 145° (Point angle) | m7 (Tolerance on Ø)

Tool material: **Solid Carbide**

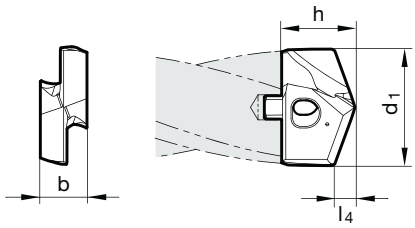
Surface: a

P	Steel	○
M	Stainless steel	○
K	Cast iron	○
N	Aluminum	○
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 11.000 • facet point grinding • main cutting edge form straight (after correction) • clamping screws art. no. 4071 included

Piloting in all materials





Speeds and feeds information on pg. 542

Sizes listed in red are new additions.

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
11.000		1.800	4.500	7.200	11.000	9041110110000
11.200		1.800	4.500	7.200	11.200	9041110112000
11.500		1.900	4.500	7.200	11.500	9041110115000
11.510	29/64	1.900	4.500	7.200	11.510	9041110115100
11.700		1.900	4.500	7.200	11.700	9041110117000
11.800		1.900	4.500	7.200	11.800	9041110118000
11.910	15/32	1.900	4.500	7.200	11.910	9041110119100
12.000		1.900	5.000	7.400	12.000	9041110120000
12.100		2.000	5.000	7.400	12.100	9041110121000
12.200		2.000	5.000	7.400	12.200	9041110122000
12.300	31/64	2.000	5.000	7.400	12.300	9041110123000
12.500		2.000	5.000	7.400	12.500	9041110125000
12.600		2.000	5.000	7.400	12.600	9041110126000
12.700	1/2	2.100	5.000	7.400	12.700	9041110127000
12.800		2.100	5.000	7.400	12.800	9041110128000
12.900		2.100	5.000	7.400	12.900	9041110129000
13.000		2.100	5.500	8.200	13.000	9041110130000
13.100	33/64	2.100	5.500	8.200	13.100	9041110131000
13.490	17/32	2.200	5.500	8.200	13.490	9041110134900
13.500		2.200	5.500	8.200	13.500	9041110135000
13.600		2.200	5.500	8.200	13.600	9041110136000
13.700		2.200	5.500	8.200	13.700	9041110137000
13.800		2.200	5.500	8.200	13.800	9041110138000
13.890	35/64	2.200	5.500	8.200	13.890	9041110138900
14.000		2.300	6.000	9.400	14.000	9041110140000
14.100		2.300	6.000	9.400	14.100	9041110141000
14.290	9/16	2.300	6.000	9.400	14.290	9041110142900
14.400		2.300	6.000	9.400	14.400	9041110144000
14.500		2.300	6.000	9.400	14.500	9041110145000
14.600		2.400	6.000	9.400	14.600	9041110146000
14.680	37/64	2.400	6.000	9.400	14.680	9041110146800
14.700		2.400	6.000	9.400	14.700	9041110147000
14.800		2.400	6.000	9.400	14.800	9041110148000
15.000		2.400	6.000	9.400	15.000	9041110150000
15.080	19/32	2.400	6.000	9.400	15.080	9041110150800
15.100		2.400	6.000	9.400	15.100	9041110151000
15.200		2.400	6.000	9.400	15.200	9041110152000
15.300		2.500	6.000	9.400	15.300	9041110153000
15.480	39/64	2.500	6.000	9.400	15.480	9041110154800
15.500		2.500	6.000	9.400	15.500	9041110155000
15.600		2.500	6.000	9.400	15.600	9041110156000
15.700		2.500	6.000	9.400	15.700	9041110157000
15.800		2.500	6.000	9.400	15.800	9041110158000

HT 800 WP drill inserts

Series no. **4111**

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
15.870	5/8	2.600	6.000	9.400	15.870	9041110158700
16.000		2.600	7.000	10.600	16.000	9041110160000
16.270	41/64	2.600	7.000	10.600	16.270	9041110162700
16.500		2.700	7.000	10.600	16.500	9041110165000
16.670	21/32	2.700	7.000	10.600	16.670	9041110166700
17.000		2.700	7.000	10.600	17.000	9041110170000
17.070	43/64	2.700	7.000	10.600	17.070	9041110170700
17.460	11/16	2.800	7.000	10.600	17.460	9041110174600
17.500		2.800	7.000	10.600	17.500	9041110175000
17.600		2.800	7.000	10.600	17.600	9041110176000
17.860	45/64	2.900	7.000	10.600	17.860	9041110178600
18.000		2.900	8.000	12.100	18.000	9041110180000
18.260	23/32	2.900	8.000	12.100	18.260	9041110182600
18.500		3.000	8.000	12.100	18.500	9041110185000
18.650	47/64	3.000	8.000	12.100	18.650	9041110186500
19.000		3.000	8.000	12.100	19.000	9041110190000
19.050	3/4	3.100	8.000	12.100	19.050	9041110190500
19.450	49/64	3.100	8.000	12.100	19.450	9041110194500
19.500		3.100	8.000	12.100	19.500	9041110195000
19.600		3.100	8.000	12.100	19.600	9041110196000
19.840	25/32	3.200	8.000	12.100	19.840	9041110198400
20.000		3.200	9.000	13.300	20.000	9041110200000
20.240	51/64	3.200	9.000	13.300	20.240	9041110202400
20.500		3.300	9.000	13.300	20.500	9041110205000
20.640	13/16	3.300	9.000	13.300	20.640	9041110206400
21.000		3.400	9.000	13.300	21.000	9041110210000
21.030	53/64	3.400	9.000	13.300	21.030	9041110210300
21.100		3.400	9.000	13.300	21.100	9041110211000
21.430	27/32	3.400	9.000	13.300	21.430	9041110214300
21.500		3.400	9.000	13.300	21.500	9041110215000
21.830	55/64	3.500	9.000	13.300	21.830	9041110218300
22.000		3.500	10.000	14.800	22.000	9041110220000
22.220	7/8	3.600	10.000	14.800	22.220	9041110222200
22.500		3.600	10.000	14.800	22.500	9041110225000
22.620	57/64	3.600	10.000	14.800	22.620	9041110226200
23.000		3.700	10.000	14.800	23.000	9041110230000
23.020	29/32	3.700	10.000	14.800	23.020	9041110230200
23.420	59/64	3.700	10.000	14.800	23.420	9041110234200
23.500		3.800	10.000	14.800	23.500	9041110235000
23.810	15/16	3.800	10.000	14.800	23.810	9041110238100
24.000		3.800	11.000	15.300	24.000	9041110240000
24.100		3.800	11.000	15.300	24.100	9041110241000
24.210	61/64	3.900	11.000	15.300	24.210	9041110242100
24.500		3.900	11.000	15.300	24.500	9041110245000
24.610	31/32	3.900	11.000	15.300	24.610	9041110246100
25.000	63/64	4.000	11.000	15.300	25.000	9041110250000
25.400	1	4.100	11.000	15.300	25.400	9041110254000
25.500		4.100	11.000	15.300	25.500	9041110255000
25.700		4.100	11.000	15.300	25.700	9041110257000
26.000		4.100	12.000	19.400	26.000	9041110260000
26.190	1 1/32	4.200	12.000	19.400	26.190	9041110261900
26.500		4.200	12.000	19.400	26.500	9041110265000
26.590	1 3/64	4.200	12.000	19.400	26.590	9041110265900
27.000		4.300	12.000	19.400	27.000	9041110270000
27.500		4.400	12.000	19.400	27.500	9041110275000
27.700		4.400	12.000	19.400	27.700	9041110277000
27.780	1 3/32	4.400	12.000	19.400	27.780	9041110277800
28.000		4.500	13.000	20.100	28.000	9041110280000
28.180	1 7/64	4.500	13.000	20.100	28.180	9041110281800
28.500		4.500	13.000	20.100	28.500	9041110285000
28.580		4.600	13.000	20.100	28.580	9041110285800
29.000		4.600	13.000	20.100	29.000	9041110290000
29.370	1 5/32	4.700	13.000	20.100	29.370	9041110293700
29.500		4.700	13.000	20.100	29.500	9041110295000
30.000		4.800	14.000	21.700	30.000	9041110300000
30.160	1 3/16	4.800	14.000	21.700	30.160	9041110301600

HT 800 WP drill inserts

Series no. **4111**

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
30.500		4.900	14.000	21.700	30.500	9041110305000
30.960	1 7/32	4.900	14.000	21.700	30.960	9041110309600
31.000		4.900	14.000	21.700	31.000	9041110310000
31.500		5.000	14.000	21.700	31.500	9041110315000
31.750	1 1/4	5.100	14.000	21.700	31.750	9041110317500
32.000		5.100	15.000	22.400	32.000	9041110320000
32.500		5.200	15.000	22.400	32.500	9041110325000
32.540	1 9/32	5.200	15.000	22.400	32.540	9041110325400
33.000		5.300	15.000	22.400	33.000	9041110330000
33.340	1 5/16	5.300	15.000	22.400	33.340	9041110333400
33.500		5.300	15.000	22.400	33.500	9041110335000
34.000		5.400	15.000	22.400	34.000	9041110340000
34.130	1 11/32	5.400	15.000	22.400	34.130	9041110341300
34.500		5.500	15.000	22.400	34.500	9041110345000
34.930		5.600	15.000	22.400	34.930	9041110349300
35.000		5.600	15.000	22.400	35.000	9041110350000
35.500		5.600	15.000	22.400	35.500	9041110355000
35.720	1 13/32	5.700	15.000	22.400	35.720	9041110357200
36.000		5.700	16.000	23.200	36.000	9041110360000
36.500		5.800	16.000	23.200	36.500	9041110365000
36.510	1 7/16	5.800	16.000	23.200	36.510	9041110365100
37.000		5.900	16.000	23.200	37.000	9041110370000
37.310	1 15/32	5.900	16.000	23.200	37.310	9041110373100
37.500		6.000	16.000	23.200	37.500	9041110375000
38.000		6.000	16.000	23.200	38.000	9041110380000
38.100	1 1/2	6.100	16.000	23.200	38.100	9041110381000
38.500	1 33/64	6.100	16.000	23.200	38.500	9041110385000
39.000		6.200	16.000	23.200	39.000	9041110390000
39.500		6.300	16.000	23.200	39.500	9041110395000
40.000		6.400	16.000	23.200	40.000	9041110400000

HT 800 WP drill inserts

Series no. **4113**

HT 800 WP (Type) | 140° (Point angle) | m7 (Tolerance on Ø)

Tool material: **Solid Carbide**

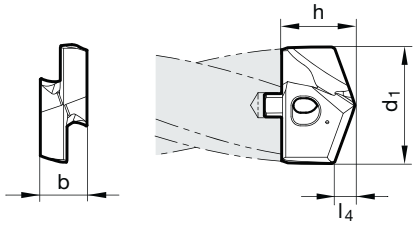
Surface: Y

P	Steel	○
M	Stainless steel	
K	Cast iron	●
N	Aluminum	
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 11.000 • facet point grinding • main cutting edge form straight (after correction) • clamping screws art. no. 4071 included

vermicular cast iron GGV • grey cast iron, malleable and spheroidal iron





Speeds and feeds information on pg. 544

Sizes listed in red are new additions.

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
11.000		2.700	4.500	7.500	11.000	9041130110000
11.200		2.700	4.500	7.500	11.200	9041130112000
11.500		2.800	4.500	7.500	11.500	9041130115000
11.510	29/64	2.800	4.500	7.500	11.510	9041130115100
11.700		2.800	4.500	7.500	11.700	9041130117000
11.800		2.800	4.500	7.500	11.800	9041130118000
11.910	15/32	2.800	4.500	7.500	11.910	9041130119100
12.000		2.900	5.000	7.700	12.000	9041130120000
12.100		2.900	5.000	7.700	12.100	9041130121000
12.200		2.900	5.000	7.700	12.200	9041130122000
12.300	31/64	2.900	5.000	7.700	12.300	9041130123000
12.500		3.100	5.000	7.700	12.500	9041130125000
12.600		3.100	5.000	7.700	12.600	9041130126000
12.700	1/2	3.100	5.000	7.700	12.700	9041130127000
12.800		3.100	5.000	7.700	12.800	9041130128000
12.900		3.100	5.000	7.700	12.900	9041130129000
13.000		3.200	5.500	8.500	13.000	9041130130000
13.100	33/64	3.200	5.500	8.500	13.100	9041130131000
13.300		3.200	5.500	8.500	13.300	9041130133000
13.490	17/32	3.200	5.500	8.500	13.490	9041130134900
13.500		3.300	5.500	8.500	13.500	9041130135000
13.600		3.300	5.500	8.500	13.600	9041130136000
13.700		3.300	5.500	8.500	13.700	9041130137000
13.800		3.300	5.500	8.500	13.800	9041130138000
13.890	35/64	3.300	5.500	8.500	13.890	9041130138900
14.000		3.400	6.000	9.600	14.000	9041130140000
14.100		3.400	6.000	9.600	14.100	9041130141000
14.290	9/16	3.400	6.000	9.600	14.290	9041130142900
14.400		3.400	6.000	9.600	14.400	9041130144000
14.500		3.600	6.000	9.600	14.500	9041130145000
14.600		3.600	6.000	9.600	14.600	9041130146000
14.680	37/64	3.600	6.000	9.600	14.680	9041130146800
14.700		3.600	6.000	9.600	14.700	9041130147000
14.800		3.600	6.000	9.600	14.800	9041130148000
15.000		3.700	6.000	9.800	15.000	9041130150000
15.080	19/32	3.700	6.000	9.800	15.080	9041130150800
15.100		3.700	6.000	9.800	15.100	9041130151000
15.200		3.700	6.000	9.800	15.200	9041130152000
15.300		3.700	6.000	9.800	15.300	9041130153000
15.480	39/64	3.700	6.000	9.800	15.480	9041130154800
15.500		3.800	6.000	9.800	15.500	9041130155000
15.600		3.800	6.000	9.800	15.600	9041130156000
15.700		3.800	6.000	9.800	15.700	9041130157000

HT 800 WP drill inserts

Series no. **4113**

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
15.800		3.800	6.000	9.800	15.800	9041130158000
15.870	5/8	3.800	6.000	9.800	15.870	9041130158700
16.000		3.900	7.000	11.000	16.000	9041130160000
16.270	41/64	3.900	7.000	11.000	16.270	9041130162700
16.500		4.100	7.000	11.000	16.500	9041130165000
16.670	21/32	4.100	7.000	11.000	16.670	9041130166700
17.000		4.200	7.000	11.000	17.000	9041130170000
17.070	43/64	4.200	7.000	11.000	17.070	9041130170700
17.300		4.200	7.000	11.000	17.300	9041130173000
17.460	11/16	4.200	7.000	11.000	17.460	9041130174600
17.500		4.300	7.000	11.000	17.500	9041130175000
17.600		4.300	7.000	11.000	17.600	9041130176000
17.860	45/64	4.300	7.000	11.000	17.860	9041130178600
18.000		4.400	8.000	12.600	18.000	9041130180000
18.260	23/32	4.400	8.000	12.600	18.260	9041130182600
18.500		4.500	8.000	12.600	18.500	9041130185000
18.650	47/64	4.500	8.000	12.600	18.650	9041130186500
18.900		4.500	8.000	12.600	18.900	9041130189000
19.000		4.700	8.000	12.600	19.000	9041130190000
19.050	3/4	4.700	8.000	12.600	19.050	9041130190500
19.250		4.700	8.000	12.600	19.250	9041130192500
19.300		4.700	8.000	12.600	19.300	9041130193000
19.450	49/64	4.700	8.000	12.600	19.450	9041130194500
19.500		4.800	8.000	12.600	19.500	9041130195000
19.600		4.800	8.000	12.600	19.600	9041130196000
19.840	25/32	4.800	8.000	12.600	19.840	9041130198400
20.000		4.900	9.000	13.900	20.000	9041130200000
20.240	51/64	4.900	9.000	13.900	20.240	9041130202400
20.500		5.100	9.000	13.900	20.500	9041130205000
20.640	13/16	5.100	9.000	13.900	20.640	9041130206400
20.900		5.100	9.000	13.900	20.900	9041130209000
21.000		5.200	9.000	13.900	21.000	9041130210000
21.030	53/64	5.200	9.000	13.900	21.030	9041130210300
21.100		5.200	9.000	13.900	21.100	9041130211000
21.430	27/32	5.200	9.000	13.900	21.430	9041130214300
21.500		5.300	9.000	13.900	21.500	9041130215000
21.700		5.300	9.000	13.900	21.700	9041130217000
21.830	55/64	5.300	9.000	13.900	21.830	9041130218300
22.000		5.400	10.000	15.300	22.000	9041130220000
22.220	7/8	5.400	10.000	15.300	22.220	9041130222200
22.500		5.600	10.000	15.300	22.500	9041130225000
22.620	57/64	5.600	10.000	15.300	22.620	9041130226200
22.700		5.600	10.000	15.300	22.700	9041130227000
23.000		5.700	10.000	15.300	23.000	9041130230000
23.020	29/32	5.700	10.000	15.300	23.020	9041130230200
23.420	59/64	5.700	10.000	15.300	23.420	9041130234200
23.500		5.800	10.000	15.300	23.500	9041130235000
23.700		5.800	10.000	15.300	23.700	9041130237000
23.810	15/16	5.800	10.000	15.300	23.810	9041130238100
24.000		6.000	11.000	15.800	24.000	9041130240000
24.100		6.000	11.000	15.800	24.100	9041130241000
24.210	61/64	6.000	11.000	15.800	24.210	9041130242100
24.500		6.100	11.000	15.800	24.500	9041130245000
24.610	31/32	6.100	11.000	15.800	24.610	9041130246100
25.000	63/64	6.200	11.000	15.800	25.000	9041130250000
25.400	1	6.200	11.000	15.800	25.400	9041130254000
25.500		6.300	11.000	15.800	25.500	9041130255000
25.670		6.300	11.000	15.800	25.670	9041130256700
25.700		6.300	11.000	15.800	25.700	9041130257000
25.810		6.300	11.000	15.800	25.810	9041130258100
26.000		6.400	12.000	20.000	26.000	9041130260000
26.190	1 1/32	6.400	12.000	20.000	26.190	9041130261900
26.500		6.500	12.000	20.000	26.500	9041130265000
26.590	1 3/64	6.500	12.000	20.000	26.590	9041130265900
27.000		6.600	12.000	20.000	27.000	9041130270000
27.500		6.700	12.000	20.000	27.500	9041130275000

HT 800 WP drill inserts

Series no. **4113**

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
27.700		6.700	12.000	20.000	27.700	9041130277000
27.780	1 3/32	6.700	12.000	20.000	27.780	9041130277800
28.000		6.800	13.000	20.700	28.000	9041130280000
28.180	1 7/64	6.800	13.000	20.700	28.180	9041130281800
28.500		6.900	13.000	20.700	28.500	9041130285000
28.580		6.900	13.000	20.700	28.580	9041130285800
29.000		7.100	13.000	20.700	29.000	9041130290000
29.370	1 5/32	7.100	13.000	20.700	29.370	9041130293700
29.500		7.200	13.000	20.700	29.500	9041130295000
29.770	1 11/64	7.200	13.000	20.700	29.770	9041130297700
30.000		7.300	14.000	22.300	30.000	9041130300000
30.160	1 3/16	7.300	14.000	22.300	30.160	9041130301600
30.500		7.400	14.000	22.300	30.500	9041130305000
30.960	1 7/32	7.400	14.000	22.300	30.960	9041130309600
31.000		7.500	14.000	22.300	31.000	9041130310000
31.500		7.600	14.000	22.300	31.500	9041130315000
31.750	1 1/4	7.600	14.000	22.300	31.750	9041130317500
32.000		7.700	15.000	23.100	32.000	9041130320000
32.500		7.800	15.000	23.100	32.500	9041130325000
32.540	1 9/32	7.800	15.000	23.100	32.540	9041130325400
32.940	1 19/64	7.800	15.000	23.100	32.940	9041130329400
33.000		7.900	15.000	23.100	33.000	9041130330000
33.340	1 5/16	7.900	15.000	23.100	33.340	9041130333400
33.500		8.100	15.000	23.100	33.500	9041130335000
34.000		8.200	15.000	23.100	34.000	9041130340000
34.130	1 11/32	8.200	15.000	23.100	34.130	9041130341300
34.500		8.400	15.000	23.100	34.500	9041130345000
34.930		8.400	15.000	23.100	34.930	9041130349300
35.000		8.500	15.000	23.100	35.000	9041130350000
35.500		8.600	15.000	23.100	35.500	9041130355000
35.720	1 13/32	8.600	15.000	23.100	35.720	9041130357200
36.000		8.700	16.000	23.900	36.000	9041130360000
36.500		8.800	16.000	23.900	36.500	9041130365000

HT 800 WP drill inserts

Series no. **4114**

HT 800 WP (Type) | 140° (Point angle) | h7 (Tolerance on Ø)

Tool material: **Solid Carbide**

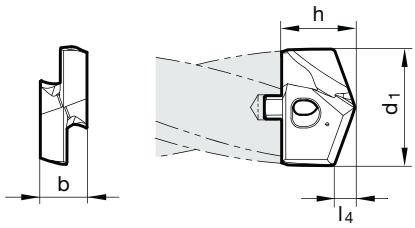
Surface: ◯

P	Steel	
M	Stainless steel	
K	Cast iron	
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 11.000 • relieved cone • main cutting edge form concave • clamping screws art. no. 4071 included

aluminium and Al-alloys • non-ferrous metals





Speeds and feeds information on pg. 545

Sizes listed in red are new additions.

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
11.000		2.100	4.500	7.500	11.000	9041140110000
11.200		2.100	4.500	7.500	11.200	9041140112000
11.500		2.100	4.500	7.500	11.500	9041140115000
11.510	29/64	2.100	4.500	7.500	11.510	9041140115100
11.700		2.200	4.500	7.500	11.700	9041140117000
11.800		2.200	4.500	7.500	11.800	9041140118000
11.910	15/32	2.200	4.500	7.500	11.910	9041140119100
12.000		2.200	5.000	7.700	12.000	9041140120000
12.100		2.300	5.000	7.700	12.100	9041140121000
12.200		2.300	5.000	7.700	12.200	9041140122000
12.300	31/64	2.300	5.000	7.700	12.300	9041140123000
12.500		2.300	5.000	7.700	12.500	9041140125000
12.600		2.300	5.000	7.700	12.600	9041140126000
12.700	1/2	2.400	5.000	7.700	12.700	9041140127000
12.800		2.400	5.000	7.700	12.800	9041140128000
12.900		2.400	5.000	7.700	12.900	9041140129000
13.000		2.400	5.500	8.500	13.000	9041140130000
13.100	33/64	2.400	5.500	8.500	13.100	9041140131000
13.490	17/32	2.500	5.500	8.500	13.490	9041140134900
13.500		2.500	5.500	8.500	13.500	9041140135000
13.600		2.500	5.500	8.500	13.600	9041140136000
13.700		2.500	5.500	8.500	13.700	9041140137000
13.800		2.600	5.500	8.500	13.800	9041140138000
13.890	35/64	2.600	5.500	8.500	13.890	9041140138900
14.000		2.600	6.000	9.600	14.000	9041140140000
14.100		2.600	6.000	9.600	14.100	9041140141000
14.290	9/16	2.700	6.000	9.600	14.290	9041140142900
14.400		2.700	6.000	9.600	14.400	9041140144000
14.500		2.700	6.000	9.600	14.500	9041140145000
14.600		2.700	6.000	9.600	14.600	9041140146000
14.680	37/64	2.700	6.000	9.600	14.680	9041140146800
14.700		2.700	6.000	9.600	14.700	9041140147000
14.800		2.700	6.000	9.600	14.800	9041140148000
15.000		2.800	6.000	9.800	15.000	9041140150000
15.080	19/32	2.800	6.000	9.800	15.080	9041140150800
15.100		2.800	6.000	9.800	15.100	9041140151000
15.200		2.800	6.000	9.800	15.200	9041140152000
15.300		2.800	6.000	9.800	15.300	9041140153000
15.480	39/64	2.900	6.000	9.800	15.480	9041140154800
15.500		2.900	6.000	9.800	15.500	9041140155000
15.600		2.900	6.000	9.800	15.600	9041140156000
15.700		2.900	6.000	9.800	15.700	9041140157000
15.800		2.900	6.000	9.800	15.800	9041140158000

HT 800 WP drill inserts

Series no. **4114**

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
15.870	5/8	2.900	6.000	9.800	15.870	9041140158700
16.000		3.000	7.000	11.000	16.000	9041140160000
16.270	41/64	3.000	7.000	11.000	16.270	9041140162700
16.500		3.100	7.000	11.000	16.500	9041140165000
16.670	21/32	3.100	7.000	11.000	16.670	9041140166700
17.000		3.100	7.000	11.000	17.000	9041140170000
17.070	43/64	3.200	7.000	11.000	17.070	9041140170700
17.460	11/16	3.200	7.000	11.000	17.460	9041140174600
17.500		3.200	7.000	11.000	17.500	9041140175000
17.600		3.300	7.000	11.000	17.600	9041140176000
17.860	45/64	3.300	7.000	11.000	17.860	9041140178600
18.000		3.300	8.000	12.600	18.000	9041140180000
18.260	23/32	3.400	8.000	12.600	18.260	9041140182600
18.500		3.400	8.000	12.600	18.500	9041140185000
18.650	47/64	3.400	8.000	12.600	18.650	9041140186500
19.000		3.500	8.000	12.600	19.000	9041140190000
19.050	3/4	3.500	8.000	12.600	19.050	9041140190500
19.250		3.600	8.000	12.600	19.250	9041140192500
19.450	49/64	3.600	8.000	12.600	19.450	9041140194500
19.500		3.600	8.000	12.600	19.500	9041140195000
19.600		3.600	8.000	12.600	19.600	9041140196000
19.840	25/32	3.700	8.000	12.600	19.840	9041140198400
20.000		3.700	9.000	13.900	20.000	9041140200000
20.240	51/64	3.700	9.000	13.900	20.240	9041140202400
20.500		3.800	9.000	13.900	20.500	9041140205000
20.640	13/16	3.800	9.000	13.900	20.640	9041140206400
21.000		3.900	9.000	13.900	21.000	9041140210000
21.030	53/64	3.900	9.000	13.900	21.030	9041140210300
21.100		3.900	9.000	13.900	21.100	9041140211000
21.430	27/32	3.900	9.000	13.900	21.430	9041140214300
21.500		4.000	9.000	13.900	21.500	9041140215000
21.830	55/64	4.000	9.000	13.900	21.830	9041140218300
22.000		4.100	10.000	15.300	22.000	9041140220000
22.220	7/8	4.100	10.000	15.300	22.220	9041140222200
22.500		4.100	10.000	15.300	22.500	9041140225000
22.620	57/64	4.200	10.000	15.300	22.620	9041140226200
23.000		4.200	10.000	15.300	23.000	9041140230000
23.020	29/32	4.200	10.000	15.300	23.020	9041140230200
23.420	59/64	4.300	10.000	15.300	23.420	9041140234200
23.500		4.300	10.000	15.300	23.500	9041140235000
23.810	15/16	4.400	10.000	15.300	23.810	9041140238100
24.000		4.400	11.000	15.800	24.000	9041140240000
24.100		4.400	11.000	15.800	24.100	9041140241000
24.210	61/64	4.500	11.000	15.800	24.210	9041140242100
24.500		4.500	11.000	15.800	24.500	9041140245000
24.610	31/32	4.500	11.000	15.800	24.610	9041140246100
25.000	63/64	4.600	11.000	15.800	25.000	9041140250000
25.400	1	4.700	11.000	15.800	25.400	9041140254000
25.500		4.700	11.000	15.800	25.500	9041140255000
25.670		4.700	11.000	15.800	25.670	9041140256700
25.700		4.700	11.000	15.800	25.700	9041140257000
25.810		4.700	11.000	15.800	25.810	9041140258100
26.000		4.800	12.000	20.000	26.000	9041140260000
26.190	1 1/32	4.800	12.000	20.000	26.190	9041140261900
26.500		4.900	12.000	20.000	26.500	9041140265000
26.590	1 3/64	4.900	12.000	20.000	26.590	9041140265900
27.000		5.000	12.000	20.000	27.000	9041140270000
27.500		5.100	12.000	20.000	27.500	9041140275000
27.700		5.100	12.000	20.000	27.700	9041140277000
27.780	1 3/32	5.100	12.000	20.000	27.780	9041140277800
28.000		5.100	13.000	20.700	28.000	9041140280000
28.180	1 7/64	5.200	13.000	20.700	28.180	9041140281800
28.500		5.200	13.000	20.700	28.500	9041140285000
28.580		5.300	13.000	20.700	28.580	9041140285800
29.000		5.300	13.000	20.700	29.000	9041140290000
29.370	1 5/32	5.400	13.000	20.700	29.370	9041140293700

HT 800 WP drill inserts

Series no. **4114**

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
29.500		5.400	13.000	20.700	29.500	9041140295000
29.770	1 11/64	5.500	13.000	20.700	29.770	9041140297700
30.000		5.500	14.000	22.300	30.000	9041140300000
30.160	1 3/16	5.500	14.000	22.300	30.160	9041140301600
30.500		5.600	14.000	22.300	30.500	9041140305000
30.960	1 7/32	5.700	14.000	22.300	30.960	9041140309600
31.000		5.700	14.000	22.300	31.000	9041140310000
31.500		5.800	14.000	22.300	31.500	9041140315000
31.750	1 1/4	5.800	14.000	22.300	31.750	9041140317500
32.000		5.900	15.000	23.100	32.000	9041140320000
32.500		6.000	15.000	23.100	32.500	9041140325000
32.540	1 9/32	6.000	15.000	23.100	32.540	9041140325400
32.940	1 19/64	6.000	15.000	23.100	32.940	9041140329400
33.000		6.100	15.000	23.100	33.000	9041140330000
33.340	1 5/16	6.100	15.000	23.100	33.340	9041140333400
33.500		6.100	15.000	23.100	33.500	9041140335000
34.000		6.200	15.000	23.100	34.000	9041140340000
34.130	1 11/32	6.300	15.000	23.100	34.130	9041140341300
34.500		6.300	15.000	23.100	34.500	9041140345000
34.930		6.400	15.000	23.100	34.930	9041140349300
35.000		6.400	15.000	23.100	35.000	9041140350000
35.500		6.500	15.000	23.100	35.500	9041140355000
35.720	1 13/32	6.600	15.000	23.100	35.720	9041140357200
36.000		6.600	16.000	23.900	36.000	9041140360000
36.500		6.700	16.000	23.900	36.500	9041140365000
36.510	1 7/16	6.700	16.000	23.900	36.510	9041140365100
37.000		6.800	16.000	23.900	37.000	9041140370000
37.310	1 15/32	6.800	16.000	23.900	37.310	9041140373100
37.500		6.900	16.000	23.900	37.500	9041140375000
38.000		7.000	16.000	23.900	38.000	9041140380000
38.100	1 1/2	7.000	16.000	23.900	38.100	9041140381000
38.500	1 33/64	7.100	16.000	23.900	38.500	9041140385000
39.000		7.100	16.000	23.900	39.000	9041140390000
39.500		7.200	16.000	23.900	39.500	9041140395000
40.000		7.300	16.000	23.900	40.000	9041140400000

HT 800 WP drill inserts

Series no. **4112**

HT 800 WP (Type) | 140° (Point angle) | h7 (Tolerance on Ø)

Tool material: **Solid Carbide**

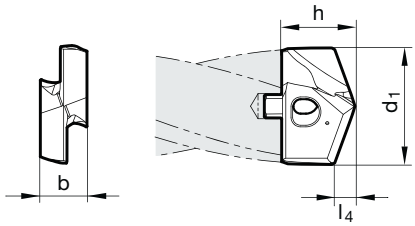
Surface: **F**

P	Steel	●
M	Stainless steel	○
K	Cast iron	○
N	Aluminum	
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 11.000 • facet point grinding • main cutting edge form straight (after correction) • clamping screws art. no. 4071 included

S structural and case hardened steels • free-cutting steels, heattreatable steels • alloyed steels up to 1200 N/mm²





Speeds and feeds information on pg. 543

Sizes listed in red are new additions.

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
11.000		2.100	4.500	7.500	11.000	9041120110000
11.200		2.100	4.500	7.500	11.200	9041120112000
11.500		2.100	4.500	7.500	11.500	9041120115000
11.510	29/64	2.100	4.500	7.500	11.510	9041120115100
11.700		2.200	4.500	7.500	11.700	9041120117000
11.800		2.200	4.500	7.500	11.800	9041120118000
11.910	15/32	2.200	4.500	7.500	11.910	9041120119100
12.000		2.200	5.000	7.700	12.000	9041120120000
12.100		2.300	5.000	7.700	12.100	9041120121000
12.200		2.300	5.000	7.700	12.200	9041120122000
12.300	31/64	2.300	5.000	7.700	12.300	9041120123000
12.500		2.300	5.000	7.700	12.500	9041120125000
12.600		2.300	5.000	7.700	12.600	9041120126000
12.700	1/2	2.400	5.000	7.700	12.700	9041120127000
12.800		2.400	5.000	7.700	12.800	9041120128000
12.900		2.400	5.000	7.700	12.900	9041120129000
13.000		2.400	5.500	8.500	13.000	9041120130000
13.100	33/64	2.400	5.500	8.500	13.100	9041120131000
13.300		2.500	5.500	8.500	13.300	9041120133000
13.490	17/32	2.500	5.500	8.500	13.490	9041120134900
13.500		2.500	5.500	8.500	13.500	9041120135000
13.600		2.500	5.500	8.500	13.600	9041120136000
13.700		2.500	5.500	8.500	13.700	9041120137000
13.800		2.600	5.500	8.500	13.800	9041120138000
13.890	35/64	2.600	5.500	8.500	13.890	9041120138900
14.000		2.600	6.000	9.600	14.000	9041120140000
14.100		2.600	6.000	9.600	14.100	9041120141000
14.290	9/16	2.700	6.000	9.600	14.290	9041120142900
14.400		2.700	6.000	9.600	14.400	9041120144000
14.500		2.700	6.000	9.600	14.500	9041120145000
14.600		2.700	6.000	9.600	14.600	9041120146000
14.680	37/64	2.700	6.000	9.600	14.680	9041120146800
14.700		2.700	6.000	9.600	14.700	9041120147000
14.800		2.700	6.000	9.600	14.800	9041120148000
15.000		2.800	6.000	9.800	15.000	9041120150000
15.080	19/32	2.800	6.000	9.800	15.080	9041120150800
15.100		2.800	6.000	9.800	15.100	9041120151000
15.200		2.800	6.000	9.800	15.200	9041120152000
15.300		2.800	6.000	9.800	15.300	9041120153000
15.480	39/64	2.900	6.000	9.800	15.480	9041120154800
15.500		2.900	6.000	9.800	15.500	9041120155000
15.600		2.900	6.000	9.800	15.600	9041120156000
15.700		2.900	6.000	9.800	15.700	9041120157000

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
15.800		2.900	6.000	9.800	15.800	9041120158000
15.870	5/8	2.900	6.000	9.800	15.870	9041120158700
16.000		3.000	7.000	11.000	16.000	9041120160000
16.270	41/64	3.000	7.000	11.000	16.270	9041120162700
16.500		3.100	7.000	11.000	16.500	9041120165000
16.670	21/32	3.100	7.000	11.000	16.670	9041120166700
17.000		3.100	7.000	11.000	17.000	9041120170000
17.070	43/64	3.200	7.000	11.000	17.070	9041120170700
17.300		3.200	7.000	11.000	17.300	9041120173000
17.460	11/16	3.200	7.000	11.000	17.460	9041120174600
17.500		3.200	7.000	11.000	17.500	9041120175000
17.600		3.300	7.000	11.000	17.600	9041120176000
17.860	45/64	3.300	7.000	11.000	17.860	9041120178600
18.000		3.300	8.000	12.600	18.000	9041120180000
18.260	23/32	3.400	8.000	12.600	18.260	9041120182600
18.500		3.400	8.000	12.600	18.500	9041120185000
18.650	47/64	3.400	8.000	12.600	18.650	9041120186500
18.900		3.500	8.000	12.600	18.900	9041120189000
19.000		3.500	8.000	12.600	19.000	9041120190000
19.050	3/4	3.500	8.000	12.600	19.050	9041120190500
19.250		3.600	8.000	12.600	19.250	9041120192500
19.300		3.600	8.000	12.600	19.300	9041120193000
19.450	49/64	3.600	8.000	12.600	19.450	9041120194500
19.500		3.600	8.000	12.600	19.500	9041120195000
19.600		3.600	8.000	12.600	19.600	9041120196000
19.840	25/32	3.700	8.000	12.600	19.840	9041120198400
20.000		3.700	9.000	13.900	20.000	9041120200000
20.240	51/64	3.700	9.000	13.900	20.240	9041120202400
20.500		3.800	9.000	13.900	20.500	9041120205000
20.640	13/16	3.800	9.000	13.900	20.640	9041120206400
20.900		3.900	9.000	13.900	20.900	9041120209000
21.000		3.900	9.000	13.900	21.000	9041120210000
21.030	53/64	3.900	9.000	13.900	21.030	9041120210300
21.100		3.900	9.000	13.900	21.100	9041120211000
21.430	27/32	3.900	9.000	13.900	21.430	9041120214300
21.500		4.000	9.000	13.900	21.500	9041120215000
21.700		4.000	9.000	13.900	21.700	9041120217000
21.830	55/64	4.000	9.000	13.900	21.830	9041120218300
22.000		4.100	10.000	15.300	22.000	9041120220000
22.220	7/8	4.100	10.000	15.300	22.220	9041120222200
22.500		4.100	10.000	15.300	22.500	9041120225000
22.620	57/64	4.200	10.000	15.300	22.620	9041120226200
22.700		4.200	10.000	15.300	22.700	9041120227000
23.000		4.200	10.000	15.300	23.000	9041120230000
23.020	29/32	4.200	10.000	15.300	23.020	9041120230200
23.420	59/64	4.300	10.000	15.300	23.420	9041120234200
23.500		4.300	10.000	15.300	23.500	9041120235000
23.700		4.400	10.000	15.300	23.700	9041120237000
23.810	15/16	4.400	10.000	15.300	23.810	9041120238100
24.000		4.400	11.000	15.800	24.000	9041120240000
24.100		4.400	11.000	15.800	24.100	9041120241000
24.210	61/64	4.500	11.000	15.800	24.210	9041120242100
24.500		4.500	11.000	15.800	24.500	9041120245000
24.610	31/32	4.500	11.000	15.800	24.610	9041120246100
25.000	63/64	4.600	11.000	15.800	25.000	9041120250000
25.400	1	4.700	11.000	15.800	25.400	9041120254000
25.500		4.700	11.000	15.800	25.500	9041120255000
25.670		4.700	11.000	15.800	25.670	9041120256700
25.700		4.700	11.000	15.800	25.700	9041120257000
25.810		4.700	11.000	15.800	25.810	9041120258100
26.000		4.800	12.000	20.000	26.000	9041120260000
26.190	1 1/32	4.800	12.000	20.000	26.190	9041120261900
26.500		4.900	12.000	20.000	26.500	9041120265000
26.590	1 3/64	4.900	12.000	20.000	26.590	9041120265900
27.000		5.000	12.000	20.000	27.000	9041120270000

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
27.500		5.100	12.000	20.000	27.500	9041120275000
27.700		5.100	12.000	20.000	27.700	9041120277000
27.780	1 3/32	5.100	12.000	20.000	27.780	9041120277800
28.000		5.100	13.000	20.700	28.000	9041120280000
28.180	1 7/64	5.200	13.000	20.700	28.180	9041120281800
28.500		5.200	13.000	20.700	28.500	9041120285000
28.580		5.300	13.000	20.700	28.580	9041120285800
29.000		5.300	13.000	20.700	29.000	9041120290000
29.370	1 5/32	5.400	13.000	20.700	29.370	9041120293700
29.500		5.400	13.000	20.700	29.500	9041120295000
29.600		5.400	13.000	20.700	29.600	9041120296000
29.770	1 11/64	5.500	13.000	20.700	29.770	9041120297700
30.000		5.500	14.000	22.300	30.000	9041120300000
30.160	1 3/16	5.500	14.000	22.300	30.160	9041120301600
30.500		5.600	14.000	22.300	30.500	9041120305000
30.960	1 7/32	5.700	14.000	22.300	30.960	9041120309600
31.000		5.700	14.000	22.300	31.000	9041120310000
31.500		5.800	14.000	22.300	31.500	9041120315000
31.750	1 1/4	5.800	14.000	22.300	31.750	9041120317500
32.000		5.900	15.000	23.100	32.000	9041120320000
32.500		6.000	15.000	23.100	32.500	9041120325000
32.540	1 9/32	6.000	15.000	23.100	32.540	9041120325400
32.940	1 19/64	6.000	15.000	23.100	32.940	9041120329400
33.000		6.100	15.000	23.100	33.000	9041120330000
33.340	1 5/16	6.100	15.000	23.100	33.340	9041120333400
33.500		6.100	15.000	23.100	33.500	9041120335000
34.000		6.200	15.000	23.100	34.000	9041120340000
34.130	1 11/32	6.300	15.000	23.100	34.130	9041120341300
34.500		6.300	15.000	23.100	34.500	9041120345000
34.930		6.400	15.000	23.100	34.930	9041120349300
35.000		6.400	15.000	23.100	35.000	9041120350000
35.500		6.500	15.000	23.100	35.500	9041120355000
35.720	1 13/32	6.600	15.000	23.100	35.720	9041120357200
36.000		6.600	16.000	23.900	36.000	9041120360000
36.500		6.700	16.000	23.900	36.500	9041120365000
36.510	1 7/16	6.700	16.000	23.900	36.510	9041120365100
37.000		6.800	16.000	23.900	37.000	9041120370000
37.310	1 15/32	6.800	16.000	23.900	37.310	9041120373100
37.500		6.900	16.000	23.900	37.500	9041120375000
38.000		7.000	16.000	23.900	38.000	9041120380000
38.100	1 1/2	7.000	16.000	23.900	38.100	9041120381000
38.500	1 33/64	7.100	16.000	23.900	38.500	9041120385000
39.000		7.100	16.000	23.900	39.000	9041120390000
39.500		7.200	16.000	23.900	39.500	9041120395000
40.000		7.300	16.000	23.900	40.000	9041120400000

HT 800 WP drill inserts

Series no. **4115**

HT 800 WP (Type) | 140° (Point angle) | h7 (Tolerance on Ø)

Tool material: **Solid Carbide**

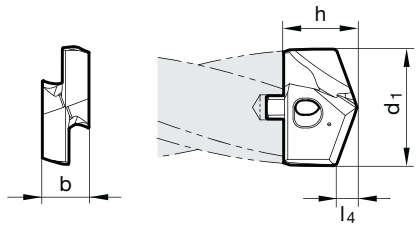
Surface: **a**

P	Steel	○
M	Stainless steel	●
K	Cast iron	
N	Aluminum	
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

web thinning ≥ Ø 11.000 • relieved cone • main cutting edge
form straight (after correction) • clamping screws art. no. 4071 included

stainless steels





Speeds and feeds information on pg. 546

Sizes listed in red are new additions.

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
11.000		2.100	4.500	7.500	11.000	9041150110000
11.200		2.100	4.500	7.500	11.200	9041150112000
11.500		2.100	4.500	7.500	11.500	9041150115000
11.510	29/64	2.100	4.500	7.500	11.510	9041150115100
11.700		2.200	4.500	7.500	11.700	9041150117000
11.800		2.200	4.500	7.500	11.800	9041150118000
11.910	15/32	2.200	4.500	7.500	11.910	9041150119100
12.000		2.200	5.000	7.700	12.000	9041150120000
12.100		2.300	5.000	7.700	12.100	9041150121000
12.200		2.300	5.000	7.700	12.200	9041150122000
12.300	31/64	2.300	5.000	7.700	12.300	9041150123000
12.500		2.300	5.000	7.700	12.500	9041150125000
12.600		2.300	5.000	7.700	12.600	9041150126000
12.700	1/2	2.400	5.000	7.700	12.700	9041150127000
12.800		2.400	5.000	7.700	12.800	9041150128000
12.900		2.400	5.000	7.700	12.900	9041150129000
13.000		2.400	5.500	8.500	13.000	9041150130000
13.100	33/64	2.400	5.500	8.500	13.100	9041150131000
13.490	17/32	2.500	5.500	8.500	13.490	9041150134900
13.500		2.500	5.500	8.500	13.500	9041150135000
13.600		2.500	5.500	8.500	13.600	9041150136000
13.700		2.500	5.500	8.500	13.700	9041150137000
13.800		2.600	5.500	8.500	13.800	9041150138000
13.890	35/64	2.600	5.500	8.500	13.890	9041150138900
14.000		2.600	6.000	9.600	14.000	9041150140000
14.100		2.600	6.000	9.600	14.100	9041150141000
14.290	9/16	2.700	6.000	9.600	14.290	9041150142900
14.400		2.700	6.000	9.600	14.400	9041150144000
14.500		2.700	6.000	9.600	14.500	9041150145000
14.600		2.700	6.000	9.600	14.600	9041150146000
14.700		2.700	6.000	9.600	14.700	9041150147000
14.800		2.700	6.000	9.600	14.800	9041150148000
15.000		2.800	6.000	9.800	15.000	9041150150000
15.080	19/32	2.800	6.000	9.800	15.080	9041150150800
15.100		2.800	6.000	9.800	15.100	9041150151000
15.200		2.800	6.000	9.800	15.200	9041150152000
15.300		2.800	6.000	9.800	15.300	9041150153000
15.500		2.900	6.000	9.800	15.500	9041150155000
15.600		2.900	6.000	9.800	15.600	9041150156000
15.700		2.900	6.000	9.800	15.700	9041150157000
15.800		2.900	6.000	9.800	15.800	9041150158000
15.870	5/8	2.900	6.000	9.800	15.870	9041150158700
16.000		3.000	7.000	11.000	16.000	9041150160000

HT 800 WP drill inserts

Series no. **4115**

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
16.270	41/64	3.000	7.000	11.000	16.270	9041150162700
16.500		3.100	7.000	11.000	16.500	9041150165000
16.670	21/32	3.100	7.000	11.000	16.670	9041150166700
17.000		3.100	7.000	11.000	17.000	9041150170000
17.070	43/64	3.200	7.000	11.000	17.070	9041150170700
17.460	11/16	3.200	7.000	11.000	17.460	9041150174600
17.500		3.200	7.000	11.000	17.500	9041150175000
17.600		3.300	7.000	11.000	17.600	9041150176000
17.860	45/64	3.300	7.000	11.000	17.860	9041150178600
18.000		3.300	8.000	12.600	18.000	9041150180000
18.260	23/32	3.400	8.000	12.600	18.260	9041150182600
18.500		3.400	8.000	12.600	18.500	9041150185000
18.650	47/64	3.400	8.000	12.600	18.650	9041150186500
19.000		3.500	8.000	12.600	19.000	9041150190000
19.050	3/4	3.500	8.000	12.600	19.050	9041150190500
19.250		3.600	8.000	12.600	19.250	9041150192500
19.450	49/64	3.600	8.000	12.600	19.450	9041150194500
19.500		3.600	8.000	12.600	19.500	9041150195000
19.600		3.600	8.000	12.600	19.600	9041150196000
19.840	25/32	3.700	8.000	12.600	19.840	9041150198400
20.000		3.700	9.000	13.900	20.000	9041150200000
20.240	51/64	3.700	9.000	13.900	20.240	9041150202400
20.500		3.800	9.000	13.900	20.500	9041150205000
20.640	13/16	3.800	9.000	13.900	20.640	9041150206400
21.000		3.900	9.000	13.900	21.000	9041150210000
21.030	53/64	3.900	9.000	13.900	21.030	9041150210300
21.100		3.900	9.000	13.900	21.100	9041150211000
21.430	27/32	3.900	9.000	13.900	21.430	9041150214300
21.500		4.000	9.000	13.900	21.500	9041150215000
21.830	55/64	4.000	9.000	13.900	21.830	9041150218300
22.000		4.100	10.000	15.300	22.000	9041150220000
22.220	7/8	4.100	10.000	15.300	22.220	9041150222200
22.500		4.100	10.000	15.300	22.500	9041150225000
22.620	57/64	4.200	10.000	15.300	22.620	9041150226200
23.000		4.200	10.000	15.300	23.000	9041150230000
23.020	29/32	4.200	10.000	15.300	23.020	9041150230200
23.420	59/64	4.300	10.000	15.300	23.420	9041150234200
23.500		4.300	10.000	15.300	23.500	9041150235000
23.810	15/16	4.400	10.000	15.300	23.810	9041150238100
24.000		4.400	11.000	15.800	24.000	9041150240000
24.100		4.400	11.000	15.800	24.100	9041150241000
24.210	61/64	4.500	11.000	15.800	24.210	9041150242100
24.500		4.500	11.000	15.800	24.500	9041150245000
24.610	31/32	4.500	11.000	15.800	24.610	9041150246100
25.000	63/64	4.600	11.000	15.800	25.000	9041150250000
25.400	1	4.700	11.000	15.800	25.400	9041150254000
25.500		4.700	11.000	15.800	25.500	9041150255000
25.700		4.700	11.000	15.800	25.700	9041150257000
26.000		4.800	12.000	20.000	26.000	9041150260000
26.190	1 1/32	4.800	12.000	20.000	26.190	9041150261900
26.500		4.900	12.000	20.000	26.500	9041150265000
26.590	1 3/64	4.900	12.000	20.000	26.590	9041150265900
27.000		5.000	12.000	20.000	27.000	9041150270000
27.500		5.100	12.000	20.000	27.500	9041150275000
27.700		5.100	12.000	20.000	27.700	9041150277000
27.780	1 3/32	5.100	12.000	20.000	27.780	9041150277800
28.000		5.100	13.000	20.700	28.000	9041150280000
28.180	1 7/64	5.200	13.000	20.700	28.180	9041150281800
28.500		5.200	13.000	20.700	28.500	9041150285000
28.580		5.300	13.000	20.700	28.580	9041150285800
29.000		5.300	13.000	20.700	29.000	9041150290000
29.370	1 5/32	5.400	13.000	20.700	29.370	9041150293700
29.500		5.400	13.000	20.700	29.500	9041150295000
29.770	1 11/64	5.500	13.000	20.700	29.770	9041150297700
30.000		5.500	14.000	22.300	30.000	9041150300000
30.160	1 3/16	5.500	14.000	22.300	30.160	9041150301600

HT 800 WP drill inserts

Series no. **4115**

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
30.500		5.600	14.000	22.300	30.500	9041150305000
30.960	1 7/32	5.700	14.000	22.300	30.960	9041150309600
31.000		5.700	14.000	22.300	31.000	9041150310000
31.500		5.800	14.000	22.300	31.500	9041150315000
31.750	1 1/4	5.800	14.000	22.300	31.750	9041150317500
32.000		5.900	15.000	23.100	32.000	9041150320000
32.500		6.000	15.000	23.100	32.500	9041150325000
32.540	1 9/32	6.000	15.000	23.100	32.540	9041150325400
33.000		6.100	15.000	23.100	33.000	9041150330000
33.340	1 5/16	6.100	15.000	23.100	33.340	9041150333400
33.500		6.100	15.000	23.100	33.500	9041150335000
34.000		6.200	15.000	23.100	34.000	9041150340000
34.130	1 11/32	6.300	15.000	23.100	34.130	9041150341300
34.500		6.300	15.000	23.100	34.500	9041150345000
34.930		6.400	15.000	23.100	34.930	9041150349300
35.000		6.400	15.000	23.100	35.000	9041150350000
35.500		6.500	15.000	23.100	35.500	9041150355000
35.720	1 13/32	6.600	15.000	23.100	35.720	9041150357200
36.000		6.600	16.000	23.900	36.000	9041150360000
36.500		6.700	16.000	23.900	36.500	9041150365000
36.510	1 7/16	6.700	16.000	23.900	36.510	9041150365100
37.000		6.800	16.000	23.900	37.000	9041150370000
37.310	1 15/32	6.800	16.000	23.900	37.310	9041150373100
37.500		6.900	16.000	23.900	37.500	9041150375000
38.000		7.000	16.000	23.900	38.000	9041150380000
38.100	1 1/2	7.000	16.000	23.900	38.100	9041150381000
38.500	1 33/64	7.100	16.000	23.900	38.500	9041150385000
39.000		7.100	16.000	23.900	39.000	9041150390000
39.500		7.200	16.000	23.900	39.500	9041150395000
40.000		7.300	16.000	23.900	40.000	9041150400000

HT 800 WP drill inserts

Series no. **4229**

HT 800 WP (Type) | 160° 125° (Point angle) | h7 (Tolerance on Ø)

Tool material **Solid Carbide**

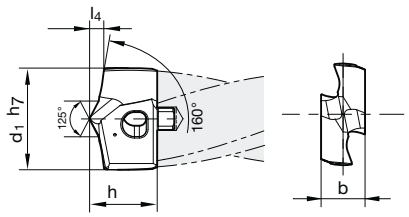
Surface **F**

P	Steel	●
M	Stainless steel	
K	Cast iron	
N	Aluminum	
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

facet point grinding • main cutting edge form concave • special point geometry with 160° point angle and 125° center point • clamping screws art. no. 4071 included

application for the machining of structural steel components





Speeds and feeds information on pg. 547

Sizes listed in red are new additions.

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
12.000		1.70	5.00	7.50	12.000	9042290120000
12.700	1/2	1.80	5.00	7.50	12.700	9042290127000
14.000		2.00	6.00	9.60	14.000	9042290140000
14.290	9/16	2.10	6.00	9.50	14.290	9042290142900
15.870	5/8	2.30	6.00	9.60	15.870	9042290158700
16.000		2.30	7.00	10.80	16.000	9042290160000
17.460	11/16	2.50	7.00	10.80	17.460	9042290174600
18.000		2.60	8.00	12.30	18.000	9042290180000
19.050	3/4	2.80	8.00	12.30	19.050	9042290190500
20.000		2.90	9.00	13.60	20.000	9042290200000
20.640	13/16	3.00	9.00	13.60	20.640	9042290206400
21.000		3.00	9.00	13.60	21.000	9042290210000
22.000		3.20	10.00	14.90	22.000	9042290220000
22.220	7/8	3.20	10.00	14.90	22.220	9042290222200
23.810	15/16	3.40	10.00	15.00	23.810	9042290238100
24.000		3.50	11.00	15.50	24.000	9042290240000
25.000	63/64	3.60	11.00	15.50	25.000	9042290250000
25.400	1	3.70	11.00	15.50	25.400	9042290254000
26.000		3.80	12.00	18.50	26.000	9042290260000
27.000		3.90	12.00	18.60	27.000	9042290270000
28.000		4.10	13.00	19.20	28.000	9042290280000
28.580	1 1/8	4.10	13.00	19.80	28.580	9042290285800
29.000		4.20	13.00	19.60	29.000	9042290290000
30.000		4.40	14.00	19.90	30.000	9042290300000
30.160	1 3/16	4.40	14.00	19.90	30.160	9042290301600
31.750	1 1/4	4.60	14.00	20.60	31.750	9042290317500
32.000		4.60	15.00	21.30	32.000	9042290320000
33.000		4.80	15.00	21.90	33.000	9042290330000
33.340	1 5/16	4.80	15.00	21.70	33.340	9042290333400
34.000		4.90	15.00	22.00	34.000	9042290340000
34.930	1 3/8	5.10	15.00	22.20	34.930	9042290349300
36.000		5.20	16.00	22.50	36.000	9042290360000
36.510	1 7/16	5.30	16.00	22.50	36.510	9042290365100
38.000		5.50	16.00	22.70	38.000	9042290380000
38.100	1 1/2	5.50	16.00	23.00	38.100	9042290381000
40.000		5.80	16.00	23.30	40.000	9042290400000

HT 800 WP countersink inserts

Series no. **7635**

Tool material **Solid Carbide**

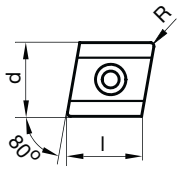
Surface ◯

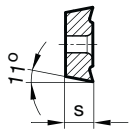
P	Steel	
M	Stainless steel	
K	Cast iron	
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

clamping screws art. no. 6128 not included

aluminium and Al-alloys • non-ferrous metals







Speeds and feeds information on pg.

ISO	d inch	s mm	R mm	l mm	Code no.	EDP #
CPGT050202FR-AL	5.560	2.380	0.200	5.640	52.020	9076350520200
CPGT050204FR-AL	5.560	2.380	0.400	5.640	52.040	9076350520400
CPGT060202FR-AL	6.350	2.380	0.200	6.450	62.020	9076350620200
CPGT060204FR-AL	6.350	2.380	0.400	6.450	62.040	9076350620400
CPGT09T308FR-AL	9.525	3.970	0.800	9.670	93.080	9076350930800

HT 800 WP countersink inserts

Series no. **7645**

Tool material **Solid Carbide**

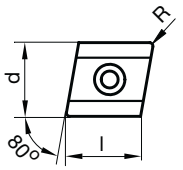
Surface **S**

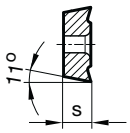
P	Steel	●
M	Stainless steel	○
K	Cast iron	○
N	Aluminum	
S	Titanium alloys	○
H	Hardened steel	○

●=Optimal
○=Limited

clamping screws art. no. 6128 not included

alloyed/unalloyed steel and cast steel







Speeds and feeds information on pg.

ISO	d inch	s mm	R mm	l mm	Code no.	EDP #
CPGT050202FR-P	5.560	2.380	0.200	5.640	52.020	9076450520200
CPGT050204FR-P	5.560	2.380	0.400	5.640	52.040	9076450520400
CPGT060202FR-P	6.350	2.380	0.200	6.450	62.020	9076450620200
CPGT060204FR-P	6.350	2.380	0.400	6.450	62.040	9076450620400
CPGT09T308FR-P	9.525	3.970	0.800	9.670	93.080	9076450930800

HT 800 WP countersink inserts

Series no. **7632**

Tool material **Solid Carbide**

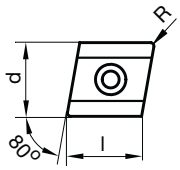
Surface **A**

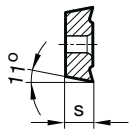
P	Steel	○
M	Stainless steel	
K	Cast iron	●
N	Aluminum	
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

clamping screws art. no. 6128 not included

grey cast iron, malleable and spheroidal iron





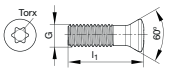


Speeds and feeds information on pg.

ISO	d inch	s mm	R mm	l mm	Code no.	EDP #
CPGW050202FN-K	5.560	2.380	0.200	5.640	52.020	9076320520200
CPGW050204FN-K	5.560	2.380	0.400	5.640	52.040	9076320520400
CPGW060202FN-K	6.350	2.380	0.200	6.450	62.020	9076320620200
CPGW060204FN-K	6.350	2.380	0.400	6.450	62.040	9076320620400
CPGW09T308FN-K	9.525	3.970	0.800	9.670	93.080	9076320930800

HT 800 WP - countersink insert clamping screw

Series no. 6128

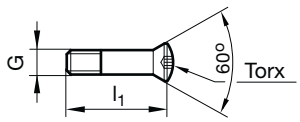




G	l1 inch	Torx	Code no.	EDP #
M 2 X5.5	5.500	T6	2.000	9061280020000
M 2.2 X5	5.000	T6	2.200	9061280022000
M 2 X5.3	5.300	T7	2.500	9061280025000
M2.5 x 6.5	6.500	T7	2.501	9061280025010
M 2.5 X5.7	5.700	T7	2.502	9061280025020
M 3.5 X10	10.000	T15	3.500	9061280035000
M3.5 x 12	12.000	T15	3.501	9061280035010
M3.5 x 8.5	8.500	T15	3.502	9061280035020
M 3.5 X8	8.000	T15	3.503	9061280035030
M4 x 13.5	13.500	T15	4.000	9061280040000
M4 x 8.4	8.400	T15	4.001	9061280040010
M4 x 10.8	10.800	T15	4.002	9061280040020
M 4 X0.5	11.000	T15	4.003	9061280040030
M 4 X9.5	9.500	T20	4.004	9061280040040
M 4 X0.5	9.000	T15	4.005	9061280040050
M 4 X9.5	9.500	T15	4.006	9061280040060
M4.5 x 11	11.000	T15	4.500	9061280045000
M4.5 x 7.5	7.500	T15	4.501	9061280045010
M4.5 x 11	11.000	T20	4.502	9061280045020
M5 x 17	17.000	T20	5.000	9061280050000
M5 x 11	11.000	T20	5.001	9061280050010

HT 800 WP - drill insert clamping screw

Series no. 4071





G	l1 inch	Torx	Code no.	EDP #
M 1.6	4.000	T5	1.600	9040710016000
M 1.6	4.400	T5	1.601	9040710016010
M 2.2	9.500	T7	2.200	9040710022000
M 2.2	10.500	T7	2.201	9040710022010
M 2.2	5.600	T7	2.202	9040710022020
M 2.2	4.600	T7	2.203	9040710022030
M 2.5	11.400	T8	2.500	9040710025000
M 2.5	6.400	T8	2.501	9040710025010
M 2.5	5.200	T8	2.502	9040710025020
M 3	13.100	T9	3.001	9040710030010
M 3	6.400	T9	3.002	9040710030020
M 3	8.000	T9	3.003	9040710030030
M 3.5	14.250	T10	3.500	9040710035000
M 4	16.000	T15	4.000	9040710040000
M 4	7.700	T15	4.001	9040710040010
M 4	10.600	T15	4.002	9040710040020
M 4.5	18.000	T15	4.500	9040710045000
M 5	19.750	T20	5.000	9040710050000
M 5	21.750	T20	5.001	9040710050010
M 5	14.200	T20	5.002	9040710050020
M 5	23.400	T20	5.003	9040710050030
M 6	27.000	T25	6.000	9040710060000
M 6	28.500	T25	6.001	9040710060010
M 6	32.500	T25	6.002	9040710060020

RT 800 WP Drill bodies

Series no. **5242**

RT 800 WP (Type) | 3xD (Cutting depth) | Internal coolant | HE (Shank form)

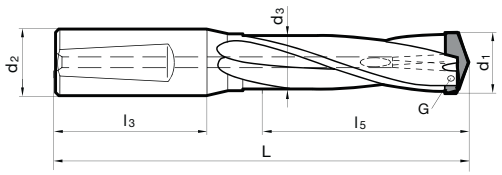
Tool material

Surface Ni

P	Steel
M	Stainless steel
K	Cast iron
N	Aluminum
S	Titanium alloys
H	Hardened steel

●=Optimal
○=Limited

web thinning ≥ Ø 17.000 • short design • secure clamping of interchangeable insert in the holder • clamping screws art. no. 1071 included • screwdriver art. no. 1612 included





d1 mm	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	G	Code no.	EDP #
16.00-17.00	20.000	15.700	130.000	50.000	54.000	1071 3.006	17.000	9052420170000
16.00-17.00	19.050	15.700	130.000	50.000	54.000	1071 3.006	17.005	9052420170050
17.01-17.99	20.000	16.700	130.000	50.000	54.000	1071 3.006	17.990	9052420179900
17.01-17.99	19.050	16.700	130.000	50.000	54.000	1071 3.006	17.995	9052420179950
18.00-19.00	20.000	17.700	138.000	50.000	60.000	1071 3.000	19.000	9052420190000
18.00-19.00	19.050	17.700	138.000	50.000	60.000	1071 3.000	19.005	9052420190050
19.01-20.00	20.000	18.700	138.000	50.000	60.000	1071 3.000	20.000	9052420200000
19.01-20.00	19.050	18.700	138.000	50.000	60.000	1071 3.000	20.005	9052420200050
20.01-21.00	25.000	19.700	153.000	56.000	66.000	1071 3.000	21.000	9052420210000
20.01-21.00	25.400	19.700	153.000	56.000	66.000	1071 3.000	21.005	9052420210050
21.01-22.50	25.000	20.700	153.000	56.000	66.000	1071 3.000	22.500	9052420225000
21.01-22.50	25.400	21.200	153.000	56.000	66.000	1071 3.000	22.505	9052420225050
22.51-24.00	25.000	22.200	161.000	56.000	72.000	1071 3.500	24.000	9052420240000
22.51-24.00	25.400	22.700	161.000	56.000	72.000	1071 3.500	24.005	9052420240050
24.01-25.50	25.000	23.700	170.000	56.000	78.000	1071 3.500	25.500	9052420255000
24.01-25.50	25.400	24.200	170.000	56.000	78.000	1071 3.500	25.505	9052420255050
25.51-27.50	32.000	25.200	182.000	60.000	84.000	1071 4.000	27.500	9052420275000
25.51-27.50	31.750	26.200	182.000	60.000	84.000	1071 4.000	27.505	9052420275050
27.51-29.50	32.000	27.200	190.000	60.000	90.000	1071 4.000	29.500	9052420295000
27.51-29.50	31.750	28.200	190.000	60.000	90.000	1071 4.000	29.505	9052420295050
29.51-32.00	32.000	29.200	198.000	60.000	96.000	1071 4.500	32.000	9052420320000
29.51-32.00	31.750	30.700	198.000	60.000	96.000	1071 4.500	32.005	9052420320050
32.01-34.50	32.000	31.700	206.000	60.000	102.000	1071 4.500	34.500	9052420345000
32.01-34.50	31.750	33.200	206.000	60.000	102.000	1071 4.500	34.505	9052420345050
34.51-37.50	32.000	34.000	218.000	60.000	114.000	1071 5.000	37.500	9052420375000
34.51-37.50	31.750	36.200	218.000	60.000	114.000	1071 5.000	37.505	9052420375050
37.51-40.50	32.000	37.000	231.000	60.000	120.000	1071 5.000	40.500	9052420405000
37.51-40.50	31.750	39.200	231.000	60.000	120.000	1071 5.000	40.505	9052420405050

RT 800 WP Drill bodies

Series no. **5243**

RT 800 WP (Type) | 5xD (Cutting depth) | Internal coolant | HE (Shank form)

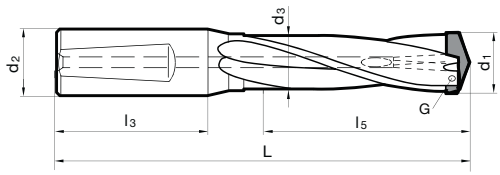
Tool material

Surface Ni

P	Steel
M	Stainless steel
K	Cast iron
N	Aluminum
S	Titanium alloys
H	Hardened steel

●=Optimal
○=Limited

web thinning ≥ Ø 17.000 • short design • secure clamping of interchangeable insert in the holder • clamping screws art. no. 1071 included • screwdriver art. no. 1612 included

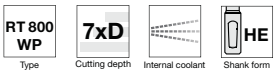




d1 mm	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	G	Code no.	EDP #
16.00-17.00	20.000	15.700	166.000	50.000	90.000	1071 3.006	17.000	9052430170000
16.00-17.00	19.050	15.700	166.000	50.000	90.000	1071 3.006	17.005	9052430170050
17.01-17.99	20.000	16.700	166.000	50.000	90.000	1071 3.006	17.990	9052430179900
17.01-17.99	19.050	16.700	166.000	50.000	90.000	1071 3.006	17.995	9052430179950
18.00-19.00	20.000	17.700	178.000	50.000	100.000	1071 3.000	19.000	9052430190000
18.00-19.00	19.050	17.700	178.000	50.000	100.000	1071 3.000	19.005	9052430190050
19.01-20.00	20.000	18.700	178.000	50.000	100.000	1071 3.000	20.000	9052430200000
19.01-20.00	19.050	18.700	178.000	50.000	100.000	1071 3.000	20.005	9052430200050
20.01-21.00	25.000	19.700	197.000	56.000	110.000	1071 3.000	21.000	9052430210000
20.01-21.00	25.400	19.700	197.000	56.000	110.000	1071 3.000	21.005	9052430210050
21.01-22.50	25.000	20.700	197.000	56.000	110.000	1071 3.000	22.500	9052430225000
21.01-22.50	25.400	21.200	197.000	56.000	110.000	1071 3.000	22.505	9052430225050
22.51-24.00	25.000	22.200	209.000	56.000	120.000	1071 3.500	24.000	9052430240000
22.51-24.00	25.400	22.700	209.000	56.000	120.000	1071 3.500	24.005	9052430240050
24.01-25.50	25.000	23.700	222.000	56.000	130.000	1071 3.500	25.500	9052430255000
24.01-25.50	25.400	24.200	222.000	56.000	130.000	1071 3.500	25.505	9052430255050
25.51-27.50	32.000	25.200	238.000	60.000	140.000	1071 4.000	27.500	9052430275000
25.51-27.50	31.750	26.200	238.000	60.000	140.000	1071 4.000	27.505	9052430275050
27.51-29.50	32.000	27.200	250.000	60.000	150.000	1071 4.000	29.500	9052430295000
27.51-29.50	31.750	28.200	250.000	60.000	150.000	1071 4.000	29.505	9052430295050
29.51-32.00	32.000	29.200	262.000	60.000	160.000	1071 4.500	32.000	9052430320000
29.51-32.00	31.750	30.700	262.000	60.000	160.000	1071 4.500	32.005	9052430320050
32.01-34.50	32.000	31.700	274.000	60.000	170.000	1071 4.500	34.500	9052430345000
32.01-34.50	31.750	33.200	274.000	60.000	170.000	1071 4.500	34.505	9052430345050
34.51-37.50	32.000	34.000	292.000	60.000	190.000	1071 5.000	37.500	9052430375000
34.51-37.50	31.750	36.200	292.000	60.000	190.000	1071 5.000	37.505	9052430375050
37.51-40.50	32.000	37.000	311.000	60.000	200.000	1071 5.000	40.500	9052430405000
37.51-40.50	31.750	39.200	311.000	60.000	200.000	1071 5.000	40.505	9052430405050

RT 800 WP Drill bodies

Series no. **5248**



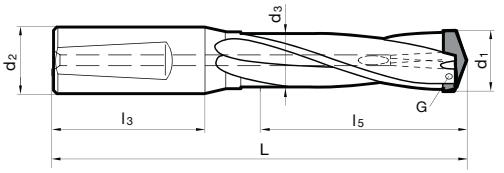
Tool material

Surface Ni

P	Steel
M	Stainless steel
K	Cast iron
N	Aluminum
S	Titanium alloys
H	Hardened steel

●=Optimal
○=Limited

web thinning ≥ Ø 17.000 • short design • secure clamping of interchangeable insert in the holder • clamping screws art. no. 1071 included • screwdriver art. no. 1612 included





d1 mm	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	G	Code no.	EDP #
16.00-17.00	20.000	15.700	202.000	50.000	126.000	1071 3.006	17.000	9052480170000
16.00-17.00	19.050	15.700	202.000	50.000	126.000	1071 3.006	17.005	9052480170050
17.01-17.99	20.000	16.700	202.000	50.000	126.000	1071 3.006	17.990	9052480179900
17.01-17.99	19.050	16.700	202.000	50.000	126.000	1071 3.006	17.995	9052480179950
18.00-19.00	20.000	17.700	218.000	50.000	140.000	1071 3.000	19.000	9052480190000
18.00-19.00	19.050	17.700	218.000	50.000	140.000	1071 3.000	19.005	9052480190050
19.01-20.00	20.000	18.700	218.000	50.000	140.000	1071 3.000	20.000	9052480200000
19.01-20.00	19.050	18.700	218.000	50.000	140.000	1071 3.000	20.005	9052480200050
20.01-21.00	25.000	19.700	241.000	56.000	154.000	1071 3.000	21.000	9052480210000
20.01-21.00	25.400	19.700	241.000	56.000	154.000	1071 3.000	21.005	9052480210050
21.01-22.50	25.000	20.700	241.000	56.000	154.000	1071 3.000	22.500	9052480225000
21.01-22.50	25.400	21.200	241.000	56.000	154.000	1071 3.000	22.505	9052480225050
22.51-24.00	25.000	22.200	257.000	56.000	168.000	1071 3.500	24.000	9052480240000
22.51-24.00	25.400	22.700	257.000	56.000	168.000	1071 3.500	24.005	9052480240050
24.01-25.50	25.000	23.700	274.000	56.000	182.000	1071 3.500	25.500	9052480255000
24.01-25.50	25.400	24.200	274.000	56.000	182.000	1071 3.500	25.505	9052480255050
25.51-27.50	32.000	25.200	294.000	60.000	196.000	1071 4.000	27.500	9052480275000
25.51-27.50	31.750	26.200	294.000	60.000	196.000	1071 4.000	27.505	9052480275050
27.51-29.50	32.000	27.200	310.000	60.000	210.000	1071 4.000	29.500	9052480295000
27.51-29.50	31.750	28.200	310.000	60.000	210.000	1071 4.000	29.505	9052480295050
29.51-32.00	32.000	29.200	326.000	60.000	224.000	1071 4.500	32.000	9052480320000
29.51-32.00	31.750	30.700	326.000	60.000	224.000	1071 4.500	32.005	9052480320050
32.01-34.50	32.000	31.700	342.000	60.000	238.000	1071 4.500	34.500	9052480345000
32.01-34.50	31.750	33.200	342.000	60.000	238.000	1071 4.500	34.505	9052480345050
34.51-37.50	32.000	34.000	366.000	60.000	266.000	1071 5.000	37.500	9052480375000
34.51-37.50	31.750	36.200	366.000	60.000	266.000	1071 5.000	37.505	9052480375050
37.51-40.50	32.000	37.000	391.000	60.000	280.000	1071 5.000	40.500	9052480405000
37.51-40.50	31.750	39.200	391.000	60.000	280.000	1071 5.000	40.505	9052480405050

RT 800 WP Drill inserts

Series no. **1047**

RT 800 WP (Type) | 140° (Point angle) | h7 (Tolerance on Ø)

Tool material: **Solid Carbide**

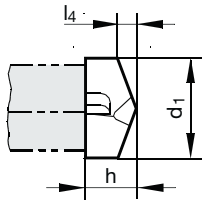
Surface: **S**

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 16.000 • relieved cone • main cutting edge form concave • clamping screws art. no. 1071 included

steels up to 1000 N/mm²





Speeds and feeds information on pg. 527

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
16.000		3.000	4.500	8.000	16.000	9010470160000
16.270	41/64	3.000	4.500	8.000	16.270	9010470162700
16.500		3.100	4.500	8.000	16.500	9010470165000
16.670	21/32	3.100	4.500	8.000	16.670	9010470166700
17.000		3.100	4.500	8.000	17.000	9010470170000
17.070	43/64	3.200	4.500	8.000	17.070	9010470170700
17.460	11/16	3.200	4.500	8.000	17.460	9010470174600
17.500		3.200	4.500	8.000	17.500	9010470175000
17.860	45/64	3.300	4.500	8.000	17.860	9010470178600
18.000		3.300	5.000	8.000	18.000	9010470180000
18.260	23/32	3.400	5.000	8.000	18.260	9010470182600
18.500		3.400	5.000	8.000	18.500	9010470185000
18.650	47/64	3.400	5.000	8.000	18.650	9010470186500
19.000		3.500	5.000	8.000	19.000	9010470190000
19.050	3/4	3.500	5.000	8.000	19.050	9010470190500
19.250		3.600	5.000	8.000	19.250	9010470192500
19.450	49/64	3.600	5.000	8.000	19.450	9010470194500
19.500		3.600	5.000	8.000	19.500	9010470195000
19.840	25/32	3.700	5.000	8.000	19.840	9010470198400
20.000		3.700	5.000	8.000	20.000	9010470200000
20.240	51/64	3.700	5.500	8.800	20.240	9010470202400
20.500		3.800	5.500	8.800	20.500	9010470205000
20.640	13/16	3.800	5.500	8.800	20.640	9010470206400
21.000		3.900	5.500	8.800	21.000	9010470210000
21.030	53/64	3.900	5.500	8.800	21.030	9010470210300
21.430	27/32	3.900	5.500	8.800	21.430	9010470214300
21.500		4.000	5.500	8.800	21.500	9010470215000
21.830	55/64	4.000	5.500	8.800	21.830	9010470218300
22.000		4.100	5.500	8.800	22.000	9010470220000
22.220	7/8	4.100	5.500	8.800	22.220	9010470222200
22.500		4.100	5.500	8.800	22.500	9010470225000
22.620	57/64	4.200	6.300	10.000	22.620	9010470226200
23.000		4.200	6.300	10.000	23.000	9010470230000
23.020	29/32	4.200	6.300	10.000	23.020	9010470230200
23.420	59/64	4.300	6.300	10.000	23.420	9010470234200
23.500		4.300	6.300	10.000	23.500	9010470235000
23.810	15/16	4.400	6.300	10.000	23.810	9010470238100
24.000		4.400	6.300	10.000	24.000	9010470240000
24.210	61/64	4.500	6.300	10.000	24.210	9010470242100
24.500		4.500	6.300	10.000	24.500	9010470245000
24.610	31/32	4.500	6.300	10.000	24.610	9010470246100
25.000	63/64	4.600	6.300	10.000	25.000	9010470250000
25.400	1	4.700	6.300	10.000	25.400	9010470254000

RT 800 WP Drill inserts

Series no. **1047**

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
25.500		4.700	6.300	10.000	25.500	9010470255000
26.000		4.800	7.300	11.600	26.000	9010470260000
26.500		4.900	7.300	11.600	26.500	9010470265000
27.000		5.000	7.300	11.600	27.000	9010470270000
27.500		5.100	7.300	11.600	27.500	9010470275000
28.000		5.100	7.300	11.600	28.000	9010470280000
28.500		5.200	7.300	11.600	28.500	9010470285000
29.000		5.300	7.300	11.600	29.000	9010470290000
29.500		5.400	7.300	11.600	29.500	9010470295000
30.000		5.500	8.500	13.600	30.000	9010470300000
30.500		5.600	8.500	13.600	30.500	9010470305000
31.000		5.700	8.500	13.600	31.000	9010470310000
31.500		5.800	8.500	13.600	31.500	9010470315000
32.000		5.900	8.500	13.600	32.000	9010470320000
32.500		6.000	8.500	13.600	32.500	9010470325000
33.000		6.100	8.500	13.600	33.000	9010470330000
33.500		6.100	8.500	13.600	33.500	9010470335000
34.000		6.200	8.500	13.600	34.000	9010470340000
34.500		6.300	8.500	13.600	34.500	9010470345000
35.000		6.400	10.000	16.000	35.000	9010470350000
36.000		6.600	10.000	16.000	36.000	9010470360000
37.000		6.800	10.000	16.000	37.000	9010470370000
37.500		6.900	10.000	16.000	37.500	9010470375000
38.000		7.000	10.000	16.000	38.000	9010470380000
39.000		7.100	10.000	16.000	39.000	9010470390000
40.000		7.300	10.000	16.000	40.000	9010470400000
40.500		7.400	10.000	16.000	40.500	9010470405000

RT 800 WP Drill inserts

Series no. **2485**

RT 800 WP — Type | 140° — Point angle | h7 — Tolerance on Ø

Tool material: **Solid Carbide**

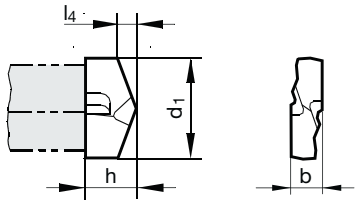
Surface: **F**

P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 16.000 • relieved cone • main cutting edge form concave • clamping screws art. no. 1071 included

steels up to 1000 N/mm²





Speeds and feeds information on pg. 538

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
16.000		3.000	4.500	8.000	16.000	9024850160000
16.270	41/64	3.000	4.500	8.000	16.270	9024850162700
16.500		3.100	4.500	8.000	16.500	9024850165000
16.670	21/32	3.100	4.500	8.000	16.670	9024850166700
17.000		3.100	4.500	8.000	17.000	9024850170000
17.070	43/64	3.200	4.500	8.000	17.070	9024850170700
17.460	11/16	3.200	4.500	8.000	17.460	9024850174600
17.500		3.200	4.500	8.000	17.500	9024850175000
17.860	45/64	3.300	4.500	8.000	17.860	9024850178600
18.000		3.300	5.000	8.000	18.000	9024850180000
18.260	23/32	3.400	5.000	8.000	18.260	9024850182600
18.500		3.400	5.000	8.000	18.500	9024850185000
18.650	47/64	3.400	5.000	8.000	18.650	9024850186500
19.000		3.500	5.000	8.000	19.000	9024850190000
19.050	3/4	3.500	5.000	8.000	19.050	9024850190500
19.250		3.600	5.000	8.000	19.250	9024850192500
19.450	49/64	3.600	5.000	8.000	19.450	9024850194500
19.500		3.600	5.000	8.000	19.500	9024850195000
19.840	25/32	3.700	5.000	8.000	19.840	9024850198400
20.000		3.700	5.000	8.000	20.000	9024850200000
20.240	51/64	3.700	5.500	8.800	20.240	9024850202400
20.500		3.800	5.500	8.800	20.500	9024850205000
20.640	13/16	3.800	5.500	8.800	20.640	9024850206400
21.000		3.900	5.500	8.800	21.000	9024850210000
21.030	53/64	3.900	5.500	8.800	21.030	9024850210300
21.430	27/32	3.900	5.500	8.800	21.430	9024850214300
21.500		4.000	5.500	8.800	21.500	9024850215000
21.830	55/64	4.000	5.500	8.800	21.830	9024850218300
22.000		4.100	5.500	8.800	22.000	9024850220000
22.220	7/8	4.100	5.500	8.800	22.220	9024850222200
22.500		4.100	5.500	8.800	22.500	9024850225000
22.620	57/64	4.200	6.300	10.000	22.620	9024850226200
23.000		4.200	6.300	10.000	23.000	9024850230000
23.020	29/32	4.200	6.300	10.000	23.020	9024850230200
23.420	59/64	4.300	6.300	10.000	23.420	9024850234200
23.500		4.300	6.300	10.000	23.500	9024850235000
23.810	15/16	4.400	6.300	10.000	23.810	9024850238100
24.000		4.400	6.300	10.000	24.000	9024850240000
24.210	61/64	4.500	6.300	10.000	24.210	9024850242100
24.500		4.500	6.300	10.000	24.500	9024850245000
24.610	31/32	4.500	6.300	10.000	24.610	9024850246100
25.000	63/64	4.600	6.300	10.000	25.000	9024850250000
25.400	1	4.700	6.300	10.000	25.400	9024850254000

RT 800 WP Drill inserts

Series no. **2485**

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
25.500		4.700	6.300	10.000	25.500	9024850255000
26.000		4.800	7.300	11.600	26.000	9024850260000
26.500		4.900	7.300	11.600	26.500	9024850265000
27.000		5.000	7.300	11.600	27.000	9024850270000
27.500		5.100	7.300	11.600	27.500	9024850275000
28.000		5.100	7.300	11.600	28.000	9024850280000
28.500		5.200	7.300	11.600	28.500	9024850285000
29.000		5.300	7.300	11.600	29.000	9024850290000
29.500		5.400	7.300	11.600	29.500	9024850295000
30.000		5.500	8.500	13.600	30.000	9024850300000
30.500		5.600	8.500	13.600	30.500	9024850305000
31.000		5.700	8.500	13.600	31.000	9024850310000
31.500		5.800	8.500	13.600	31.500	9024850315000
32.000		5.900	8.500	13.600	32.000	9024850320000
32.500		6.000	8.500	13.600	32.500	9024850325000
33.000		6.100	8.500	13.600	33.000	9024850330000
33.500		6.100	8.500	13.600	33.500	9024850335000
34.000		6.200	8.500	13.600	34.000	9024850340000
34.500		6.300	8.500	13.600	34.500	9024850345000
35.000		6.400	10.000	16.000	35.000	9024850350000
36.000		6.600	10.000	16.000	36.000	9024850360000
37.000		6.800	10.000	16.000	37.000	9024850370000
37.500		6.900	10.000	16.000	37.500	9024850375000
38.000		7.000	10.000	16.000	38.000	9024850380000
39.000		7.100	10.000	16.000	39.000	9024850390000
40.000		7.300	10.000	16.000	40.000	9024850400000
40.500		7.400	10.000	16.000	40.500	9024850405000

RT 800 WP Drill inserts

Series no. **2747**

RT 800 WP — Type | 140° — Point angle | h7 — Tolerance on Ø

Tool material: **Solid Carbide**

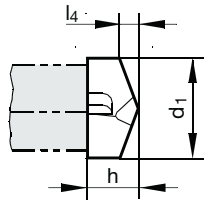
Surface: ◯

P	Steel	
M	Stainless steel	
K	Cast iron	○
N	Aluminum	●
S	Titanium alloys	
H	Hardened steel	

●=Optimal
○=Limited

web thinning ≥ Ø 16.000 • relieved cone • main cutting edge form concave • clamping screws art. no. 1071 included

cast and AlSi-alloys





Speeds and feeds information on pg. 540

d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
16.000		3.000	4.500	8.000	16.000	9027470160000
16.500		3.100	4.500	8.000	16.500	9027470165000
17.000		3.100	4.500	8.000	17.000	9027470170000
17.070	43/64	3.200	4.500	8.000	17.070	9027470170700
17.500		3.200	4.500	8.000	17.500	9027470175000
18.000		3.300	5.000	8.000	18.000	9027470180000
18.260	23/32	3.400	5.000	8.000	18.260	9027470182600
18.650	47/64	3.400	5.000	8.000	18.650	9027470186500
19.000		3.500	5.000	8.000	19.000	9027470190000
19.050	3/4	3.500	5.000	8.000	19.050	9027470190500
19.250		3.600	5.000	8.000	19.250	9027470192500
19.450	49/64	3.600	5.000	8.000	19.450	9027470194500
19.500		3.600	5.000	8.000	19.500	9027470195000
19.840	25/32	3.700	5.000	8.000	19.840	9027470198400
20.000		3.700	5.000	8.000	20.000	9027470200000
20.500		3.800	5.500	8.800	20.500	9027470205000
20.640	13/16	3.800	5.500	8.800	20.640	9027470206400
21.000		3.900	5.500	8.800	21.000	9027470210000
21.030	53/64	3.900	5.500	8.800	21.030	9027470210300
21.430	27/32	3.900	5.500	8.800	21.430	9027470214300
21.830	55/64	4.000	5.500	8.800	21.830	9027470218300
22.000		4.100	5.500	8.800	22.000	9027470220000
23.000		4.200	6.300	10.000	23.000	9027470230000
23.420	59/64	4.300	6.300	10.000	23.420	9027470234200
23.500		4.300	6.300	10.000	23.500	9027470235000
24.000		4.400	6.300	10.000	24.000	9027470240000
24.210	61/64	4.500	6.300	10.000	24.210	9027470242100
24.500		4.500	6.300	10.000	24.500	9027470245000
25.000	63/64	4.600	6.300	10.000	25.000	9027470250000
25.500		4.700	6.300	10.000	25.500	9027470255000
26.000		4.800	7.300	11.600	26.000	9027470260000
26.500		4.900	7.300	11.600	26.500	9027470265000
27.000		5.000	7.300	11.600	27.000	9027470270000
27.500		5.100	7.300	11.600	27.500	9027470275000
28.000		5.100	7.300	11.600	28.000	9027470280000
29.500		5.400	7.300	11.600	29.500	9027470295000
30.000		5.500	8.500	13.600	30.000	9027470300000
30.500		5.600	8.500	13.600	30.500	9027470305000
31.000		5.700	8.500	13.600	31.000	9027470310000
31.500		5.800	8.500	13.600	31.500	9027470315000
32.000		5.900	8.500	13.600	32.000	9027470320000
32.500		6.000	8.500	13.600	32.500	9027470325000
33.000		6.100	8.500	13.600	33.000	9027470330000

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Series no. **2747**

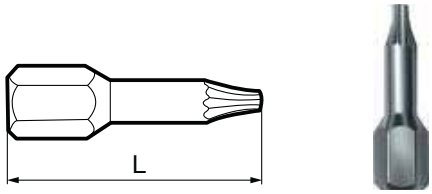
d1 mm	inch	l4 mm	b mm	h mm	Code no.	EDP #
33.500		6.100	8.500	13.600	33.500	**9027470335000**
34.000		6.200	8.500	13.600	34.000	**9027470340000**
34.500		6.300	8.500	13.600	34.500	**9027470345000**
35.000		6.400	10.000	16.000	35.000	**9027470350000**
36.000		6.600	10.000	16.000	36.000	**9027470360000**
37.000		6.800	10.000	16.000	37.000	**9027470370000**
39.000		7.100	10.000	16.000	39.000	**9027470390000**
40.000		7.300	10.000	16.000	40.000	**9027470400000**



G	l1 mm	Torx	Code no.	EDP #
M 3 X0.35	7.000	T6	3.000	9010710030000
M 3 X0.35	6.000	T6	3.006	9010710030060
M 3.5 X0.35	8.000	T7	3.500	9010710035000
M 4 X0.5	9.000	T8	4.000	9010710040000
M 4 X0.5	10.000	T8	4.500	9010710045000
M 5 X0.5	11.000	T10	5.000	9010710050000



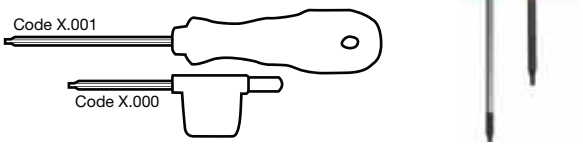
Drive		Nm	Type	Code no.	EDP #
1/4”	hexagonal	0,4-1	A	1.001	**9049150010010**
1/4”	hexagonal	0,8-2	A	2.000	**9049150020000**
1/4”	hexagonal	1-5	A	5.001	**9049150050010**
1/4”	hexagonal	2-8	A	8.000	**9049150080000**
1/4”	hexagonal	12	D	12.000	**9049150120000**
1/4”	hexagonal	5-14	D	14.000	**9049150140000**
3/8”	square	5-50	B	50.000	**9049150500000**
1/2”	square	20-200	C	200.000	**9049152000000**



Drive		Torx	L mm	Code no.	EDP #
1/4	hexagonal	T5	25.000	5.000	9049170050000
1/4	hexagonal	T6	25.000	6.000	9049170060000
1/4	hexagonal	T7	25.000	7.000	9049170070000
1/4	hexagonal	T8	25.000	8.000	9049170080000
1/4	hexagonal	T9	25.000	9.000	9049170090000
1/4	hexagonal	T10	25.000	10.000	9049170100000
1/4	hexagonal	T15	25.000	15.000	9049170150000
1/4	hexagonal	T20	25.000	20.000	9049170200000
1/2	square	T25	25.000	25.000	9049170250000

Torx screwdriver

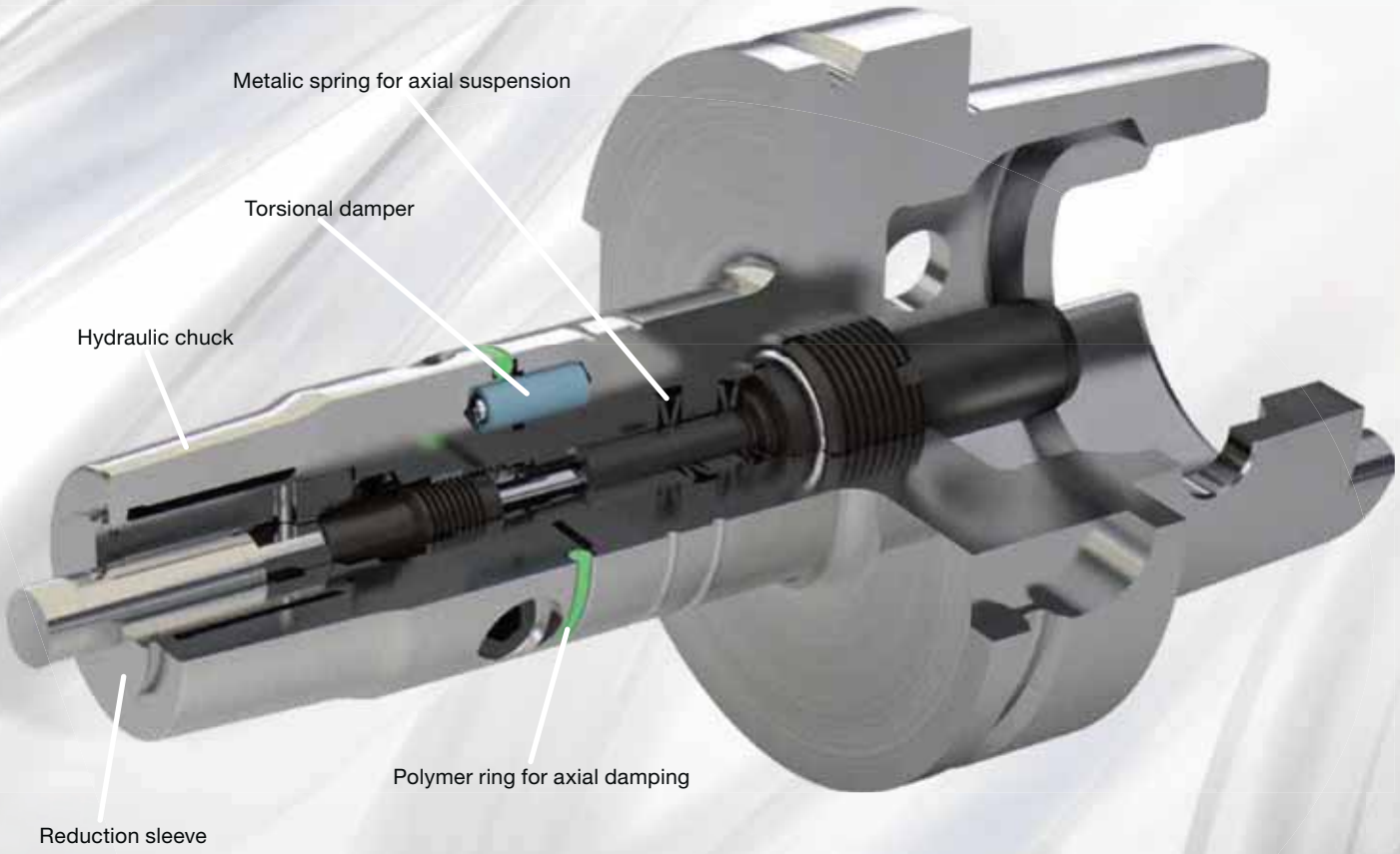
Series no. **1612**



Torx	Code no.	EDP #
T5	5.001	9016120050010
T6	6.000	9016120060000
T6	6.001	9016120060010
T7	7.001	9016120070010
T8	8.000	9016120080000
T8	8.001	9016120080010
T9	9.001	9016120090010
T10	10.001	9016120100010
T15	15.000	9016120150000
T15	15.001	9016120150010
T20	20.001	9016120200010
T25	25.001	9016120250010
T30	30.001	9016120300010

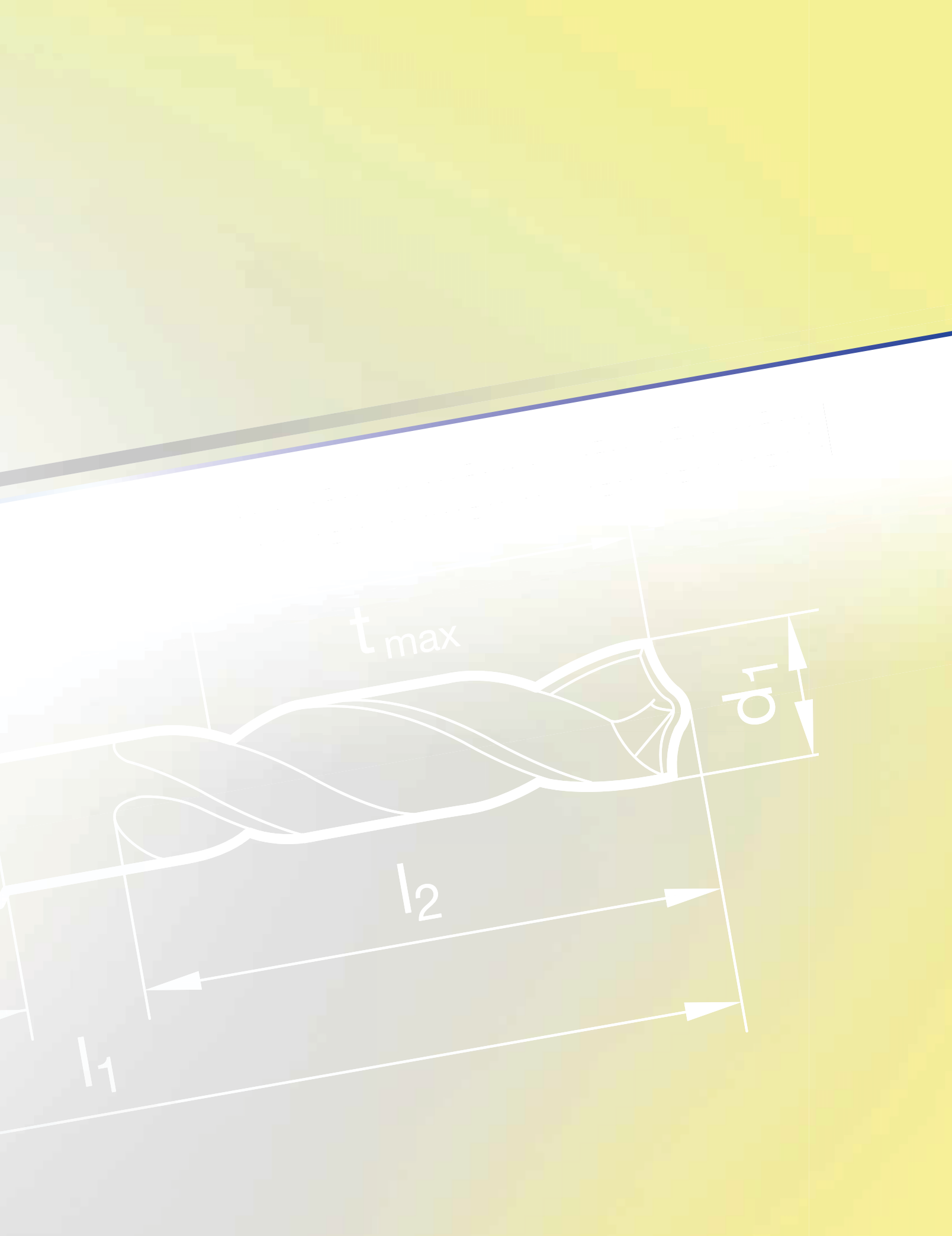
GUHROSYNC

THE EASY WAY TO THE PERFECT THREAD



Intelligent design:
As well as the suspension and damping elements in the slender GUHROSync chucks (for the reduction of axial and radial forces during the tapping process) there is also room for the delivery set for MQL or conventional cooling lubrication and the length setting screw.


l3


t max
d1
l2
l1

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RT 100 AL

Guhring's new solid carbide drill for the machining of aluminum materials

For aluminum drilling chip formation with chip evacuation are both of vital importance.
With RT 100 AL optimal chip formation is achieved at the cutting edge in the entire material range – from tough aluminum wrought alloys to aluminum cast alloys with high silicon content.

Sharp, micro-treated cutting edges

- perfect cutting behavior, also in heat-treated AlSi-alloys
- short chip fracture also in aluminum wrought alloys

Extremely high surface finish quality of web thinning, front face and clearance rake areas

- reduction in process temperatures
- prevents formation of built-up edges

Open point geometry and cutting edge form:

- optimal chip formation behavior

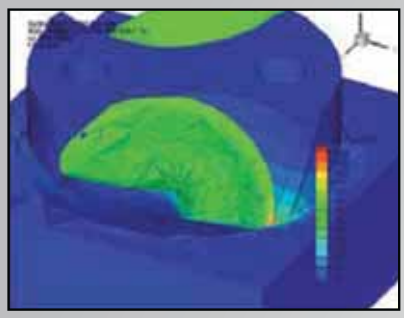
Flute geometry

- polished flutes for optimal chip evacuation
- minimizing friction
- prevention of material adhesion

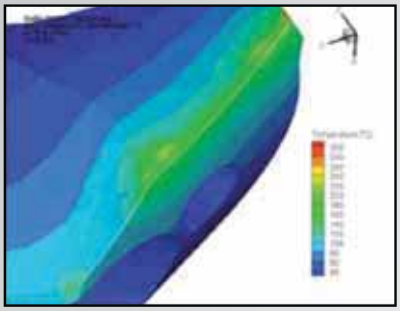


RT 100 AL distinguishes itself thanks to an ideal geometry with high surface finish qualities in the web thinning, front face and clearance rake areas. Micro-treated cutting edges and corners complement the point geometry and ensure perfect cutting behavior, low process temperatures prevent the formation of built-up edges when machining aluminum.

Chip formation



Temperature distribution at cutting edge



The tools are designed with a bright finish, for heavily abrasive aluminum materials an additional head coating for further tool life improvement is possible.
Special dimensions as well as single- or multi-step tools are available on request

Fiber composite plastics (FCP's)

Modern fiber composite plastics (FCP's) are making an entry into a broad range of industrial applications for reasons of efficiency, weight reduction, strength and dynamics. With their specific properties they extend the group of conventional metal lightweight construction materials such as aluminum- and titanium-alloys. FCP's or multi-material systems, ie. a mixture of FCP and metallic materials, are therefore no longer exclusively retained for the aerospace industry, motorsport and other high-end applications.

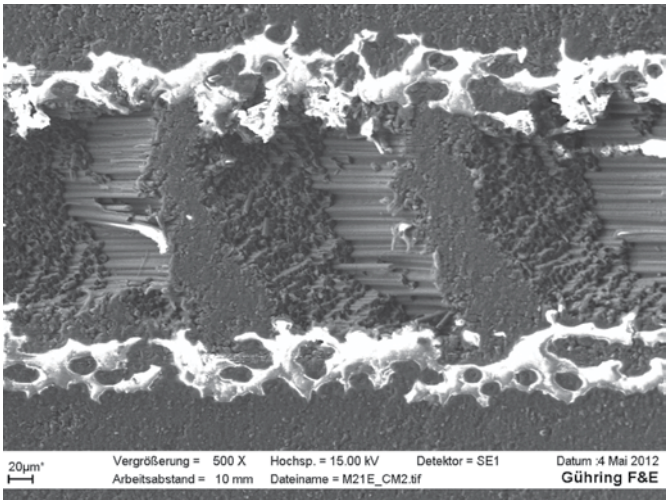
It is especially worth high-lighting the great growth in the vehicle and commercial vehicle technology, the wind energy sector as well as general mechanical engineering. FCP's are applied where high specific strength and low weight as well as high dynamic or energy efficient processes can be found.

Since the mid 1980's Guhring has provided tooling solutions in the standard and special sector for the machining of FCP's. This long-term experience resulted in the development of a wide variety of specialized high-performance tools, adapted to different conditions and application cases such as manual drilling, drilling with drill feed units, machining with robots or machining in conventional machining centers.

Guhring tools for the machining of FCP meet the general requirements for the machining of modern lightweight construction materials.

- Components without fiber projections
- Delamination-free component surface
- No component damage through "peel-up" or "push-out"
- Prevention of split fibers "pull-outs" on component
- Minimizing burr development
- Prevention of thermal damage

For the machining of FCP materials without component damage, cutting edge quality and wear resistance of the tool material are of absolute importance. Prerequisite for a process reliable separation of the heavily abrasive fibers, especially materials with a fiber volume ratio of more than 55 percent, is a sharp cutting edge.



CFRP cutting area with 500-fold magnification
The scanning electron microscope shows how the materials fiber structure and fiber direction is retained after machining. Fibers are neither pressed into the matrix, nor torn out of the composite.

GFRP / CFRP

Glass fiber reinforced plastics (GFRP) are industrially applied in large volume for wind energy applications as well as in the transportation and construction sector. GFRP is generally only applied for moderately load bearing components, mostly large area shell components. The lesser load bearing GFRP components are in many cases preferred to the lighter carbon fiber reinforced plastics (CFRP) as they can be produced considerably more cost-efficient and are easier to machine.

Carbon reinforced plastics (CFRP) by comparison have considerably higher strength. Depending on the manufacturing process and fiber diameter, pure carbon fibers achieve a higher tensile strength weight ratio compared with steel materials. For this reason CFRP is extensively used for high load bearing structural components.

To protect the fibers in CFRP and GFRP from applied forces they are bedded into a matrix. The ratio of fiber to matrix determines the so-called fiber volume ratio and in heavily stressed CFRP components it can be up to 65 percent. For finish machining the type of fiber and fiber direction of the components must be observed. The fiber direction with CFRP is the deciding factor for the tendency for the material to delaminate and fiber splitting. Therefore, unidirectional layers especially at the hole exit tend to delaminate heavily. The tendency to delaminate must be counteracted with the tool geometry.



typical delamination



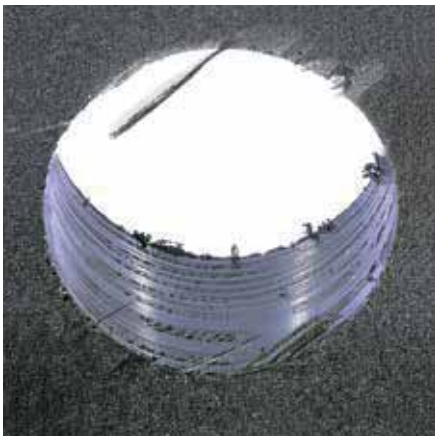
without delamination

The machining of CFRP and GFRP materials require specific tooling solutions especially designed to suit the heavily abrasive fibers. To prevent typical FCP component damage, Guhring provides application specific high-performance tools. This prevents the material from delaminating due to targeted control of the cutting forces.



FCP drilling operations

For drilling operations, specific drilling tools with different point geometries are applied. Thanks to specifically designed tools, the fibers can be reliably separated in unidirectional fiber layers as well as in fabric layers. Delamination on the component surface on tool entry and exit ("peel up" / "push out") as well as in the component can be prevented.



Hole D = 6.35 mm
With fiber projection on cover coating and delamination



Hole D = 6.35 mm
CFRP with fabric layer, optimal machining quality



Hole D = 6.35 mm
Unidirectional CFRP with optimal machining quality

Stack materials

The combination of at least two different materials with differing properties is described as a stack material or just stack. Often applied material pairings for lightweight construction applications are CFRP/titanium as well as CFRP/aluminium. But also other combinations of the materials CFRP, titanium, stainless steel and aluminum in different combinations are possible. To insert the connection elements, the different materials must be machined together in a process. The challenge for cutting tools during the machining process results from the very different material properties and the machining strategies of the combined materials. When machining CFRP/titanium stacks CFRP is heavily abrasive and quickly leads to a rounding of the cutting edges of the tool. Titanium in contrast is very tough and causes high machining temperatures due to its low thermal conductivity. The CFRP is very quickly damaged when machining due to high machining forces and temperatures. Despite the different materials a secure accurate machining process must be ensured over a long tool life.

Guhring also provides special solid carbide, coated carbide and PCD tooling solutions for this material group. They are specially adapted to the respective material structure and ensure chip evacuation as well as uniform hole diameters across all materials.



Process optimization when machining with added movement

The machining of new materials with fiber reinforced materials to very tough materials such as titanium- or copper-alloys as well as very brittle ceramic materials poses a challenge for conventional machining because of the extreme wear and chip formation behavior. New approaches for process optimization by added motion in feed direction open new opportunities for improved chip formation, reduced process forces and higher quality of the produced surfaces as well as maximizing the achievable tool life.

Basic considerations

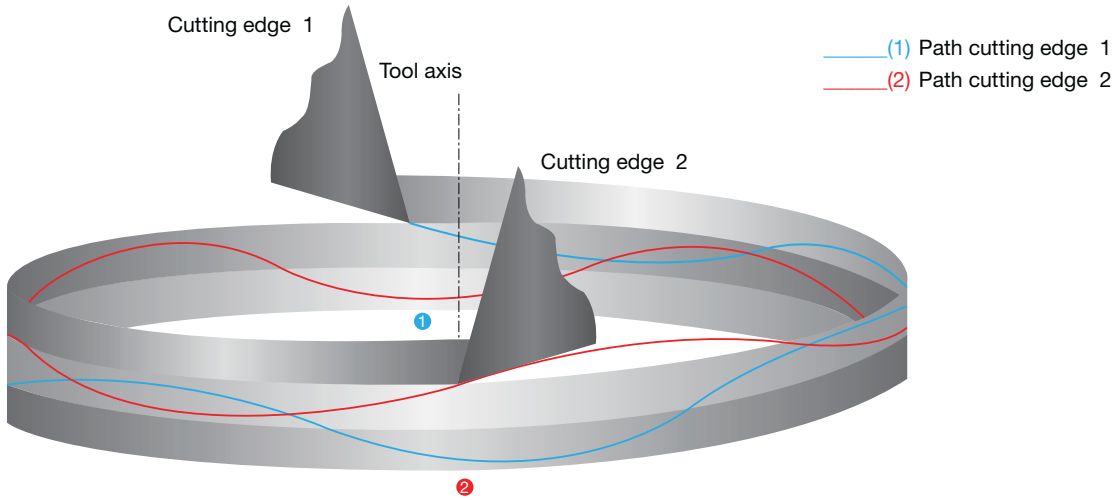
When adding axial movements via a continuous feed movement, different frequency ranges from a few Hertz up to several thousand Hertz are applied depending on the application case. In addition, a defined modification of effective direction angle and an increase in tool cutting edge speed is made. Dependent on the application and tool type, various effects are achieved by vibration supported machining.

Machining with added movement is currently applied for the machining of difficult-to-machine materials such as super-alloys, fiber-reinforced plastics and stack-materials as well as long-chipping alloys, for example, lead-free copper-alloys. With added vibration, one differentiates between low-frequency and high-frequency vibrations.

- more favorable chip formation/improved chip fracture
- improved chip evacuation
- production of predetermined breaking point in chip
- reduced built up edge
- prolonging tool life
- reduced machining forces
- reduced temperatures

1.) Low-frequency impulse

With low-frequency impulse frequencies to 1 kHz and amplitudes up to 0.5 mm are used. This category also includes programmed pecking by lifting the tool or an interrupted feed movement by dwelling cycles. On conventional machining centers, , this discontinuous feed movement cannot be increased unrestrictedly due to the limited dynamics of axial movement. To achieve added movement with frequencies matching multiple spindle machines, special mechanical transmissions are applied. These transmissions can be directly integrated in the machine or designed as gear heads attached to the spindle. The stroke is mechanically produced by the gear ratio in the feed axis or by moving over a corresponding cam disc.
Deviating from a spiral-shaped cutting path with a constant chip thickness when drilling with a constant feed rate, the addition of axial movement results in varying chip thickness.



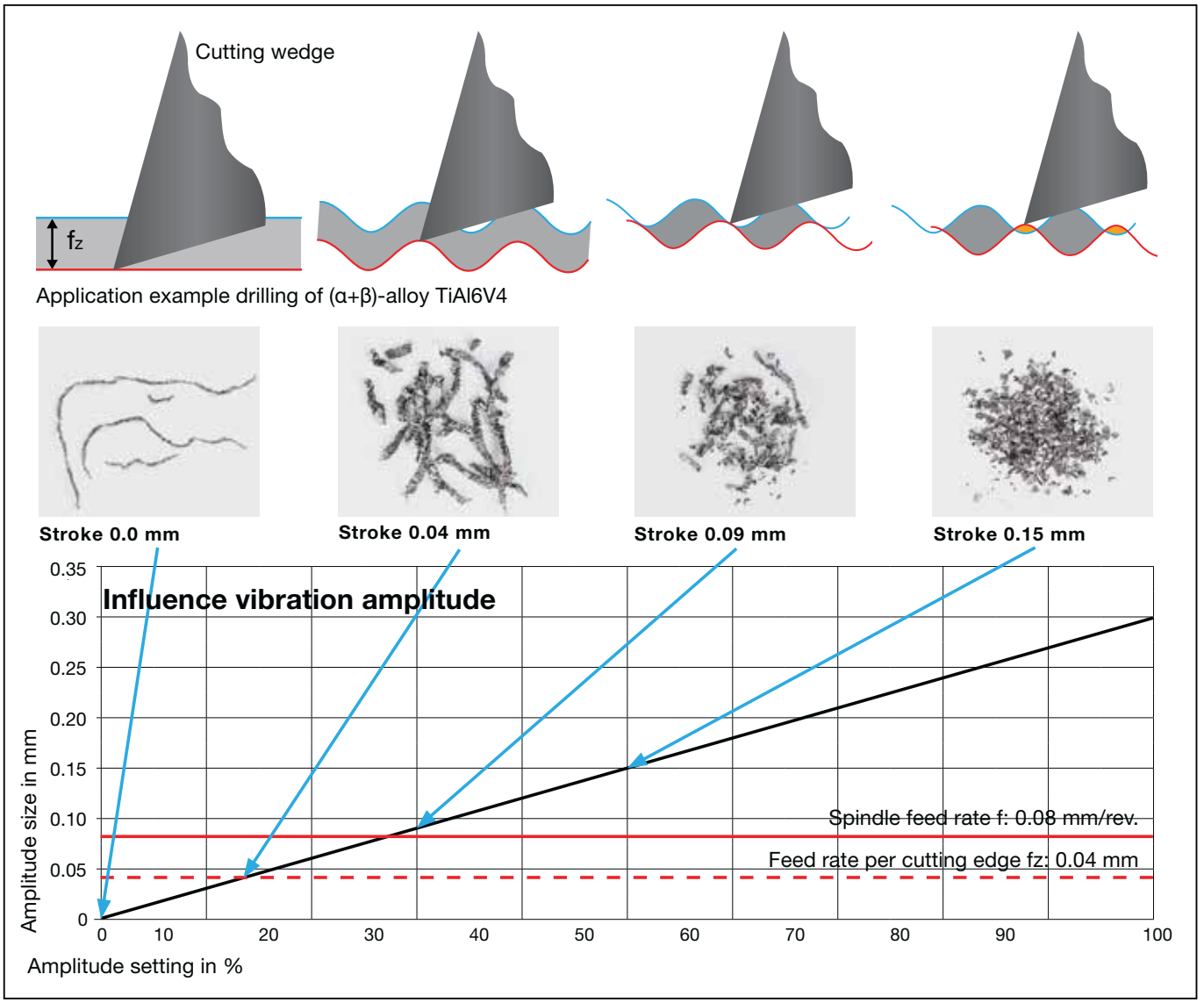
Low-frequency added axial movement enables the production of controllable chips, even with ductile materials. The amplitude of the added axial movement controls the chip thickness. The amplitude setting can be changed to control the chip as a peck and therefore an interruption of the chip formation. With rotational speed linked frequency, the number of pecks can be determined.

Influence of vibration on chip formation

In a test, holes were produced in a standard titanium-alloy (TiAl6V4), where the levels of vibration were varied. All tests were carried out completely dry with identical drilling tools of diameter d = 6.35 mm. The cutting rates were vc = 30 m/min and f = 0.08 mm/rev.

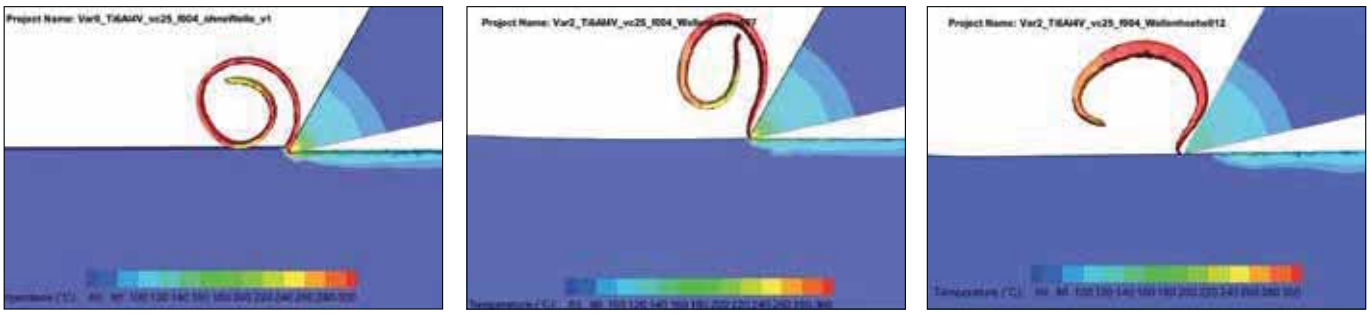
An observation of the produced chips clearly shows the influence of amplitude on the chip formation. Already an amplitude in the height of the chip thickness clearly reduces the chip length. To produce very short chips, without exception in ductile materials, the amplitude must be selected considerably higher than the feed rate of the cutting edges. Therefore, the cutting edge completely lifts-off the workpiece surface and the chip formation process is specifically interrupted

Machining with applied vibration is already well established for the machining of hybrid material combinations, so-called sandwich or stack materials. Here, leaching in fiber composite layers can be prevented and machining temperatures reduced in total thanks to securing the chip break.



Influence of applied vibration on the process temperature

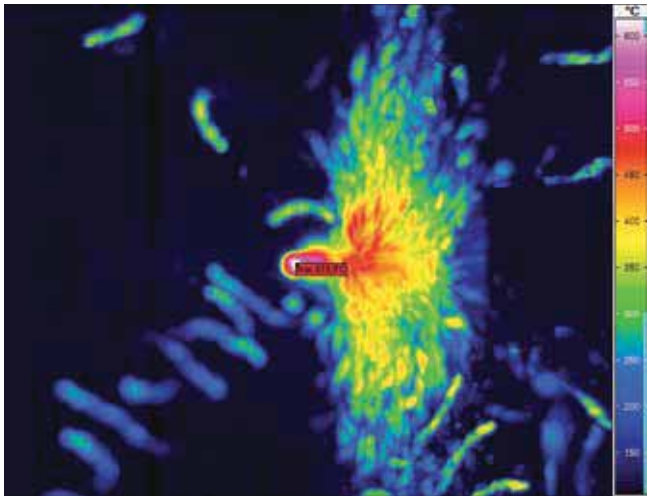
With the assistance of the Finite-Element-Method (FEM) the chip formation at the cutting edge is simulated for different application conditions. The following images show a the chip in a FEM simulation. The results of the simulation show the increasing chip thickness and shortening of the chip with the amplitude of the vibration. Furthermore, it shows with a continuous cut a higher temperature level is achieved at the cutting edge



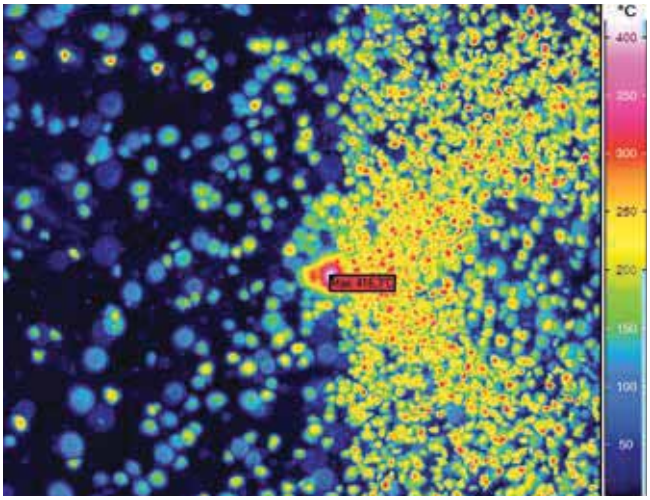
This becomes especially clear when comparing the machining temperatures when machining CFRP/titanium material combinations. Identical drilling tools with diameter d = 6.35 mm were applied dry for the test. The cutting rates were vc = 30 m/min and f = 0.08 mm/rev.

The heat created during the machining of a CFRP/titanium stack material is recorded in real time with a thermography camera. The test panel had a total thickness of 20 mm, 6 mm CFRP and 14 mm titanium (TiAl6V4). It was drilled so that the remaining residual wall was 1.5 mm to the panel face. A comparison of the temperature at the cutting edge on exit of the material and chip temperature was measured to show the difference between conventional machining and machining with vibration. Without vibration, a maximum temperature of 600° C was measured at the cutting edge. With vibration the maximum temperature under identical conditions was reduced by approximately a third to under 450° C. Furthermore, a considerably improved hole quality and increased tool life was achieved thanks to an improved chip break.

Recording stack machining CFRP / (α+β)-alloy TiAl6V4



Conventional dry
ϑmax: 619 °C



Vibration supported dry
ϑmax: 416 °C

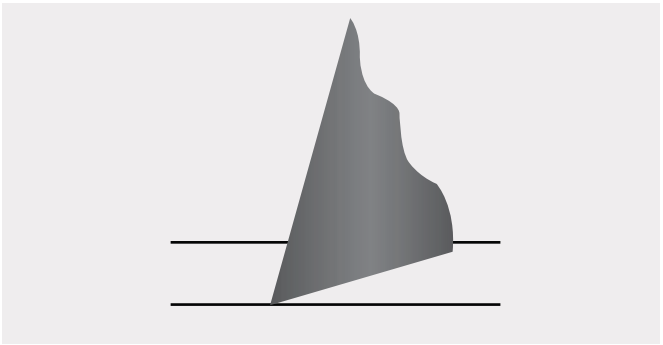
2.) High-frequency impulse (ultra-sound supported)

With high-frequency impulse metal-cutting manufacturing processes – also called ultra-sound supported – an overlaying of the conventional process kinematics with an oscillating tool movement in axial direction takes place exhibiting a considerably higher frequency of > 16.55 kHz in contrast to a low-frequency impulse. The maximum achievable amplitude at the tool point, mostly between 2…30 µm, is heavily dependent on the combination of tool, impulse system and power applied, as the oscillation results from the impulse of the tool with its resonance frequency.

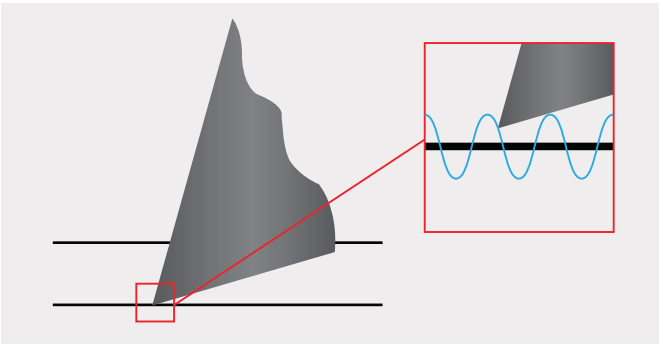
The impulse takes place via actuator, consisting of a generator, converter, booster and the combination of tool and holder, the so-called sonotrode. The generator converts electrical energy into high-frequency sine oscillation that is transferred to the converter. The booster transforms from the converter received vibration amplitude and transfers it enlarged to the sonotrode in which the electrical energy is converted into mechanical energy by piezo actuators.

The combination of feed movement and an oscillating linear movement also enables a more economical machining of high-tensile materials such as ceramic composite materials. Previously, ultra-sound supported machining was predominantly applied for the machining of so-called advance materials such as glass, ceramics and carbide using tools with geometrically undefined cutting edges. High-frequency impulse machining is increasingly applied also in the machining with a defined cutting edge thanks to the drilling and milling of composite materials such as fiber reinforced plastics, sandwich structures and foam. When machining with a defined cutting edge a micro-break-up supports the machining of the material partly visible affecting the surface quality and resulting in a reduction of the process forces.

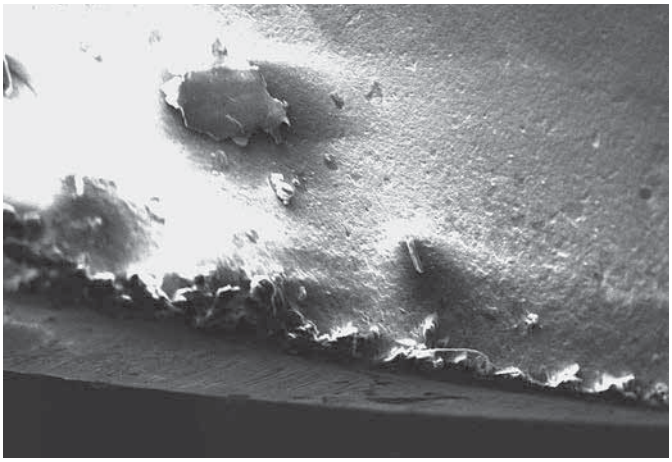
Alongside positively influencing the wear behavior when machining steel materials, a reduction in edge build-up can be identified when drilling nickel based alloys.

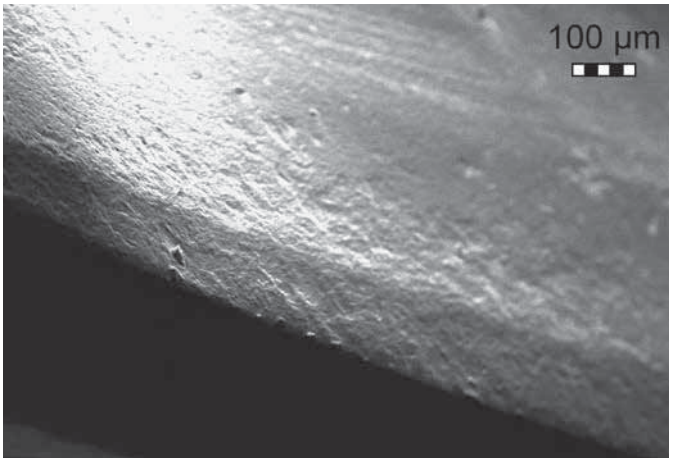


Without ultra-sound support



With ultra-sound support



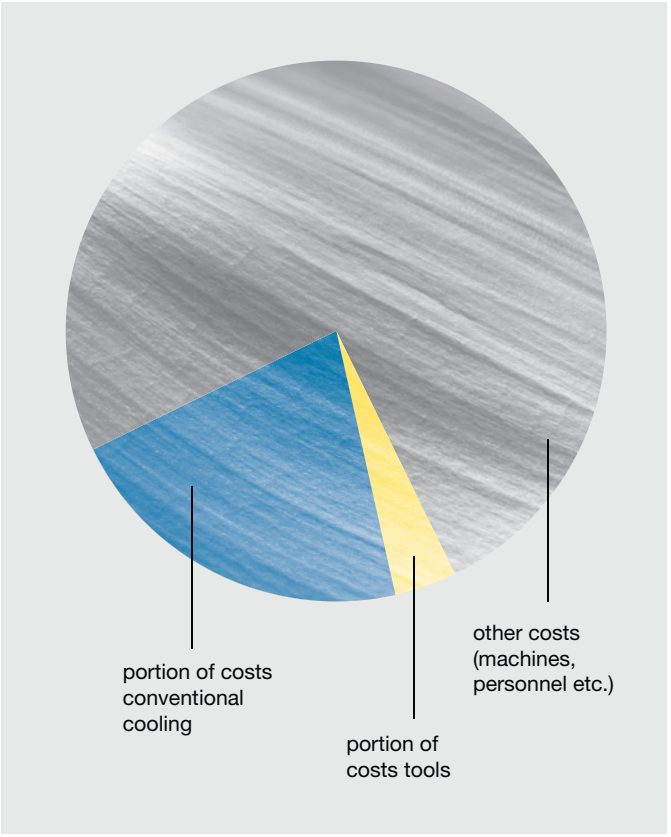


MQL technology

Basics

Alongside the machine and tooling the costs for coolant are a considerable portion of the overall cost of the machining process. Therefore, a reduction in the cooling lubrication requirements offers a potential for cost savings.

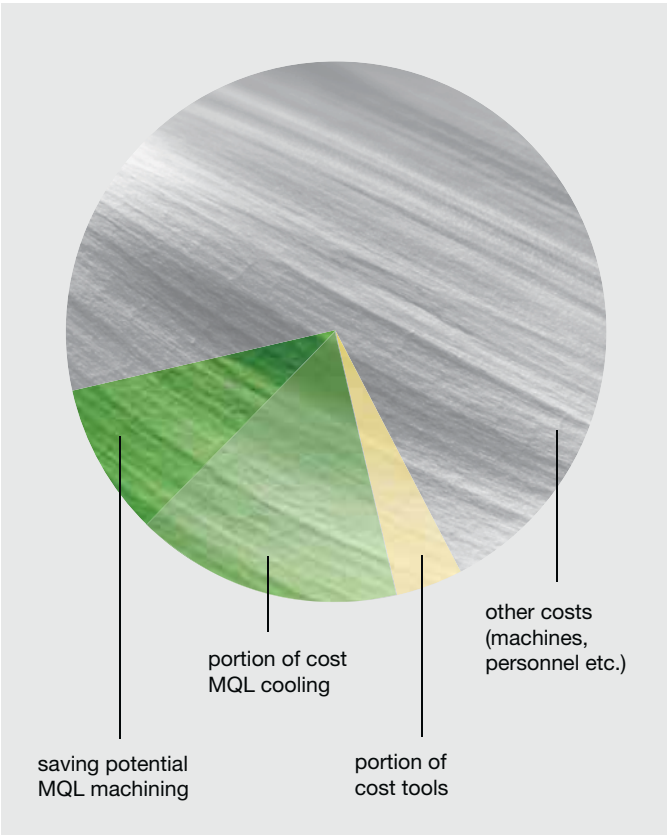
The reduction of cooling lubricants is not only cost saving but is also of benefit to the environment and health protection. Guhring is one of the pioneers in the research and development of MQL that began in the mid 1990's.



The aim of MQL machining

The acquisition of a new MQL cooling lubricant system is significantly less expensive than conventional cooling!

- reduction of thermal stresses at the tool point
- less tool wear
- effective chip evacuation from deep holes
- reduction of cooling lubricant requirement
- high cooling and lubrication effect especially in deep holes
- lowering the resulting costs such as:
  - component cleaning costs
  - cooling lubricant disposal costs
  - swarf disposal costs
- environment and health protection



The development of present-day MQL systems

Thanks to the research in MQL machining Guhring created the precondition for a practical MQL technology. From the clamping set to the tool's cutting edge all the components were integrated in the development – the result was the first MQL delivery system.

Features:
- modular constructed and standardized system
- MQL and conventional clamping set are freely interchangeable thanks to an identical spindle contour
- hydraulic, shrink fit and synchro chucks are all designed for the MQL clamping set



Guhring's current MQL system

By incorporating the MQL length adjustment screw to Guhring's first MQL delivery system in 2007, the original drawback was eliminated. There is, therefore, currently a MQL delivery system available to the customer that optimally meets the requirements of the present-day production process.

Features of the first Guhring MQL delivery system:
- no lubricant delays
- special MQL coolant delivery unit
- MQL suitable tool shank end
- tapered length setting screw

The user, therefore, benefits from a standardized system and a clearly reduced stock keeping thanks to compatible components.

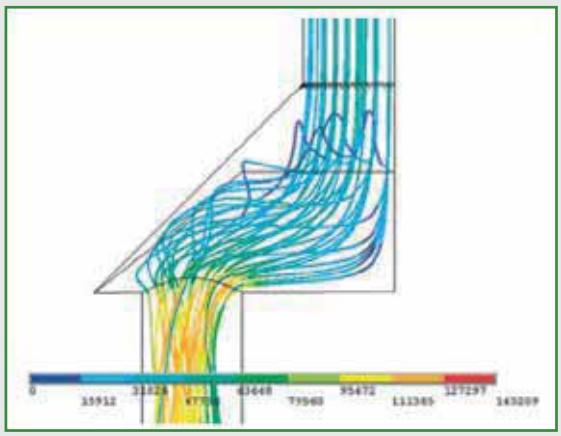


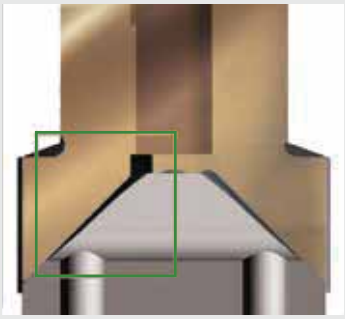
Optimally formed shank end!
For a secure MQL delivery

The delivery of these extremely low coolant quantities directly to the effective area is of utmost importance. Hereby, the geometric design of the shank end plays a significant role! The Guhring developed conical shank end optimally satisfies the relevant MQL conditions.

Advantages of the tapered shank end:
- no lubricant delays
- minimal dead area
- simple operation
- cost-efficient production

Flow pattern with low vortex formation



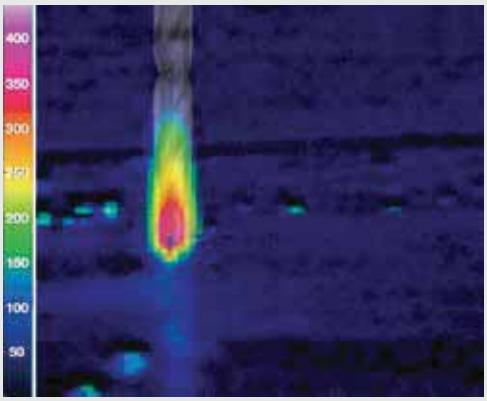


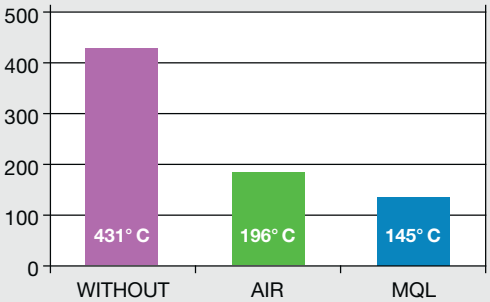
Flow conditions in the coolant duct connection slot at the point of the tapered transition

Keeping a cool point

With MQL the process temperature can be considerably reduced in comparison to dry machining resulting in longer tool life and an increased process reliability.

Thermographic examination at Guhring: Comparison of tool temperatures





The best form for MQL!

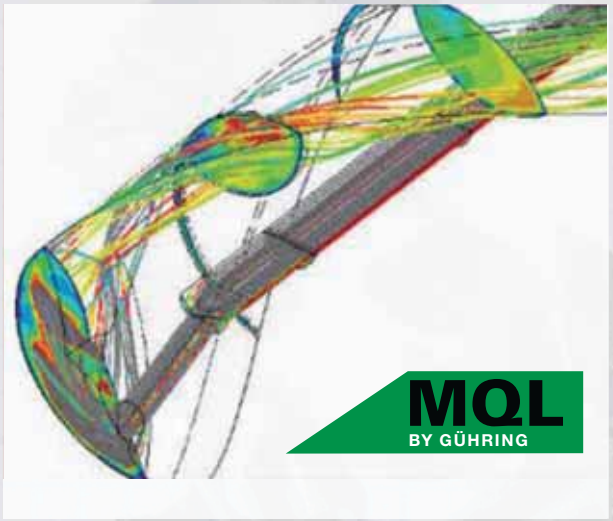
Optimal MQL machining results thanks to the optimized tool geometry of RT 100 T!

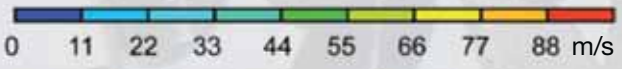


1. Flute cross section:
The flute geometry of Guhring MQL tools ensures short chips that are optimally evacuated from deep holes.

2. Maximum coolant duct cross-section:
The cooling lubricant supply as well as the chip evacuation have been optimized through the tool' maximum coolant duct cross-section.

Flow speed comparison

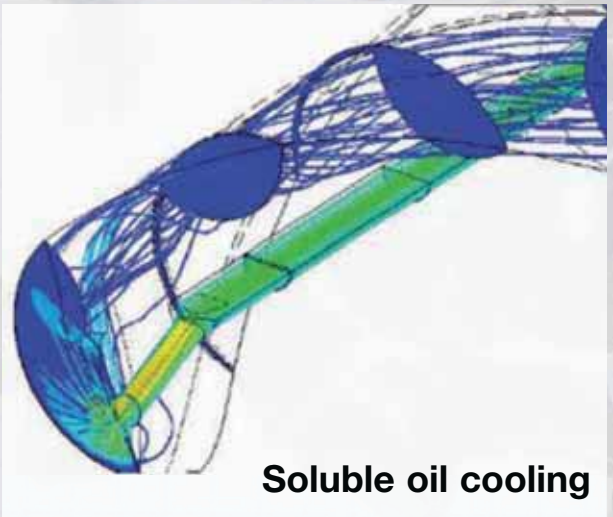




The flow speed
in the flute with MQL is 30.4 m/s.

The volume with MQL
is 6.960 l/h (std.litres air/h).

Tool Ø = 11.7 mm
Pressure at pump = 6 bar
Pressure at tool = 4 bar



The flow speed
In the flute with soluble oil is 3.5 m/s.

The volume with soluble oil
is 600 l/h (std.litres air/h).

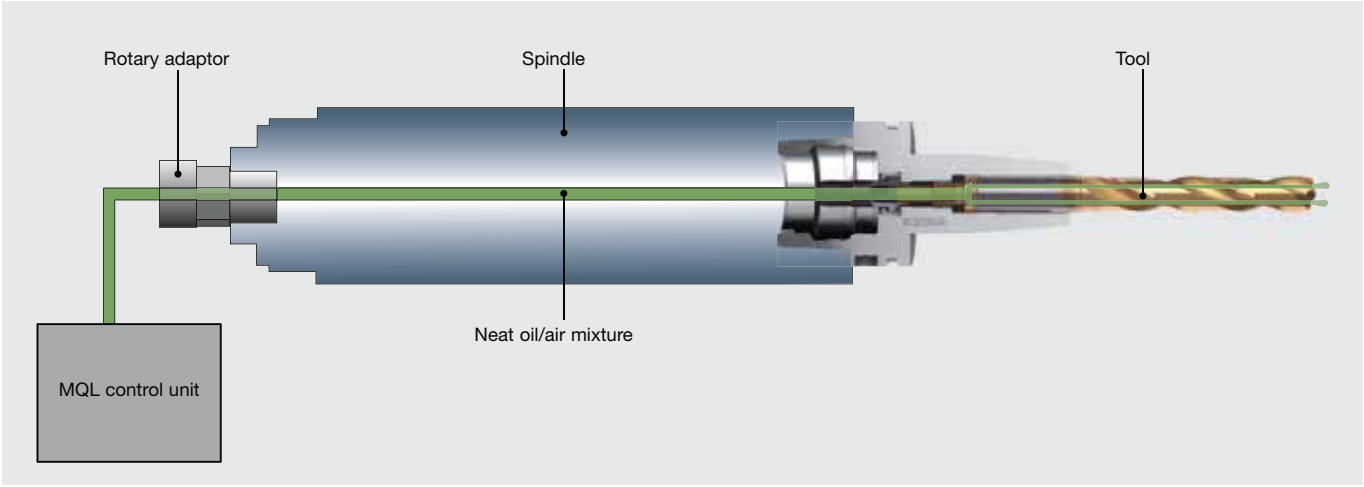
Tool Ø = 11.7 mm
Pressure at pump = 60 bar
Pressure at tool = 31 bar

MQL system types

The provision of the MQL medium to the tool can be achieved in two ways: the aerosol mixture can be prepared outside the machine and conveyed to the machining location (1-channel system) or compressed air and MQL medium are conveyed separately to the mixing chamber where they are then mixed together (2-channel system). The aerosol feed to the machining location is achieved via a suitable minimal quantity lubrication rotary adaptor (preferably with axial flowthrough), the spindle, the clamping system and finally the cutting tool. Unavoidable cross-section modifications should be as streamlined as possible.

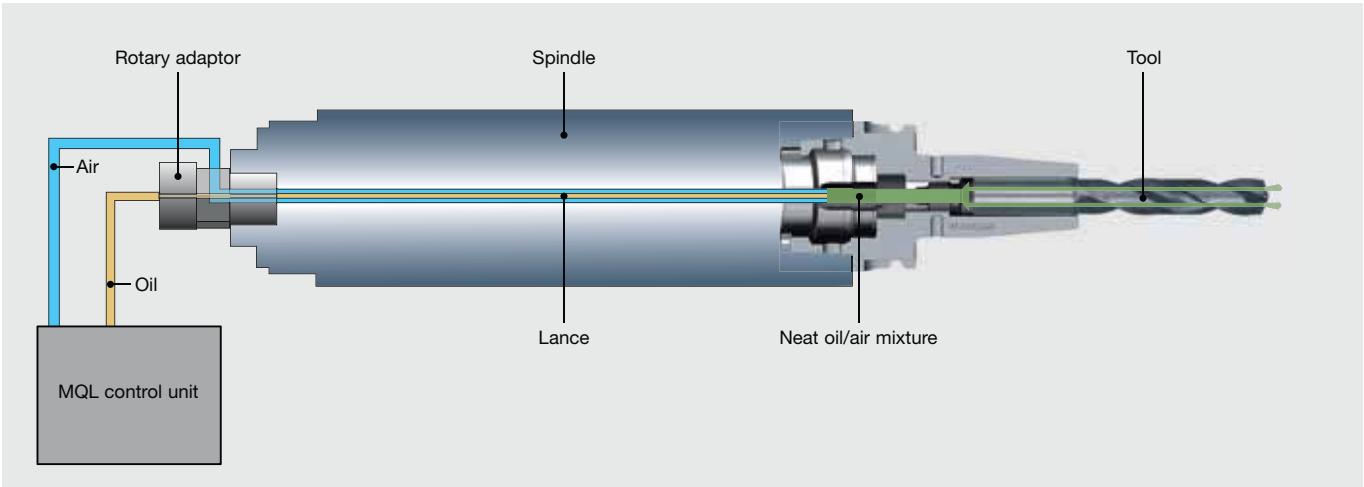
1-channel MQL system

With a 1-channel MQL system, a lubricating aerosol is created in a separate MQL unit attached to the machine tool. Specialnozzle systems inside a pressurised container create a lubricating aerosol via a regulated compressed air feed, its neatoil content adjustable and then maintained within the physical limits by the MQL control.



The 2-channel MQL system

With a 2-channel system the neat oil reaches the rotary adaptor from the unit via a ring line and a as short as possible stub line. In it is incorporated a quick valve that regulates minute quantities of neat oil. The neat oil is transported into the tool holder via a lance attached in the spindle. The second channel of the rotary adaptor is used for the air supply to the tool holder. Only at this point the air is mixed with the neat oil. To achieve this, the tool holder possesses a pressed-in pipe nozzle in which the mixing chamber is located. Neat oil and air can be mixed with this system in more or less any quantities. The route from the mixing chamber to the point of destination is only minimal resulting in a rapid response time and allowing a very quick alteration of the volume of neat oil.



Bright finish



Especially for the machining of wrought and cast aluminum alloys with a high silicon content, uncoated drills offer a very good machining performance. In order to counter adhesive (formation of built-up edges), these tools are optimally suited to this field of application thanks to a special geometry combined with a high surface quality in the point thinning, flute and clearance areas.

Steam tempered/nitrided surface finish



A steam tempered surface finish provides an improved corrosion protection as well as an improved tribological behavior of the tools thanks to the oxidation of the surface area (approx. 3 to 10 µm). Nitriding the land is recommended for abrasive applications, it increases the hardness of the surface on the land and therefore improves wear resistance of the tool. However, using hard material / soft material coatings often provide better results, this type of surface treatment is becoming increasingly less important.

TiN coating



Max. application temperature: <600° C
Color: Golden yellow
Structure: Single-layer
Hardness: 2300 HV0.05

Introduced by Guhring at the beginning of the 1980's, TiN-coating is applied to HSS and carbide for drilling operations as a cost-efficient general purpose coating.

FIREX®/nano-FIREX® coating



Max. application temperature: <800° C
Color: Violet
Structure: Multi-layer
Hardness: 3300 HV0.05

FIREX® and nano-FIREX® coatings contain aluminum, titanium and nitrogen. These coatings were introduced towards the end of the 1990's and are a further development of the TiN-coating. They excel thanks to increased hardness and good thermochemical resistance, they are suitable for HSS and carbide.

nano-Ra coating



Max. application temperature: < 800°C
Color: Pale golden
Structure: Multi-layer
Hardness: 3300 HV0.05

The TiN/TiAlN multi-layer structure of Raptor is the key component for the good performance when machining steel. Thanks to the additional friction reducing top layer coating, based on zircon, the performance could now be further extended for steels that tend to adhere during machining (i.e. ferritic, austenitic and Duplex steels).

TiAlN coating



Max. application temperature: <800° C
Color: Violet
Structure: Single-layer
Hardness: 3300 HV0.05

The TiAlN coating displays similar characteristics to FIREX and nano-FIREX and with its single-layer structure is mostly applied in the field of micro-precision drills.

nano-A coating



Max. application temperature: <900° C
Color: Blue violet
Structure: Multi-layer, nano-structured
Hardness: 3300 HV0.05

TiAlN based nano-A has proven itself in the machining of stainless steels and is suitable for drilling cast iron, nickel based alloys and cobalt chrome alloys. Thanks to its nano-layered structure the fracture growth is delayed. Furthermore, thanks to its adapted composition it possesses a higher thermochemical resistance than for example TiAlN.

Sirius coating



Max. application temperature: < 900°C
Color: Pale golden
Structure: Multi-layer, nano-structured
Hardness: 3400 HV0.05

Sirius, essentially based on AlTiN is especially suitable for the machining of stainless steels. Thanks to the nano-structured design, it displays good hardness and toughness. The zircon containing top layer coating is to largely eliminate chemical reactions with the material and therefore encourage chip evacuation.

nano-Si coating



Max. application temperature: <800° C
Color: Bronze
Structure: Multi-layered nano-composite
Hardness: 5500 HV0.05

The nano-Si coating belongs to the group of Nano-composites. The microstructure features extremely fine TiAlN nano-crystals bedded into a glass-like, high temperature resistant silicon nitride matrix. This results in a high hardness especially making the nano-Si coating the first choice for hardened steels and cast materials.

Endurum coating



Max. application temperature: <800° C
Color: Copper
Structure: Multi-layered nano-composite
Hardness: 4000 HV0.05

Endurum coating, another coating of the Nano-composite family, this was specifically designed for the machining of carbon, free-cutting and manganese alloyed steels.

Zenit coating



Max. application temperature: <700° C
Color: Pale gold
Structure: Multi-layer, nano-structured
Hardness: 2500 HV0.05

The nano-structured Zenit coating was specifically optimized for the machining of titanium alloys. The special structure as well as the composition contribute to a significant reduction of tribochemical wear and therefore make it a true specialist. In parallel it also achieves good results when drilling aluminium cast alloys with moderate silicon content.

		DRILLING		
		CARBIDE		HSS
		conv. coolant	MQL	
C-steels, Free-cutting steels, Mn-steels	P	Endurum nano-Ra nano-FIREX	Endurum nano-Ra nano-FIREX	nano-FIREX
Steel, low-alloyed	P	nano-FIREX Endurum nano-Ra	nano-FIREX Endurum nano-Ra	nano-FIREX TiN
Steel, alloyed	P	nano-Si nano-FIREX TiAlN	nano-Si nano-FIREX TiAlN	nano-FIREX TiN
Steel, hardened, <55 HRC	P	nano-Si nano-FIREX TiAlN	nano-Si nano-FIREX TiAlN	
Steel, hardened, 55–65 HRC	P	nano-Si nano-FIREX TiAlN	nano-Si nano-FIREX TiAlN	bright
Steel, stainless and acid-resistant	M	nano-A Sirius Endurum	nano-A Sirius Endurum	Sirius nano-FIREX TiN
Cast iron	K	nano-Si nano-FIREX nano-A	nano-Si nano-FIREX nano-A	nano-FIREX
Nickel-based alloys (i.e. Inconel)	S	nano-A nano-Si nano-FIREX	nano-A nano-Si nano-FIREX	nano-FIREX
Titanium / titanium-alloys	S	Zenit nano-A	Zenit nano-A	nano-FIREX
Cobalt-chromium-alloys	S	nano-A nano-Si nano-FIREX	nano-A nano-Si nano-FIREX	
Precious metals	S	nano-A	nano-A	
Aluminium-wrought alloys	N	bright	bright	
Aluminium-cast alloys (<12% Silizium)	N	bright Zenit	bright Zenit	bright Zenit
Aluminium-cast alloys (≥12% Silizium)	N			
Copper / bronze / brass	N			TiN
Ceramics	N			
Plastics, not reinforced	N			
Plastics, fiber-reinforced	N	nano-Si	nano-Si	
Graphite	N			

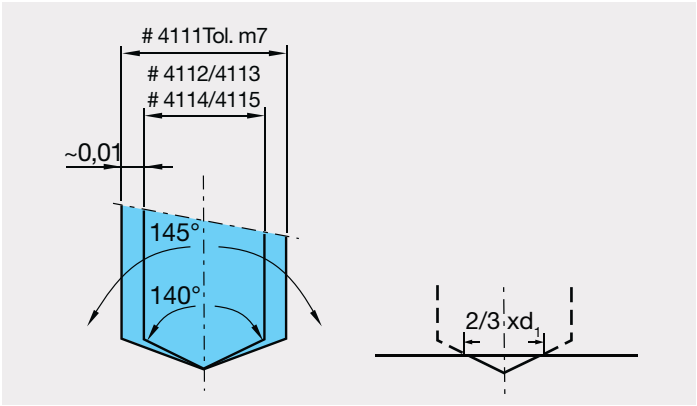
***Note:** The overview shows the general application recommendations for Guhring coatings.*
Prioritization is from top to bottom.

Centering and pilot drilling

Centering and pilot drilling for HT 800

Generally we recommend centering/pilot drilling for HT 800 with drilling depths above 7xD.

When centering, the drilling diameter should be approximately 2/3 of the hole diameter to be produced.
With pilot drilling we recommend a drilling depth of 1xD. In addition, the point angle as well as the diameter of the pilot drill should be larger than the point angle and the diameter of the following drill.
To ensure this, we recommend the application of the adapted pilot drilling inserts series no. 4111 with 145° point angle and m7 diameter tolerance in an extra short, rigid holder series no. 4105 or 4106

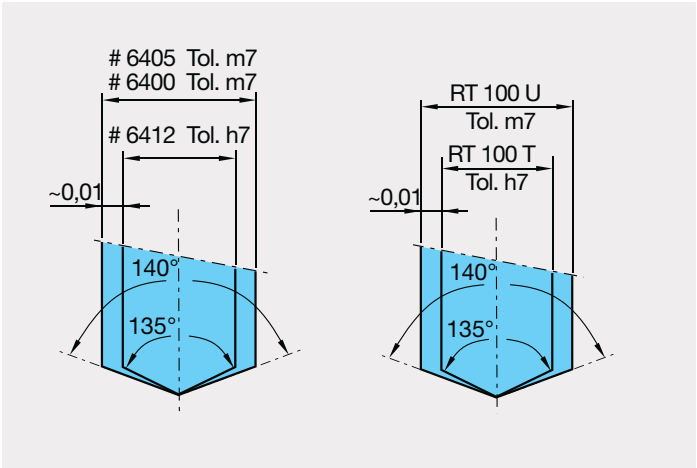


Centering and pilot drilling for solid carbide

When applying solid carbide drills for drilling depths of 12xD we recommend centering or the production of a pilot hole with a depth of 1xD to 2xD.
With drilling depths larger than 12xD a pilot hole with a depth of 1xD to 2xD is imperative.

With pilot drilling for the Exclusive Line micro-precision drill with 15xD (series no. 6412) we recommend the application of Exclusive Line micro-precision drill 4xD without internal cooling (series no. 6400) or 5xD with internal cooling (series no. 6405), as they are optimally adapted regarding point angle and diameter tolerance.

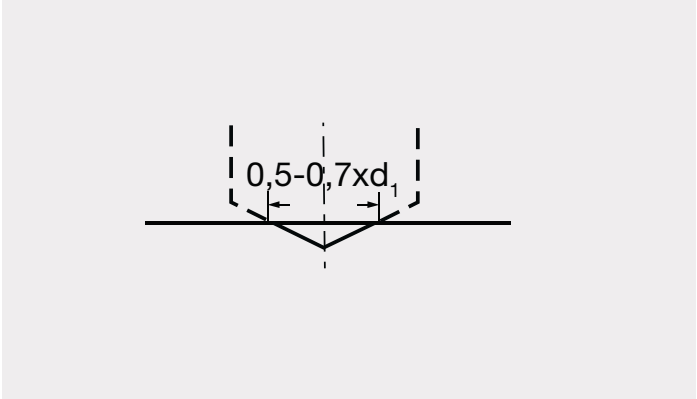
When pilot drilling for deep hole drills eg. type RT100T, a Ratio drill type RT100U with internal cooling, 3xD (e.g. series no. 5510) can be applied, as it is optimally suited regarding point angle and diameter tolerance.



Centering and pilot drilling for HSS

Centering with drill lengths to DIN 340

When using long series drills (DIN340) in HSS/HSCO, we recommend spot drilling with a spotting diameter of 0.5 to 0.7xD (D = drill diameter). HSS NC spotting drills are optimally suited for this process. Detailed information regarding NC spotting drills can be found in the NC spot drilling section.



Pilot drilling with drill lengths to DIN 1869

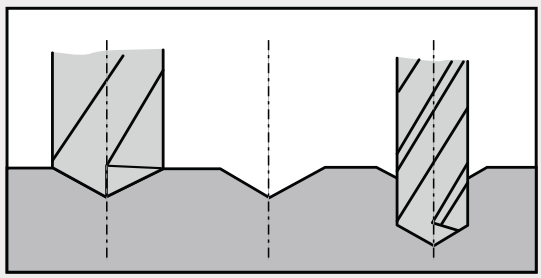
When applying extra length HSS/HSCO drills to DIN 1869 we recommend the production of a pilot hole with a depth of 1xD to 2xD.
Stub drills type GV 120 to DIN 1897 are optimally suited.

NC spotting drills

NC spotting drills

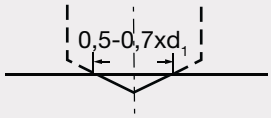
When producing accurately positioned holes, holes with close diameter tolerances, deep holes or generally with unfavorably shaped workpieces (round, rough. etc.) it's recommended to use a NC spotting drill. This ensures the following drill, drills accurately and prevents the drill from running off.
NC spotting drills can also be used to produce chamfers or countersinks (when using a spot drill with a larger diameter than the actual hole) and centering in one operation.

NC spotting drills are designed with a very short flute length and without body clearance to ensure a very rigid design and therefore accurately positioned spotting. Due to the design, NC spot drills are only suitable for spotting, drilling depths must not exceed the length of the point geometry.



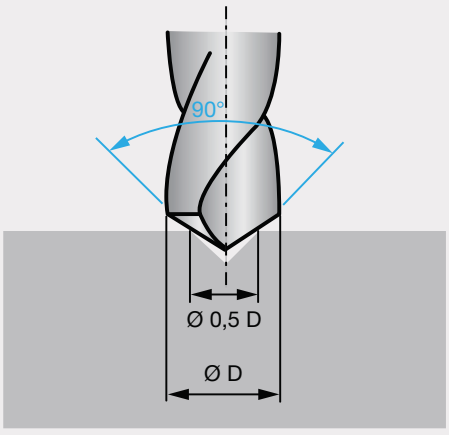
Selecting an NC spotting drill

Ideally, the spotting diameter should be chosen between 0.5 to 0.7xD.



90° NC spotting drills

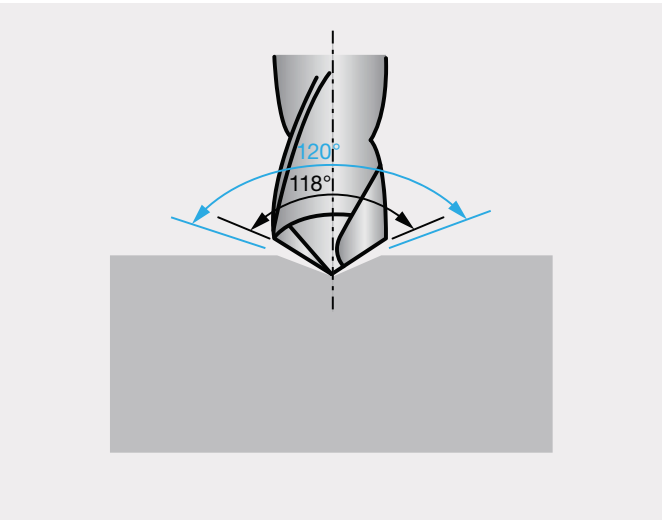
NC spotting drills with a 90° point angle are ideally suited for spotting if the following HSS/HSCO drills have a relatively large chisel edge. This ensures that the following HSS/HSCO drill drills with the cutting lip first and is guided by the most stable points of the cutting edge.
In addition, NC spotting drills with a 90° point angle are used to produce a 90° countersink and center in one operation if the spotting diameter is larger than the actual hole diameter.



NC spotting drills

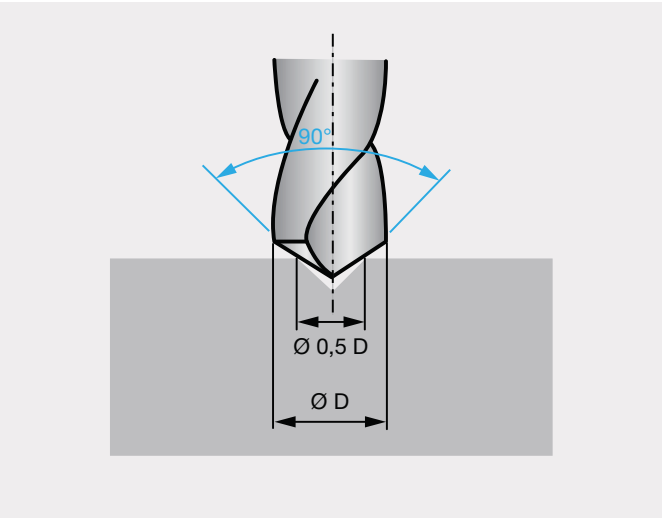
120° NC-spotting drills

NC-spotting drills with a 120° point angle are specially suited for spotting operations if the actual hole is subsequently produced with HSS/HSCO drills with a 118° point angle. This ensures the following HSS/HSCO drill spots with the point first and is well guided.



142° NC-spotting drills

NC-spotting drills with 142° point angle are specially suited for spotting operations if the actual hole is subsequently produced with carbide drills with a 135° - 140° point angle. This ensures the following carbide drill spots with the point first, centers and is well guided. If the cutting corners of the carbide drill meet the material to be machined before the point, there is the risk of corner crumbling with carbide drills.



NC spotting drills		
90°	120°	142°
		

Coolant pressure and volumes Ratio drills

The illustrated optimum, good and minimum required coolant volume apply only to spiral-fluted Ratio drills type RT 100. In contrast to the pressure, which is a feature of the machine tool; the cooling system fitted to it and also the possibility of leakage, volume does not depend on the machine (fig. 1). The pressure figures given are therefore recommendations which serve only as guidelines. Ratio drills type RT 80 with central coolant duct are subject to different standards (fig. 2). The diagrams shown are for Ratio drills in their most important application, machining of steel. But they are also guidelines for the machining of other materials, primarily because the highest coolant pressures are constantly required for the machining of steel. The effects of cooling using straight-fluted Ratio drills type RT 150 is particularly sensitive and is clearly demonstrated in the examples for particular workpiece materials. For example, the loss in tool life through low pressures when machining grey cast iron is considerably higher than when machining AlSi alloys. But this is only the case when the AlSi alloy is short-chipping! The absolute necessary minimum pressure or good pressure should, when machining cast iron, be generally a little higher than for AlSi machining (figures 3 and 4).

The recommended values are to be used only for drilling depths of up to approx. 5 x D. Deeper holes should be produced with tools having internal coolant ducts, as for example RT 150 GN, otherwise the production of deeper holes (depending on the material) becomes uneconomical.

Required coolant pressures
optimum pressure
good pressure
minimum pressure

Required coolant volumes
optimum volume
good volume
minimum volume

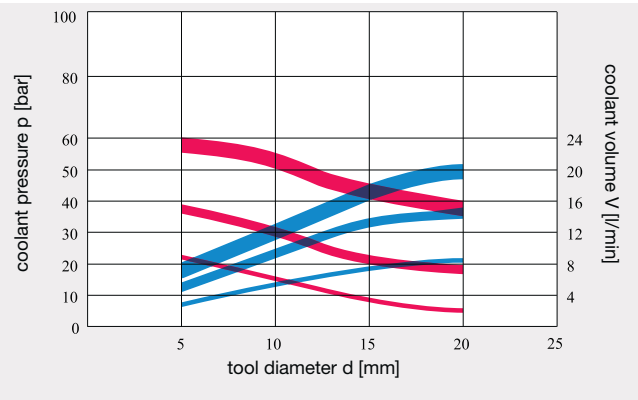


fig. 1:
Required coolant pressures and volumes for RT 100 Ratio drills with internal spiral coolant ducts.

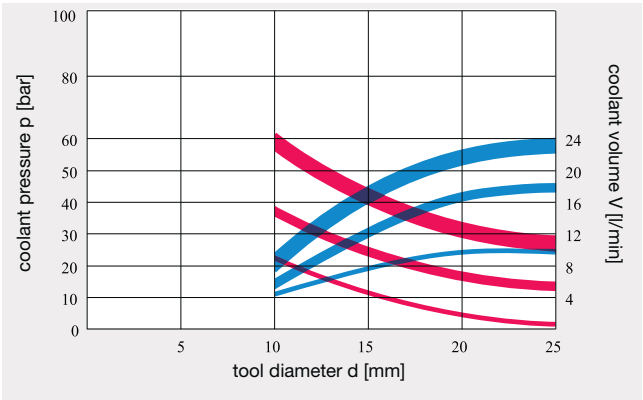


fig. 2:
Required coolant pressures and volumes for RT 80 Ratio drills with central internal coolant duct.

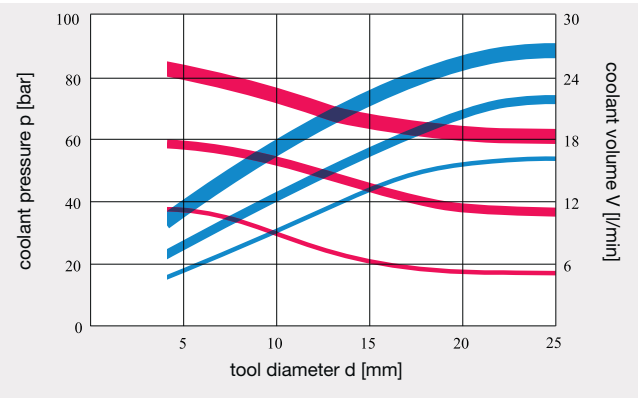


fig. 3:
Required coolant pressures and volumes for straight-fluted Ratio drill type 150 GG when machining cast iron.

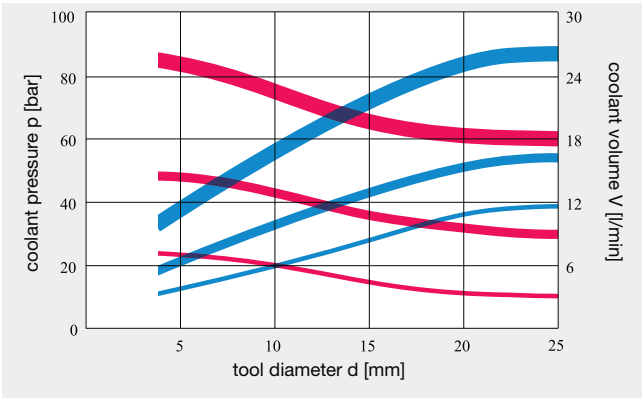


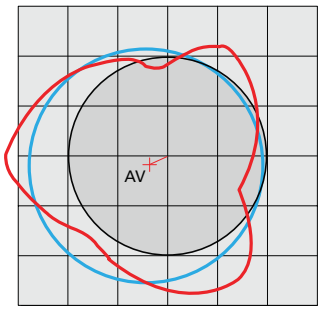
fig. 4:
Required coolant pressures and volumes for straight-fluted Ratio drill type 150 GG when machining AlSi7.

Typical hole quality characteristics

1. in 42CrMo4V, Ø 14.5 mm

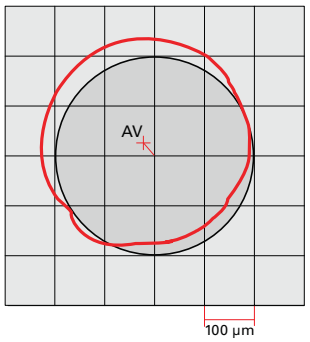
HSS drills, type N
Guhring no. 651 Ⓢ

vc = 25 m/min
f = 0.25 mm/rev.
+Rmax = 131.8 µm
-Rmax = -49.1 µm
actual D = 14.566 mm
dRmax = 103.5 µm
AV = 49.2 µm
Ra = 2.6 µm, Rz = 6.8 µm **IT12**



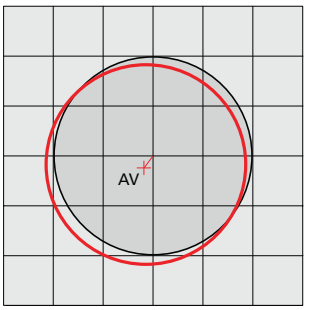
Ratio drills, type RT 80
Guhring no. 1171 Ⓢ

vc = 70 m/min
f = 0.25 mm/rev.
+Rmax = 42.7 µm
-Rmax = -29.6 µm
actual D = 14.515 mm
dRmax = 12.9 µm
AV = 35.3 µm
Ra = 1.4 µm, Rz = 4.31 µm **IT9**



Ratio drills, type RT 100
Guhring no. 1181 Ⓢ

vc = 70 m/min
f = 0.25 mm/rev.
+Rmax = 26.7 µm
-Rmax = -17.2 µm
actual D = 14.509 mm
dRmax = 5.2 µm
AV = 22.8 µm
Ra = 1.04 µm, Rz = 3.2 µm **IT8**



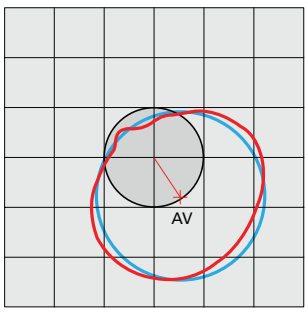
The overall total of the maximum positive and negative deviations is the sum of the total run-out in relation to the black circle as measured on standard instruments (dRmax). The red lines at the hole centers indicate the direction and amplitude of the displacements AV (Axis Shifting) of the produced hole from the true center point. The parameter showing the largest deviation is decisive for the IT quality class of the hole in relation to the tool diameter.

The black circle in the diagram represents the nominal hole diameter which the tool should ideally produce. The red circle indicates the form actually produced.
The mean value of the radius of the red circle, i.e. the average diameter, is shown by the blue circle. (with our Ratio drills the average diameter is practically identical to the actual diameter produced).

2. in GGG40, Ø 10.0 mm

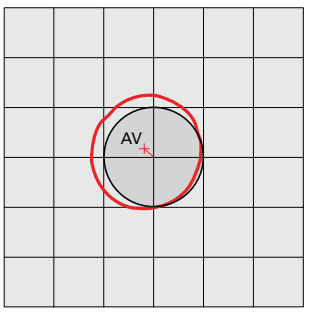
HSS drills, type N
Guhring no. 651 Ⓢ

vc = 30 m/min
f = 0.2 mm/rev.
actual D = 10.077 mm
+Rmax = 106 µm
-Rmax = -28 µm
dRmax = 42 µm
AV = 68.5 µm
Ra = 3.7 µm, Rz = 17.2 µm **IT12**



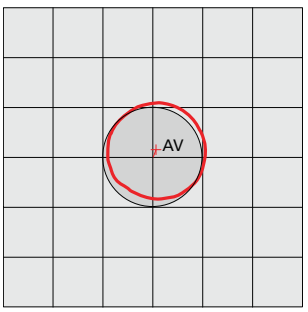
Ratio drills, type RT 100
Guhring no. 1181 Ⓢ

vc = 90 m/min
f = 0.3 mm/rev.
actual D = 10.027 mm
+Rmax = 34 µm
-Rmax = -9.2 µm
dRmax = 6.5 µm
AV = 22.5 µm
Ra = 2.2 µm, Rz = 11.5 µm **IT9**



Ratio drills, type RT 150 GG
Guhring no. 768 ◯

vc = 130 m/min
f = 0.2 mm/rev.
actual D = 9.994 mm
+Rmax = 11.5 µm
-Rmax = -18 µm
dRmax = 5 µm
AV = 14 µm
Ra = 1.99 µm, Rz = 11.2 µm **IT8**



A brief introduction to the subject of deep hole gun drilling

In the machining world, drilling depths of 10xD and deeper are regarded as deep hole drilling operations, whereby smaller drilling depths can naturally also be produced with gun drills. Advantage is taken of the positive side effects, as for example good surface quality, low deviation from concentricity and optimized alignment accuracy..

High pressure cooling -
has become a matter of course.
In recent years, internal cooling has established itself for all drilling tools. Coolants are now living up to their name and being supplied via coolant ducts to where they are urgently required. Considerable improvements in tool life and less breakages have been achieved by this measure for twist drills, taps etc.
Every conventional machine tool currently on the market can be supplied with high pressure internal cooling and is therefore also suitable for deep hole drilling.
The share of gun drills on machining centers, lathes etc. is forever gaining more importance. The process is therefore increasing in popularity in the machining world.



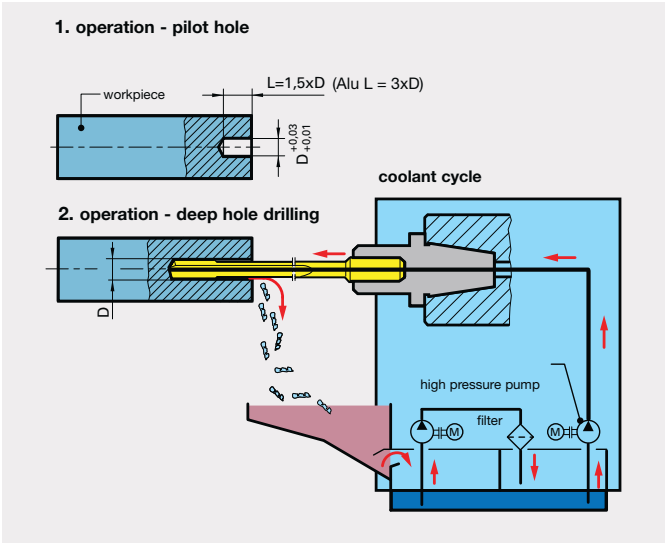
All gun drills must have support for the pilot hole.
Gun drills must never operate at full speed without support in the machine shop.

Attention!
Gun drills with steel shanks are predominantly NOT suitable for shrink fitting (exception T16 see next page)

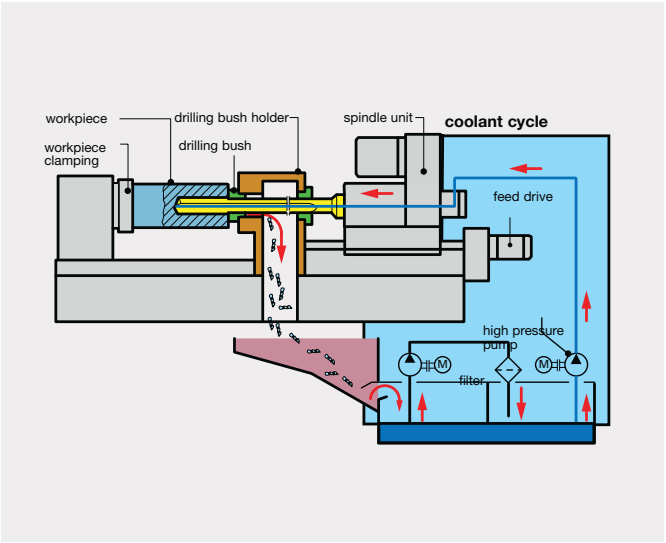
Typical procedure with all gun drills on conventional machine tools
- production of pilot hole (L ≈ 3xD, tolerance H8)
- enter at low revolutions, approx. 200 rev./min, feed rate approx. 500 mm/min. With tools for drilling depths in excess than 40xD enter the pilot hole revolving in left hand direction.
- setting of coolant pressure and revolutions
- uninterrupted drilling to required drilling depth without wood pecking. When applying gun drills with increased length-diameter-ratio, we recommend machining with reduced cutting parameters (approx. 75% of the optimal cutting speed) up to a drilling depth of approx. 25 mm.
- switching off coolant supply after reaching the required hole depth
- withdrawal in top gear (max. 10 m/min) with stationary spindle

Application advice
- For drilling depths in excess than 40xD we recommend the use of two or more gun drills, e. g. Ø 10 x 400 mm and Ø 9.95 x 800 mm.
- Gun drills for drilling depths of more than 40xD should enter the pilot hole revolving in the left hand direction.
- When changing tools for drilling depths of more than 40xD, the tool can be damped by switching on coolant supply for just one second.
- Generally we recommend the use of soluble oil with a minimum oil content of 10 %.
- Single-fluted gun drills for long-chipping aluminum should be supplied with point grind 180° and coolant chamber.
- For optimized bore straightness an additional cylindrical guide part can be used (optional).

Deep hole drilling on conventional machine tools

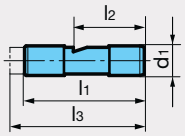


Deep hole drilling machines

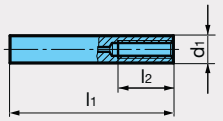


The range of drivers introduced below is available ex stock. However, it only represents a small selection of drivers from our complete range. We naturally also produce individual drivers of the highest precision to customer drawings. Attention! EB 100 requires drivers with positioning lugs. Further information on request.

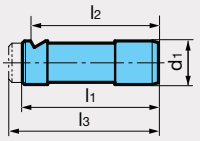
Drivers for deep drilling machines



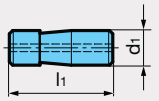
code no.	d_1	l_1	l_2	l_3
1.1	10	40	24	-
1.2	10	40	24	45
1.3	10	40	24	55
1.4	16	45	31,2	-
1.5	25	70	34	-
1.6	25	70	34	78



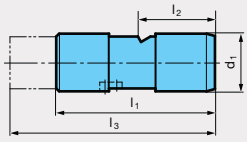
code no.	d_1	l_1	l_2
5.1	10	60	20
5.2	16	80	28
5.3	25	100	50
5.4	10	100	
5.5	10	110	



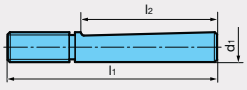
code no.	d_1	l_1	l_2	l_3
2.1	16	50	47	-
2.2	16	50	47	55
2.3	16	50	47	70



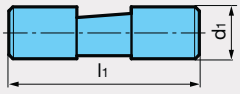
code no.	d_1	l_1
6.1	12,7	38
6.2	19,05	70
6.3	38,1	70



code no.	d_1	l_1	l_2	l_3
3.1	25	70	34	100



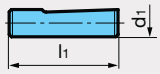
code no.	d_1	l_1	l_2
7.1	16	112	73
7.2	20	126	82



code no.	d_1	l_1
4.1	19,05	70
4.2	12,70	70
4.3	25,40	70
4.4	31,75	
4.5	36,10	70

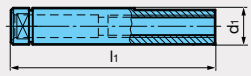
Drivers to DIN 1835

form E



code no.	d_1	l_1
9.1	8	36
9.2	10	40
9.3	12	45
9.4	16	48
9.5	20	50
9.6	25	56
9.7	32	60
9.8	31,75	70
9.9	38,1	70
9.10	40	70

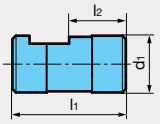
Drivers to VDI-draft



code no.	d_1	l_1
12.1	10	68
12.2	16	90
12.3	25	112

also be used for deep hole drilling machines

Drivers to Speed-Bit-System

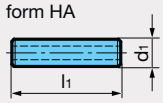


code no.	d_1	l_1	l_2
13.1	16	40	16
13.2	25	50	25
13.2	35,6	60	

also be used for deep hole drilling machines

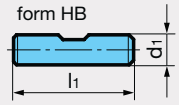
Drivers to DIN 6535

form HA

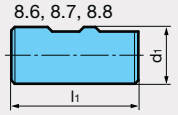


code no.	d_1	l_1
10.1	8	36
10.2	10	40
10.3	12	45
10.4	16	48
10.5	20	50
10.6	25	56
10.7	32	60
10.8	25	70
10.9	40	70

form HB

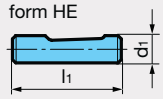


with code no. 8.6, 8.7, 8.8



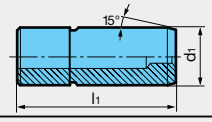
code no.	d_1	l_1
8.1	8	36
8.2	10	40
8.3	12	45
8.4	16	48
8.5	20	50
8.6	25	56
8.7	32	60
8.8	40	70

form HE



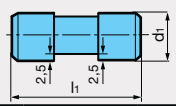
code no.	d_1	l_1
11.1	8	36
11.2	10	40
11.3	12	45
11.4	16	48
11.5	20	50
11.6	25,4	70
11.7	25	56
11.8	32	60
11.9	40	70

similar form HA (shrinkable)



code no.	d_1	l_1
16.1	10	50
16.2	16	64
16.3	20	70
16.4	25	81
16.5	32	92

similar form HE

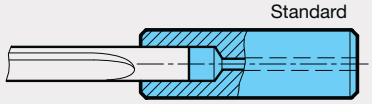


code no.	d_1	l_1
17.1	19,05	70
17.2	25,40	70
17.3	31,75	70
17.4	38,1	70

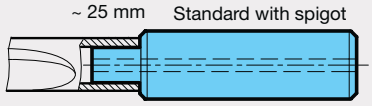
also be used for deep hole drilling machines

Driver variations to suit gun drill tubes

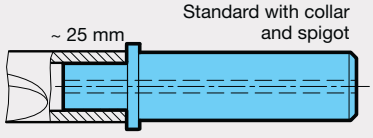
Solution for nom.-Ø < driver-Ø (difference must be appr. 6 mm): tube shank installed in driver



Solution for nom.-Ø ≠ driver-Ø (close to parallel): tube shank installed over spigot



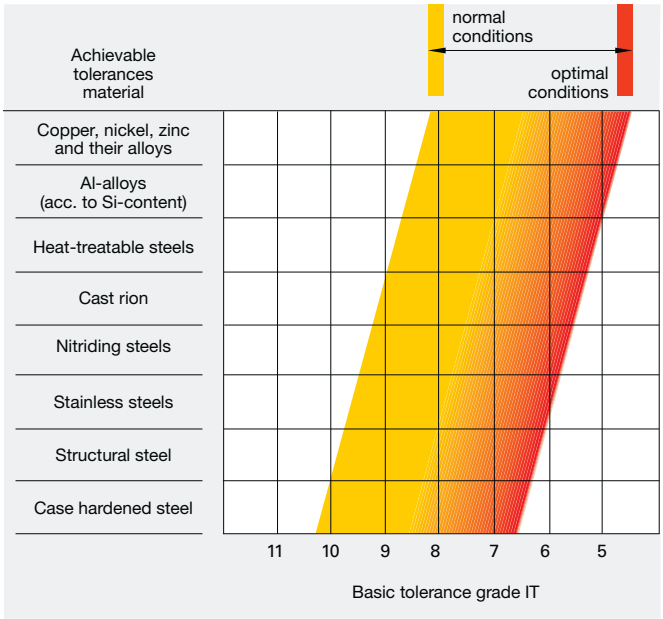
Solution for nom.-Ø > driver-Ø: tube shank installed over spigot, inside-Ø of tube shank >driver-Ø, tube shank fits against collar shoulder.



Single fluted gun drill accuracy

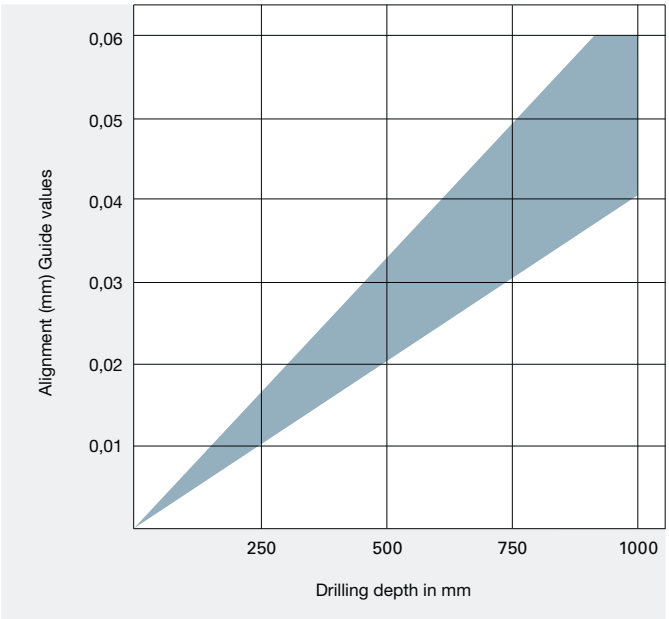
Basic tolerances*

The application of single-fluted gun drills can achieve a lower basic tolerance, as the cutting forces at the cutting edge are absorbed by the supporting strips, unlike twist drills where the slightest deviation of the two cutting edges causes a larger hole.



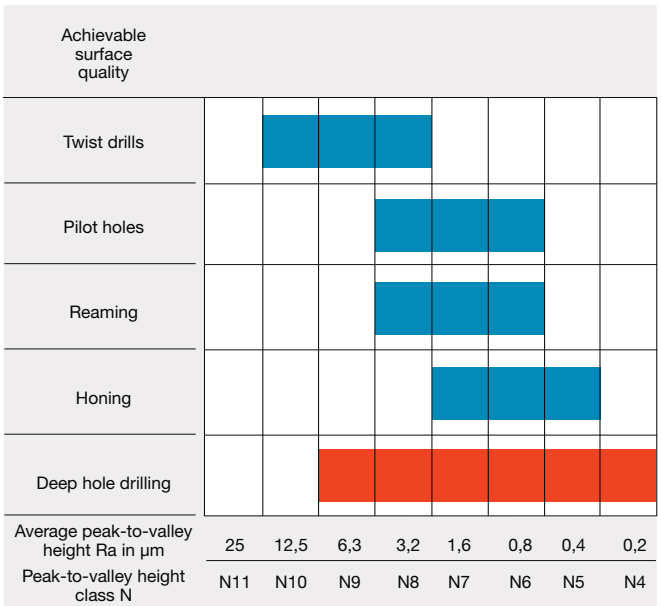
Alignment accuracy*

Because brazed single-fluted gun drills always have the precision carbide head brazed on to a flexible tube, the tool achieves very accurate aligned holes remaining unaffected by possible concentricity errors.
However, extreme material fluctuations and other influencing factors can impair the alignment accuracy.



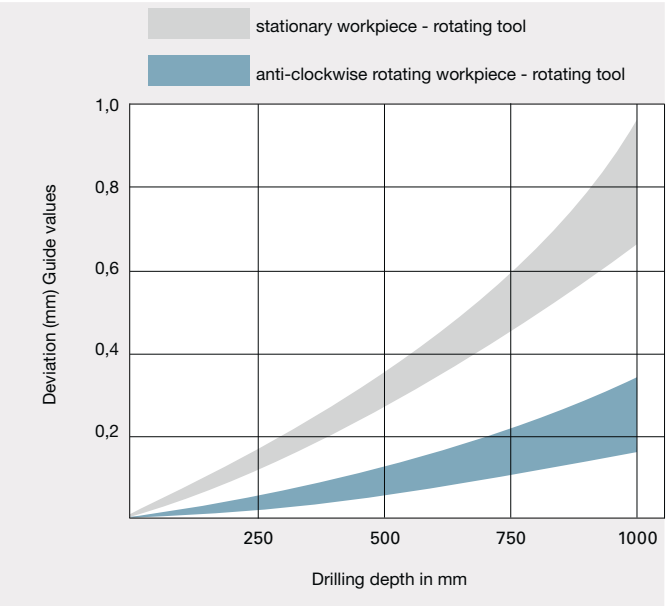
Surface quality*

The forces at the cutting edge are absorbed by the support bushes, which in return burnishes the surface.
Lubrication between the supporting strips and hole surface is therefore very important.
The better the lubricant, the better the surface quality.



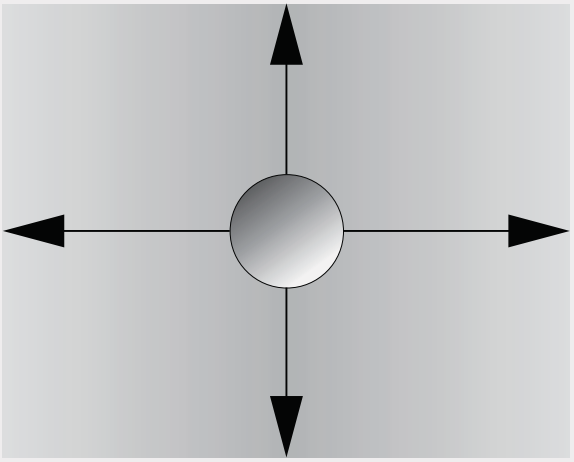
Deviation from concentricity*

When a hole is produced with, for example, a commercial twist drill, the quality of the point grind affects the concentricity of the hole. An imbalance of forces is created at the cutting edges. With gun drills, these cutting forces are absorbed by the supporting strips, resulting in excellent concentricity.

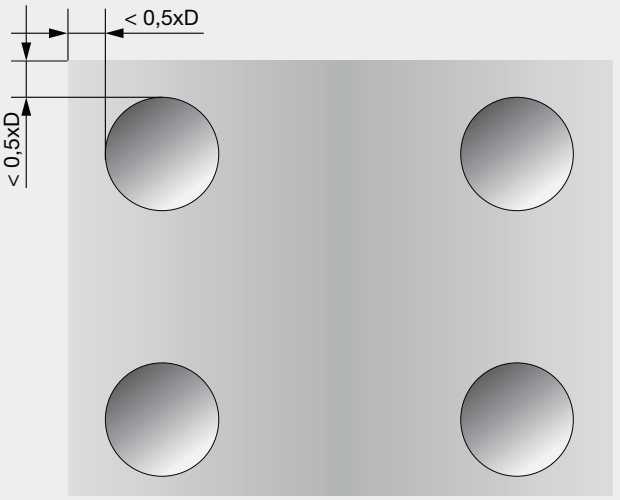


** Gun drills with two cutting edges – straight-fluted as well as spiral-fluted – achieve approx. twice of the values stated*

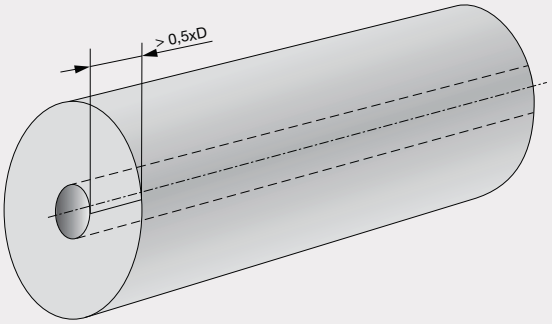
Hole straightness/deviation



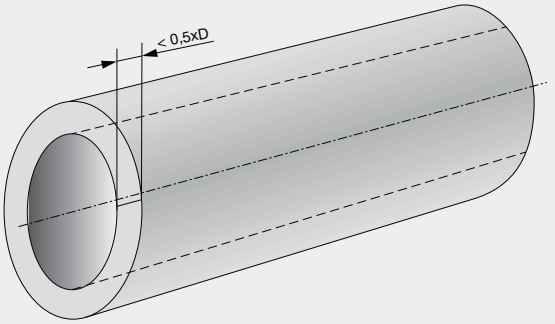
Hole distance to edge > 0.5xD



Hole distance to edge < 0.5xD



Sufficient wall distance
(> 0.5xD) > optimal



Minimum distance (0.5xD)
falling short → can lead to losses
in hole straightness

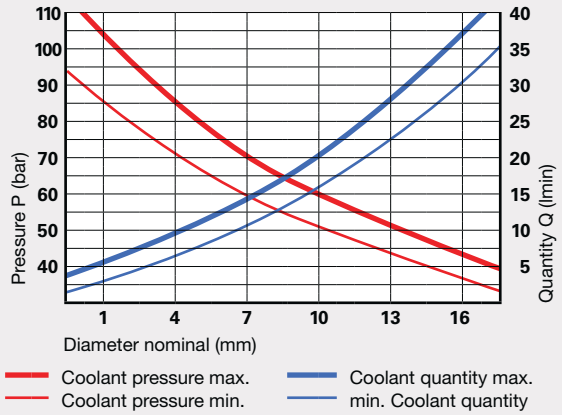
Coolant values

Please note:

- All gun drills must be applied with internal cooling, either air, water or oil. Without internal cooling the chips cannot be evacuated.
- All gun drills can be applied with oil as the medium for internal cooling. However, in this case a 30% higher pressure is required in order to achieve the same coolant volume.
- When MQL is applied with gun drills an increase in pressure may be necessary for smaller nominal diameters dependent on the pressure of the MQL system.
- If the cooling lubricant data is insufficient the cutting parameters may be reduced. Pressure boosting systems are also possible.
- With increased gun drill length a pressure increase has to be expected to transport the required coolant volume through the coolant ducts.

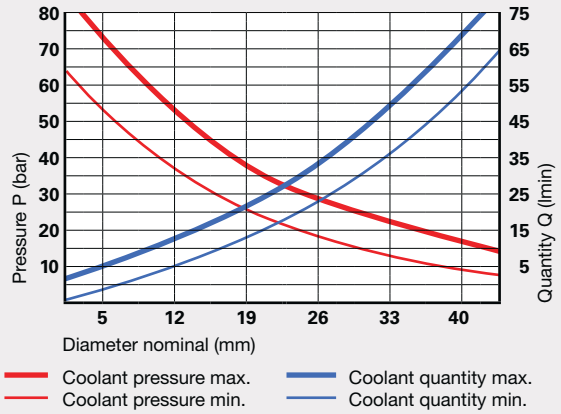
Coolant values EB 100

(Recommended values for soluble oil)



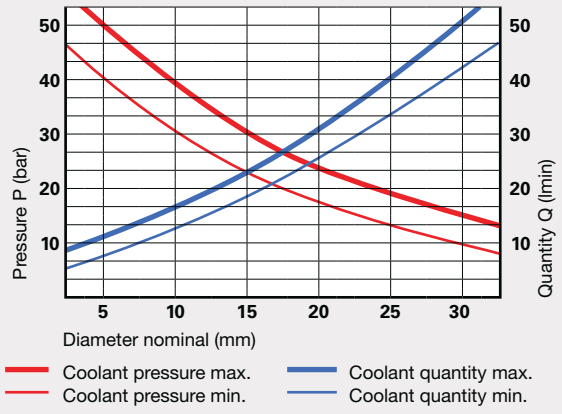
Coolant values EB 80

(Recommended values for soluble oil)



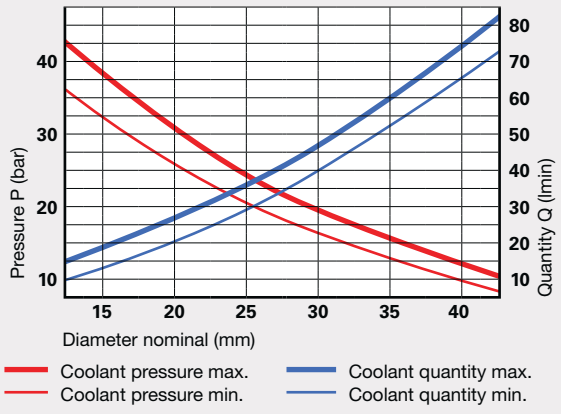
Coolant values ZB 80

(Recommended values for soluble oil)

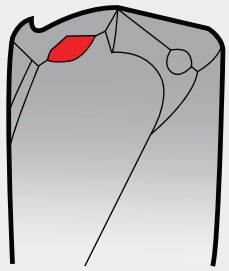
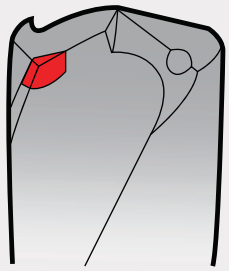
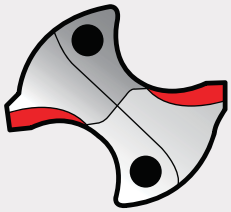
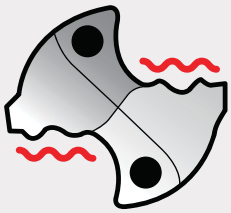


Coolant values EB 800

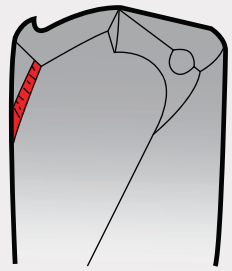
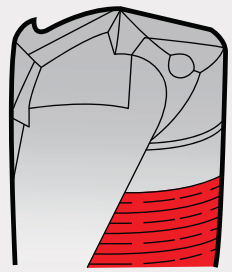
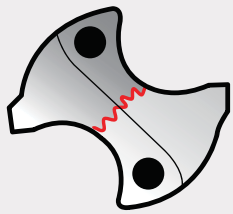
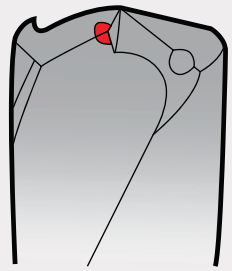
(Recommended values for soluble oil)



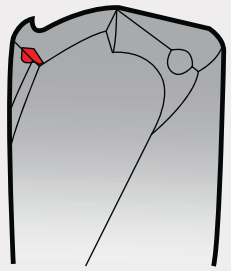
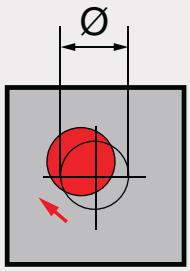
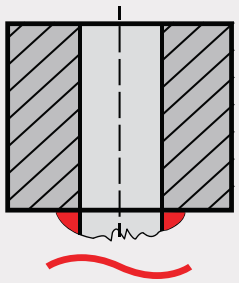
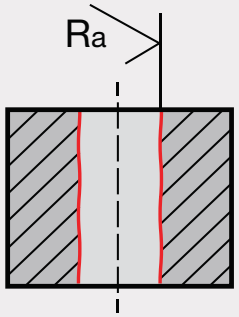
Application/Troubleshooting

Problem	Cause	Remedy
1. Cutting edge build up 	low cutting speed	increase cutting speed
	excessive honing of cutting lip	reduce cutting lip honing
	bright finish cutting lip	have tool coated
2. Crumbling of outer corners 	non rigid conditions, insufficient workpiece clamping	rigid clamping of workpiece
	deviation from concentricity too large	check and correct concentricity if possible
	interrupted cut	reduce feed
3. Heavy wear at flank 	cutting speed too high	reduce cutting speed
	feed too low	increase feed
	clearance angle too small	increase clearance angle
4. Crumbling on cutting lips 	non rigid conditions, insufficient workpiece clamping	rigid clamping of workpiece
	interrupted cut	reduce feed
	max. wear values exceeded	reduce tool change intervals
	incorrect tool type	apply suitable tool)

Application/Troubleshooting

Problem	Cause	Remedy
5. Land wear 	non rigid conditions, insufficient workpiece clamping	rigid clamping of workpiece
	deviation from concentricity too large	check and correct concentricity if possible
	back taper too small	reduce tool change intervals
	incorrect coolant (oil), coolant too weak	increase strength of coolant or use neat oil
6. Scoring on tool body 	non rigid conditions, insufficient workpiece clamping	rigid clamping of workpiece
	deviation from concentricity too large	check and correct concentricity if possible
	interrupted cut	increase back taper
	abrasive workpiece material	increase strength of coolant or use neat oil
7. Heavy chisel edge wear 	cutting speed too low	increase cutting speed
	feed too high	reduce feed
	excessive honing of cutting lip	reduce cutting lip honing
8. Crumbling at intersection, web thinning and cutting lip 	clearance angle too small	increase clearance angle
	excessive honing of cutting lip	reduce cutting lip honing
	incorrect tool type	apply suitable tool

Application/Troubleshooting

Problem	Cause	Remedy
9. Plastic deformation of outer corner 	cutting speed too high	reduce cutting speed
	insufficient coolant volume	increase volume/pressure
	incorrect or no honing at corner	correct honing
10. Misalignment 	non rigid conditions, insufficient workpiece clamping	rigid clamping of workpiece
	deviation from concentricity too large	check and correct concentricity if possible
	spotting area transverse	use milling cutter (2-fluted) for spotting
	chisel edge too large	reduce chisel edge
11. Heavy burring on breakthrough 	feed too high	reduce feed
	max. wear values exceeded	reduce tool change intervals
	excessive honing of cutting lip	reduce cutting lip honing
12. Unsatisfactory surface quality 	non rigid conditions, insufficient workpiece clamping	rigid clamping of workpiece
	deviation from concentricity too large	check and correct concentricity if possible
	insufficient coolant volume	increase volume/pressure

High speed steels

We only produce tools in the highest quality, carefully selected high speed grades. Depending on the alloying component, the tools have specific properties suited to the application case:

Tungsten, molybdenum: Increases the temper resistance and the wear resistance.
Vanadium: Increases the wear resistance.
Cobalt: Increases the wear resistance, increases the thermal hardness.

Guhring description	Type	Field of application, properties
HSS	Conventional high speed steel	Standard tool material for universal applications
HSCO / HSS-E	Cobalt-alloyed high speed steel	Tool material with high thermal hardness for increased demands, especially suitable for higher machining temperatures or unfavorable cooling.
M42	8% cobalt-alloyed high speed steel	Tool material with increased thermal resistance and hardness,suitable for machining difficult-to-machine materials.
HSS-E		
HSS-E-PM	Powder metallurgically produced cobalt-alloyed high speed steel	Tool material with a very dense and uniform structure. High hardness and thermal resistance, high wear resistance and cutting edge stability.

The most important carbide grades for Guhring tools

The following table lists the most important carbides that are available from Guhring ex-stock for general applications.

In more than 80% of applications known to Guhring, the results of DK460UF carbide grade tools together with a specially adapted coating could not be surpassed by any other carbide grades, including coated tools. This and the availability of the material ex-stock simplify tool selection immensely. For further information regarding the application of other carbide grades please contact our technical engineers.

Grade	Co-content [M-%]	Tungsten carbide grain size [µm]	Hardness [HV]	ISO classification [ISO 513]	Characteristics
DK460UF K40UF	10	0.6	1620	K20-K40	A carbide grade with wide range of application possibilities. It is applied, mostly coated, for the machining of steel, soft Al alloys, cast iron as well as “super alloys” such as Inconel 718. This grade is the backbone of our carbide production.
DK500UF K44UF	12	0.5	1690	K20-K30	The grade has been especially developed for hard machining. It possesses a higher hardness and deformation tolerance in comparison to DK460UF. Due to the high Co-content, a coated application is strongly recommended.
DK255F	8	0.7	1720	K20	The grade is recommended for hard machining, the machining of high tensile grey cast iron and hard AlSi-alloys. Dry machining is possible. A coated application is preferable.
DK120	6	1.3	1620	K15-K20	The grade is especially suitable for the application with diamond coating.
DK120UF	7	0.7	1850	K05-K10	Ultra fine grain type offering extreme wear resistance, suitable for absolutely rigid machines, preferred for reamers.
K55SF	9	0.2-0.4	1920	K05-K10	For application with high wear resistant materials, stainless steels, composite materials such as Kevlar and GRP, high speed machining and dry machining.
DK400N	10	0.7	1580	K20-K40	An extremely tough grade for the machining of high heat resistant metals.
DK256EH	10	0.6	1750	K20	The grade is especially suitable for the machining of nickel-based alloys.
K6UF	6	0.6	1870	K05-K10	Ultra fine grain type offering extreme wear resistance. Especially suitable for application with high wear resistant materials, composite materials, GRP and Kevlar.
K5UF	5	0.5	2010	K05-K10	Newly developed extremely hard grade for drilling and reaming. Especially suitable for application with composite materials and GRP.

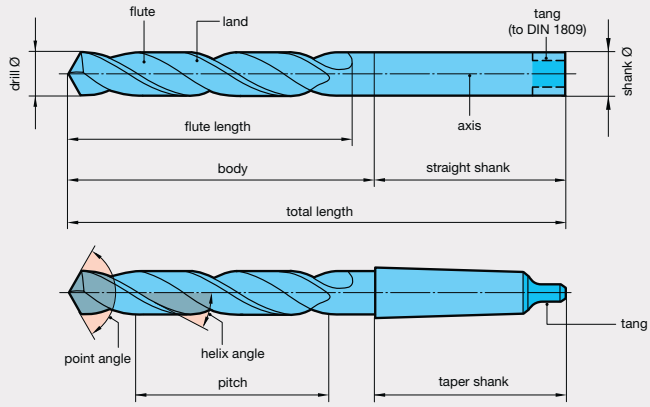
Superhard tool materials

It is not only the extreme hardness of superhard tool materials but also their high heat-resistance which enables highest cutting rates and increased productivity. PCD (Poly-Crystalline Diamond) stands for maximum wear resistance. PCD's main field of application is the machining of aluminum and fiber composites. PcBN (Polycrystalline cubic Boron Nitride) finds application in ferrous materials. To unfold the full potential of these tool materials, the application on the most rigid of machine tools is recommended

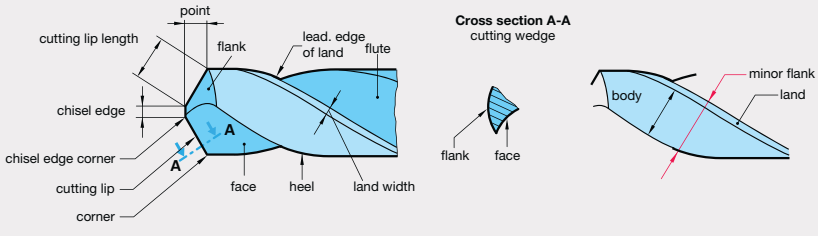
Guhring description	Classification	Range of application	Average grain size	Diamond content
PCD	Fine grain	Aluminum and AlSi-alloys <10%Si, magnesium alloys, brass, copper, bronze, excellent cutting edge quality, high abrasion resistance, excellent surface qualities.	2-4 µm	> 90% PCD
	Medium grain	Universal grade (general finishing applications) AlSi-alloys <14%Si, copper alloys, graphite and graphite composite materials, fiber composite plastics, unsintered ceramic and carbide (<15% binding metal content) excellent resistance, good surface qualities.	5-10 µm	approx. 92% PCD
	Coarse grain	Roughing applications AlSi-alloys >14%Si and other abrasive machining applications, MMC, sintered ceramic and carbide (<15% binding metal content, extreme abrasion resistance, high shock resistance, long tool life with acceptable surface quality.	>25 µm	approx. 94% PCD
	Mixed grain	Abrasive machining applications (i.e.: >14% AlSi-alloys, MMC, fiber composite plastics) highest wear resistance, excellent shock resistance, extreme abrasion resistance with good edge roughness, long tool life with good surface quality.	4 µm+ 25 µm	approx. 95% PCD
PcBN 10..	Low CBN-content with carbide base	For finish machining of case hardened, hardened heat-treatable and tool steels, suitable for continuous and medium to heavily interrupted cutting with ap smaller 0.3 mm. High wear resistance, resistance to impact, temperature resistance, toughness.	<1-4 µm	40-65% CBN
PcBN 20..	High CBN-content with carbide base	For the machining of perlitic grey cast iron (> 45 HRC), PM-steels, chilled cast iron. Application in continuous and interrupted cutting with ap of 0.5-1.5 mm. High wear resistance, resistance to impact.	2-3 µm	70-90% CBN
PcBN 30..	High CBN-content without carbide base	Massive PcBN tool material suitable for roughing operations. Perlitic grey cast iron, hard casting, hardened steels. For application in clamping holders, drilling and boring tools, milling heads with jaw clamping. High wear resistance, resistance to impact.	2-20 µm	70-87% CBN

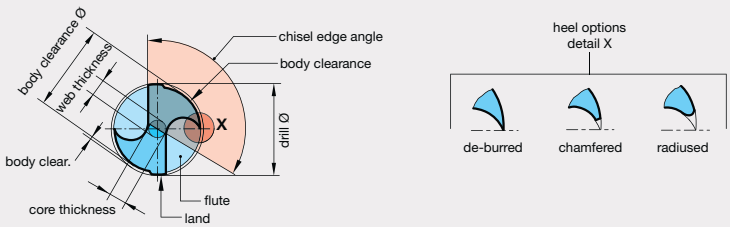
Definitions, dimensions and angles DIN ISO 5419 (extract; edition 06/98)

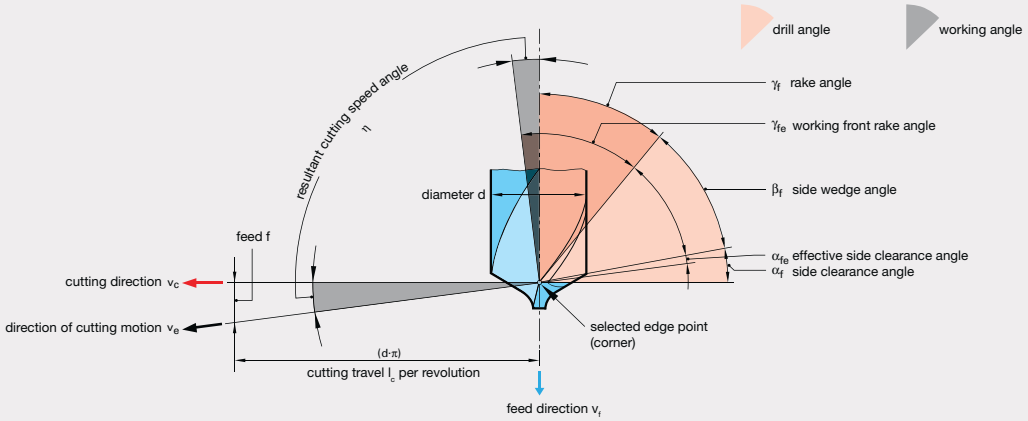
Twist drills with straight/Morse taper shank



Cutting portion

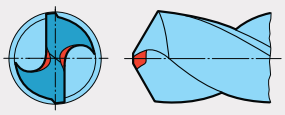




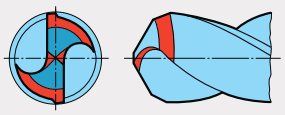


Special point geometry and manufacturing tolerances

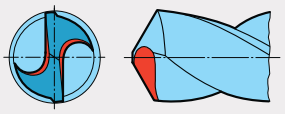
Special point geometry to DIN 1412 (extract; edition 03/01)



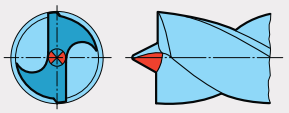
Form A
Thinned chisel edge



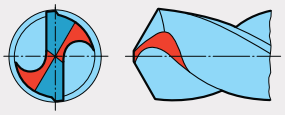
Form D
Point ground for cast iron



Form B
Thinned chisel edge with corrected cutting lips



Form E
Brad point (center point)



Form C
Split point

Twist drill manufacturing tolerances to DIN ISO 286, part 2

diameter (nominal size) up to and incl. mm	tolerance range µm h8	h7
0.38 … 0.60	10	7
0.95	12	8
3.00	14	10
6.00	18	12
10.00	22	15
18.00	27	18
30.00	33	21
50.00	39	25
80.00	46	30
120.00	54	35

* If you need tolerances other than ISO h8 please let us know. Additional charges for closer diameter tolerance see additional charges at the end of chapter Drilling Tools.

Reference to other relevant standards

DIN 228	Part 1 machine tapers; Morse tapers and metric tapers, taper shank
DIN 1414-1	Directions for design and use for high speed steel twist drills
DIN 6580	Definitions of the metal-cutting industry; motions and geometry of the cutting process
DIN 6581	Definitions of the metal-cutting industry; Cutting portion reference systems and angles

The standard descriptions above are given with the permission from the German Standards Institute (Deutsches Institut für Normung). The most recent editions of the standard sheets apply and are available in DIN A 4 format from Beuth-Verlag GmbH, D-10787 Berlin.

Outside Diameter (O.D.) Manufacturing Tolerances

Twist drills

h6 Tolerance Range	
Ø-range mm	tolerance range mm
> 0.600 - 0.950	+0.000 / -0.005
> 0.950 - 3.000	+0.000 / -0.006
> 3.000 - 6.000	+0.000 / -0.008
> 6.000 - 10.000	+0.000 / -0.009
> 10.000 - 18.000	+0.000 / -0.011
> 18.000 - 30.000	+0.000 / -0.013
> 30.000 - 50.000	+0.000 / -0.016

h7 Tolerance Range	
Ø-range mm	tolerance range mm
0.380 - 0.600	+0.000 / -0.007
> 0.600 - 0.950	+0.000 / -0.008
> 0.950 - 3.000	+0.000 / -0.010
> 3.000 - 6.000	+0.000 / -0.012
> 6.000 - 10.000	+0.000 / -0.015
> 10.000 -18.000	+0.000 / -0.018
> 18.000 - 30.000	+0.000 / -0.021
> 30.000 - 50.000	+0.000 / -0.025

h5 Tolerance Range	
Ø-range mm	tolerance range mm
≤ 3.000	+0.000 / -0.004
> 3.000 - 6.000	+0.000 / -0.005

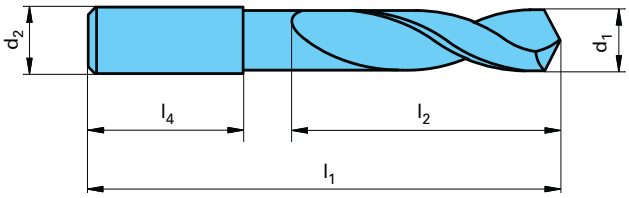
h8 Tolerance Range	
Ø-range mm	tolerance range mm
0.380 - 0.600	+0.000 / -0.010
> 0.600 - 0.950	+0.000 / -0.012
> 0.950 - 3.000	+0.000 / -0.014
> 3.000 - 6.000	+0.000 / -0.018
> 6.000 - 10.000	+0.000 / -0.022
> 10.000 - 18.000	+0.000 / -0.027
> 18.000 - 30.000	+0.000 / -0.033
> 30.000 - 50.000	+0.000 / -0.039

m7 Tolerance Range	
Ø-range mm	tolerance range mm
0.800 - 3.000	+0.002 / +0.012
3.000 - 6.000	+0.004 / +0.016
> 6.000 - 10.000	+0.006 / +0.021
> 10.000 - 18.000	+0.007 / +0.025
> 18.000 - 30.000	+0.008 / +0.029

Carbide twist drills (Ratio drills)

Carbide twist drills (Ratio drills) DIN 6537

Applies to solid carbide twist drills with 2 or 3 cutting edges and straight shank to DIN 6535



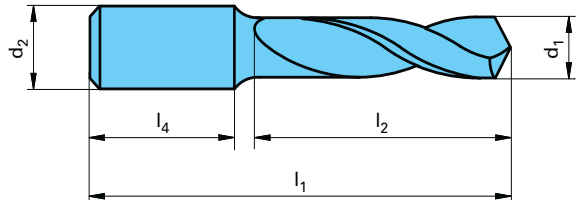
Dimensions in mm

nom. Ø-range up to d1m7	shank Ø d2h6	Ratio drills for 3 x D		Ratio drills for 5 x D		shank length l4
		overall length l1	max. flute length l2	overall length l1	max. flute length l2	
2.9...3.75	6	62	20	66	28	36
4.75	6	66	24	74	36	36
6.00	6	66	28	82	44	36
7.00	8	79	34	91	53	36
8.00	8	79	41	91	53	36
10.00	10	89	47	103	61	40
12.00	12	102	55	118	71	45
14.00	14	107	60	124	77	45
16.00	16	115	65	133	83	48
18.00	18	123	73	143	93	48
20.00	20	131	79	153	101	50

Carbide twist drills (Ratio drills)

Carbide twist drills (Ratio drills) DIN 6538

Applies to twist drills with brazed carbide tip or head with reinforced straight shank (steel) to DIN 6535. The brazed head can be a part or the complete cutting portion.

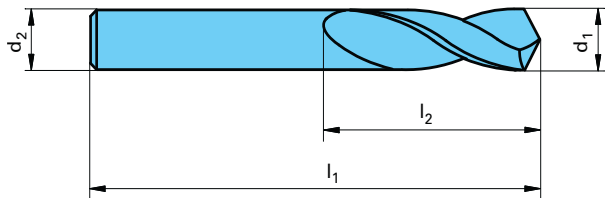


Dimensions in mm

nom. Ø-range up to d1h7	shank Ø d2h6	Ratio drills for 3 x D		Ratio drills for 5 x D		Ratio drills for 7 x D		shank length l4
		overall length l1	max. flute length l2	overall length l1	max. flute length l2	overall length l1	max. flute length l2	
9.5...12.0	16	103	51	127	75	151	99	48
14.0	16	111	59	139	87	167	115	48
16.0	20	122	68	154	100	186	132	50
18.0	20	130	76	166	112	202	148	50
20.0	25	144	84	184	124	224	164	56
22.0	25	153	93	197	137	241	181	56
24.0	25	161	101	209	149	257	197	56
26.0	32	174	110	226	162	278	214	60
28.0	32	182	118	238	174	294	230	60
30.0	32	190	126	250	186	310	246	60

Carbide twist drills (Ratio drills) DIN 6539

Applies to solid carbide twist drills with parallel shank, i.e. equal nom. drill and shank diameter.



Dimensions in mm

nom. Ø-range up to (= shank Ø d2) d1	overall length l1	flute length l2
1.90...2.12	38	12
2.36	40	13
2.65	43	14
3.00	46	16
3.35	49	18
3.75	52	20
4.25	55	22
4.75	58	24
5.30	62	26
6.00	66	28
6.70	70	31
7.50	74	34
8.00	79	37
8.50	79	37
9.50	84	40

nom. Ø-range up to (= shank Ø d2) d1	overall length l1	flute length l2
10.00	89	43
10.60	89	43
11.80	95	47
12.00	102	51
13.20	102	51
14.00	107	54
15.00	111	56
16.00	115	58
17.00	119	60
18.00	123	62
19.00	127	64
20.00	131	66

Straight shank twist drills

dia. to (incl.) mm	DIN 338		DIN 339		DIN 340		DIN 1897		DIN 1869 Extra length twist drills					
									series 1		series 2		series 3	
	total length	flute length	total length	flute length	total length	flute length	total length	flute length	total length	flute length	total length	flute length	total length	flute length
	mm		mm		mm		mm		mm		mm		mm	
≤ 0.24	19	2.5					19	1.5						
0.30	19	3					19	1.5						
0.38	19	4					19	2						
0.48	20	5			30*	10*	19	2.5						
0.53	22	6			32*	12*	20	3						
0.60	24	7	32*	15*	35*	15*	21	3.5						
0.67	26	8	36*	18*	38*	18*	22	4						
0.75	28	9	39*	20*	42*	21*	23	4.5						
0.85	30	10	42*	22*	46*	25*	24	5						
0.95	32	11	45*	24*	51*	29*	25	5.5						
1.06	34	12	48	26	56	33	26	6						
1.18	36	14	50	28	60	37	28	7						
1.32	38	16	52	30	65	41	30	8						
1.50	40	18	55	33	70	45	32	9						
1.70	43	20	58	35	76	50	34	10	115*	75*				
1.90	46	22	62	38	80	53	36	11	120*	80*				
2.12	49	24	66	41	85	56	38	12	125	85	160*	110*	205*	135*
2.36	53	27	70	44	90	59	40	13	135	90	170*	115*	215*	145*
2.65	57	30	74	47	95	62	43	14	140	95	180*	120*	225*	150*
3.00	61	33	79	51	100	66	46	16	150	100	190	130	240*	160*
3.35	65	36	84	55	106	69	49	18	155	105	200	135	250*	170*
3.75	70	39	91	60	112	73	52	20	165	115	210	145	265	180
4.25	75	43	96	64	119	78	55	22	175	120	220	150	280	190
4.75	80	47	102	69	126	82	58	24	185	125	235	160	295	200
5.30	86	52	108	74	132	87	62	26	195	135	245	170	315	210
6.00	93	57	116	80	139	91	66	28	205	140	260	180	330	225
6.70	101	63	124	86	148	97	70	31	215	150	275	190	350	235
7.50	109	69	133	93	156	102	74	34	225	155	290	200	370	250
8.50	117	75	142	100	165	109	79	37	240	165	305	210	390	265
9.50	125	81	151	107	175	115	84	40	250	175	320	220	410	280
10.60	133	87	162	116	184	121	89	43	265	185	340	235	430	295
11.80	142	94	173	125	195	128	95	47	280*	195*	365*	250*	455*	310*
13.20	151	101	184	134	205	134	102	51	295*	205*	375*	260*	480*	330*
14.00	160	108	194	142	214	140	107	54						
15.00	169	114	202	147	220	144	111	56						
16.00	178	120	211	153	227	149	115	58						
17.00	184	125	218	159	235	154	119	60						
18.00	191	130	226	165	241	158	123	62						
19.00	198	135	234	171	247	162	127	64						
20.00	205	140	242	177	254	166	131	66						
21.20					261	171	136	68						
22.40					268	176	141	70						
23.60					275	180	146	72						
25.00					282	185	151	75						
26.50					290	190	156	78						
28.00					298	195	162	81						
30.00					307	201	168	84						
31.50					316	207	174	87						
33.50							180	90						
35.50							186	93						
37.50							193	96						
40.00							200	100						
42.50							207	104						
45.00							214	108						
47.50							221	112						
50.00							228	116						

Guhring delivers twist drills to Guhring standard up to total length of 1000 mm
Guhring no. 242, 243, 244

* Guhring std.

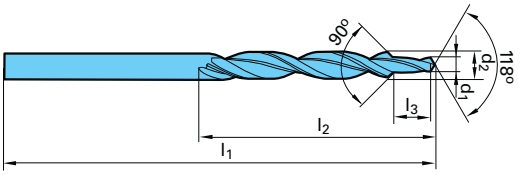
Morse taper twist drills

dia. to (incl.) mm	DIN 345			DIN 346			DIN 341			Bushing drills with oversize taper*			GV/VA-drills* for drilling difficult materials			DIN 1870 Extra length twist drills series 1			DIN 1870 Extra length twist drills series 2		
	total length	flute length	Morse taper	total length	flute length	Morse taper	total length	flute length	Morse taper	total length	flute length	Morse taper	total length	flute length	Morse taper	total length	flute length	Morse taper	total length	flute length	Morse taper
	mm			mm			mm			mm			mm			mm			mm		
2.65	111*	30*	1*																		
3.00	114	33	1																		
3.35	117	36	1																		
3.75	120	39	1																		
4.25	124	43	1				145*	64*	1*												
4.75	128	47	1				150*	69*	1*												
5.30	133	52	1				155	74	1												
6.00	138	57	1				161	80	1												
6.70	144	63	1				167	86	1												
7.50	150	69	1				174	93	1												
8.50	156	75	1				181	100	1				130	49	1	265	165	1	330	210	1
9.50	162	81	1				188	107	1				134	53	1	275	175	1	345	220	1
10.60	168	87	1	185*	87*	2*	197	116	1	214	116	2	138	57	1	285	185	1	360	235	1
11.80	175	94	1	192*	94*	2*	206	125	1	223	125	2	142	61	1	300	195	1	375	250	1
13.20	182	101	1	199	101	2	215	134	1	232	134	2	147	66	1	310	205	1	395	260	1
14.00	189	108	1	206	108	2	223	142	1	240	142	2	168	70	2	325	220	1	410	275	1
15.00	212	114	2	235*	114*	3*	245	147	2	268	147	3	172	74	2	340	220	2	425	275	2
16.00	218	120	2	241*	120*	3*	251	153	2	274	153	3	176	78	2	355	230	2	445	295	2
17.00	223	125	2	246*	125*	3*	257	159	2	280	159	3	179	81	2	355	230	2	445	295	2
18.00	228	130	2	251*	130*	3*	263	165	2	286	165	3	183	85	2	370	245	2	465	310	2
19.00	233	135	2	256	135	3	269	171	2	292	171	3	186	88	2	370	245	2	465	310	2
20.00	238	140	2	261	140	3	275	177	2	298	177	3	212	91	3	385	260	2	490	325	2
21.20	243	145	2	266	145	3	282	184	2	305	184	3	216	95	3	385	260	3	490	325	3
22.40	248	150	2	271	150	3	289	191	2	312	191	3	219	98	3	405	270	3	515	345	3
23.02	253	155	2	276	155	3	296	198	2	319	198	3	222	101	3	405	270	3	515	345	3
23.60	276	155	3	304*	155*	4*	319	198	3	347	198	4	222	101	3	425	270	3	535	345	3
25.00	281	160	3	309*	160*	4*	327	206	3	355	206	4	225	104	3	440	290	3	555	365	3
26.50	286	165	3	314*	165*	4*	335	214	3	363	214	4	256	107	4	440	290	3	555	365	3
28.00	291	170	3	319	170	4	343	222	3	371	222	4	259	110	4	460	305	3	580	385	3
30.00	296	175	3	324	175	4	351	230	3	379	230	4	263	114	4	460	305	3	580	385	3
31.50	301	180	3	329	180	4	360	239	3	388	239	4	266	117	4	480	320	3	610	410	3
31.75	306	185	3	334	185	4	369	248	3	397	248	4	269	120	4	480	320	3	610	410	3
33.50	334	185	4	372*	185*	5*	397	248	4	435	248	5	269	120	4	505	320	4	635	410	4
35.50	339	190	4	377*	190*	5*	406	257	4				272	123	4	530	340	4	665	430	4
37.50	344	195	4	382*	195*	5*	416	267	4				276	127	4	530	340	4	665	430	4
40.00	349	200	4	387*	200*	5*	426	277	4				317	130	5	555	360	4	695	460	4
42.50	354	205	4	392	205	5	436	287	4				320	133	5	555	360	4	695	460	4
45.00	359	210	4	397	210	5	447	298	4				323	136	5	585	385	4	735	490	4
47.50	364	215	4	402	215	5	459	310	4							585	385	4	735	490	4
50.00	369	220	4	407	220	5	470	321	4							605	405	4	765	510	4
50.80	374	225	4	412	225	5	475*	326*	4*												
53.00	412	225	5	479*	225*	6*	513*	326*	5*												
56.00	417	230	5	484*	230*	6*	518*	331*	5*												
60.00	422	235	5	489*	235*	6*	523*	336*	5*												
63.00	427	240	5	494*	240*	6*															
67.00	432	245	5	499	245	6															
71.00	437	250	5	504	250	6															
75.00	442	255	5	509	255	6															
76.50	447	260	5	514	206	6															
80.00	514	260	6																		
85.00	519	265	6																		
90.00	524	270	6																		
95.00	529	275	6																		
100.00	534	280	6																		
106.00	539*	285*	6*																		

Guhring delivers twist drills to Guhring standard up to total length of 1000 mm Guhring no. 293, 298, 299, 563, 564, 565, 566

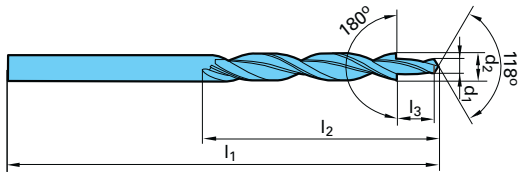
* Guhring std.

Straight shank subland drills, 90° step angle



body Ø d2 h8 mm	step Ø d1 h9 mm	overall length l1 mm	step length l2 mm	step length l3 mm	for thread	range of application
			HSS DIN 8378/	Carbide Guhring std.		
3.4	2.5	70	39	8.8	M 3	For tapping size holes to DIN 336 and countersinks in accordance with clearance holes to DIN-ISO 273 (old) and DIN EN 20273 »medial tolerance«.
4.5	3.3	80	47	11.4	M 4	
5.5	4.2	93	57	13.6	M 5	
6.6	5.0	101	63	16.5	M 6	
9.0	6.8	125	81	21.0	M 8	
11.0	8.5	142	94	25.5	M10	
13.5	10.2	160	108	30.0	M12	
DIN 8374 for countersinks, fine tolerance						
6.0	3.2	93	57	9.0	M 3	For clearance holes to DIN-ISO 273 (old). DIN EN 20273 »fine tolerance« and screwhead countersinks form A and B to DIN 74 part 1 (old) »fine tolerance« and screwhead countersinks to DIN 74 form F. For screws to DIN 963 (old) and DIN 964 (old).
8.0	4.3	117	75	11.0	M 4	
10.0	5.3	133	87	13.0	M 5	
11.5	6.4	142	94	15.0	M 6	
15.0	8.4	169	114	19.0	M 8	
19.0	10.5	198	135	23.0	M10	
Guhring std. for countersinks, medial tolerance						
6.6	3.4	101	63	9.0	M 3	For clearance holes to DIN-ISO 273 (old) and screwhead countersinks form A and B to DIN 74 part 1 (old) »medial tolerance«. For screws to DIN 963 (old) and DIN 964 (old).
9.0	4.5	125	81	11.0	M 4	
11.0	5.5	142	94	13.0	M 5	
13.0	6.6	151	101	15.0	M 6	
17.2	9.0	191	130	19.0	M 8	
DIN 8374 for countersinks, medial tolerance						
7.5	3.4	109	69	9.0	M 3	For clearance holes to DIN-ISO 273 (old) and screwhead countersinks form A and B to DIN 74 part 1 (old) »medial tolerance«. For screws to DIN 963 (old) and DIN 964 (old).
9.7	4.5	133	87	11.0	M 4	
12.0	5.5	151	101	13.0	M 5	
14.5	6.6	169	114	15.0	M 6	
19.9	9.0	198	135	19.0	M 8	

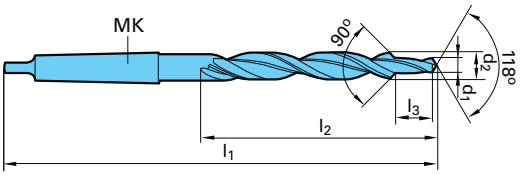
Straight shank subland drills, 180° step angle



body Ø d2 h8 mm	step Ø d1 h9 mm	overall length l1 mm	flute length l2 mm	step length l3 mm	for thread	range of application
			HSS DIN 8376/	Carbide Guhring std.		
6.0**	3.4	93**	57**	9.0	M 3	For clearance holes to DIN-ISO 273 (old), DIN EN 20273 »medial tolerance«, screwhead countersinks to DIN 974-1 and screwhead countersinks form H, J and K to DIN 74 part 2 (old): »medial tolerance«. For screws to DIN 84 (old), 912 (old), 6912, 7513 and DIN 7984.
6.5	3.4	101	63	9.0	M 3	
8.0	4.5	117	75	11.0	M 4	
10.0	5.5	133	87	13.0	M 5	
11.0	6.6	142	94	15.0	M 6	
15.0	9.0	169	114	19.0	M 8	
18.0	11.0	191	130	23.0	M10	
Guhring std.						
6.0	3.2	93	57	9.0	M 3	For clearance holes to DIN-ISO 273 (old) and screwhead countersinks form H, J and K to DIN 74 part 2 (old): »fine tolerance«. For screws to DIN 84 (old), 912 (old), 6912, 7513 and DIN 7984.
8.0	4.3	117	75	11.0	M 4	
Guhring std. for countersinks, fine tolerance (old*)						
5.9	3.2	93	57	11.0	M 3	For screws to DIN 84 (old), DIN 912 (old) and DIN 6912. For old type screwhead countersinks form H, J and K to DIN 75 part 2: »fine tolerance«.
7.4	4.3	109	69	13.0	M 4	
9.4	5.3	125	81	16.0	M 5	
10.4	6.4	133	87	19.0	M 6	
13.5	8.4	160	108	22.0	M 8	
16.5	10.5	184	125	25.0	M10	
Guhring std. for countersinks, medial tolerance (old*)						
8.0	4.8	117	75	13.0	M 3	For screws to DIN 84 (old), DIN 912 (old) and DIN 6912. For old type screwhead countersinks form H, J and K to DIN 75 part 2: »medial tolerance«.
10.0	5.8	133	87	16.0	M 4	
11.0	7.0	142	94	19.0	M 5	
14.5	9.5	169	114	22.0	M 6	
17.5	11.5	191	130	25.0	M 8	

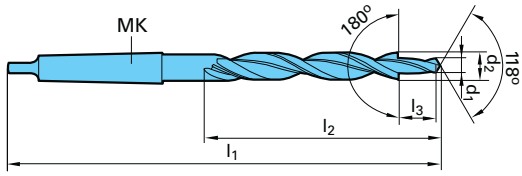
* DIN 75, part 2; ** Guhring std

Morse taper subland drills, 90° step angle



body Ø d2 h8 mm	step Ø d1 h9 mm	overall length l1 mm	flute length l2 mm	Morse taper MK	step length l3 mm	for thread	range of application
Guhring std.							
11.0	5.5	175	94	1	13.0	M 5	For clearance holes to DIN-ISO 273 (old), DIN EN 20273 »medial tolerance«, screwhead countersinks to DIN 74 form F and screwhead countersinks form A and B to DIN 74 part 1 (old) »medial tolerance«. For screws to DIN 963 (old) and DIN 964 (old).
13.0	6.6	182	101	1	15.0	M 6	
17.2	9.0	228	130	2	19.0	M 8	
21.5	11.0	248	150	2	23.0	M10	
26.0	14.0	286	165	3	27.0	M12	
29.0	16.0	296	175	3	31.0	M14	
DIN 8375							
12.0	5.5	182	101	1	13.0	M 5	For clearance holes to DIN-ISO 273 (old), DIN EN 20273 »medial tolerance«, screwhead countersinks to DIN 74 form F and screwhead countersinks form A and B to DIN 74 part 1 (old) »medial tolerance«. For screws to DIN 963 (old) and DIN 964 (old).
14.5	6.6	---	108	1	15.0	M 6	
19.0	9.0	253	135	2	19.0	M 8	
23.0	11.0	248	155	2	23.0	M10	
Guhring std.							
11.5	6.4	175	94	1	15.0	M 6	For clearance holes to DIN-ISO 273 (old) and screwhead countersinks form A and B to DIN 74 part 1 (old) »fine tolerance«. For screws to DIN 963 (old) and DIN 964 (old).
15.0	8.4	212	114	2	19.0	M 8	
19.0	10.5	233	135	2	23.0	M10	
23.0	13.0	253	155	2	27.0	M12	
26.0	15.0	286	165	3	31.0	M14	
30.0	17.0	296	175	3	35.0	M16	
DIN 8379							
9.0	6.8	162	81	1	21.0	M 8	For tapping size holes to DIN 336, DIN EN 20273 »medial tolerance« and countersinks in accordance with clearance holes to DIN-ISO 273 (old).
11.0	8.5	175	94	1	25.5	M10	
13.5	10.2	189	108	1	30.0	M12	
15.5	12.0	218	120	2	34.5	M14	
17.5	14.0	228	130	2	38.5	M16	
20.0	15.5	238	140	2	43.5	M18	
22.0	17.5	248	150	2	47.5	M20	

Morse taper subland drills, 180° step angle



body Ø d2 h8 mm	step Ø d1 h9 mm	overall length l1 mm	flute length l2 mm	Morse taper MK	step length l3 mm	for thread	range of application
			HSS DIN 8377/ Carbide Guhring std.				
10,0	5,5	168	87	1	13,0	M 5	For clearance holes to DIN-ISO 273 (old), DIN EN 20273 »medial tolerance«, screwhead countersinks to DIN 974-1 and screwhead countersinks form H, J and K to DIN 74 part 2 (old): »medial tolerance«. For screws to DIN 84 (old), 912 (old), 6912, 7513 and DIN 7984.
11,0	6,6	175	94	1	15,0	M 6	
15,0	9,0	212	114	2	19,0	M 8	
18,0	11,0	228	130	2	23,0	M10	
20,0	13,5	238	140	2	27,0	M12	
24,0	15,5	281	160	3	31,0	M14	
26,0	17,5	286	165	3	35,0	M16	
30,0	20,0	296	175	3	39,0	M18	
33,0	22,0	334	185	4	43,0	M20	
			Guhring std.				
10,0	5,3	168	87	1	13,0	M 5	For clearance holes to DIN-ISO 273 (old) and screwhead countersinks form H, J and K to DIN 74 part 2 (old): »fine tolerance«. For screws to DIN 84 (old), 912 (old), 6912, 7513 and DIN 7984.
11,0	6,4	175	94	1	15,0	M 6	
15,0	8,4	212	114	2	19,0	M 8	
18,0	10,5	228	130	2	23,0	M10	
20,0	13,0	238	140	2	27,0	M12	
24,0	15,0	281	160	3	31,0	M14	
26,0	17,0	286	165	3	35,0	M16	
			Werksnorm für Senkungen, Ausführung fein (alt*)				
9,4	5,3	162	81	1	16,0	M 5	For screws DIN 84 (old), DIN 912 (old) and DIN 6912. For old countersinks form H, J and K to DIN 75 part 2: »fine tolerance«.
10,4	6,4	168	87	1	19,0	M 6	
13,5	8,4	189	108	1	22,0	M 8	
16,5	10,5	223	125	2	25,0	M10	
19,0	13,0	233	135	2	28,0	M12	
23,0	15,0	253	155	2	30,0	M14	
25,0	17,0	281	160	3	33,0	M16	
28,0	19,0	291	170	3	36,0	M18	
31,0	21,0	301	180	3	39,0	M 20	
			Werksnorm für Senkungen, Ausführung mittel (alt*)				
10,0	5,8	168	87	1	16,0	M 5	For screws DIN 84 (old), DIN 6912. For old countersinks form H, J and K to DIN 75 part 2: »medial tolerance«.
11,0	7,0	175	94	1	19,0	M 6	
14,5	9,5	212	114	2	22,0	M 8	
17,5	11,5	228	130	2	25,0	M10	
20,0	14,0	238	140	2	28,0	M12	
24,0	16,0	281	160	3	30,0	M14	
26,0	18,0	286	165	3	33,0	M16	
29,0	20,0	296	175	3	36,0	M18	
33,0	23,0	334	185	4	39,0	M20	

inches	mm	inches	mm	inches	mm	inches	mm	MK	inches	mm	for thread	range of application
British Standard												
19/32	15.08	25/64	9.92	8 5/8	219	4 3/4	121	2	3/4	19.05	3/8 inch	For British Standard caphead screws.
21/32	16.67	29/64	11.51	8 3/4	222	4 7/8	124	2	7/8	22.22	7/16 inch	
25/32	19.84	33/64	13.10	9 3/8	238	5 1/2	140	2	1	25.40	1/2 inch	

* DIN 75, part 2

Straight shank core drills

diameter up to incl. mm	DIN 344				
	overall length mm	flute length mm	diameter up to incl. mm	overall length mm	flute length mm
4.25	96*	64*	11.70	173	125
4.75	102*	69*	13.20	184	134
5.30	108	74	14.00	194	142
6.00	116	80	15.00	202	147
6.70	124	86	16.00	211	153
7.50	133	93	17.00	218	159
8.50	142	100	18.00	226	165
9.50	151	107	19.00	234	171
10.60	162	116	20.00	242	177

Shell-core drills

DIN 222		
nom. Ø up to incl. mm	overall length mm	nom. Ø of hole mm
35.5	45	13
45.0	50	16
53.0	56	19
63.0	63	22
75.0	71	27
90.0	80	32
101.6	90	40

Taper shank core drills

diameter up to incl. mm	DIN 343			DIN 1864		
	overall length mm	flute length mm	Morse taper	overall length mm	flute length mm	Morse taper
7.50	150*	69*	1*	174*	93*	1*
8.50	156*	75*	1*	181*	100*	1*
9.50	162	81	1	188	107	1
10.60	168	87	1	197	116	1
11.70	175	94	1	206	125	1
13.20	182	101	1	215	134	1
14.00	189	108	1	223	142	1
15.00	212	114	2	245	147	2
16.00	218	120	2	251	153	2
17.00	223	125	2	257	159	2
18.00	228	130	2	263	165	2
19.00	233	135	2	269	171	2
20.00	238	140	2	275	177	2
21.20	243	145	2	282	184	2
22.40	248	150	2	289	191	2
23.60	253	155	2	296	198	2
25.00	281	160	3	327	206	3
26.50	286	165	3	335	214	3
28.00	291	170	3	343	222	3
30.00	296	175	3	351	230	3
31.50	301	180	3	360	239	3
33.50	334	185	4			
35.50	339	190	4			
37.50	344	195	4			
40.00	349	200	4			
42.50	354	205	4			
45.00	359	210	4			
47.50	364	215	4			
50.00	369	220	4			

*Guhring std.

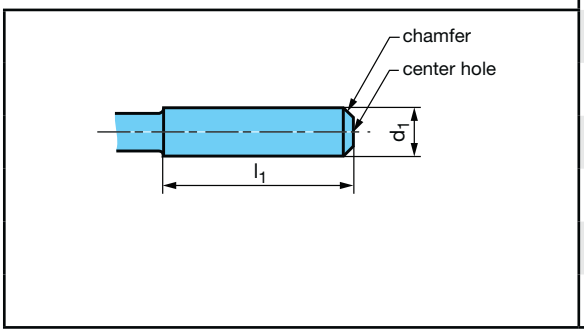
Micro-precision drills (total length 25 mm)

DIN 1899					
diameter up to incl. mm	shank Ø mm	flute length mm	diameter up to incl. mm	shank Ø mm	flute length mm
from 0.1 . . . 0.12	1.0	0.5	0.67	1.0	4.2
0.15	1.0	0.8	0.75	1.0	4.8
0.19	1.0	1.1	0.79	1.0	5.3
0.24	1.0	1.5	0.85	1.5	5.3
0.30	1.0	1.9	0.95	1.5	6.0
0.38	1.0	2.4	1.06	1.5	6.8
0.48	1.0	3.0	1.18	1.5	7.6
0.53	1.0	3.4	1.32	1.5	8.5
0.60	1.0	3.9	1.45	1.5	9.5

High speed steel straight shanks, DIN 1835-1 (extract)

Form A, plain

Dimensions in mm

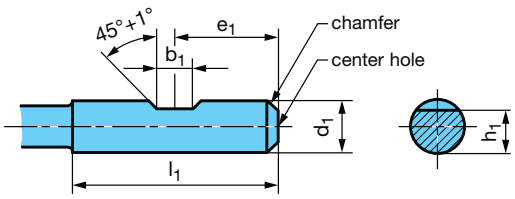


d_1 h8	l_1 +2 0	d_1 h8	l_1 +2 0	d_1 h8	l_1 +2 0
3	28	12	45	50	80
4	28	16	48	63	90
5	28	20	50		
6	36	25	56		
8	36	32	60		
10	40	40	70		

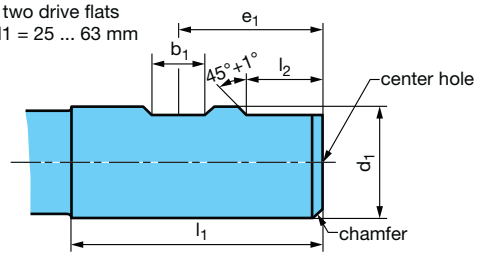
Form B, with drive flat

Dimensions in mm

with one drive flat
for d1 = 6 ... 20 mm



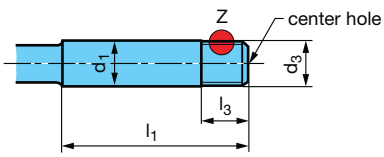
with two drive flats
for d1 = 25 ... 63 mm



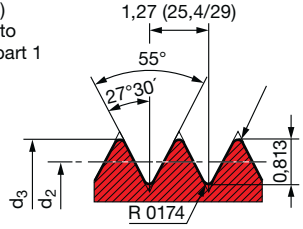
d_1 h6	b_1 +0,05 0	e_1 0 -1	h_1 h13	l_1 +2 0	l_2 +1 0	center hole form R DIN 332 sect. 1
6	4.2	18	4.8	36	-	1.6x2.5
8	5.5	18	6.6	36	-	1.6x3.35
10	7	20	8.4	40	-	1.6x3.35
12	8	22.5	10.4	45	-	1.6x3.35
16	10	24	14.2	48	-	2.0x4.25
20	11	25	18.2	50	-	2.5x5.3
25	12	32	23	56	17	2.5x5.3
32	14	36	30	60	19	3.15x6.7
40	14	40	38	70	19	3.15x6.7
50	18	45	47.8	80	23	3.15x6.7
63	18	50	60.8	90	23	3.15x6.7

Form D, screwed shank

Dimensions in mm



Detail Z
(cross section)
thread profile to
DIN ISO 228 part 1

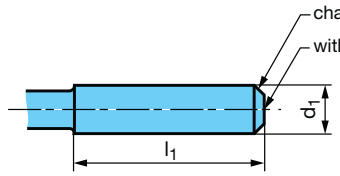


d_1 h8	d_3	tol. zone	d_2	tol. zone	l_1 +2 0	l_3 +2 0	center hole form R DIN 332 sect. 1
6	5.9	0 -0.1	5.087	0 -0.1	36	10	1.6 x 2.5
10	9.9	0 -0.1	9.087	0 -0.1	40	10	1.6 x 3.35
12	11.9	0 -0.1	11.087	0 -0.1	45	10	1.6 x 3.35
16	15.9	0 -0.1	15.087	0 -0.1	48	10	2.0 x 4.25
20	19.9	0 -0.15	19.087	0 -0.15	50	15	2.5 x 5.3
25	24.9	0 -0.15	24.087	0 -0.15	56	15	2.5 x 5.3
32	31.9	0 -0.15	31.087	0 -0.15	60	15	3.15 x 6.7

Carbide straight shanks DIN 6535 for twist drills and end mills

Form HA, plain

Dimensions in mm

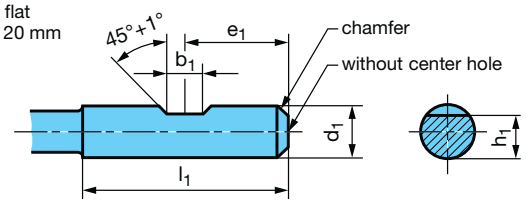


d_1 h6	l_1 +2 0	d_1 h6	l_1 +2 0
2	28	14	45
3	28	16	48
4	28	18	48
5	28	20	50
6	36	25	56
8	36	32	60
10	40		
12	45		

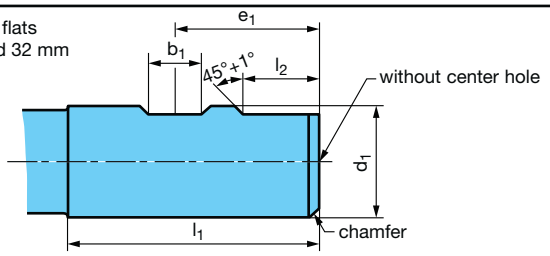
Form HB, with drive flat

Dimensions in mm

with **one** drive flat
for d1 = 6 and 20 mm



with **two** drive flats
for d1 = 25 and 32 mm



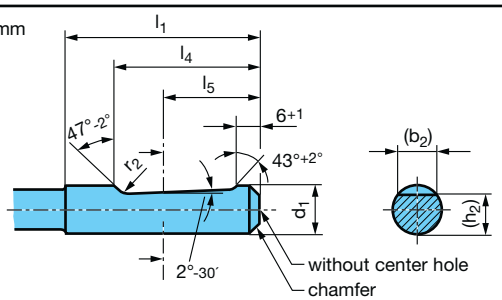
d_1 h6	b_1 +0,05 0	e_1 0 -1	h_1 h11	l_1 +2 0	l_2 +1 0
6	4.2	18	5.1	36	–
8	5.5	18	6.9	36	–
10	7	20	8.5	40	–
12	8	22.5	10.4	45	–
14	8	22.5	12.7	45	–
16	10	24	14.2	48	–
18	10	24	16.2	48	–
20	11	25	18.2	50	–
25	12	32	23	56	17
32	14	36	30	60	19

Form HE, with whistle notch flat without coolant ducts*

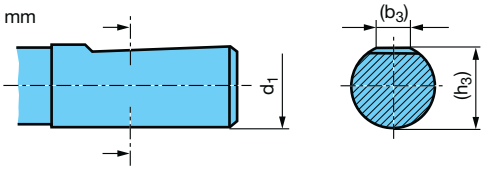
* Design: Straight shanks to DIN 6335 are available with or without oil feed holes. Applications for various tools, dimensions and position of oil feed holes are fully described within the standard range sections.

Dimensions in mm

for d_1 = 6 to 20 mm



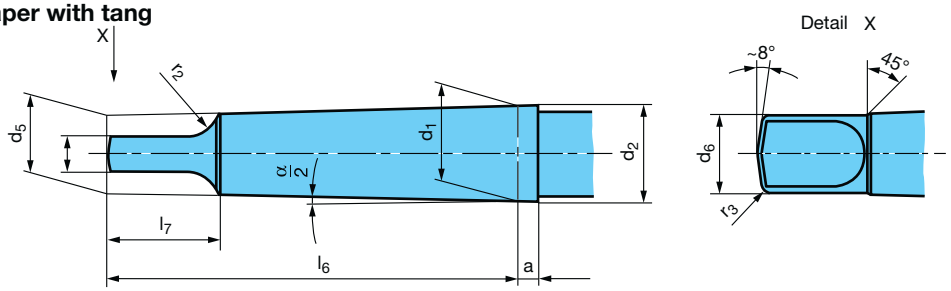
for d_1 = 25 and 32 mm



d_1 h6	(b_2) ≈	(b_3)	h_2 h11	(h_3)	l_1 +2 0	l_4 0 -1	l_5 Dim. nom.	r_2 min.
6	4,3	–	5,1	–	36	25	18	1,2
8	5,5	–	6,9	–	36	25	18	1,2
10	7,1	–	8,5	–	40	28	20	1,2
12	8,2	–	10,4	–	45	33	22,5	1,2
14	8,1	–	12,7	–	45	33	22,5	1,2
16	10,1	–	14,2	–	48	36	24	1,6
18	10,8	–	16,2	–	48	36	24	1,6
20	11,4	–	18,2	–	50	38	25	1,6
25	13,6	9,3	23,0	24,1	56	44	32	1,6
32	15,5	9,9	30,0	31,2	60	48	35	1,6

Morse taper shanks DIN 228 part 1 (extract)

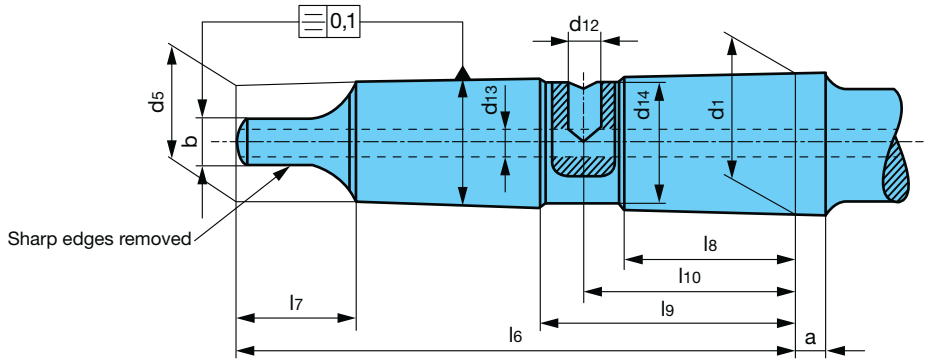
Form B, Morse taper with tang



Dimensions in mm

Shank to DIN 228 form B Size	a	Limiting dimensions	b	d_1	d_2 ≈	d_5 ≈	d_6 max.	l_6 0 -1	l_7 max.	r_2 max.	r_3 ≈	$\frac{\alpha}{2}$
MK 1	3.5	+1.4 0	5.2	12.065	12.2	9.0	8.7	62	13.5	5	1.2	1°25′43″
MK 2	5.0	+1.4 0	6.3	17.780	18.0	14.0	13.5	75	16	6	1.6	1°25′50″
MK 3	5.0	+1.7 0	7.9	23.825	24.1	19.1	18.5	94	20	7	2	1°26′16″
MK 4	6.5	+1.9 0	11.9	31.267	31.6	25.2	24.5	117.5	24	8	2.5	1°29′15″
MK 5	6.5	+1.9 0	15.9	44.399	44.7	36.5	35.7	149.5	29	10	3	1°30′26″

Form BK, Morse taper with tang and coolant lubricant delivery



Dimensions in mm

Shank to DIN 228 form BK Size	a ±0.1	Limiting dimen-sions	b h13	d_1	d_5 ≈	d_{12}	d_{13}	d_{14} 0 -0.01	l_6 0 -1	l_7 max.	l_8	l_9	l_{10}
MK 1	3.5	+1.4 0	5.2	12.065	9.0	-	-	-	62	13.5	-	-	-
MK 2	5	+1.4 0	6.3	17.780	14.0	4.2	4.2	15.0	75	16	20	34	27
MK 3	5	+1.7 0	7.9	23.825	19.1	5.0	5.0	21.0	94	20	29	43	36
MK 4	6.5	+1.9 0	11.9	31.267	25.2	6.8	6.8	28.0	117.5	24	39	55	47
MK 5	6.5	+1.9 0	15.9	44.399	36.5	8.5	8.5	40.0	149.5	29	51	69	60

Tolerances core drills

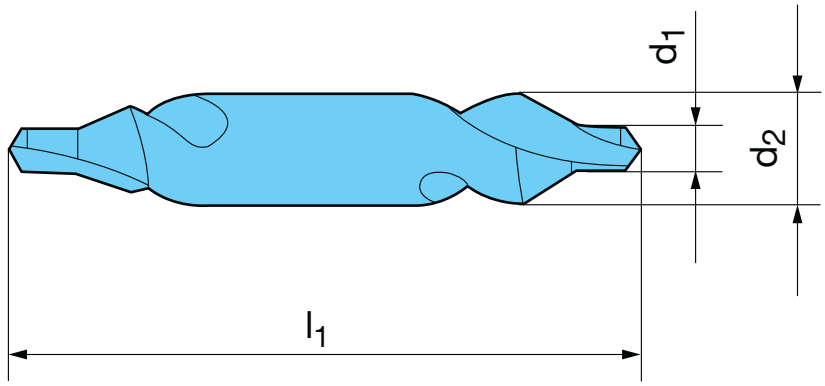
DIN 333	
Ø-range d_1 mm	tolerance zones from d_1 mm
0,50 – 2,50	0 +0,14
3,15 – 5,00	0 +0,18
6,30 – 10,00	0 +0,22
12,50	0 +0,27

for Guhring nos. 285/286	
Ø-range d_1 mm	tolerance zones from d_1 mm
1,00 –1,25	0 +0,10
1,60 – 3,15	0 +0,15
3,15 – 10,00	0 +0,20

to B.S. 328	
Ø-range d_1 mm	tolerance zones from d_1 mm
1,19 – 1,59	0 ±0,05
2,38 – 3,17	0 ±0,07
4,76	0 ±0,07
6,35 – 7,94	0 ±0,12

to B.S. 328	
Ø-range d_1 mm	tolerance zones from d_1 mm
3,17 – 4,76	-0,020
6,35	-0,025
7,94 – 11,11	-0,050
15,87 – 19,05	-0,050

to ASA	
Ø-range d_1 mm	tolerance zones from d_1 mm
all	0 + 0,07 mm



Tapping size holes for thread cutting

Std. ISO metric threads DIN 13

nom. Ø	pitch P	tapping size hole Ø DIN 336	core Ø of int. thread 6H* min.	core Ø of int. thread 6H* max.
	mm	mm	mm	mm
M 1	0.25	**0.75**	0.729	0.785
M 1.1	0.25	**0.85**	0.829	0.885
M 1.2	0.25	**0.95**	0.929	0.985
M 1.4	0.30	**1.10**	1.075	1.142
M 1.6	0.35	**1.25**	1.221	1.321
M 1.8	0.35	**1.45**	1.421	1.521
M 2	0.40	**1.60**	1.567	1.679
M 2.2	0.45	**1.75**	1.713	1.838
M 2.5	0.45	**2.05**	2.013	2.138
M 3	0.50	**2.50**	2.459	2.599
M 3.5	0.60	**2.90**	2.850	3.010
M 4	0.70	**3.30**	3.242	3.422
M 4.5	0.75	**3.70**	3.688	3.878
M 5	0.80	**4.20**	4.134	4.334
M 6	1.00	**5.00**	4.917	5.153
M 7	1.00	**6.00**	5.917	6.153
M 8	1.25	**6.80**	6.647	6.912
M 9	1.25	**7.80**	7.647	7.912
M 10	1.50	**8.50**	8.376	8.676
M 11	1.50	**9.50**	9.376	9.676
M 12	1.75	**10.20**	10.106	10.441
M 14	2.00	**12.00**	11.835	12.210
M 16	2.00	**14.00**	13.835	14.210
M 18	2.50	**15.50**	15.294	15.744
M 20	2.50	**17.50**	17.294	17.744
M 22	2.50	**19.50**	19.294	19.744
M 24	3.00	**21.00**	20.752	21.252
M 27	3.00	**24.00**	23.752	24.252
M 30	3.50	**26.50**	26.211	26.771
M 33	3.50	**29.50**	29.211	29.771
M 36	4.00	**32.00**	31.670	32.270
M 39	4.00	**35.00**	34.670	35.270
M 42	4.50	**37.50**	37.129	37.799
M 45	4.50	**40.50**	40.129	40.799
M 48	5.00	**43.00**	42.587	43.297
M 52	5.00	**47.00**	46.587	47.297
M 56	5.50	**50.50**	50.046	50.796

** M 1.1 up to M 1.4 tapping size hole of int. thread 5H*

ISO metric fine threads DIN 13

nom. Ø	x	pitch P	tapping size hole Ø DIN 336	core Ø of int. thread 6H min.	core Ø of int. thread 6H max.
		mm	mm	mm	mm
M 2.5	x	0.35	**2.15**	2.121	2.221
M 3.0	x	0.35	**2.65**	2.621	2.721
M 3.5	x	0.35	**3.15**	3.121	3.221
M 4.0	x	0.50	**3.50**	3.459	3.599
M 4.5	x	0.50	**4.00**	3.959	4.099
M 5.0	x	0.50	**4.50**	4.459	4.599
M 5.5	x	0.50	**5.00**	4.959	5.099
M 6.0	x	0.75	**5.20**	5.188	5.378
M 7.0	x	0.75	**6.20**	6.188	6.378
M 8.0	x	0.50	**7.50**	7.459	7.599
M 8.0	x	0.75	**7.20**	7.188	7.378
M 8.0	x	1.00	**7.00**	6.917	7.153
M 9.0	x	0.75	**8.20**	8.188	8.378
M 9.0	x	1.00	**8.00**	7.917	8.153
M 10	x	0.75	**9.20**	9.188	9.378
M 10	x	1.00	**9.00**	8.917	9.153
M 10	x	1.25	**8.80**	8.647	8.912
M 11	x	0.75	**10.20**	10.188	10.378
M 11	x	1.00	**10.00**	9.917	10.153
M 12	x	1.00	**11.00**	10.917	11.153
M 12	x	1.25	**10.80**	10.647	10.912
M 12	x	1.50	**10.50**	10.376	10.676
M 14	x	1.00	**13.00**	12.917	13.153
M 14	x	1.25	**12.80**	12.647	12.912
M 14	x	1.50	**12.50**	12.376	12.676
M 15	x	1.00	**14.00**	13.917	14.153
M 15	x	1.50	**13.50**	13.376	13.676
M 16	x	1.00	**15.00**	14.917	15.153
M 16	x	1.25	**14.80**	14.647	14.912
M 16	x	1.50	**14.50**	14.376	14.676
M 17	x	1.00	**16.00**	15.917	16.153
M 17	x	1.50	**15.50**	15.376	15.676
M 18	x	1.00	**17.00**	16.917	17.153
M 18	x	1.50	**16.50**	16.376	16.676
M 20	x	1.00	**19.00**	18.917	19.153
M 20	x	1.50	**18.50**	18.376	18.676
M 20	x	2.00	**18.00**	17.835	18.210

nom. Ø	x	pitch P	tapping size hole Ø DIN 336	core Ø of int. thread 6H min.	core Ø of int. thread 6H max.
		mm	mm	mm	mm
M 22	x	1.00	**21.00**	20.917	21.153
M 22	x	1.50	**20.50**	20.376	20.676
M 22	x	2.00	**20.00**	19.835	20.210
M 24	x	1.00	**23.00**	22.917	23.153
M 24	x	1.50	**22.50**	22.376	22.676
M 24	x	2.00	**22.00**	21.835	22.210
M 25	x	1.00	**24.00**	23.917	24.153
M 25	x	1.50	**23.50**	23.376	23.676
M 25	x	2.00	**23.00**	22.835	23.210
M 27	x	1.00	**26.00**	25.917	26.153
M 27	x	1.50	**25.50**	25.376	25.676
M 27	x	2.00	**25.00**	24.835	25.210
M 28	x	1.00	**27.00**	26.917	27.153
M 28	x	1.50	**26.50**	26.376	26.676
M 28	x	2.00	**26.00**	25.835	26.210
M 30	x	1.00	**29.00**	28.917	29.153
M 30	x	1.50	**28.50**	28.376	28.676
M 30	x	2.00	**28.00**	27.835	28.210
M 30	x	3.00	**27.00**	26.752	27.252
M 32	x	1.50	**30.50**	30.376	30.676
M 32	x	2.00	**30.00**	29.835	30.210
M 33	x	1.50	**31.50**	31.376	31.676
M 33	x	2.00	**31.00**	30.835	31.210
M 33	x	3.00	**30.00**	29.752	30.252
M 35	x	1.50	**33.50**	33.376	33.676
M 36	x	1.50	**34.50**	34.376	34.676

UNC threads ASME B1.1

nom. Ø	threads pro inch	tapping size hole Ø DIN 336	core Ø of int. thread 2B min.	core Ø of int. thread 2B max.
		mm	mm	mm
Nr. 1	- 64	**1.55**	1.425	1.580
Nr. 2	- 56	**1.85**	1.694	1.872
Nr. 3	- 48	**2.10**	1.941	2.146
Nr. 4	- 40	**2.35**	2.157	2.385
Nr. 5	- 40	**2.65**	2.487	2.698
Nr. 6	- 32	**2.85**	2.642	2.896
Nr. 8	- 32	**3.50**	3.302	3.531
Nr. 10	- 24	**3.90**	3.683	3.937
Nr. 12	- 24	**4.50**	4.343	4.597
1/4	- 20	**5.10**	4.978	5.258
5/16	- 18	**6.60**	6.401	6.731
3/8	- 16	**8.00**	7.798	8.153
7/16	- 14	**9.40**	9.144	9.550
1/2	- 13	**10.80**	10.592	11.024
9/16	- 12	**12.20**	11.989	12.446
5/8	- 11	**13.50**	13.386	13.868
3/4	- 10	**16.50**	16.307	16.840
7/8	- 9	**19.50**	19.177	19.761
1	- 8	**22.25**	21.971	22.606
1 1/8	- 7	**25.00**	24.638	25.349
1 1/4	- 7	**28.00**	27.813	28.524
1 3/8	- 6	**30.75**	30.353	31.115
1 1/2	- 6	**34.00**	33.528	34.290
1 3/4	- 5	**39.50**	38.938	39.802
2	- 4.5	**45.00**	44.679	45.593

MJ threads DIN ISO 5855

nom. Ø	x	pitch P	tapping size hole Ø DIN 336	core Ø of int. thread 5H* min.	core Ø of int. thread 5H* max.
		mm	mm	mm	mm
MJ 3	x	0.50	**2.60**	2.513	2.653
MJ 4	x	0.70	**3.40**	3.318	3.498
MJ 5	x	0.80	**4.30**	4.221	4.421
MJ 6	x	0.50	**5.55**	5.513	5.625
MJ 6	x	0.75	**5.35**	5.269	5.419
MJ 6	x	1.00	**5.10**	5.026	5.216
MJ 8	x	0.50	**7.55**	7.513	7.625
MJ 8	x	0.75	**7.35**	7.269	7.419
MJ 8	x	1.00	**7.10**	7.026	7.216
MJ 8	x	1.25	**6.90**	6.782	6.994
MJ 10	x	1.00	**9.10**	9.026	9.216
MJ 10	x	1.25	**8.90**	8.782	8.994
MJ 10	x	1.50	**8.60**	8.539	8.775
MJ 12	x	1.75	**10.40**	10.295	10.560
MJ 16	x	2.00	**14.20**	14.051	14.351

** MJ3 x 0.50 up to MJ 5 x 0.80 tapping size hole of int. thread 6H*

UNJC threads ISO 3161

nom. Ø	threads per inch	tapping size hole Ø DIN 336	core Ø of int. thread 3B min.	core Ø of int. thread 3B max.
		mm	mm	mm
Nr. 6	- 32	**2.85**	2.733	2.939
Nr. 8	- 32	**3.55**	3.393	3.599
Nr. 10	- 24	**4.00**	3.795	4.064
Nr. 12	- 24	**4.60**	4.455	4.704
1/4	- 20	**5.30**	5.113	5.387
5/16	- 18	**6.75**	6.563	6.833
3/8	- 16	**8.20**	7.978	8.255
7/16	- 14	**9.60**	9.346	9.639
1/2	- 13	**11.00**	10.798	11.095
9/16	- 12	**12.40**	12.228	12.482
5/8	- 11	**13.80**	13.627	13.904

UNJF threads ISO 3161

nom. Ø	threads per inch	tapping size hole Ø DIN 336	core Ø of int. thread 3B min.	core Ø of int. thread 3B max.
		mm	mm	mm
Nr. 6	- 40	**3.00**	2.888	3.053
Nr. 8	- 36	**3.60**	3.480	3.663
Nr. 10	- 32	**4.20**	4.054	4.255
Nr. 12	- 28	**4.75**	4.602	4.816
1/4	- 28	**5.60**	5.466	5.662
5/16	- 24	**7.00**	6.906	7.109
3/8	- 24	**8.60**	8.494	8.679
7/16	- 20	**10.00**	9.876	10.084
1/2	- 20	**11.60**	11.463	11.661
9/16	- 18	**13.00**	12.913	13.122
5/8	- 18	**14.60**	14.501	14.702

UNF threads ASME B1.1

nom. Ø	threads per inch	tapping size hole Ø DIN 336 mm	core Ø of int. thread 2B min. mm	core Ø of int. thread 2B max. mm
Nr. 1 -	72	**1.55**	1.473	1.610
Nr. 2 -	64	**1.85**	1.755	1.910
Nr. 3 -	56	**2.15**	2.024	2.197
Nr. 4 -	48	**2.40**	2.271	2.459
Nr. 5 -	44	**2.70**	2.550	2.741
Nr. 6 -	40	**2.95**	2.819	3.023
Nr. 8 -	36	**3.50**	3.404	3.607
Nr. 10 -	32	**4.10**	3.962	4.166
Nr. 12 -	28	**4.60**	4.496	4.724
1/4 -	28	**5.50**	5.359	5.588
5/16 -	24	**6.90**	6.782	7.036
3/8 -	24	**8.50**	8.382	8.636
7/16 -	20	**9.90**	9.728	10.033
1/2 -	20	**11.50**	11.328	11.608
9/16 -	18	**12.90**	12.751	13.081
5/8 -	18	**14.50**	14.351	14.681
3/4 -	16	**17.50**	17.323	17.678
7/8 -	14	**20.40**	20.269	20.650
1 -	12	**23.25**	23.114	23.571
1 1/8 -	12	**26.50**	26.289	26.746
1 1/4 -	12	**29.50**	29.464	29.921
1 3/8 -	12	**32.75**	32.639	33.096
1 1/2 -	12	**36.00**	35.814	36.271

BSW (Whitworth) threads BS84

nom. Ø	threads per inch	tapping size hole Ø DIN 336 mm	core Ø of int. thread 2B min. mm	core Ø of int. thread 2B max. mm
W 1/16	60	**1.20**	1.045	1.230
W 3/32	48	**1.80**	1.704	1.912
W 1/8	40	**2.50**	2.362	2.591
W 5/32	32	**3.20**	2.952	3.214
W 3/16	24	**3.60**	3.407	3.745
W 7/32	24	**4.50**	4.201	4.539
W 1/4	20	**5.10**	4.724	5.156
W 5/16	18	**6.50**	6.130	6.590
W 3/8	16	**7.90**	7.492	7.987
W 7/16	14	**9.20**	8.789	9.330
W 1/2	12	**10.50**	9.989	10.591
W 9/16	12	**12.00**	11.577	12.179
W 5/8	11	**13.50**	12.918	13.558
W 3/4	10	**16.25**	15.797	16.483
W 7/8	9	**19.25**	18.611	19.353
W 1	8	**22.00**	21.334	22.147
W 1 1/8	7	**24.50**	23.928	24.832
W 1 1/4	7	**27.75**	27.103	28.007
W 1 3/8	6	**30.50**	29.504	30.528
W 1 1/2	6	**33.50**	32.679	33.703
W 1 5/8	5	**35.50**	34.769	35.963
W 1 3/4	5	**39.00**	37.944	39.138
W 2	4.5	**44.50**	43.571	44.877

(Whitworth) threads (DIN-ISO 228-1)

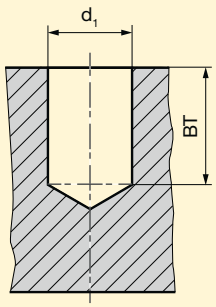
nom. Ø	threads per inch	tapping size hole Ø DIN 336 mm	core Ø of int. thread min. mm	core Ø of int. thread max. mm
G 1/16	28	**6.80**	6.561	6.843
G 1/8	28	**8.80**	8.566	8.848
G 1/4	19	**11.80**	11.445	11.890
G 3/8	19	**15.25**	14.950	15.395
G 1/2	14	**19.00**	18.631	19.172
G 5/8	14	**21.00**	20.587	21.128
G 3/4	14	**24.50**	24.117	24.658
G 7/8	14	**28.25**	27.877	28.418
G 1	11	**30.75**	30.291	30.931
G 1 1/8	11	**35.50**	34.939	35.579
G 1 1/4	11	**39.50**	38.952	39.592
G 1 1/2	11	**45.25**	44.845	45.485
G 1 3/4	11	**51.00**	50.788	51.428
G 2	11	**57.00**	56.656	57.296

Steel armored conduit threads to DIN 40430

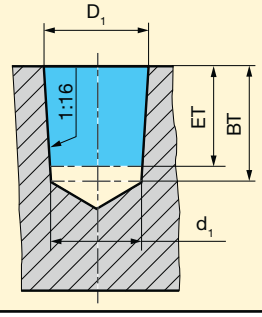
nom. Ø	threads per inch	tapping size hole Ø mm	core Ø of int. thread min. mm	core Ø of int. thread max. mm
Pg 7	20	**11.40**	11.280	11.430
Pg 9	18	**14.00**	13.860	14.010
Pg 11	18	**17.30**	17.260	17.410
Pg 13.5	18	**19.00**	19.060	19.210
Pg 16	18	**21.30**	21.160	21.310
Pg 21	16	**26.90**	26.780	27.030
Pg 29	16	**35.50**	35.480	35.730
Pg 36	16	**45.50**	45.480	45.730
Pg 42	16	**52.50**	52.480	52.730
Pg 48	16	**57.80**	57.780	58.030

NPT ANSI B 2.1 American tapered pipe thread 1:16

Version A (avoid if possible)



Version B



nom. Ø	threads pro inch	tapp. size hole Ø cylindrical (A) d_1	tapp. size hole Ø conical (B) D_1	cutting depth ET mm	cutting depth BT (min) mm
1/16 -	27	**6.15**	6.39	9.29	10.7
1/8 -	27	**8.40**	8.74	9.32	10.8
1/4 -	18	**11.10**	**11.36**	13.52	15.6
3/8 -	18	**14.30**	**14.80**	13.83	16.0
1/2 -	14	**17.90**	**18.32**	18.07	20.8
3/4 -	14	**23.30**	**23.67**	18.55	21.3
1 -	11.5	**29.00**	**29.69**	22.29	25.6
1 1/4 -	11.5	**37.70**	**38.45**	22.80	26.1
1 1/2 -	11.5	**43.70**	**44.52**	22.80	26.1
2 -	11.5	**55.60**	**56.56**	23.20	26.5
2 1/2 -	8	**66.30**	**67.62**	31.75	36.3
3 -	8	**82.30**	**83.52**	33.74	38.5

Metric/metric fine EG-threads (EG M14 x 1.25) for wire thread inserts DIN 8140

nom. Ø x pitch P mm	tapping size hole Ø DIN 336 mm	core Ø of int. thread min. mm	core Ø of int. thread max. mm
EG M 4 x 0.70	**4.20**	4.152	4.292
EG M 5 x 0.80	**5.25**	5.174	5.334
EG M 6 x 1.00	**6.30**	6.217	6.407
EG M 8 x 1.25	**8.40**	8.271	8.483
EG M10 x 1.50	**10.50**	10.324	10.560
EG M12 x 1.75	**12.50**	12.379	12.644
EG M14 x 1.25	**14.40**	14.271	14.483
EG M16 x 2.00	**16.50**	16.433	16.733

UNC (UNC-STI) EG-threads for wire thread inserts ASME B18.29.1

nom. Ø	threads per inch	tapping size hole Ø mm	core Ø of int. thread min. mm	core Ø of int. thread max. mm
EG Nr. 6 -	32	**3.80**	3.678	3.879
EG Nr. 8 -	32	**4.40**	4.338	4.524
EG Nr. 10 -	24	**5.20**	5.055	5.283
EG Nr. 12 -	24	**5.80**	5.715	5.944
EG 1/4 -	20	**6.70**	6.624	6.868
EG 5/16 -	18	**8.40**	8.242	8.489
EG 3/8 -	16	**10.00**	9.868	10.127
EG 7/16 -	14	**11.60**	11.506	11.783
EG 1/2 -	13	**13.30**	13.122	13.393
EG 9/16 -	12	**14.90**	14.747	15.032
EG 5/8 -	11	**16.50**	16.375	16.673

UNF (UNF-STI) EG-threads for wire thread inserts ASME B18.29.1

nom. Ø	threads per inch	tapping size hole Ø mm	core Ø of int. thread min. mm	core Ø of int. thread max. mm
EG Nr. 6 -	40	**3.70**	3.644	3.818
EG Nr. 8 -	36	**4.40**	4.321	4.498
EG Nr. 10 -	32	**5.10**	4.999	5.184
EG Nr. 12 -	28	**5.70**	5.682	5.809
EG 1/4 -	28	**6.60**	6.546	6.721
EG 5/16 -	24	**8.25**	8.166	8.352
EG 3/8 -	24	**9.80**	9.754	9.931
EG 7/16 -	20	**11.50**	11.389	11.585
EG 1/2 -	20	**13.10**	12.974	13.172
EG 9/16 -	18	**14.70**	14.592	14.798
EG 5/8 -	18	**16.25**	16.180	16.386

Recommended tapping size holes for thread forming

Std. ISO metric threads DIN 13

nom. Ø	pitch P	tapp. size hole Ø	tapp. size hole Ø min.	tapp. size hole Ø max.	core Ø of int. thread 7H* min.	core Ø of int. thread 7H* max.
mm		mm	mm	mm	mm	mm
M 2	0.40	**1.85**	1.84	1.88	1.567	1.679
M 2.2	0.45	**2.00**	2.01	2.05	1.713	1.838
M 2.5	0.45	**2.30**	2.28	2.32	2.013	2.138
M 3	0.50	**2.80**	2.78	2.85	2.459	2.639
M 3.5	0.60	**3.25**	3.23	3.30	2.850	3.050
M 4	0.70	**3.70**	3.68	3.76	3.242	3.466
M 4.5	0.75	**4.20**				
M 5	0.80	**4.65**	4.62	4.71	4.134	4.384
M 6	1.00	**5.55**	5.52	5.62	4.917	5.217
M 7	1.00	**6.55**	6.52	6.62	5.917	6.217
M 8	1.25	**7.40**	7.36	7.47	6.647	6.982
M 9	1.25	**8.40**	8.36	8.47	7.647	7.982
M 10	1.50	**9.30**	9.26	9.38	8.376	8.751
M 11	1.50	**10.30**	10.26	10.38	9.376	9.751
M 12	1.75	**11.20**	11.15	11.29	10.106	10.531
M 14	2.00	**13.10**	13.05	13.20	11.835	12.310
M 16	2.00	**15.10**	15.05	15.20	13.835	14.310
M 18	2.50	**16.90**	16.83	17.02	15.294	15.854
M 20	2.50	**18.90**	18.83	19.02	17.294	17.854
M 22	2.50	**20.90**	20.83	21.02	19.294	19.854
M 24	3.00	**22.70**	22.62	22.80	20.752	21.382
M 27	3.00	**25.70**	25.62	25.80	23.752	24.382
M 30	3.50	**28.50**	28.40	28.60	26.211	26.921
M 33	3.50	**31.50**	31.40	31.60	29.211	29.921
M 36	4.00	**34.30**	34.17	34.40	31.670	32.420
M 39	4.00	**37.30**	37.17	37.40	34.670	35.420
M 42	4.50	**40.10**	39.95	40.20	37.129	37.979

* M 2 up to M 2.5 tapping size hole of int. thread 6H

ISO metric fine threads DIN 13

nom. Ø	x	pitch P	tapp. size hole Ø	tapp. size hole Ø min.	tapp. size hole Ø max.	core Ø of int. thread 7H* min.	core Ø of int. thread 7H* max.
mm			mm	mm	mm	mm	mm
M 2.5	x	0.35	**2.35**	2.35	2.38	2.121	2.221
M 3	x	0.35	**2.85**	2.85	2.88	2.621	2.721
M 4	x	0.35	**3.85**	3.85	3.88	3.621	3.721
M 4	x	0.50	**3.80**	3.78	3.83	3.459	3.639
M 5	x	0.50	**4.80**	4.78	4.83	4.459	4.639
M 5.5	x	0.50	**5.30**	5.28	5.33	4.959	5.139
M 6	x	0.75	**5.65**	5.62	5.70	5.188	5.424
M 7	x	0.75	**6.65**	6.62	6.70	6.188	6.424
M 8	x	0.75	**7.65**	7.62	7.70	7.188	7.424
M 8	x	1.00	**7.55**	7.52	7.62	6.917	7.217
M 9	x	0.75	**8.65**	8.62	8.70	8.188	8.424
M 9	x	1.00	**8.55**	8.52	8.62	7.917	8.217
M 10	x	0.75	**9.65**	9.62	9.70	9.188	9.424
M 10	x	1.00	**9.55**	9.52	9.62	8.917	9.217
M 10	x	1.25	**9.40**	9.36	9.47	8.647	8.982
M 11	x	0.75	**10.65**	10.62	10.70	10.188	10.424
M 11	x	1.00	**10.55**	10.52	10.62	9.917	10.217
M 12	x	1.00	**11.55**	11.52	11.62	10.917	11.217
M 12	x	1.25	**11.40**	11.36	11.47	10.647	10.982
M 12	x	1.50	**11.30**	11.26	11.38	10.376	10.751
M 14	x	1.00	**13.55**	13.52	13.62	12.917	13.217
M 14	x	1.25	**13.40**	13.36	13.47	12.647	12.982
M 14	x	1.50	**13.30**	13.26	13.38	12.376	12.751
M 15	x	1.00	**14.55**	14.52	14.62	13.917	14.217
M 15	x	1.50	**14.30**	14.26	14.38	13.376	13.751
M 16	x	1.00	**15.55**	15.52	15.62	14.917	15.217
M 16	x	1.50	**15.30**	15.26	15.38	14.376	14.751
M 17	x	1.00	**16.55**	16.52	16.62	15.917	16.217

* M 2.5 x 0.35 up to M 4 x 0.35 tapping size hole of int. thread 6H

nom. Ø	x	pitch P	tapp. size hole Ø	tapp. size hole Ø min.	tapp. size hole Ø max.	core Ø of int. thread 7H* min.	core Ø of int. thread 7H* max.
mm			mm	mm	mm	mm	mm
M 17	x	1.50	**16.30**	16.26	16.38	15.376	15.751
M 18	x	1.00	**17.55**	17.52	17.62	16.917	17.217
M 18	x	1.50	**17.30**	17.26	17.38	16.376	16.751
M 18	x	2.00	**17.10**	17.05	17.20	15.835	16.310
M 20	x	1.00	**19.55**	19.52	19.62	18.917	19.217
M 20	x	1.50	**19.30**	19.26	19.38	18.376	19.751
M 24	x	1.00	**23.55**	23.52	23.62	22.917	23.217
M 24	x	1.50	**23.30**	23.26	23.38	22.376	22.751
M 24	x	2.00	**23.10**	23.05	23.20	21.835	22.310
M 27	x	1.50	**26.30**	26.26	26.38	25.376	25.751
M 30	x	1.50	**29.30**	29.26	29.38	28.376	28.751
M 33	x	1.50	**32.30**	32.26	32.38	31.376	31.751
M 36	x	1.50	**35.30**	35.26	35.38	34.376	34.751
M 39	x	1.50	**38.30**	38.26	38.38	37.376	37.751
M 42	x	1.50	**41.30**	41.26	41.38	42.376	42.751

Tapping size hole diameter tolerance zone for thread forming (to DIN 13, section 50)

Due to the tensile strength it is not necessary to adhere to the tapping size hole diameter tolerance class 6H; tolerance class 7H satisfies the requirement that the flank coverage of external and internal threads should not fall below 0.32 x P.
In addition, formed threads generally possess a higher tensile strength in comparison to cut threads thanks to an uninterrupted grain flow and subsequent work hardening.

UNC threads ASME B1.1

nom. Ø		threads per inch	tapp. size hole Ø	tapp. size hole Ø min.	tapp. size hole Ø max.	core Ø of int. thread min.	core Ø of int. thread max.
			mm	mm	mm	mm	mm
Nr. 1	-	64	**1.68**	1.67	1.70	1.425	1.580
Nr. 2	-	56	**1.98**	1.97	2.01	1.694	1.872
Nr. 3	-	48	**2.28**	2.27	2.32	1.941	2.146
Nr. 4	-	40	**2.55**	2.54	2.59	2.157	2.385
Nr. 5	-	40	**2.90**	2.89	2.94	2.487	2.698
Nr. 6	-	32	**3.15**	3.14	3.19	2.642	2.896
Nr. 8	-	32	**3.80**	3.78	3.82	3.302	3.531
Nr. 10	-	24	**4.35**	4.33	4.39	3.683	3.937
Nr. 12	-	24	**5.00**	4.97	5.03	4.343	4.597
1/4	-	20	**5.75**	5.72	5.80	4.978	5.258
5/16	-	18	**7.30**	7.26	7.37	6.401	6.731
3/8	-	16	**8.80**	8.77	8.88	7.798	8.153
7/16	-	14	**10.30**	10.27	10.37	9.144	9.550
1/2	-	13	**11.80**	11.77	11.88	10.592	11.024
9/16	-	12	**13.30**	13.28	13.39	11.989	12.446
5/8	-	11	**14.80**	14.78	14.90	13.386	13.868
3/4	-	10	**17.90**	17.85	17.97	16.307	16.840
7/8	-	9	**21.00**	20.95	21.10	19.177	19.761
1	-	8	**24.00**	23.95	24.12	21.971	22.606

UNF threads ASME B1.1

nom. Ø		threads per inch	tapp. size hole Ø	tapp. size hole Ø min.	tapp. size hole Ø max.	core Ø of int. thread min.	core Ø of int. thread max.
			mm	mm	mm	mm	mm
Nr. 1	-	72	**1.70**	1.69	1.72	1.473	1.610
Nr. 2	-	64	**2.00**	1.99	2.03	1.755	1.910
Nr. 3	-	56	**2.30**	2.29	2.34	2.024	2.197
Nr. 4	-	48	**2.60**	2.59	2.63	2.271	2.459
Nr. 5	-	44	**2.90**	2.89	2.93	2.550	2.741
Nr. 6	-	40	**3.20**	3.19	3.24	2.819	3.023
Nr. 8	-	36	**3.85**	3.83	3.88	3.404	3.607
Nr. 10	-	32	**4.45**	3.43	4.49	3.962	4.166
Nr. 12	-	28	**5.10**	5.07	5.13	4.496	4.724
1/4	-	28	**5.95**	5.92	5.99	5.359	5.588
5/16	-	24	**7.45**	7.42	7.50	6.782	7.036
3/8	-	24	**9.05**	9.02	9.10	8.838	8.636
7/16	-	20	**10.55**	10.48	10.58	9.728	10.033
1/2	-	20	**12.10**	12.08	12.18	11.328	11.608
9/16	-	18	**13.65**	13.61	13.72	12.751	13.081
5/8	-	18	**15.25**	15.21	15.32	14.351	14.681
3/4	-	16	**18.35**	15.30	18.41	17.323	17.678
7/8	-	14	**21.40**	21.35	21.49	20.269	20.650
1	-	12	**24.45**	24.40	24.54	23.114	23.571

(Whitworth) threads DIN EN ISO 228-1

nom. Ø	threads pro inch	tapp. size hole Ø	tapp. size hole Ø min.	tapp. size hole Ø max.	core Ø of int. thread min.	core Ø of int. thread max.
inch		mm	mm	mm	mm	mm
G 1/16	28	**7.30**	7.28	7.35	6.561	6.843
G 1/8	28	**9.30**	9.28	9.35	8.566	8.848
G 1/4	19	**12.50**	12.48	12.55	11.445	11.890
G 3/8	19	**16.00**	15.98	16.05	14.950	15.395
G 1/2	14	**20.00**	19.98	20.12	18.631	19.172
G 5/8	14	**22.00**	21.98	22.12	20.587	21.128
G 3/4	14	**25.50**	25.48	25.62	24.117	24.658
G 7/8	14	**29.25**	29.23	29.37	27.877	28.418
G 1	11	**32.00**	31.98	32.15	30.291	30.931
G 1 1/4	11	**40.75**	40.70	40.85	38.952	39.592

From 1/64 to 11 63/64

Size (inch)	mm	Part of inch (decimal)
-	0.10	0.0039
97	0.15	0.0059
96	0.16	0.0063
95	0.17	0.0067
94	0.18	0.0071
93	0.19	0.0075
92	0.20	0.0079
91	0.21	0.0083
90	0.22	0.0087
89	0.23	0.0091
88	0.24	0.0095
-	0.25	0.0098
87	0.25	0.0100
	0.26	0.0102
86	0.27	0.0105
	0.27	0.0106
85	0.28	0.0110
	0.29	0.0114
84	0.29	0.0115
-	0.30	0.0118
83	0.30	0.0120
82	0.32	0.0125
	0.32	0.0126
81	0.33	0.0130
80	0.34	0.0135
79	0.37	0.0145
1/64	0.40	0.0156
78	0.41	0.0160
77	0.46	0.0180
-	0.50	0.0197
76	0.51	0.0200
75	0.53	0.0210
74	0.57	0.0225
-	0.60	0.0236
73	0.61	0.0240
72	0.64	0.0250
71	0.66	0.0260
-	0.70	0.0276
70	0.71	0.0280
69	0.74	0.0292
-	0.75	0.0295
68	0.79	0.0310
1/32	0.79	0.0313
-	0.80	0.0315
67	0.81	0.0320
66	0.84	0.0330
65	0.89	0.0350
-	0.90	0.0354
64	0.91	0.0360
63	0.94	0.0370
62	0.97	0.0380
61	0.99	0.0390
-	1.00	0.0394
60	1.02	0.0400
59	1.04	0.0410
58	1.07	0.0420
57	1.09	0.0430
56	1.18	0.0465
3/64	1.19	0.0469
	1.20	0.0472
	1.25	0.0492
	1.30	0.0512
55	1.32	0.0520
54	1.40	0.0550
	1.45	0.0571
	1.50	0.0591
53	1.51	0.0595
	1.55	0.0610
1/16	1.59	0.0625
	1.60	0.0630
52	1.61	0.0635
	1.65	0.0650
51	1.70	0.0670
	1.75	0.0689
50	1.78	0.0700
	1.80	0.0709
49	1.85	0.0730
	1.90	0.0748
48	1.93	0.0760
	1.95	0.0768
5/64	1.98	0.0781
47	1.99	0.0785
-	2.00	0.0787
	2.05	0.0807
46	2.06	0.0810
45	2.08	0.0820
	2.15	0.0846
44	2.18	0.0860
43	2.26	0.0890
42	2.37	0.0935
3/32	2.38	0.0938
41	2.44	0.0960
40	2.50	0.0980
39	2.53	0.0995
38	2.58	0.1015
37	2.64	0.1040
36	2.71	0.1065
7/64	2.78	0.1094
35	2.79	0.11
34	2.82	0.111
33	2.87	0.113
	2.90	0.1142
32	2.95	0.116
-	3.00	0.1181
31	3.05	0.12
1/8	3.18	0.125
30	3.26	0.1285
	3.30	0.1299
29	3.45	0.136
	3.50	0.1378
28	3.57	0.1405
9/64	3.57	0.1406
27	3.66	0.144
26	3.73	0.147
	3.75	0.1476
25	3.80	0.1495
24	3.86	0.152
23	3.91	0.154
5/32	3.97	0.1562
22	3.99	0.157
-	4.00	0.1575
21	4.04	0.159
20	4.09	0.161
	4.20	0.1654
19	4.22	0.166
18	4.31	0.1695
11/64	4.37	0.1719
17	4.39	0.173
16	4.50	0.177
15	4.57	0.18
14	4.62	0.182
13	4.70	0.185
3/16	4.76	0.1875
12	4.80	0.189
11	4.85	0.191
10	4.91	0.1935
9	4.98	0.196
-	5.00	0.1968
8	5.05	0.199
7	5.11	0.2010
13/64	5.16	0.2031
6	5.18	0.2040
5	5.22	0.2055
	5.25	0.2067
4	5.31	0.2090
3	5.41	0.213
	5.50	0.2165
7/32	5.56	0.2188
2	5.61	0.221
1	5.79	0.228
A	5.94	0.234
15/64	5.95	0.2344
-	6.00	0.2362
B	6.05	0.238
C	6.15	0.242
D	6.25	0.246
1/4	6.35	0.25
E	6.35	0.25
	6.50	0.2559
F	6.53	0.257
G	6.63	0.261
17/64	6.75	0.2656
	6.75	0.2657
H	6.76	0.266
I	6.91	0.272
-	7.00	0.2756
J	7.04	0.2772
K	7.14	0.281
9/32	7.14	0.2812
L	7.37	0.29
M	7.49	0.2949
	7.50	0.2953
19/64	7.54	0.2969
N	7.67	0.3020
	7.75	0.3051
5/16	7.94	0.3125
-	8.00	0.315
O	8.03	0.316
P	8.20	0.323
21/64	8.33	0.3281
Q	8.43	0.332
	8.50	0.3346
R	8.61	0.339
11/32	8.73	0.3438
	8.75	0.3445
S	8.84	0.348
-	9.00	0.3543
T	9.09	0.358
23/64	9.13	0.3594
U	9.35	0.368
	9.50	0.374
3/8	9.53	0.375
V	9.56	0.377
W	9.80	0.386
25/64	9.92	0.3906
-	10.00	0.3937
X	10.08	0.397
Y	10.26	0.4040
13/32	10.32	0.4062
Z	10.49	0.413
	10.50	0.4134
27/64	10.72	0.4219
-	11.00	0.4331
7/16	11.11	0.4375
	11.50	0.4528
29/64	11.51	0.4531
15/32	11.91	0.4688
-	12.00	0.4724
31/64	12.30	0.4844
	12.50	0.4921
1/2	12.70	0.50
-	13.00	0.5118
33/64	13.10	0.5156
17/32	13.49	0.5312
	13.50	0.5315
35/64	13.89	0.5469
-	14.00	0.5512
9/16	14.29	0.5625
	14.50	0.5709
37/64	14.68	0.5781
-	15.00	0.5906
19/32	15.08	0.5938
39/64	15.48	0.6094
	15.50	0.6102
5/8	15.88	0.625
-	16.00	0.6299
41/64	16.27	0.6406
	16.50	0.6496
21/32	16.67	0.6562
-	17.00	0.6693
43/64	17.07	0.6719
11/16	17.46	0.6875
	17.50	0.689
45/64	17.86	0.7031
-	18.00	0.7087
23/32	18.26	0.7188
	18.50	0.7283
47/64	18.65	0.7344
-	19.00	0.748
3/4	19.05	0.75
49/64	19.45	0.7656
	19.50	0.7677
25/32	19.84	0.7812
-	20.00	0.7874
51/64	20.24	0.7969
	20.50	0.8071
13/16	20.64	0.8125
-	21.00	0.8268
53/64	21.03	0.8281
27/32	21.43	0.8438
	21.50	0.8465
55/64	21.84	0.8594
-	22.00	0.8661
7/8	22.23	0.875
	22.50	0.8858
57/64	22.62	0.8906
-	23.00	0.9055
29/32	23.02	0.9062
59/64	23.42	0.9219
	23.50	0.9252
15/16	23.81	0.9375
-	24.00	0.9449
61/64	24.21	0.9531
	24.50	0.9646
31/32	24.61	0.9688
-	25.00	0.9843
63/64	25.00	0.9844
1	25.40	1.00

1 inch = 25.400 0 mm, see DIN 4890 (issue 2/75)

The new material abbreviations (selection)

mat. nos.	abbreviation old	abbreviation new
0.6010	GG10	EN-GJL-100
0.6020	GG20	EN-GJL-200
0.6025	GG25	EN-GJL-250
0.6035	GG35	EN-GJL-350
0.7050	GGG50	EN-GJS-500-7
0.7070	GGG70	EN-GJS-700-2
0.8035	GTW35	EN-GJMW-350-4
0.8155	GTS55	EN-GJMB-550-4
0.8170	GTS70	EN-GJMB-700-2
1.0022	St 01Z	–
1.0035	St 33	S185
1.0039	St 37 -2	S235JRH
1.0044	St 44 -2	S275JR
1.0050	St 50 -2	E295
1.0060	St 60 -2	E335
1.0070	St 70 –2	E360
1.0114	St 37 –3U	S235J0
1.0226	St 02Z	DX51D
1.0242	StE 250 -2Z	S250GD
1.0244	StE 280 -2Z	S280GD
1.0250	StE 320 -3Z	S320GD
1.0301	C 10	–
1.0302	C 10 Pb	–
1.0306	St 06 Z	DX54D
1.0312	St 15	DC05 [Fe P05]
1.0319	RRStE 210.7	L210GA
1.0322	–	DX56D
1.0330	St 12 [St 2]	DC01 [Fe P01]
1.0333	USt 13	–
1.0338	St 14 [St 4]	DC04 [Fe P04]
1.0345	H I	P235GH
1.0347	RRSt 13 [RRSt 3]	DC03 [Fe P03]
1.0348	UH I	P195GH
1.0350	St 03Z	DX52D
1.0355	St 05Z	DX53D
1.0356	TTSt 35 N	P215NL
1.0358	St 05 Z	–
1.0401	C 15	–
1.0402	C 22	C22
1.0403	C 15 Pb	–
1.0406	C 25	C25
1.0419	St 52.0	L355
1.0424	St 45.8 (ersetzt)	P265
1.0424	St 42.8 (ersetzt)	P265
1.0425	H2	P265GH
1.0429	StE 290.7 TM	L290MB
1.0457	StE 240.7	L245NB
1.0459	RRStE 240.7	L245GA
1.0461	StE 255	S255N
1.0473	19 Mn 6	P355GH
1.0481	17 Mn 4	P295GH
1.0484	StE 290.7	L290NB
1.0486	StE 285	P275N
1.0501	C 35	C35
1.0503	C 45	C45
1.0505	StE 315	P315N
1.0511	C 40	C40
1.0528	C 30	C30
1.0529	StE 350 -3Z	S350GD
1.0535	C 55	C55
1.0539	StE 355N	S355NH
1.0540	C 50	C50
1.0547	St 52 –3U	S355J0H
1.0582	StE 360.7	L360NB
1.0601	C 60	C60
1.0710	15 S 10	–
1.0715	9 SMn 28	11SMn30
1.0718	9 SMnPb 28	11SMnPb30
1.0721	10 S 20	10S20
1.0722	10 S Pb 20	10SPb20
1.0726	35 S 20	35S20
1.0727	45 S 20	46S20
1.0728	60 S 20	–
1.0736	9 SMn 36	11SMn37
1.0737	9 SMnPb 36	11SMnPb37
1.0756	35 SPb 20	35SPb20
1.0757	45 SPb 20	46SPb20
1.0760	–	38SMn26
1.0761	–	38SMnPb26
1.0762	–	44SMn28
1.0763	–	44SMnPb28
1.0873	–	DC06 [Fe P06]
1.1103	EStE 255	S255NL1
1.1105	EStE 315	S315NL1
1.1121	Ck 10	C10E
1.1141	Ck15	C15E
1.1151	Ck 22	C22E
1.1158	Ck 25	C25E
1.1170	28 Mn 6	28Mn6
1.1178	Ck 30	C30E
1.1181	Ck 35	C35E
1.1186	Ck 40	C40E
1.1191	Ck 45	C45E
1.1203	Ck 55	C55E
1.1206	Ck 50	C50E
1.1221	Ck 60	C60E
1.1241	Cm 50	C50R
1.1750	C 75 W	C75W
1.2067	102 Cr 6	102Cr6
1.2080	–	X210Cr12
1.2083	–	X42Cr13
1.2419	–	105WCr6
1.2767	–	X45NiCrMo4
1.3243	S6-5-2-5	S 6-5-2-5
1.3343	S6-5-2	S 6-5-2
1.3344	S6-5-3	S 6-5-3
1.4000	X6Cr 13	X6Cr13
1.4002	X6CrAl 13	X6CrAl13
1.4003	X2Cr 11	X2CrNi12
1.4005	–	X12CrS13
1.4006	X10Cr 13	X12Cr13
1.4016	X6Cr 17	X6Cr17
1.4021	X20Cr 13	X20Cr13
1.4028	X30Cr 13	X30Cr13
1.4031	X38Cr 13	X38Cr13
1.4034	X46Cr 13	X46Cr13
1.4037	X65Cr13	X65Cr13
1.4057	X20CrNi 17 2	X17CrNi16-2
1.4104	X12CrMoS 17	X14CrMoS17
1.4105	X4CrMoS 18	X6CrMoS17
1.4109	X65CrMo 14	X70CrMo15
1.4110	X55CrMo 14	X55CrMo14
1.4112	X90CrMoV 18	X90CrMoV18
1.4113	X6CrMo 17 1	X6CrMo17-1
1.4116	X45CrMoV 15	X50CrMoV15
1.4120	X20CrMo 13	X20CrMo13
1.4122	X35CrMo 17	X39CrMo17-1
1.4125	X105CrMo 17	X105CrMo17
1.4301	X5CrNi 18 10	X5CrNi18-10
1.4303	X5CrNi 18 12	X4CrNi18-12
1.4305	X10CrNiS 18 9	X8CrNiS18-9
1.4306	X2CrNi 19 11	X2CrNi19-11
1.4310	X12CrNi 17 7	X10CrNi18-8
1.4311	X2CrNiN 18 10	X2CrNiN18-10
1.4313	X4CrNi 13 4	X3CrNiMo13-4
1.4318	X2CrNiN 18 7	X2CrNiN18-7
1.4335	X1CrNi 25 21	X1CrNi25-21
1.4361	X1CrNiSi 18 15	X1CrNiSi18-15-4
1.4362	X2CrNiN 23 4	X2CrNiN23-4
1.4401	X5CrNiMo 17 12 2	X5CrNiMo17-12-2
1.4404	X2CrNiMo 17 13 2	X2CrNiMo17-12-2
1.4410	X10CrNiMo 18 9	X2CrNiMoN25-7-4
1.4418	X4CrNiMo 16 5	X4CrNiMo16-5-1
1.4435	X2CrNiMo 18 14 3	X2CrNiMo18-14-3
1.4436	X5CrNiMo 17 13 3	X3CrNiMo17-13-3
1.4438	X2CrNiMo 18 16 4	X2CrNiMo18-15-4
1.4460	X4CrNiMo 27 5 2	X3CrNiMoN27-5-2
1.4462	X2CrNiMoN 22 5 3	X2CrNiMoN22-5-3
1.4509	X6CrTiNb 18	X2CrTiNb18
1.4510	X6CrTi 17	X3CrTi17
1.4511	X6CrNb 17	X3CrNb17
1.4512	X6CrTi 12	X2CrTi12
1.4520	X1CrTi 15	X2CrTi17
1.4521	X2CrMoTi 18 2	X2CrMoTi18-2
1.4522	X2CrMoNb 18 2	X2CrMoNb18-2
1.4532	X7CrNiMoAl 15 7	X8CrNiMoAl15-7-2
1.4541	X6CrNiTi18 10	X6CrNiTi18-10
1.4542	X5CrNiCuNb 17 4	X5CrNiCuNb16-4
1.4550	X6CrNiNb 18 10	X6CrNiNb18-10
1.4558	X2NiCrAlTi 32 20	X2NiCrAlTi32-20
1.4567	X3CrNiCu 18 9 X	X3CrNiCu18-9-4
1.4568	X7CrNiAl 17 7	X7CrNiAl17-7
1.4571	–	X6CrNiMoTi17-12-2
1.4577	X3CrNiMoTi 25 25	X3CrNiMoTi25-25
1.4592	X1CrMoTi 29 4	X2CrMoTi29-4
1.4713	X10CrAl 7	X10CrAlSi7
1.4724	X10CrAl 13	X10CrAlSi13
1.4742	X10CrAl 18	X10CrAlSi18
1.4762	X10CrAl 24	X10CrAlSi25
1.4821	X20CrNiSi 25 4	X20CrNiSi25-4
1.4828	X15CrNiSi 20 12	X15CrNiSi20-12
1.4833	X7CrNi 23 14	X7CrNi23-12
1.4841	X15CrNiSi 25 20	X15CrNiSi25-21
1.4845	X12CrNi 25 21	X12CrNi25-21
1.4864	X12NiCrSi 36 16	X12NiCrSi35-16
1.4878	X12CrNiTi18 9	X10CrNiTi18-10
1.4903	–	X10CrMoVNb9-1
1.5026	55 Si 7	55Si7
1.5131	50 MnSi 4	50MnSi4
1.5415	15 Mo 3	16Mo3
1.5530	21 MnB 5	20MnB5
1.5531	30 MnB 5	30MnB5
1.5532	38 MnB 5	38MnB5
1.5637	10 Ni 14	12Ni14
1.5662	–	X11CrMo5+I
1.5680	–	X12Ni5
1.5710	36 NiCr 6	36NiCr6
1.5715	–	16NiCrS4
1.5752	14 NiCr 14	15NiCr13
1.6210	15 MnNi 6 3	15MnNi6-3
1.6211	16 MnNi 6 3	16MnNi6-3
1.6310	20 MnMoNi 5 5	20MnMoNi5-5
1.6311	20 MnMoNi 4 5	20MnMoNi4-5
1.6341	11 NiMoV 5 3	11NiMoV5-3
1.6368	15 NiCuMoNb 5	15NiCuMoNb5
1.6511	36 CrNiMo 4	36CrNiMo4
1.6523	21 NiCrMo 2	21NiCrMo2-2
1.6526	21 NiCrMoS 2	21NiCrMoS2-2
1.6580	30 CrNiMo 8	30CrNiMo8
1.6582	34 CrNiMo 6	34CrNiMo6
1.6587	17 CrNiMo 6	18CrNiMo7-6
1.7003	38 Cr 2	38Cr2
1.7006	46 Cr 2	46Cr2
1.7016	17 Cr 3	17Cr3
1.7023	38 CrS 2	38CrS2
1.7025	46 CrS 2	46CrS2
1.7030	28 Cr 4	28Cr4
1.7033	34 Cr 4	34Cr4
1.7034	37 Cr 4	37Cr4
1.7035	41 Cr 4	41Cr4
1.7036	28 CrS 4	28CrS4
1.7037	34 CrS 4	34CrS4
1.7038	37 CrS 4	37CrS4
1.7039	41 CrS 4	41CrS4
1.7131	16 MnCr 5	16MnCr5
1.7139	16 MnCrS 5	16MnCrS5
1.7043	–	38Cr4
1.7147	20 MnCr 5	20MnCr5
1.7149	20 MnCrS 5	20MnCrS5
1.7176	55 Cr 3	55Cr3
1.7182	27 MnCrB 5 2	27MnCrB5-2
1.7185	33 MnCrB 5 2	33MnCrB5-2
1.7189	39 MnCrB 6 2	39MnCrB6-2
1.7213	25 CrMoS 4	25CrMoS4
1.7218	25 CrMo 4	25CrMo4
1.7219	–	26CrMo4-2
1.7220	34 CrMo 4	34CrMo4
1.7225	42 CrMo 4	42CrMo4
1.7226	34 CrMoS 4	34CrMoS4
1.7227	42 CrMoS 4	42CrMoS4
1.7228	50 CrMo 4	50CrMo4
1.7264	20 CrMo 5	20CrMo5
1.7321	20 MoCr 4	20MoCr4
1.7323	20 MoCrS 4	20MoCrS4
1.7333	22 CrMoS 3 5	22CrMoS3-5
1.7335	13 CrMo 4 4	13CrMo4-5
1.7362	12 CrMo 19 5	12CrMo19-5
1.7380	10 CrMo 9 10	10CrMo9-10
1.7383	–	11CrMo9-10
1.7779	–	20CrMoV13-5-5
1.8159	50 CrV 4	51CrV4
1.8504	34 CrAl 6	34CrAl6
1.8519	31 CrMoV 9	31CrMoV9
1.8550	34 CrAlNi 7	34CrAlNi7
1.8807	13 MnNiMoV 5 4	13MnNiMoV5-4
1.8812	18 MnMoV 5 2	18MnMoV5-2
1.8815	18 MnMoV 6 3	18MnMoV6-3
1.8821	StE 355 TM	P355M
1.8824	StE 420 TM	P420M
1.8826	StE 460 TM	P460M
1.8828	EStE 420 TM	P420ML2
1.8831	EStE 460 TM	P460ML2
1.8832	TStE 355 TM	P355ML1
1.8835	TStE 420 TM	P420ML1
1.8837	TStE 460 TM	P460ML1
1.8879	StE ...	P690Q
1.8880	WStE ...	P690QH
1.8881	TStE ...	P690QL1
1.8882	10 MnTi 3	10MnTi3
1.8888	EStE ...	P690QL2
1.8900	StE 380	S380N
1.8901	StE 460	S460N
1.8902	StE 420	S420N
1.8903	TStE 460	S460NL
1.8905	StE 460	P460N
1.8907	StE 500	S500N
1.8910	TStE 380	S380NL
1.8911	EStE 380	S380NL1
1.8912	TStE 420	S420NL
1.8913	EStE 420	S420NL1
1.8915	TStE 460	P460NL1
1.8917	WStE 500	S500NL
1.8918	EStE 460	P460NL2
1.8919	EStE 500	S500NL1
1.8930	WStE 380	P380NH
1.8932	WStE 420	P420NH
1.8935	WStE 460	P460NH
1.8937	TStE 500	P500NH
1.8972	StE 415.7	L415NB
1.8973	StE 415.7 TM	L415MB
1.8975	StE 445.7 TM	L450MB
1.8977	StE 480.7 TM	L485MB
1.8978	StE 550.7 TM	L555MB

Series # 205

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	100 80	0.0017 0.0015	0.005 0.004	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110			
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	100 80	0.0017 0.0015	0.005 0.004	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110			
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	100 80	0.0015 0.0015	0.004 0.004	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110			
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255	100	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	50	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	100 80	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	90 65	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140			
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	205 130	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140			
Magnesium alloys	-	≤ 120	260	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Copper, low-alloyed	-	≤ 150	100	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	205 130	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110			
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	100 90	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090			
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	80	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			50 80	0.0012 0.0015	0.0030 0.0040	0.0050 0.0065	0.0065 0.0080	0.0080 0.0100	0.0080 0.0100	0.0090 0.0110			

Series # 206

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	260	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Al wrought alloys	-	≤ 200	260	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	205	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Magnesium alloys	-	≤ 120	260	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	205	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	100	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			50 80	0.0012 0.0015	0.0030 0.0040	0.0050 0.0065	0.0065 0.0080	0.0080 0.0100	0.0080 0.0100	0.0090 0.0110			

Series # 207

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150											
	≤ 32	≤ 301											
Free-cutting steels	≤ 25	≤ 255											
	≤ 32	≤ 301											
Unalloyed heat-treatable steels	≤ 20	≤ 220											
	≤ 25	≤ 255											
	≤ 32	≤ 301											
Alloyed heat-treatable steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Nitriding steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Tool steels	≤ 25	≤ 255											
	≤ 43	≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273											
austenitic	≤ 36	≤ 337											
martensitic	≤ 46	≤ 435											
Cast iron	≤ 23	≤ 242											
	≤ 38	≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242											
	≤ 38	≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25	≤ 255											
	≤ 43	≤ 402											
Aluminium and Al-alloys	-	≤ 120	260	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Al wrought alloys	-	≤ 200	260	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Al cast alloys ≤ 10 % Si	-	≤ 180	205	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
≤ 24 % Si	-	≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	100	0.0015	0.004	0.0065	0.0080	0.0100	0.0100	0.0110			
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180											
Bronze, short-chipping	-	≤ 180											
	≤ 25	≤ 255											
Bronze, long-chipping	≤ 25	≤ 255											
	≤ 32	≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			80	0.0015	0.00400	0.0065	0.0080	0.0100	0.0100	0.0110			

Series # 208

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	100	0.0017	0.0050	0.0080	0.0100	0.0125					
	≤ 32	≤ 301	80	0.0015	0.0040	0.0065	0.0080	0.0100					
Free-cutting steels	≤ 25	≤ 255	100	0.0017	0.0050	0.0080	0.0100	0.0125					
	≤ 32	≤ 301	80	0.0015	0.0040	0.0065	0.0080	0.0100					
Unalloyed heat-treatable steels	≤ 20	≤ 220	100	0.0015	0.0040	0.0065	0.0080	0.0100					
	≤ 25	≤ 255	80	0.0015	0.0040	0.0065	0.0080	0.0100					
	≤ 32	≤ 301											
Alloyed heat-treatable steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255	100	0.0017	0.0050	0.008	0.0100	0.0125					
Alloyed case hardened steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Nitriding steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Tool steels	≤ 25	≤ 255	50	0.0012	0.0030	0.0050	0.0065	0.0080					
	≤ 43	≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273											
austenitic	≤ 36	≤ 337											
martensitic	≤ 46	≤ 435											
Cast iron	≤ 23	≤ 242	100	0.0017	0.0050	0.0080	0.0100	0.0125					
	≤ 38	≤ 354	80	0.0017	0.0050	0.0080	0.0100	0.0125					
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	90	0.0017	0.0050	0.0080	0.0100	0.0125					
	≤ 38	≤ 354	65	0.0017	0.0050	0.0080	0.0100	0.0125					
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25	≤ 255											
	≤ 43	≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180	205	0.0020	0.0065	0.0100	0.0125	0.0160					
≤ 24 % Si	-	≤ 180	160	0.0017	0.0050	0.0080	0.0100	0.0125					
Magnesium alloys	-	≤ 120	260	0.0017	0.0050	0.0080	0.0100	0.0125					
Copper, low-alloyed	-	≤ 150	100	0.0015	0.0040	0.0065	0.0080	0.0100					
Brass, short-chipping	-	≤ 180	205	0.0015	0.0040	0.0065	0.0080	0.0100					
long-chipping	-	≤ 180	130	0.0015	0.0040	0.0065	0.0080	0.0100					
Bronze, short-chipping	-	≤ 180	100	0.0012	0.0030	0.0050	0.0065	0.0080					
	≤ 25	≤ 255	90	0.0012	0.0030	0.0050	0.0065	0.0080					
Bronze, long-chipping	≤ 25	≤ 255	80	0.0012	0.0030	0.0050	0.0065	0.0080					
	≤ 32	≤ 301											
Duroplastics			50	0.0012	0.0030	0.0050	0.0065	0.0080					
Thermoplastics			80	0.0015	0.0040	0.0065	0.0080	0.0100					
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Series # 217

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	90 70	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	90 70	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	90 70	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110	0.0125 0.0125		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255	90	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	45	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	90 70	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	70 55	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	180 145	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160		
Magnesium alloys	-	≤ 120	225	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
Copper, low-alloyed	-	≤ 150	90	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	110	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	90 70	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	70	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			45 70	0.0012 0.0015	0.0030 0.0040	0.0050 0.0065	0.0065 0.0080	0.0080 0.0100	0.0080 0.0100	0.0090 0.0110	0.0100 0.0125		

Series # 219

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	225	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Al wrought alloys	-	≤ 200	225	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	180	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	90	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			70	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			

Series # 223

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	225	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Al wrought alloys	-	≤ 200	225	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	180	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	90	0.0015	0.004	0.0065	0.0080	0.0100	0.0100	0.0110			
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			70	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			

Series # 224

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	260	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0180		
Al wrought alloys	-	≤ 200	260	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0180		
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	205	0.002	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0180		
Magnesium alloys	-	≤ 120	295	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	225	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	115	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			55 90	0.0012 0.0015	0.0030 0.0040	0.0050 0.0065	0.0065 0.0080	0.0080 0.0100	0.0080 0.0100	0.0090 0.0110	0.0100 0.0125		

Series # 225

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	295	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Al wrought alloys	-	≤ 200	295	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	225	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	115	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	145	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			90	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		

Series # 226

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	115 90	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	115 90	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	115 90	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255	115	0.0017	0.0050	0.0080	0.0100	0.0125					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	55	0.0012	0.0030	0.0050	0.0065	0.0080					
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 90	0.0017 0.0017	0.0050 0.0050	0.008 0.008	0.0100 0.0100	0.0125 0.0125					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	100 75	0.0017 0.0017	0.0050 0.0050	0.008 0.008	0.0100 0.0100	0.0125 0.0125					
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	225 180	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125					
Magnesium alloys	-	≤ 120	295	0.0017	0.0050	0.0080	0.0100	0.0125					
Copper, low-alloyed	-	≤ 150	115	0.0015	0.0040	0.0065	0.0080	0.0100					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	145	0.0015	0.0040	0.0065	0.0080	0.0100					
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	115 100	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080					
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	90	0.0012	0.0030	0.0050	0.0065	0.0080					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			55 90	0.0012 0.0015	0.0030 0.0040	0.0050 0.0065	0.0065 0.0080	0.0080 0.0100					

Series # 235

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	70 55	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	70 55	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	70 55	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35	0.0010	0.0025	0.0040	0.0050	0.0065					
Unalloyed case hardened steels	≤ 25	≤ 255	70	0.0015	0.0040	0.0065	0.0080	0.0100					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	25	0.0010	0.0025	0.0040	0.0050	0.0065					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	35 15	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
High speed steels	≤ 43	≤ 402	15	0.0007	0.0020	0.0030	0.0040	0.0050					
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	25	0.001	0.0025	0.0040	0.0050	0.0065					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	70 55	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	65 45	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	145 115	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Magnesium alloys	-	≤ 120	180	0.0015	0.0040	0.0065	0.0080	0.0100					
Copper, low-alloyed	-	≤ 150	70	0.0012	0.0030	0.0050	0.0065	0.0080					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	145 90	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080					
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	70 65	0.0010 0.0010	0.0025 0.0025	0.0040 0.0040	0.0050 0.0050	0.0065 0.0065					
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	55 45	0.0010 0.0010	0.0025 0.0025	0.0040 0.0040	0.0050 0.0050	0.0065 0.0065					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			35 55	0.0010 0.0012	0.0025 0.0030	0.0040 0.0050	0.0050 0.0065	0.0065 0.0080					

Series # 245

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	100 80		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125	0.0200 0.0160	0.0245 0.0200
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	100 80		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125	0.0200 0.0160	0.0245 0.0200
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	100 80		0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255	100		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160	0.0200	0.0245
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	50		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	0.0160
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	100 80		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200	0.0245 0.0245
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	90 65		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200	0.0245 0.0245
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	205 160		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160	0.0245 0.0200	0.0290 0.0245
Magnesium alloys	-	≤ 120	260		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160	0.0200	0.0245
Copper, low-alloyed	-	≤ 150	100		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125	0.0160	0.0200
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	130		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125	0.0160	0.0200
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	100 90		0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	80		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	0.0160
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			50 80		0.0030 0.0040	0.0050 0.0065	0.0065 0.0080	0.0080 0.0100	0.0080 0.0100	0.0090 0.0110	0.0100 0.0125	0.0125 0.0160	0.0160 0.0200

Series # 257

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	90 70				0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.014 0.011	0.0160 0.0125	0.0200 0.0160	0.0245 0.0200
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	90 70				0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.014 0.011	0.0160 0.0125	0.0200 0.0160	0.0245 0.0200
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	90 70				0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.011 0.011	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255	90				0.0100	0.0125	0.0125	0.0140	0.0160	0.0200	0.0245
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	45				0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	0.0160
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	90 70				0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200	0.0245 0.0245
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	70 55				0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200	0.0245 0.0245
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	180 145				0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160	0.0245 0.0200	0.0290 0.0245
Magnesium alloys	-	≤ 120	225				0.0100	0.0125	0.0125	0.0140	0.0160	0.0200	0.0245
Copper, low-alloyed	-	≤ 150	90				0.0080	0.0100	0.0100	0.0110	0.0125	0.0160	0.0200
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	110				0.0080	0.0100	0.0100	0.0110	0.0125	0.0160	0.0200
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	90 70				0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	70				0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	0.0160
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			45 70				0.0065 0.0080	0.0080 0.0100	0.0080 0.0100	0.0090 0.0110	0.0100 0.0125	0.0125 0.0160	0.0160 0.0200

Series # 266

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	70 55				0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090	0.0125 0.0100	0.0160 0.0125	
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	70 55				0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090	0.0125 0.0100	0.0160 0.0125	
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	70 55				0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100	0.0125 0.0125	
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35				0.0050	0.0065	0.0065	0.0070	0.0080	0.0100	
Unalloyed case hardened steels	≤ 25	≤ 255	70				0.0080	0.0100	0.0100	0.0110	0.0125	0.0160	
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	30				0.0050	0.0065	0.0065	0.0070	0.0080	0.0100	
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	25				0.0050	0.0065	0.0065	0.0070	0.0080	0.0100	
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	35 15				0.0050 0.0040	0.0065 0.0050	0.0065 0.0050	0.0070 0.0055	0.0080 0.0065	0.0100 0.0080	
High speed steels	≤ 43	≤ 402	15				0.0040	0.0050	0.0050	0.0055	0.0065	0.0080	
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	25				0.0050	0.0065	0.0065	0.0070	0.0080	0.010	
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	70 55				0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110	0.0125 0.0125	0.0160 0.0160	
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	65 45				0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110	0.0125 0.0125	0.0160 0.0160	
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	145 115				0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125	0.0200 0.0160	
Magnesium alloys	-	≤ 120	180				0.0080	0.0100	0.0100	0.0110	0.0125	0.0160	
Copper, low-alloyed	-	≤ 150	70				0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	145 90				0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100	0.0125 0.0125	
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	70 65				0.0050 0.0050	0.0065 0.0065	0.0065 0.0065	0.0070 0.0070	0.0080 0.0080	0.0100 0.0100	
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	55 45				0.0050 0.0050	0.0065 0.0065	0.0065 0.0065	0.0070 0.0070	0.0080 0.0080	0.0100 0.0100	
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			35 55				0.0050 0.0065	0.0065 0.0080	0.0065 0.0080	0.0070 0.0090	0.0080 0.0100	0.0100 0.0125	

Series # 280

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 281

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 282

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 283

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 284

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
malleable cast iron	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 285

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
malleable cast iron	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 287

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 288

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 289

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 292

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 294

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 301

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .0039 in. .10 mm	.0063 in. .16 mm	.0098 in .25 mm	.0118 in. .30 mm	.0197 in. .50 mm	.0248 in. .63 mm	.0315 in. .8 mm	.0394 in. 1.0 mm	.0591 in. 1.5 mm	.0787 in. 2.0 mm
Common structural steels	-	≤ 150	70	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
	≤ 32	≤ 301	60	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0009	0.0016	0.0020	0.0028
Free-cutting steels	≤ 25	≤ 255	60	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
	≤ 32	≤ 301	50	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0009	0.0016	0.0020	0.0028
Unalloyed heat-treatable steels	≤ 20	≤ 220	65	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0009	0.0016	0.0020	0.0028
	≤ 25	≤ 255	60	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0009	0.0016	0.0020	0.0028
	≤ 32	≤ 301	45	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
Alloyed heat-treatable steels	≤ 32	≤ 301	45	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
	≤ 43	≤ 402	40	0.0001	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0011	0.0016	0.0021
Unalloyed case hardened steels	≤ 25	≤ 255	60	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
Alloyed case hardened steels	≤ 32	≤ 301	45	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
	≤ 43	≤ 402	40	0.0001	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0011	0.0016	0.0021
Nitriding steels	≤ 32	≤ 301	45	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
	≤ 43	≤ 402	40	0.0001	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0011	0.0016	0.0021
Tool steels	≤ 25	≤ 255	50	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
	≤ 43	≤ 402	45	0.0001	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0011	0.0016	0.0021
High speed steels	≤ 43	≤ 402	45	0.0001	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0011	0.0016	0.0021
Spring steels	≤ 38	≤ 354	25	0.0001	0.0001	0.0002	0.0002	0.0003	0.0004	0.0005	0.0009	0.0014	0.0018
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273	60	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
austenitic	≤ 36	≤ 337	45	0.0001	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0011	0.0016	0.0021
martensitic	≤ 46	≤ 435	50	0.0001	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0011	0.0016	0.0021
Cast iron	≤ 23	≤ 242	85	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
	≤ 38	≤ 354	70	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	60	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
	≤ 38	≤ 354	70	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25	≤ 255											
	≤ 43	≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180	85	0.0004	0.0005	0.0006	0.0007	0.0009	0.0013	0.0015	0.0024	0.0027	0.0037
≤ 24 % Si	-	≤ 180	60	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
Magnesium alloys	-	≤ 120	245	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
Copper, low-alloyed	-	≤ 150	140	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0009	0.0016	0.0020	0.0028
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180	70	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0009	0.0016	0.0020	0.0028
Bronze, short-chipping	-	≤ 180	70	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
	≤ 25	≤ 255	60	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
Bronze, long-chipping	≤ 25	≤ 255	45	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
	≤ 32	≤ 301											
Duroplastics			50	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
Thermoplastics			60	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Series # 303

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .0039 in. .10 mm	.0063 in. .16 mm	.0098 in .25 mm	.0118 in. .30 mm	.0197 in. .50 mm	.0248 in. .63 mm	.0315 in. .8 mm	.0394 in. 1.0 mm	.0591 in. 1.5 mm	.0787 in. 2.0 mm
Common structural steels	-	≤ 150	70	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
	≤ 32	≤ 301	60	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0009	0.0016	0.0020	0.0028
Free-cutting steels	≤ 25	≤ 255	60	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
	≤ 32	≤ 301	50	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0009	0.0016	0.0020	0.0028
Unalloyed heat-treatable steels	≤ 20	≤ 220	65	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0009	0.0016	0.0020	0.0028
	≤ 25	≤ 255	60	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0009	0.0016	0.0020	0.0028
	≤ 32	≤ 301	45	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
Alloyed heat-treatable steels	≤ 32	≤ 301	45	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
	≤ 43	≤ 402	40	0.0001	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0011	0.0016	0.0021
Unalloyed case hardened steels	≤ 25	≤ 255	60	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
Alloyed case hardened steels	≤ 32	≤ 301	45	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
	≤ 43	≤ 402	40	0.0001	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0011	0.0016	0.0021
Nitriding steels	≤ 32	≤ 301	45	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
	≤ 43	≤ 402	40	0.0001	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0011	0.0016	0.0021
Tool steels	≤ 25	≤ 255	50	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
	≤ 43	≤ 402	45	0.0001	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0011	0.0016	0.0021
High speed steels	≤ 43	≤ 402	45	0.0001	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0011	0.0016	0.0021
Spring steels	≤ 38	≤ 354	25	0.0001	0.0001	0.0002	0.0002	0.0003	0.0004	0.0005	0.0009	0.0014	0.0018
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273	60	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
austenitic	≤ 36	≤ 337	45	0.0001	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0011	0.0016	0.0021
martensitic	≤ 46	≤ 435	50	0.0001	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0011	0.0016	0.0021
Cast iron	≤ 23	≤ 242	85	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
	≤ 38	≤ 354	70	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
Spheroidal graphite iron and	≤ 23	≤ 242	60	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
malleable cast iron	≤ 38	≤ 354	70	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25	≤ 255											
	≤ 43	≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180	85	0.0004	0.0005	0.0006	0.0007	0.0009	0.0013	0.0015	0.0024	0.0027	0.0037
≤ 24 % Si	-	≤ 180	60	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
Magnesium alloys	-	≤ 120	245	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
Copper, low-alloyed	-	≤ 150	140	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0009	0.0016	0.0020	0.0028
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180	70	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0009	0.0016	0.0020	0.0028
Bronze, short-chipping	-	≤ 180	70	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
	≤ 25	≤ 255	60	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
Bronze, long-chipping	≤ 25	≤ 255	45	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
	≤ 32	≤ 301											
Duroplastics			50	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
Thermoplastics			60	0.0002	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0014	0.0018	0.0024
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Series # 305

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150											
	≤ 32	≤ 301											
Free-cutting steels	≤ 25	≤ 255											
	≤ 32	≤ 301	90	0.0015	0.0040	0.0065	0.0080	0.0100					
Unalloyed heat-treatable steels	≤ 20	≤ 220											
	≤ 25	≤ 255	90	0.0015	0.0040	0.0065	0.0080	0.0100					
	≤ 32	≤ 301	45	0.0012	0.0030	0.0050	0.0065	0.0080					
Alloyed heat-treatable steels	≤ 32	≤ 301	55	0.0012	0.0030	0.0050	0.0065	0.0080					
	≤ 43	≤ 402	45	0.0010	0.0025	0.0040	0.0050	0.0065					
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0012	0.0030	0.0050	0.0065	0.0080					
	≤ 43	≤ 402	35	0.0010	0.0025	0.0040	0.0050	0.0065					
Nitriding steels	≤ 32	≤ 301	45	0.0012	0.0030	0.0050	0.0065	0.0080					
	≤ 43	≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065					
Tool steels	≤ 25	≤ 255	55	0.0012	0.0030	0.0050	0.0065	0.0080					
	≤ 43	≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065					
High speed steels	≤ 43	≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065					
Spring steels	≤ 38	≤ 354	25	0.0007	0.0020	0.0030	0.0040	0.0050					
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273	45	0.0012	0.0030	0.0050	0.0065	0.0080					
austenitic	≤ 36	≤ 337	30	0.0010	0.0025	0.0040	0.0050	0.0065					
martensitic	≤ 46	≤ 435	35	0.0010	0.0025	0.0040	0.0050	0.0065					
Cast iron	≤ 23	≤ 242	115	0.0017	0.0050	0.0080	0.0100	0.0125					
	≤ 38	≤ 354	90	0.0017	0.0050	0.0080	0.0100	0.0125					
Spheroidal graphite iron and	≤ 23	≤ 242	95	0.0017	0.0050	0.0080	0.0100	0.0125					
malleable cast iron	≤ 38	≤ 354	70	0.0017	0.0050	0.0080	0.0100	0.0125					
Chilled cast iron	≤ 38	≤ 354	25	0.0010	0.0025	0.0040	0.0050	0.0065					
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25	≤ 255											
	≤ 43	≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180											
≤ 24 % Si	-	≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	115	0.0015	0.0040	0.0065	0.0080	0.0100					
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180	145	0.0015	0.0040	0.0065	0.0080	0.0100					
Bronze, short-chipping	-	≤ 180	115	0.0012	0.0030	0.0050	0.0065	0.0080					
	≤ 25	≤ 255	95	0.0012	0.0030	0.0050	0.0065	0.0080					
Bronze, long-chipping	≤ 25	≤ 255	90	0.0012	0.0030	0.0050	0.0065	0.0080					
	≤ 32	≤ 301	70	0.0012	0.0030	0.0050	0.0065	0.0080					
Duroplastics			55	0.0012	0.0030	0.0050	0.0065	0.0080					
Thermoplastics													
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Series # 308

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	90	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	90 45	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090			
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55 45	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070			
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	50 35	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070			
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 30	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070			
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	55 30	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070			
High speed steels	≤ 43	≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
Spring steels	≤ 38	≤ 354	25	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050	0.0055			
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	45 30 35	0.0012 0.0010 0.0010	0.0030 0.0025 0.0025	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0080 0.0065 0.0065	0.0090 0.0070 0.0070			
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 90	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	95 70	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140			
Chilled cast iron	≤ 38	≤ 354	25	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	115	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	145	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	115 95	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090			
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	90 70	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090			
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			55	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			

Series # 317

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	75	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	75 50	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090			
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	50 35	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070			
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 30	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070			
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35 25	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070			
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	50 25	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070			
High speed steels	≤ 43	≤ 402	25	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
Spring steels	≤ 38	≤ 354	15	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050	0.0055			
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	35 25 30	0.0012 0.0010 0.0010	0.0030 0.0025 0.0025	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0080 0.0065 0.0065	0.0090 0.0070 0.0070			
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	95 75	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	75 65	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140			
Chilled cast iron	≤ 38	≤ 354	15	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	15	0.0005	0.0015	0.0025	0.0030	0.0040	0.0040	0.0045			
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	95	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	120	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	95 75	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090			
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	75 65	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090			
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			50	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			

Series # 329

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	95	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	95 70	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090	0.0125 0.0100		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65 50	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070	0.0100 0.0080		
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55 45	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070	0.0100 0.0080		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	50 35	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070	0.0100 0.0080		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	65 35	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070	0.0100 0.0080		
High speed steels	≤ 43	≤ 402	35	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
Spring steels	≤ 38	≤ 354	30	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050	0.0055	0.0065		
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	50 35 45	0.0012 0.0010 0.0010	0.0030 0.0025 0.0025	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0080 0.0065 0.0065	0.0090 0.0070 0.0070	0.0100 0.0080 0.0080		
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	130 95	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 90	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160		
Chilled cast iron	≤ 38	≤ 354	30	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	25	0.0005	0.0015	0.0025	0.0030	0.0040	0.0040	0.0045	0.0050		
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	35 25	0.0007 0.0007	0.0020 0.0020	0.0030 0.0030	0.0040 0.0040	0.0050 0.0050	0.0050 0.0050	0.0055 0.0055	0.0065 0.0065		
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	130 115	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100	0.0125 0.0125	
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	95 80	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100	0.0125 0.0125	
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			65	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	

Series # 336

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	75	0.0015	0.0040	0.0065	0.0080	0.0100					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	75 50	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	50 35	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065					
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 30	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35 25	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	50 25	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065					
High speed steels	≤ 43	≤ 402	25	0.0010	0.0025	0.0040	0.0050	0.0065					
Spring steels	≤ 38	≤ 354	15	0.0007	0.0020	0.0030	0.0040	0.0050					
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	35 25 30	0.0012 0.0005 0.0010	0.0030 0.0015 0.0025	0.0050 0.0025 0.0040	0.0065 0.0030 0.0050	0.0080 0.0040 0.0065					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	95 75	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	75 65	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125					
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	195 160	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125					
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	95	0.0015	0.0040	0.0065	0.0080	0.0100					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	120	0.0015	0.0040	0.0065	0.0080	0.0100					
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	75 65	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			50	0.0012	0.0030	0.0050	0.0065	0.0080					

Series # 345

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	90			0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	90 45			0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090	0.0125 0.0100		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55 45			0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070	0.0100 0.0080		
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	50 35			0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070	0.0100 0.0080		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 30			0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070	0.0100 0.0080		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	55 30			0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070	0.0100 0.0080		
High speed steels	≤ 43	≤ 402	30			0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
Spring steels	≤ 38	≤ 354	25			0.0030	0.0040	0.0050	0.0050	0.0055	0.0065		
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	45 30 35			0.0050 0.0040 0.0040	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0080 0.0065 0.0065	0.0090 0.0070 0.0070	0.0100 0.0080 0.0080		
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 90			0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	95 70			0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160		
Chilled cast iron	≤ 38	≤ 354	25			0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	115			0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	145			0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	115 95			0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	90 70			0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			55			0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		

Series # 381

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	115 100	0.0003 0.0003	0.0006 0.0006	0.0016 0.0016	0.0020 0.0020	0.0025 0.0025	0.0031 0.0031	0.0031 0.0031	0.0039 0.0039	0.0049 0.0049
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	115 115	0.0003 0.0003	0.0006 0.0006	0.0016 0.0016	0.0020 0.0020	0.0025 0.0025	0.0031 0.0031	0.0031 0.0031	0.0039 0.0039	0.0049 0.0049
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	100 80 70	0.0003 0.0003 0.0003	0.0006 0.0006 0.0005	0.0016 0.0016 0.0013	0.0020 0.0020 0.0016	0.0025 0.0025 0.0020	0.0031 0.0031 0.0025	0.0031 0.0031 0.0025	0.0039 0.0039 0.0031	0.0049 0.0049 0.0039
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55 35	0.0003 0.0003	0.0006 0.0005	0.0016 0.0013	0.0020 0.0016	0.0025 0.0020	0.0031 0.0025	0.0031 0.0025	0.0039 0.0031	0.0049 0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	100	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	60 35	0.0003 0.0003	0.0006 0.0005	0.0016 0.0013	0.0020 0.0016	0.0025 0.0020	0.0031 0.0025	0.0031 0.0025	0.0039 0.0031	0.0049 0.0039
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 35	0.0003 0.0003	0.0006 0.0005	0.0016 0.0013	0.0020 0.0016	0.0025 0.0020	0.0031 0.0025	0.0031 0.0025	0.0039 0.0031	0.0049 0.0039
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	45 25	0.0003 0.0003	0.0005 0.0005	0.0013 0.0013	0.0016 0.0016	0.0020 0.0020	0.0025 0.0025	0.0025 0.0025	0.0031 0.0031	0.0039 0.0039
High speed steels	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	25	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48 ≤ 66	≤ 460 -										
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	50 35 25	0.0003 0.0003 0.0003	0.0005 0.0005 0.0005	0.0013 0.0013 0.0013	0.0016 0.0016 0.0016	0.0020 0.0020 0.0020	0.0025 0.0025 0.0025	0.0025 0.0025 0.0025	0.0031 0.0031 0.0031	0.0039 0.0039 0.0039
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	80 80	0.0005 0.0004	0.0007 0.0006	0.0025 0.0020	0.0031 0.0025	0.0039 0.0031	0.0049 0.0039	0.0049 0.0039	0.0063 0.0049	0.0079 0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	100 80	0.0005 0.0004	0.0007 0.0006	0.0025 0.0020	0.0031 0.0025	0.0039 0.0031	0.0049 0.0039	0.0049 0.0039	0.0063 0.0049	0.0079 0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301										
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402										
Special alloys	≤ 54	≤ 549	20	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	20 15	0.0002 0.0002	0.0003 0.0003	0.0010 0.0010	0.0013 0.0013	0.0016 0.0016	0.0020 0.0020	0.0020 0.0020	0.0025 0.0025	0.0031 0.0031
Aluminium and Al-alloys	-	≤ 120	260	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	260	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	165 165	0.0005 0.0005	0.0007 0.0007	0.0025 0.0025	0.0031 0.0031	0.0039 0.0039	0.0049 0.0049	0.0049 0.0049	0.0063 0.0063	0.0079 0.0079
Magnesium alloys	-	≤ 120	230	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	230 150	0.0004 0.0004	0.0006 0.0006	0.0020 0.0020	0.0025 0.0025	0.0031 0.0031	0.0039 0.0039	0.0039 0.0039	0.0049 0.0049	0.0063 0.0063
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	115 100	0.0003 0.0003	0.0006 0.0006	0.0016 0.0016	0.0020 0.0020	0.0025 0.0025	0.0031 0.0031	0.0031 0.0031	0.0039 0.0039	0.0049 0.0049
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	65 60	0.0003 0.0003	0.0006 0.0006	0.0016 0.0016	0.0020 0.0020	0.0025 0.0025	0.0031 0.0031	0.0031 0.0031	0.0039 0.0039	0.0049 0.0049
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			65 100	0.0003 0.0004	0.0006 0.0006	0.0016 0.0020	0.0020 0.0025	0.0025 0.0031	0.0031 0.0039	0.0031 0.0039	0.0039 0.0049	0.0049 0.0063

Series # 390

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	130		0.0050	0.0080	0.0100	0.0125	0.0125				
	≤ 32	≤ 301	95		0.0040	0.0065	0.0080	0.0100	0.0100				
Free-cutting steels	≤ 25	≤ 255	130		0.0050	0.0080	0.0100	0.0125	0.0125				
	≤ 32	≤ 301	95		0.0040	0.0065	0.0080	0.0100	0.0100				
Unalloyed heat-treatable steels	≤ 20	≤ 220	130		0.0040	0.0065	0.0080	0.0100	0.0100				
	≤ 25	≤ 255	95		0.0040	0.0065	0.0080	0.0100	0.0100				
	≤ 32	≤ 301	70		0.0030	0.0050	0.0065	0.0080	0.0080				
Alloyed heat-treatable steels	≤ 32	≤ 301	65		0.0030	0.0050	0.0065	0.0080	0.0080				
	≤ 43	≤ 402	45		0.0025	0.0040	0.0050	0.0065	0.0065				
Unalloyed case hardened steels	≤ 25	≤ 255	130		0.0050	0.0080	0.0100	0.0125	0.0125				
Alloyed case hardened steels	≤ 32	≤ 301	55		0.0030	0.0050	0.0065	0.0080	0.0080				
	≤ 43	≤ 402	35		0.0025	0.0040	0.0050	0.0065	0.0065				
Nitriding steels	≤ 32	≤ 301	45		0.0030	0.0050	0.0065	0.0080	0.0080				
	≤ 43	≤ 402	30		0.0025	0.0040	0.0050	0.0065	0.0065				
Tool steels	≤ 25	≤ 255	65		0.0030	0.0050	0.0065	0.0080	0.0080				
	≤ 43	≤ 402	30		0.0025	0.0040	0.0050	0.0065	0.0065				
High speed steels	≤ 43	≤ 402	30		0.0025	0.0040	0.0050	0.0065	0.0065				
Spring steels	≤ 38	≤ 354	20		0.0020	0.0030	0.0040	0.0050	0.0050				
Hardened steels	≤ 48	≤ 460	10		0.0020	0.0030	0.0040	0.0050	0.0050				
	≤ 66	-	•										
Stainless steels, sulphured	≤ 28	≤ 273	45		0.0030	0.0050	0.0065	0.0080	0.0080				
austenitic	≤ 36	≤ 337	30		0.0025	0.0040	0.0050	0.0065	0.0065				
martensitic	≤ 46	≤ 435	35		0.0025	0.0040	0.0050	0.0065	0.0065				
Cast iron	≤ 23	≤ 242	130		0.0050	0.0080	0.0100	0.0125	0.0125				
	≤ 38	≤ 354	95		0.0050	0.0080	0.0100	0.0125	0.0125				
Spheroidal graphite iron and	≤ 23	≤ 242	110		0.0050	0.0080	0.0100	0.0125	0.0125				
malleable cast iron	≤ 38	≤ 354	80		0.0050	0.0080	0.0100	0.0125	0.0125				
Chilled cast iron	≤ 38	≤ 354	20		0.0025	0.0040	0.0050	0.0065	0.0065				
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549	15		0.0015	0.0025	0.0030	0.0040	0.0040				
Ti and Ti-alloys	≤ 25	≤ 255	30		0.0020	0.0030	0.0040	0.0050	0.0050				
	≤ 43	≤ 402	15		0.0020	0.0030	0.0040	0.0050	0.0050				
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180	245		0.0065	0.0100	0.0125	0.0160	0.0160				
≤ 24 % Si	-	≤ 180	195		0.0050	0.0080	0.0100	0.0125	0.0125				
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	130		0.0040	0.0065	0.0080	0.0100	0.0100				
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180	160		0.0040	0.0065	0.0080	0.0100	0.0100				
Bronze, short-chipping	-	≤ 180											
	≤ 25	≤ 255	110		0.0030	0.0050	0.0065	0.0080	0.0080				
Bronze, long-chipping	≤ 25	≤ 255	95		0.0030	0.0050	0.0065	0.0080	0.0080				
	≤ 32	≤ 301	80		0.0030	0.0050	0.0065	0.0080	0.0080				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			95		0.0040	0.0065	0.0080	0.0100	0.0100				

Series # 501

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150											
	≤ 32	≤ 301											
Free-cutting steels	≤ 25	≤ 255											
	≤ 32	≤ 301											
Unalloyed heat-treatable steels	≤ 20	≤ 220											
	≤ 25	≤ 255											
	≤ 32	≤ 301											
Alloyed heat-treatable steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Nitriding steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Tool steels	≤ 25	≤ 255											
	≤ 43	≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273											
austenitic	≤ 36	≤ 337											
martensitic	≤ 46	≤ 435											
Cast iron	≤ 23	≤ 242											
	≤ 38	≤ 354											
Spheroidal graphite iron and	≤ 23	≤ 242											
malleable cast iron	≤ 38	≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25	≤ 255											
	≤ 43	≤ 402											
Aluminium and Al-alloys	-	≤ 120	225	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al wrought alloys	-	≤ 200	225	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al cast alloys ≤ 10 % Si	-	≤ 180											
≤ 24 % Si	-	≤ 180											
Magnesium alloys	-	≤ 120	225	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Copper, low-alloyed	-	≤ 150	130	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180											
Bronze, short-chipping	-	≤ 180											
	≤ 25	≤ 255											
Bronze, long-chipping	≤ 25	≤ 255											
	≤ 32	≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			70	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				

Series # 502

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	70 55	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	70 55	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	70 55	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35	0.0010	0.0025	0.0040	0.0050	0.0065					
Unalloyed case hardened steels	≤ 25	≤ 255	70	0.0015	0.0040	0.0065	0.0080	0.0100					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	25	0.0010	0.0025	0.0040	0.0050	0.0065					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	35 15	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
High speed steels	≤ 43	≤ 402	15	0.0007	0.0020	0.0030	0.0040	0.0050					
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	25	0.0010	0.0025	0.0040	0.0050	0.0065					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	70 55	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	65 45	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	145 115	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Magnesium alloys	-	≤ 120	180	0.0015	0.0040	0.0065	0.0080	0.0100					
Copper, low-alloyed	-	≤ 150	70	0.0012	0.0030	0.0050	0.0065	0.0080					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	90	0.0012	0.0030	0.0050	0.0065	0.0080					
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	70 65	0.0010 0.0010	0.0025 0.0025	0.0040 0.0040	0.0050 0.0050	0.0065 0.0065					
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	55	0.0010	0.0025	0.0040	0.0050	0.0065					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			35 55	0.0010 0.0012	0.0025 0.0030	0.0040 0.0050	0.0050 0.0065	0.0065 0.0080					

Series # 503

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	70 55	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	70 55	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	70 55	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Unalloyed case hardened steels	≤ 25	≤ 255	70	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	25	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	35 15	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050	0.0065 0.0050				
High speed steels	≤ 43	≤ 402	15	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	25	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	70 55	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	65 45	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	145 115	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Magnesium alloys	-	≤ 120	180	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Copper, low-alloyed	-	≤ 150	70	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	90	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	70 65	0.0010 0.0010	0.0025 0.0025	0.0040 0.0040	0.0050 0.0050	0.0065 0.0065	0.0065 0.0065				
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	55	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			35 55	0.0010 0.0012	0.0025 0.0030	0.0040 0.0050	0.0050 0.0065	0.0065 0.0080	0.0065 0.0080				

Series # 504

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	70 55		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	70 55		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	70 55		0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35		0.0025	0.0040	0.0050	0.0065					
Unalloyed case hardened steels	≤ 25	≤ 255	70		0.0040	0.0065	0.0080	0.0100					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	30		0.0025	0.0040	0.0050	0.0065					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	25		0.0025	0.0040	0.0050	0.0065					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	35 15		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
High speed steels	≤ 43	≤ 402	15		0.0020	0.0030	0.0040	0.0050					
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	25		0.0025	0.0040	0.0050	0.0065					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	70 55		0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	65 45		0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	145 115		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Magnesium alloys	-	≤ 120	180		0.0040	0.0065	0.0080	0.0100					
Copper, low-alloyed	-	≤ 150	70		0.0030	0.0050	0.0065	0.0080					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	90		0.0030	0.0050	0.0065	0.0080					
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	70 65		0.0025 0.0025	0.0040 0.0040	0.0050 0.0050	0.0065 0.0065					
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	55		0.0025	0.0040	0.0050	0.0065					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			35 55		0.0025 0.0030	0.0040 0.0050	0.0050 0.0065	0.0065 0.0080					

Series # 515

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	160 130	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	195 160	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	130 130 100	0.0017 0.0017 0.0015	0.0050 0.0050 0.0040	0.0080 0.0080 0.0065	0.0100 0.0100 0.0080	0.0125 0.0125 0.0100	0.0125 0.0125 0.0100				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	100 100	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Unalloyed case hardened steels	≤ 25	≤ 255	130	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	80 65	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65 65	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	80 65	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
High speed steels	≤ 43	≤ 402	65	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Spring steels	≤ 38	≤ 354	35	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	65 45 65	0.0012 0.0010 0.0010	0.0030 0.0025 0.0025	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0080 0.0065 0.0065				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	145 115	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	130 100	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	40	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	295 260	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Magnesium alloys	-	≤ 120	260	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 524

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	180	0.0017	0.0050	0.0080	0.0100	0.0125					
Al wrought alloys	-	≤ 200	180	0.0017	0.0050	0.0080	0.0100	0.0125					
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120	180	0.0015	0.0040	0.0065	0.0080	0.0100					
Copper, low-alloyed	-	≤ 150	105	0.0017	0.0050	0.0080	0.0100	0.0125					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			55	0.0012	0.0030	0.0050	0.0065	0.0080					

Series # 526

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	70 55				0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090	0.0125 0.0100		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	70 55				0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090	0.0125 0.0100		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	70 55				0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35				0.0050	0.0065	0.0065	0.0070	0.0080		
Unalloyed case hardened steels	≤ 25	≤ 255	70				0.0080	0.0100	0.0100	0.0110	0.0125		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	30				0.0050	0.0065	0.0065	0.0070	0.0080		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	25				0.0050	0.0065	0.0065	0.0070	0.0080		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	35 15				0.0050 0.0040	0.0065 0.0050	0.0065 0.0050	0.0070 0.0055	0.0080 0.0065		
High speed steels	≤ 43	≤ 402	15				0.0040	0.0050	0.0050	0.0055	0.0065		
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	25				0.0050	0.0065	0.0065	0.0070	0.0080		
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	70 55				0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110	0.0125 0.0125		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	65 45				0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110	0.0125 0.0125		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	145 115				0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125		
Magnesium alloys	-	≤ 120	180				0.0080	0.0100	0.0100	0.0110	0.0125		
Copper, low-alloyed	-	≤ 150	70				0.0065	0.0080	0.0080	0.0090	0.0100		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	90				0.0065	0.0080	0.0080	0.0090	0.0100		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	70 65				0.0050 0.0050	0.0065 0.0065	0.0065 0.0065	0.0070 0.0070	0.0080 0.0080		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	55				0.0050	0.0065	0.0065	0.0070	0.0080		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			35 55				0.0050 0.0065	0.0065 0.0080	0.0065 0.0080	0.0070 0.0090	0.0080 0.0100		

Series # 527

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	70 55				0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090	0.0125 0.0100		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	70 55				0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090	0.0125 0.0100		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	70 55				0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35				0.0050	0.0065	0.0065	0.0070	0.0080		
Unalloyed case hardened steels	≤ 25	≤ 255	70				0.0080	0.0100	0.0100	0.0110	0.0125		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	30				0.0050	0.0065	0.0065	0.0070	0.0080		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	25				0.0050	0.0065	0.0065	0.0070	0.0080		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	35 15				0.0050 0.0040	0.0065 0.0050	0.0065 0.0050	0.0070 0.0055	0.0080 0.0065		
High speed steels	≤ 43	≤ 402	15				0.0040	0.0050	0.0050	0.0055	0.0065		
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	25				0.0050	0.0065	0.0065	0.0070	0.0080		
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	70 55				0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110	0.0125 0.0125		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	65 45				0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110	0.0125 0.0125		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	145 115				0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125		
Magnesium alloys	-	≤ 120	180				0.0080	0.0100	0.0100	0.0110	0.0125		
Copper, low-alloyed	-	≤ 150	70				0.0065	0.0080	0.0080	0.0090	0.0100		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	90				0.0065	0.0080	0.0080	0.0090	0.0100		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	70 65				0.0050 0.0050	0.0065 0.0065	0.0065 0.0065	0.0070 0.0070	0.0080 0.0080		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	55				0.0050	0.0065	0.0065	0.0070	0.0080		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			35 55				0.0050 0.0065	0.0065 0.0080	0.0065 0.0080	0.0070 0.0090	0.0080 0.0100		

Series # 530

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	160 130	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	195 160	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	130 130 100	0.0017 0.0017 0.0015	0.0050 0.0050 0.0040	0.0080 0.0080 0.0065	0.0100 0.0100 0.0080	0.0125 0.0125 0.0100	0.0125 0.0125 0.0100				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	100 100	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Unalloyed case hardened steels	≤ 25	≤ 255	130	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	80 65	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65 65	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	80 65	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
High speed steels	≤ 43	≤ 402	65	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Spring steels	≤ 38	≤ 354	35	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	65 45 65	0.0012 0.0010 0.0010	0.0030 0.0025 0.0025	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0080 0.0065 0.0065				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	145 115	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	130 100	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	40	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	295 260	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Magnesium alloys	-	≤ 120	260	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 535

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	90 70	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	90 70	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	90 90	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255	90	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	45	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	90 70	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	70 55	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	180 145	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	90	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	110	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	70	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			45	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				

Series # 546

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	245 230		0.0031 0.0025	0.0049 0.0039	0.0079 0.0063	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	260 230		0.0031 0.0025	0.0049 0.0039	0.0079 0.0063	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	260 230 195		0.0025 0.0025 0.0025	0.0039 0.0039 0.0039	0.0063 0.0063 0.0063	0.0063 0.0063 0.0063	0.0079 0.0079 0.0079	0.0098 0.0098 0.0098	0.0124 0.0124 0.0124		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	195 165		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Unalloyed case hardened steels	≤ 25	≤ 255	260		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	195 165		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	165 130		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	165 130		0.0020 0.0016	0.0031 0.0025	0.0049 0.0039	0.0049 0.0039	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079		
High speed steels	≤ 43	≤ 402	130		0.0016	0.0025	0.0039	0.0039	0.0049	0.0063	0.0079		
Spring steels	≤ 38	≤ 354	80		0.0016	0.0025	0.0039	0.0039	0.0049	0.0063	0.0079		
Hardened steels	≤ 48 ≤ 66	≤ 460 -	65		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	80 80 80		0.0025 0.0020 0.0020	0.0039 0.0031 0.0031	0.0063 0.0049 0.0049	0.0063 0.0049 0.0049	0.0079 0.0063 0.0063	0.0098 0.0079 0.0079	0.0124 0.0098 0.0098		
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	295 260		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	260 230		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	50		0.0016	0.0025	0.0039	0.0039	0.0049	0.0063	0.0079		
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	65 50		0.0020 0.0016	0.0031 0.0025	0.0049 0.0039	0.0049 0.0039	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079		
Aluminium and Al-alloys	-	≤ 120	655		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al wrought alloys	-	≤ 200	655		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	490 395		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Magnesium alloys	-	≤ 120	590		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Copper, low-alloyed	-	≤ 150	260		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	590 590		0.0031 0.0031	0.0049 0.0049	0.0079 0.0079	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	395 395		0.0031 0.0031	0.0049 0.0049	0.0079 0.0079	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	230 165		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			130		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		

Series # 549

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	100 80	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	100 80	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	100 80	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255	100	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	50	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	100 80	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	90 65	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	260	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al wrought alloys	-	≤ 200	260	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	205 130	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Magnesium alloys	-	≤ 120	260	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Copper, low-alloyed	-	≤ 150	100	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	130	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	80	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			50	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				

Series # 550

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	100 80	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	100 80	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	100 80	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255	100	0.0017	0.0050	0.0080	0.0100	0.0125					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	50	0.0012	0.0030	0.0050	0.0065	0.0080					
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	100 80	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	90 65	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125					
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	260	0.0020	0.0065	0.0100	0.0125	0.0160					
Al wrought alloys	-	≤ 200	260	0.0020	0.0065	0.0100	0.0125	0.0160					
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	205 160	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125					
Magnesium alloys	-	≤ 120	260	0.0017	0.0050	0.0080	0.0100	0.0125					
Copper, low-alloyed	-	≤ 150	100	0.0015	0.0040	0.0065	0.0080	0.0100					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	130	0.0015	0.0040	0.0065	0.0080	0.0100					
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	80	0.0012	0.0030	0.0050	0.0065	0.0080					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			50	0.0012	0.0030	0.0050	0.0065	0.0080					

Series # 551

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	90 70			0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	90 70			0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	90 90			0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110	0.0125 0.0125		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255	90			0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	45			0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	90 70			0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	70 55			0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	180 145			0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160		
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	90			0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	110			0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	70			0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			45			0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		

Series # 552

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	115 90	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110			
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	115 90	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110			
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	115 90	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110			
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255	115	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	55	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 90	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	100 75	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140			
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	295	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Al wrought alloys	-	≤ 200	295	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	225 180	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140			
Magnesium alloys	-	≤ 120	295	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Copper, low-alloyed	-	≤ 150	115	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	145	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	115 100	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090			
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	90	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			55 90	0.0012 0.0015	0.0030 0.0040	0.0050 0.0065	0.0065 0.0080	0.0080 0.0100	0.0080 0.0100	0.0090 0.0110			

Series # 553

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	115 90	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	115 90	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	115 90	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255	115	0.0017	0.0050	0.0080	0.0100	0.0125					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	55	0.0012	0.0030	0.0050	0.0065	0.0080					
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 90	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	100 75	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125					
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	295	0.0020	0.0065	0.0100	0.0125	0.0160					
Al wrought alloys	-	≤ 200	295	0.0020	0.0065	0.0100	0.0125	0.0160					
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	225 180	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125					
Magnesium alloys	-	≤ 120	295	0.0017	0.0050	0.0080	0.0100	0.0125					
Copper, low-alloyed	-	≤ 150	115	0.0015	0.0040	0.0065	0.0080	0.0100					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	145	0.0015	0.0040	0.0065	0.0080	0.0100					
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	115 100	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080					
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	90	0.0012	0.0030	0.0050	0.0065	0.0080					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			55 90	0.0012 0.0015	0.0030 0.0040	0.0050 0.0065	0.0065 0.0080	0.0080 0.0100					

Series # 556

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	100 80		0.0039 0.0031	0.0063 0.0049	0.0098 0.0079	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	105 100		0.0039 0.0031	0.0063 0.0049	0.0098 0.0079	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	80 80 65		0.0031 0.0031 0.0025	0.0049 0.0049 0.0039	0.0079 0.0079 0.0063	0.0079 0.0079 0.0063	0.0098 0.0098 0.0079	0.0124 0.0124 0.0098	0.0157 0.0157 0.0124		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	50 40		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Unalloyed case hardened steels	≤ 25	≤ 255	100		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	50 25		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	50		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	35 20 25		0.0020 0.0020 0.0020	0.0031 0.0031 0.0031	0.0049 0.0049 0.0049	0.0049 0.0049 0.0049	0.0063 0.0063 0.0063	0.0079 0.0079 0.0079	0.0098 0.0098 0.0098		
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	100 100		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	80 65		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	230		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al wrought alloys	-	≤ 200	230		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	165 165		0.0049 0.0039	0.0079 0.0063	0.0124 0.0098	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157	0.0248 0.0197		
Magnesium alloys	-	≤ 120	230		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Copper, low-alloyed	-	≤ 150	195		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	195 130		0.0031 0.0031	0.0049 0.0049	0.0079 0.0079	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	100 80		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	50 40		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Duroplastics			60		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			90		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		

Series # 557

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	100		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
	≤ 32	≤ 301	80		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Free-cutting steels	≤ 25	≤ 255	105		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
	≤ 32	≤ 301	100		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Unalloyed heat-treatable steels	≤ 20	≤ 220	80		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
	≤ 25	≤ 255	80		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
	≤ 32	≤ 301	65		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
Alloyed heat-treatable steels	≤ 32	≤ 301	50		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
	≤ 43	≤ 402	40		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Unalloyed case hardened steels	≤ 25	≤ 255	100		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Alloyed case hardened steels	≤ 32	≤ 301	50		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
	≤ 43	≤ 402	25		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Nitriding steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Tool steels	≤ 25	≤ 255	50		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
	≤ 43	≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273	35		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
austenitic	≤ 36	≤ 337	20		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
martensitic	≤ 46	≤ 435	25		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Cast iron	≤ 23	≤ 242	100		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
	≤ 38	≤ 354	100		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
	≤ 38	≤ 354	65		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25	≤ 255											
	≤ 43	≤ 402											
Aluminium and Al-alloys	-	≤ 120	230		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al wrought alloys	-	≤ 200	230		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al cast alloys ≤ 10 % Si	-	≤ 180	165		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
≤ 24 % Si	-	≤ 180	165		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Magnesium alloys	-	≤ 120	230		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Copper, low-alloyed	-	≤ 150	195		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Brass, short-chipping	-	≤ 180	195		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
long-chipping	-	≤ 180	130		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Bronze, short-chipping	-	≤ 180	100		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
	≤ 25	≤ 255	80		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
Bronze, long-chipping	≤ 25	≤ 255	50		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
	≤ 32	≤ 301	40		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
Duroplastics			60		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
Thermoplastics			90		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Series # 559

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	100		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
	≤ 32	≤ 301	80		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Free-cutting steels	≤ 25	≤ 255	105		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
	≤ 32	≤ 301	100		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Unalloyed heat-treatable steels	≤ 20	≤ 220	80		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
	≤ 25	≤ 255	80		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
	≤ 32	≤ 301	65		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
Alloyed heat-treatable steels	≤ 32	≤ 301	50		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
	≤ 43	≤ 402	40		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Unalloyed case hardened steels	≤ 25	≤ 255	100		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Alloyed case hardened steels	≤ 32	≤ 301	50		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
	≤ 43	≤ 402	25		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Nitriding steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Tool steels	≤ 25	≤ 255	50		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
	≤ 43	≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273	35		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
austenitic	≤ 36	≤ 337	20		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
martensitic	≤ 46	≤ 435	25		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Cast iron	≤ 23	≤ 242	100		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
	≤ 38	≤ 354	100		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
	≤ 38	≤ 354	65		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25	≤ 255											
	≤ 43	≤ 402											
Aluminium and Al-alloys	-	≤ 120	230		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al wrought alloys	-	≤ 200	230		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al cast alloys ≤ 10 % Si	-	≤ 180	165		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
≤ 24 % Si	-	≤ 180	165		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Magnesium alloys	-	≤ 120	230		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Copper, low-alloyed	-	≤ 150	195		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Brass, short-chipping	-	≤ 180	195		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
long-chipping	-	≤ 180	130		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Bronze, short-chipping	-	≤ 180	100		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
	≤ 25	≤ 255	80		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
Bronze, long-chipping	≤ 25	≤ 255	50		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
	≤ 32	≤ 301	40		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
Duroplastics			60		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
Thermoplastics			90		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Series # 567

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	105 85		0.0039 0.0031	0.0063 0.0049	0.0098 0.0079	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	115 110		0.0039 0.0031	0.0063 0.0049	0.0098 0.0079	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	90 90 80		0.0031 0.0031 0.0025	0.0049 0.0049 0.0039	0.0079 0.0079 0.0063	0.0079 0.0079 0.0063	0.0098 0.0098 0.0079	0.0124 0.0124 0.0098	0.0157 0.0157 0.0124		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	70 55		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Unalloyed case hardened steels	≤ 25	≤ 255	110		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65 40		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	60		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	40 25 35		0.0020 0.0020 0.0020	0.0031 0.0031 0.0031	0.0049 0.0049 0.0049	0.0049 0.0049 0.0049	0.0063 0.0063 0.0063	0.0079 0.0079 0.0079	0.0098 0.0098 0.0098		
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	110 110		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	90 70		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	195		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Magnesium alloys	-	≤ 120	260		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Copper, low-alloyed	-	≤ 150	215		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	230 150		0.0031 0.0031	0.0049 0.0049	0.0079 0.0079	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	110 90		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	50 50		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Duroplastics			70		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			120		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		

Series # 568

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	105 85		0.0039 0.0031	0.0063 0.0049	0.0098 0.0079	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	115 110		0.0039 0.0031	0.0063 0.0049	0.0098 0.0079	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	90 90 80		0.0031 0.0031 0.0025	0.0049 0.0049 0.0039	0.0079 0.0079 0.0063	0.0079 0.0079 0.0063	0.0098 0.0098 0.0079	0.0124 0.0124 0.0098	0.0157 0.0157 0.0124		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	70 55		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Unalloyed case hardened steels	≤ 25	≤ 255	110		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65 40		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	60		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	40 25 35		0.0020 0.0020 0.0020	0.0031 0.0031 0.0031	0.0049 0.0049 0.0049	0.0049 0.0049 0.0049	0.0063 0.0063 0.0063	0.0079 0.0079 0.0079	0.0098 0.0098 0.0098		
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	110 110		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	90 70		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	195		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Magnesium alloys	-	≤ 120	260		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Copper, low-alloyed	-	≤ 150	215		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	230 150		0.0031 0.0031	0.0049 0.0049	0.0079 0.0079	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	110 90		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	50 50		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Duroplastics			70		0.0025	0.0039	0.0063	0.0063	0.0079	0.0098	0.0124		
Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			120		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		

Series # 581

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 582

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 583

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 584

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 585

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 586

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 587

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 588

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 589

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 590

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 591

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 594

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	65	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	35	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	20	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	65	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
malleable cast iron	≤ 38	≤ 354	65	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	10	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	230	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
≤ 24 % Si	-	≤ 180	130	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	195	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	165	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			50	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 605

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
High speed steels	≤ 43	≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
Spring steels	≤ 38	≤ 354	25	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050	0.0055			
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	45 30 35	0.0012 0.0010 0.0010	0.0030 0.0025 0.0025	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0080 0.0065 0.0065	0.0090 0.0070 0.0070			
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354	25	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	15	0.0005	0.0015	0.0025	0.0030	0.0040	0.0040	0.0045			
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	30 15	0.0007 0.0007	0.0020 0.0020	0.0030 0.0030	0.0040 0.0040	0.0050 0.0050	0.0050 0.0050	0.0055 0.0055			
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 609

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080					
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301		0.0040 0.0040 0.0040	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0100 0.0100 0.0100	0.0100 0.0100 0.0100					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080					
Unalloyed case hardened steels	≤ 25	≤ 255		0.0050	0.0080	0.0100	0.0125	0.0125					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402		0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402		0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080					
High speed steels	≤ 43	≤ 402		0.0025	0.0040	0.0050	0.0065	0.0065					
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435		0.0025 0.0025 0.0020	0.0040 0.0040 0.0030	0.0050 0.0050 0.0040	0.0065 0.0065 0.0050	0.0065 0.0065 0.0050					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125					
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050	0.0065 0.0050					
Aluminium and Al-alloys	-	≤ 120		0.0065	0.0100	0.0125	0.0160	0.0160					
Al wrought alloys	-	≤ 200		0.0050	0.0080	0.0100	0.0125	0.0125					
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125					
Magnesium alloys	-	≤ 120		0.0050	0.0080	0.0100	0.0125	0.0125					
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125					
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255		0.0025	0.0040	0.0050	0.0065	0.0065					
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 613

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	115	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	115	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	115	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	70	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	55	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	100	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	60	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	45	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	45	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	25	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	50	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	100	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	20	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	20	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120										
Al wrought alloys	-	≤ 200										
Al cast alloys ≤ 10 % Si	-	≤ 180										
≤ 24 % Si	-	≤ 180	165	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	230	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	230	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	150	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	115	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	60	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			100	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 614

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	-	≤ 150	115	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Free-cutting steels	≤ 25	≤ 255	115	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	115	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Unalloyed heat-treatable steels	≤ 20	≤ 220	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	80	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	70	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Alloyed heat-treatable steels	≤ 32	≤ 301	55	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	100	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32	≤ 301	60	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Nitriding steels	≤ 32	≤ 301	45	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 43	≤ 402	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Tool steels	≤ 25	≤ 255	45	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
High speed steels	≤ 43	≤ 402	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	25	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	50	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
austenitic	≤ 36	≤ 337	35	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
martensitic	≤ 46	≤ 435	25	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Cast iron	≤ 23	≤ 242	80	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	100	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
	≤ 38	≤ 354	80	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20	≤ 220										
	≤ 32	≤ 301										
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	20	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25	≤ 255	20	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
	≤ 43	≤ 402	15	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Aluminium and Al-alloys	-	≤ 120										
Al wrought alloys	-	≤ 200										
Al cast alloys ≤ 10 % Si	-	≤ 180										
≤ 24 % Si	-	≤ 180	165	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Magnesium alloys	-	≤ 120	230	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping	-	≤ 180	230	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
long-chipping	-	≤ 180	150	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Bronze, short-chipping	-	≤ 180	115	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 25	≤ 255	100	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Bronze, long-chipping	≤ 25	≤ 255	65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
	≤ 32	≤ 301	60	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Duroplastics			65	0.0003	0.0006	0.0016	0.0020	0.0025	0.0031	0.0031	0.0039	0.0049
Thermoplastics			100	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 617

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35	0.0010	0.0025	0.0040	0.0050	0.0065					
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	35 25 30	0.0012 0.0010 0.0010	0.0030 0.0025 0.0025	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354	15	0.0010	0.0025	0.0040	0.0050	0.0065					
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	15	0.0005	0.0015	0.0025	0.0030	0.0040					
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	25 15	0.0007 0.0007	0.0020 0.0020	0.0030 0.0030	0.0040 0.0040	0.0050 0.0050					
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			65	0.0012	0.0030	0.0050	0.0065	0.0080					

Series # 618

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	65		0.0030	0.0050	0.0065	0.0080					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	45		0.0025	0.0040	0.0050	0.0065					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 30		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35 30		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	30 25		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	45 25		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
High speed steels	≤ 43	≤ 402	25		0.0020	0.0030	0.0040	0.0050					
Spring steels	≤ 38	≤ 354	15		0.0015	0.0025	0.0030	0.0040					
Hardened steels	≤ 48 ≤ 66	≤ 460 -	5		0.0015	0.0025	0.0030	0.0040					
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	30 25 30		0.0025 0.0020 0.0020	0.0040 0.0030 0.0030	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	65		0.0040	0.0065	0.0080	0.0100					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	50		0.0040	0.0065	0.0080	0.0100					
Chilled cast iron	≤ 38	≤ 354	15		0.0020	0.0030	0.0040	0.0050					
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	15		0.0015	0.0025	0.0030	0.0040					
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	25 15		0.0015 0.0015	0.0025 0.0025	0.0030 0.0030	0.0040 0.0040					
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	160 130		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	75		0.0030	0.0050	0.0065	0.0080					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	95		0.0030	0.0050	0.0065	0.0080					
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	65 50		0.0025 0.0025	0.0040 0.0040	0.0050 0.0050	0.0065 0.0065					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			45		0.0025	0.0040	0.0050	0.0065					

Series # 619

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	65		0.0030	0.0050	0.0065	0.0080					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	45		0.0025	0.0040	0.0050	0.0065					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 30		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35 30		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	30 25		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	45 25		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
High speed steels	≤ 43	≤ 402	25		0.0020	0.0030	0.0040	0.0050					
Spring steels	≤ 38	≤ 354	15		0.0015	0.0025	0.0030	0.0040					
Hardened steels	≤ 48 ≤ 66	≤ 460 -	5		0.0015	0.0025	0.0030	0.0040					
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	30 25 30		0.0025 0.0020 0.0020	0.0040 0.0030 0.0030	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	65		0.0040	0.0065	0.0080	0.0100					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	50		0.0040	0.0065	0.0080	0.0100					
Chilled cast iron	≤ 38	≤ 354	15		0.0020	0.0030	0.0040	0.0050					
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	15		0.0015	0.0025	0.0030	0.0040					
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	25 15		0.0015 0.0015	0.0025 0.0025	0.0030 0.0030	0.0040 0.0040					
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	160 130		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	75		0.0030	0.0050	0.0065	0.0080					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	95		0.0030	0.0050	0.0065	0.0080					
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	65 50		0.0025 0.0025	0.0040 0.0040	0.0050 0.0050	0.0065 0.0065					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			45		0.0025	0.0040	0.0050	0.0065					

Series # 622

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	90	0.0015	0.0040	0.0065	0.0080	0.0100					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	90 45	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55 45	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065					
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	50 35	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 30	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	55 30	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065					
High speed steels	≤ 43	≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065					
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	45 35	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 90	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	95 70	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125					
Chilled cast iron	≤ 38	≤ 354	25	0.0010	0.0025	0.0040	0.0050	0.0065					
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	225 180	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125					
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	115	0.0015	0.0040	0.0065	0.0080	0.0100					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	145	0.0015	0.0040	0.0065	0.0080	0.0100					
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	90 70	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			55	0.0012	0.0030	0.0050	0.0065	0.0080					

Series # 651

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	130 100	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110			
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	130 100	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110			
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	130 100 50	0.0015 0.0015 0.0012	0.0040 0.0040 0.0030	0.0065 0.0065 0.0050	0.0080 0.0080 0.0065	0.0100 0.0100 0.0080	0.0100 0.0100 0.0080	0.0110 0.0110 0.0090			
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
Unalloyed case hardened steels	≤ 25	≤ 255	130	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	65	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	130 100	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 80	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140			
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	260 225	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140			
Magnesium alloys	-	≤ 120	325	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Copper, low-alloyed	-	≤ 150	130	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	160	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	130 115	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090			
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	100 80	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090			
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			65 100	0.0012 0.0015	0.0030 0.0040	0.0050 0.0065	0.0065 0.0080	0.0080 0.0100	0.0080 0.0100	0.0090 0.0110			

Series # 652

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	130 100	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	130 100	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	130 100 50	0.0015 0.0015 0.0012	0.0040 0.0040 0.0030	0.0065 0.0065 0.0050	0.0080 0.0080 0.0065	0.0100 0.0100 0.0080	0.0100 0.0100 0.0080				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Unalloyed case hardened steels	≤ 25	≤ 255	130	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	65	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	130 100	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 80	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	260 225	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	130	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	160	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	100 80	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			65	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				

Series # 653

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	145 115	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125	0.0200 0.0160	
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	145 115	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125	0.0200 0.0160	
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	145 100 55	0.0015 0.0015 0.0012	0.0040 0.0040 0.0030	0.0065 0.0065 0.0050	0.0080 0.0080 0.0065	0.0100 0.0100 0.0080	0.0100 0.0100 0.0080	0.0110 0.0110 0.0090	0.0125 0.0125 0.0100	0.0160 0.0160 0.0125	
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	70	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	
Unalloyed case hardened steels	≤ 25	≤ 255	145	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160	0.0200	
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	70	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	145 115	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200	
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	130 90	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200	
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	295 260	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160	0.0245 0.0200	
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	145	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125	0.0160	
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	180	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125	0.0160	
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	145 130	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100	0.0125 0.0125	
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	110 90	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100	0.0125 0.0125	
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			70 115	0.0012 0.0015	0.0030 0.0040	0.0050 0.0065	0.0065 0.0080	0.0080 0.0100	0.0080 0.0100	0.0090 0.0110	0.0100 0.0125	0.0125 0.0160	

Series # 654

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	130 100		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125	0.0200 0.0160	
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	130 100		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125	0.0200 0.0160	
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	130 100 50		0.0040 0.0040 0.0030	0.0065 0.0065 0.0050	0.0080 0.0080 0.0065	0.0100 0.0100 0.0080	0.0100 0.0100 0.0080	0.0110 0.0110 0.0090	0.0125 0.0125 0.0100	0.0160 0.0160 0.0125	
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	
Unalloyed case hardened steels	≤ 25	≤ 255	130		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160	0.0200	
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	65		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	130 100		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200	
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 80		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200	
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	260 225		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160	0.0245 0.0200	
Magnesium alloys	-	≤ 120	325		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160	0.0200	
Copper, low-alloyed	-	≤ 150	130		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125	0.0160	
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	160		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125	0.0160	
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	130 115		0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100	0.0125 0.0125	
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	100 80		0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100	0.0125 0.0125	
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			65 100		0.0030 0.0040	0.0050 0.0065	0.0065 0.0080	0.0080 0.0100	0.0080 0.0100	0.0090 0.0110	0.0100 0.0125	0.0125 0.0160	

Series # 657

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150											
	≤ 32	≤ 301											
Free-cutting steels	≤ 25	≤ 255											
	≤ 32	≤ 301											
Unalloyed heat-treatable steels	≤ 20	≤ 220											
	≤ 25	≤ 255											
	≤ 32	≤ 301											
Alloyed heat-treatable steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32	≤ 301											
	≤ 43	≤ 402	45	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Nitriding steels	≤ 32	≤ 301											
	≤ 43	≤ 402	40	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Tool steels	≤ 25	≤ 255											
	≤ 43	≤ 402	40	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
High speed steels	≤ 43	≤ 402	40	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Spring steels	≤ 38	≤ 354	30	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Hardened steels	≤ 48	≤ 460	10	0.0005	0.0015	0.0025	0.0030	0.0040	0.0040				
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273	55	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
austenitic	≤ 36	≤ 337	40	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
martensitic	≤ 46	≤ 435	45	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Cast iron	≤ 23	≤ 242											
	≤ 38	≤ 354											
Spheroidal graphite iron and	≤ 23	≤ 242											
malleable cast iron	≤ 38	≤ 354											
Chilled cast iron	≤ 38	≤ 354	30	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549	25	0.0005	0.0015	0.0025	0.0030	0.0040	0.0040				
Ti and Ti-alloys	≤ 25	≤ 255	40	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
	≤ 43	≤ 402	25	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180											
≤ 24 % Si	-	≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180											
Bronze, short-chipping	-	≤ 180											
	≤ 25	≤ 255											
Bronze, long-chipping	≤ 25	≤ 255											
	≤ 32	≤ 301	90	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Duroplastics													
Thermoplastics													
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Series # 658

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150											
	≤ 32	≤ 301											
Free-cutting steels	≤ 25	≤ 255											
	≤ 32	≤ 301	115	0.0015	0.0040	0.0065	0.0080	0.0100					
Unalloyed heat-treatable steels	≤ 20	≤ 220											
	≤ 25	≤ 255	100	0.0015	0.0040	0.0065	0.0080	0.0100					
	≤ 32	≤ 301	55	0.0012	0.0030	0.0050	0.0065	0.0080					
Alloyed heat-treatable steels	≤ 32	≤ 301	70	0.0012	0.0030	0.0050	0.0065	0.0080					
	≤ 43	≤ 402	55	0.0010	0.0025	0.0040	0.0050	0.0065					
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32	≤ 301	65	0.0012	0.0030	0.0050	0.0065	0.0080					
	≤ 43	≤ 402	45	0.0010	0.0025	0.0040	0.0050	0.0065					
Nitriding steels	≤ 32	≤ 301	55	0.0012	0.0030	0.0050	0.0065	0.0080					
	≤ 43	≤ 402	40	0.0010	0.0025	0.0040	0.0050	0.0065					
Tool steels	≤ 25	≤ 255	70	0.0012	0.0030	0.0050	0.0065	0.0080					
	≤ 43	≤ 402	40	0.0010	0.0025	0.0040	0.0050	0.0065					
High speed steels	≤ 43	≤ 402	40	0.0010	0.0025	0.0040	0.0050	0.0065					
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273	55	0.0012	0.0030	0.0050	0.0065	0.0080					
austenitic	≤ 36	≤ 337											
martensitic	≤ 46	≤ 435	45	0.0010	0.0025	0.0040	0.0050	0.0065					
Cast iron	≤ 23	≤ 242	145	0.0017	0.0050	0.0080	0.0100	0.0125					
	≤ 38	≤ 354	115	0.0017	0.0050	0.0080	0.0100	0.0125					
Spheroidal graphite iron and	≤ 23	≤ 242	130	0.0017	0.0050	0.0080	0.0100	0.0125					
malleable cast iron	≤ 38	≤ 354	90	0.0017	0.0050	0.0080	0.0100	0.0125					
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25	≤ 255											
	≤ 43	≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180	275	0.0020	0.0065	0.0100	0.0125	0.0160					
≤ 24 % Si	-	≤ 180	225	0.0017	0.0050	0.0080	0.0100	0.0125					
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	145	0.0015	0.0040	0.0065	0.0080	0.0100					
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180											
Bronze, short-chipping	-	≤ 180											
	≤ 25	≤ 255											
Bronze, long-chipping	≤ 25	≤ 255	115	0.0012	0.0030	0.0050	0.0065	0.0080					
	≤ 32	≤ 301	90	0.0012	0.0030	0.0050	0.0065	0.0080					
Duroplastics			70	0.0012	0.0030	0.0050	0.0065	0.0080					
Thermoplastics													
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Series # 659

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	130	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	130 90	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	80 65	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	70 55	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65 45	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	80 45	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
High speed steels	≤ 43	≤ 402	45	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Spring steels	≤ 38	≤ 354	35	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Hardened steels	≤ 48 ≤ 66	≤ 460 -	15	0.0005	0.0015	0.0025	0.0030	0.0040	0.0040				
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	65 45 55	0.0012 0.0010 0.0010	0.0030 0.0025 0.0025	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0080 0.0065 0.0065				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	160 130	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	145 100	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Chilled cast iron	≤ 38	≤ 354	35	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	30	0.0005	0.0015	0.0025	0.0030	0.0040	0.0040				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	45 30	0.0007 0.0007	0.0020 0.0020	0.0030 0.0030	0.0040 0.0040	0.0050 0.0050	0.0050 0.0050				
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	145	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	130 100	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 660

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .0039 in. .10 mm	.0063 in. .16 mm	.0098 in .25 mm	.0118 in. .30 mm	.0197 in. .50 mm	.0248 in. .63 mm	.0315 in. .8 mm	.0394 in. 1.0 mm	.0591 in. 1.5 mm	.0787 in. 2.0 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	90 75	0.0003 0.0002	0.0004 0.0003	0.0004 0.0004	0.0006 0.0004	0.0007 0.0006	0.0010 0.0008	0.0012 0.0009	0.0020 0.0016	0.0024 0.0020	0.0031 0.0028
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	75 70	0.0003 0.0002	0.0004 0.0003	0.0004 0.0004	0.0006 0.0004	0.0007 0.0006	0.0010 0.0008	0.0012 0.0009	0.0020 0.0016	0.0024 0.0020	0.0031 0.0028
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	85 75 60	0.0002 0.0002 0.0002	0.0003 0.0003 0.0002	0.0004 0.0004 0.0003	0.0004 0.0004 0.0004	0.0006 0.0006 0.0004	0.0008 0.0008 0.0006	0.0009 0.0009 0.0008	0.0016 0.0016 0.0014	0.0020 0.0020 0.0018	0.0028 0.0028 0.0024
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	60 50	0.0002 0.0001	0.0002 0.0002	0.0003 0.0002	0.0004 0.0003	0.0004 0.0003	0.0006 0.0005	0.0008 0.0006	0.0014 0.0011	0.0018 0.0016	0.0024 0.0021
Unalloyed case hardened steels	≤ 25	≤ 255	75	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	60 50	0.0002 0.0001	0.0002 0.0002	0.0003 0.0002	0.0004 0.0003	0.0004 0.0003	0.0006 0.0005	0.0008 0.0006	0.0014 0.0011	0.0018 0.0016	0.0024 0.0021
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	60 50	0.0002 0.0001	0.0002 0.0002	0.0003 0.0002	0.0004 0.0003	0.0004 0.0003	0.0006 0.0005	0.0008 0.0006	0.0014 0.0011	0.0018 0.0016	0.0024 0.0021
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	65 60	0.0002 0.0001	0.0002 0.0002	0.0003 0.0002	0.0004 0.0003	0.0004 0.0003	0.0006 0.0005	0.0008 0.0006	0.0014 0.0011	0.0018 0.0016	0.0024 0.0021
High speed steels	≤ 43	≤ 402	60	0.0001	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0011	0.0016	0.0021
Spring steels	≤ 38	≤ 354	35	0.0001	0.0001	0.0002	0.0002	0.0003	0.0004	0.0005	0.0009	0.0014	0.0018
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	65 50 60	0.0002 0.0001 0.0001	0.0002 0.0002 0.0002	0.0003 0.0002 0.0002	0.0004 0.0003 0.0003	0.0004 0.0003 0.0003	0.0006 0.0005 0.0005	0.0008 0.0006 0.0006	0.0014 0.0011 0.0011	0.0018 0.0016 0.0016	0.0024 0.0021 0.0021
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	110 90	0.0003 0.0003	0.0004 0.0004	0.0004 0.0004	0.0006 0.0006	0.0007 0.0007	0.0010 0.0010	0.0012 0.0012	0.0020 0.0020	0.0024 0.0024	0.0031 0.0031
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	75 90	0.0003 0.0003	0.0004 0.0004	0.0004 0.0004	0.0006 0.0006	0.0007 0.0007	0.0010 0.0010	0.0012 0.0012	0.0020 0.0020	0.0024 0.0024	0.0031 0.0031
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120	260	0.0003	0.0004	0.0004	0.0006	0.0007	0.0010	0.0012	0.0020	0.0024	0.0031
Copper, low-alloyed	-	≤ 150	175	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0009	0.0016	0.0020	0.0028
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	90	0.0002	0.0003	0.0004	0.0004	0.0006	0.0008	0.0009	0.0016	0.0020	0.0028
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	90 75	0.0002 0.0002	0.0002 0.0002	0.0003 0.0003	0.0004 0.0004	0.0004 0.0004	0.0006 0.0006	0.0008 0.0008	0.0014 0.0014	0.0018 0.0018	0.0024 0.0024
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	50 45	0.0002 0.0002	0.0002 0.0002	0.0003 0.0003	0.0004 0.0004	0.0004 0.0004	0.0006 0.0006	0.0008 0.0008	0.0014 0.0014	0.0018 0.0018	0.0024 0.0024
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			65 75	0.0002 0.0002	0.0002 0.0002	0.0003 0.0003	0.0004 0.0004	0.0004 0.0004	0.0006 0.0006	0.0008 0.0008	0.0014 0.0014	0.0018 0.0018	0.0024 0.0024

Series # 664

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	130 100	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	130 100	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	130 100 50	0.0015 0.0015 0.0012	0.0040 0.0040 0.0030	0.0065 0.0065 0.0050	0.0080 0.0080 0.0065	0.0100 0.0100 0.0080	0.0100 0.0100 0.0080				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Unalloyed case hardened steels	≤ 25	≤ 255	130	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	65	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	130 100	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 80	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	260 225	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Magnesium alloys	-	≤ 120	325	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Copper, low-alloyed	-	≤ 150	130	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	160	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	130 115	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	100 80	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			65 100	0.0012 0.0015	0.0030 0.0040	0.0050 0.0065	0.0065 0.0080	0.0080 0.0100	0.0080 0.0100				

Series # 666

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	115 90	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	115 90	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	115 90 70	0.0015 0.0015 0.0012	0.0040 0.0040 0.0030	0.0065 0.0065 0.0050	0.0080 0.0080 0.0065	0.0100 0.0100 0.0080					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55	0.0012	0.0030	0.0050	0.0065	0.0080					
Unalloyed case hardened steels	≤ 25	≤ 255	115	0.0017	0.0050	0.0080	0.0100	0.0125					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45	0.0012	0.0030	0.0050	0.0065	0.0080					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35	0.0012	0.0030	0.0050	0.0065	0.0080					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	55 25	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065					
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 90	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	90 70	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125					
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	225 180	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125					
Magnesium alloys	-	≤ 120	310	0.0017	0.0050	0.0080	0.0100	0.0125					
Copper, low-alloyed	-	≤ 150	115	0.0015	0.0040	0.0065	0.0080	0.0100					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	145	0.0015	0.0040	0.0065	0.0080	0.0100					
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	115 90	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080					
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	90 70	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			55 90	0.0012 0.0015	0.0030 0.0040	0.0050 0.0065	0.0065 0.0080	0.0080 0.0100					

Series # 667

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	115 90	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080						
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	115 90	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080						
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	115 90 70	0.0015 0.0015 0.0012	0.0040 0.0040 0.0030	0.0065 0.0065 0.0050	0.0080 0.0080 0.0065						
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55	0.0012	0.0030	0.0050	0.0065						
Unalloyed case hardened steels	≤ 25	≤ 255	115	0.0017	0.0050	0.0080	0.0100						
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45	0.0012	0.0030	0.0050	0.0065						
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35	0.0012	0.0030	0.0050	0.0065						
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	55 25	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050						
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 90	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100						
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	90 70	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100						
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	225 180	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100						
Magnesium alloys	-	≤ 120	310	0.0017	0.0050	0.0080	0.0100						
Copper, low-alloyed	-	≤ 150	115	0.0015	0.0040	0.0065	0.0080						
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	145	0.0015	0.0040	0.0065	0.0080						
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	115 90	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065						
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	90 70	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065						
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			55 90	0.0012 0.0015	0.0030 0.0040	0.0050 0.0065	0.0065 0.0080						

Series # 668

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	115 90	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	115 90	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	115 90 70	0.0015 0.0015 0.0012	0.0040 0.0040 0.0030	0.0065 0.0065 0.0050	0.0080 0.0080 0.0065	0.0100 0.0100 0.0080					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55	0.0012	0.0030	0.0050	0.0065	0.0080					
Unalloyed case hardened steels	≤ 25	≤ 255	115	0.0017	0.0050	0.0080	0.0100	0.0125					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45	0.0012	0.0030	0.0050	0.0065	0.0080					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35	0.0012	0.0030	0.0050	0.0065	0.0080					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	55 25	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065					
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 90	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	90 70	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125					
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	225 180	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125					
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	115	0.0015	0.0040	0.0065	0.0080	0.0100					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	145	0.0015	0.0040	0.0065	0.0080	0.0100					
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	90 70	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			55	0.0012	0.0030	0.0050	0.0065	0.0080					

Series # 669

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45	0.0010	0.0025	0.0040	0.0050	0.0065					
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	40	0.0010	0.0025	0.0040	0.0050	0.0065					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065					
High speed steels	≤ 43	≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065					
Spring steels	≤ 38	≤ 354	25	0.0007	0.0020	0.0030	0.0040	0.0050					
Hardened steels	≤ 48 ≤ 66	≤ 460 -	5	0.0005	0.0015	0.0025	0.0030	0.0040					
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	45 30 40	0.0012 0.0010 0.0010	0.0030 0.0025 0.0025	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354	15	0.0010	0.0025	0.0040	0.0050	0.0065					
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	15	0.0005	0.0015	0.0025	0.0030	0.0040					
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	30 15	0.0007 0.0007	0.0020 0.0020	0.0030 0.0030	0.0040 0.0040	0.0050 0.0050					
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	80	0.0012	0.0030	0.0050	0.0065	0.0080					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 670

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	90 70	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	90 70	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	90 70 50	0.0012 0.0012 0.0010	0.0030 0.0030 0.0025	0.0050 0.0050 0.0040	0.0065 0.0065 0.0050	0.0080 0.0080 0.0065					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 30	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
Unalloyed case hardened steels	≤ 25	≤ 255	90	0.0015	0.0040	0.0065	0.0080	0.0100					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35 30	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	30 25	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	35 25	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
High speed steels	≤ 43	≤ 402	25	0.0007	0.0020	0.0030	0.0040	0.0050					
Spring steels	≤ 38	≤ 354	15	0.0005	0.0015	0.0025	0.0030	0.0040					
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	30 25 30	0.0010 0.0007 0.0007	0.0025 0.0020 0.0020	0.0040 0.0030 0.0030	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	90 70	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	80 55	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Chilled cast iron	≤ 38	≤ 354	15	0.0007	0.0020	0.0030	0.0040	0.0050					
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	15	0.0005	0.0015	0.0025	0.0030	0.0040					
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	25 15	0.0005 0.0005	0.0015 0.0015	0.0025 0.0025	0.0030 0.0030	0.0040 0.0040					
Aluminium and Al-alloys	-	≤ 120	225	0.0017	0.0050	0.0080	0.0100	0.0125					
Al wrought alloys	-	≤ 200	225	0.0017	0.0050	0.0080	0.0100	0.0125					
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	180 145	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Magnesium alloys	-	≤ 120	225	0.0015	0.0040	0.0065	0.0080	0.0100					
Copper, low-alloyed	-	≤ 150	90	0.0012	0.0030	0.0050	0.0065	0.0080					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	115	0.0012	0.0030	0.0050	0.0065	0.0080					
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	90 80	0.0010 0.0010	0.0025 0.0025	0.0040 0.0040	0.0050 0.0050	0.0065 0.0065					
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	70 55	0.0010 0.0010	0.0025 0.0025	0.0040 0.0040	0.0050 0.0050	0.0065 0.0065					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			45 70	0.0010 0.0012	0.0025 0.0030	0.0040 0.0050	0.0050 0.0065	0.0065 0.0080					

Series # 671

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	90 70	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065						
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	90 70	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065						
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	90 70 50	0.0012 0.0012 0.0010	0.0030 0.0030 0.0025	0.0050 0.0050 0.0040	0.0065 0.0065 0.0050						
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 30	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040						
Unalloyed case hardened steels	≤ 25	≤ 255	90	0.0015	0.0040	0.0065	0.0080						
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35 30	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040						
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	30 25	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040						
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	35 25	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040						
High speed steels	≤ 43	≤ 402	25	0.0007	0.0020	0.0030	0.0040						
Spring steels	≤ 38	≤ 354	15	0.0005	0.0015	0.0025	0.0030						
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	30 25 30	0.0010 0.0007 0.0007	0.0025 0.0020 0.0020	0.0040 0.0030 0.0030	0.0050 0.0040 0.0040						
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	90 70	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080						
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	80 55	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080						
Chilled cast iron	≤ 38	≤ 354	15	0.0007	0.0020	0.0030	0.0040						
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	15	0.0005	0.0015	0.0025	0.0030						
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	25 15	0.0005 0.0005	0.0015 0.0015	0.0025 0.0025	0.0030 0.0030						
Aluminium and Al-alloys	-	≤ 120	225	0.0017	0.0050	0.0080	0.0100						
Al wrought alloys	-	≤ 200	225	0.0017	0.0050	0.0080	0.0100						
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	180 145	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080						
Magnesium alloys	-	≤ 120	225	0.0015	0.0040	0.0065	0.0080						
Copper, low-alloyed	-	≤ 150	90	0.0012	0.0030	0.0050	0.0065						
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	115	0.0012	0.0030	0.0050	0.0065						
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	90 80	0.0010 0.0010	0.0025 0.0025	0.0040 0.0040	0.0050 0.0050						
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	70 55	0.0010 0.0010	0.0025 0.0025	0.0040 0.0040	0.0050 0.0050						
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			45 70	0.0010 0.0012	0.0025 0.0030	0.0040 0.0050	0.0050 0.0065						

Series # 730

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	260 225	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	260 225	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	260 225 195	0.0012 0.0012 0.0012	0.0030 0.0030 0.0030	0.0050 0.0050 0.0050	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0080 0.0080 0.0080				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	195	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Unalloyed case hardened steels	≤ 25	≤ 255	260	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	195	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	160	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	160	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354	80	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Hardened steels	≤ 48 ≤ 66	≤ 460 -	65	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	80 80 80	0.0012 0.0010 0.0010	0.0030 0.0025 0.0025	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0080 0.0065 0.0065				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	295 260	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	225 260	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	45	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	65 45	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050	0.0065 0.0050				
Aluminium and Al-alloys	-	≤ 120	655	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al wrought alloys	-	≤ 200	655	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	490 390	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Magnesium alloys	-	≤ 120	590	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Copper, low-alloyed	-	≤ 150	260	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	590 590	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	390 390	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100				
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	225 160	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			160 130 260	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				

Series # 723

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	245 230		0.0031 0.0025	0.0049 0.0039	0.0079 0.0063	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	260 230		0.0031 0.0025	0.0049 0.0039	0.0079 0.0063	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	260 230 195		0.0025 0.0025 0.0025	0.0039 0.0039 0.0039	0.0063 0.0063 0.0063	0.0063 0.0063 0.0063	0.0079 0.0079 0.0079	0.0098 0.0098 0.0098	0.0124 0.0124 0.0124		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	195 165		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Unalloyed case hardened steels	≤ 25	≤ 255	260		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	195 165		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	165 130		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	165 130		0.0020 0.0016	0.0031 0.0025	0.0049 0.0039	0.0049 0.0039	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079		
High speed steels	≤ 43	≤ 402	130		0.0016	0.0025	0.0039	0.0039	0.0049	0.0063	0.0079		
Spring steels	≤ 38	≤ 354	80		0.0016	0.0025	0.0039	0.0039	0.0049	0.0063	0.0079		
Hardened steels	≤ 48 ≤ 66	≤ 460 -	65		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	80 80 80		0.0025 0.0020 0.0020	0.0039 0.0031 0.0031	0.0063 0.0049 0.0049	0.0063 0.0049 0.0049	0.0079 0.0063 0.0063	0.0098 0.0079 0.0079	0.0124 0.0098 0.0098		
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	295 260		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	260 230		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	50		0.0016	0.0025	0.0039	0.0039	0.0049	0.0063	0.0079		
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	65 50		0.0020 0.0016	0.0031 0.0025	0.0049 0.0039	0.0049 0.0039	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079		
Aluminium and Al-alloys	-	≤ 120	655		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al wrought alloys	-	≤ 200	655		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	490 395		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Magnesium alloys	-	≤ 120	590		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Copper, low-alloyed	-	≤ 150	260		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	590 590		0.0031 0.0031	0.0049 0.0049	0.0079 0.0079	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	395 395		0.0031 0.0031	0.0049 0.0049	0.0079 0.0079	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	230 165		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			130		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		

Series # 724

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	245 230		0.0031 0.0025	0.0049 0.0039	0.0079 0.0063	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	260 230		0.0031 0.0025	0.0049 0.0039	0.0079 0.0063	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	260 230 195		0.0025 0.0025 0.0025	0.0039 0.0039 0.0039	0.0063 0.0063 0.0063	0.0063 0.0063 0.0063	0.0079 0.0079 0.0079	0.0098 0.0098 0.0098	0.0124 0.0124 0.0124		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	195 165		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Unalloyed case hardened steels	≤ 25	≤ 255	260		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	195 165		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	165 130		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	165 130		0.0020 0.0016	0.0031 0.0025	0.0049 0.0039	0.0049 0.0039	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079		
High speed steels	≤ 43	≤ 402	130		0.0016	0.0025	0.0039	0.0039	0.0049	0.0063	0.0079		
Spring steels	≤ 38	≤ 354	80		0.0016	0.0025	0.0039	0.0039	0.0049	0.0063	0.0079		
Hardened steels	≤ 48 ≤ 66	≤ 460 -	65		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	80 80 80		0.0025 0.0020 0.0020	0.0039 0.0031 0.0031	0.0063 0.0049 0.0049	0.0063 0.0049 0.0049	0.0079 0.0063 0.0063	0.0098 0.0079 0.0079	0.0124 0.0098 0.0098		
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	295 260		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	260 230		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	50		0.0016	0.0025	0.0039	0.0039	0.0049	0.0063	0.0079		
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	65 50		0.0020 0.0016	0.0031 0.0025	0.0049 0.0039	0.0049 0.0039	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079		
Aluminium and Al-alloys	-	≤ 120	655		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al wrought alloys	-	≤ 200	655		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	490 395		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Magnesium alloys	-	≤ 120	590		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Copper, low-alloyed	-	≤ 150	260		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	590 590		0.0031 0.0031	0.0049 0.0049	0.0079 0.0079	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	395 395		0.0031 0.0031	0.0049 0.0049	0.0079 0.0079	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	230 165		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			130		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		

Series # 732

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	260 225	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080					
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	190 185	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	230 185 100	0.0012 0.0012 0.0012	0.0030 0.0030 0.0030	0.0050 0.0050 0.0050	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	120 90	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065					
Unalloyed case hardened steels	≤ 25	≤ 255	260	0.0015	0.0040	0.0065	0.0080	0.0100					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	105 80	0.0012 0.0020	0.0030 0.0020	0.0050 0.0030	0.0065 0.0040	0.0080 0.0050					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	90	0.0012	0.0030	0.0050	0.0065	0.0080					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	120	0.0010	0.0025	0.0040	0.0050	0.0065					
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -	65	0.0010	0.0025	0.0040	0.0050	0.0065					
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	80 80 80	0.0012 0.0010 0.0010	0.0030 0.0025 0.0025	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	235 185	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	200 145	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080					
Chilled cast iron	≤ 38	≤ 354	50	0.0020	0.0020	0.0030	0.0040	0.0050					
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	45	0.0020	0.0020	0.0030	0.0040	0.0050					
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	50 40	0.0010 0.0020	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
Aluminium and Al-alloys	-	≤ 120	460	0.0017	0.0050	0.0080	0.0100	0.0125					
Al wrought alloys	-	≤ 200	360	0.0015	0.0040	0.0065	0.0080	0.0100					
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	460 360	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Magnesium alloys	-	≤ 120	390	0.0015	0.0040	0.0065	0.0080	0.0100					
Copper, low-alloyed	-	≤ 150	260	0.0015	0.0040	0.0065	0.0080	0.0100					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	300 295	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	290 280	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	225 160	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			130 160 260	0.0012 0.0010 0.0010	0.0030 0.0025 0.0025	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065					

Series # 736

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .5 mm	1.0 mm	2.0 mm	2.5 mm	3.15 mm	4.0 mm	5.0 mm	6.3 mm	8 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	230 195	0.0003 0.0003	0.0006 0.0006	0.0016 0.0016	0.0020 0.0020	0.0025 0.0025	0.0031 0.0031	0.0031 0.0031	0.0039 0.0039	0.0049 0.0049
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	230 230	0.0003 0.0003	0.0006 0.0006	0.0016 0.0016	0.0020 0.0020	0.0025 0.0025	0.0031 0.0031	0.0031 0.0031	0.0039 0.0039	0.0049 0.0049
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	195 165 150	0.0003 0.0003 0.0003	0.0006 0.0006 0.0005	0.0016 0.0016 0.0013	0.0020 0.0020 0.0016	0.0025 0.0025 0.0020	0.0031 0.0031 0.0025	0.0031 0.0031 0.0025	0.0039 0.0039 0.0031	0.0049 0.0049 0.0039
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	115 65	0.0003 0.0003	0.0006 0.0005	0.0016 0.0013	0.0020 0.0016	0.0025 0.0020	0.0031 0.0025	0.0031 0.0025	0.0039 0.0031	0.0049 0.0039
Unalloyed case hardened steels	≤ 25	≤ 255	195	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	115 65	0.0003 0.0003	0.0006 0.0005	0.0016 0.0013	0.0020 0.0016	0.0025 0.0020	0.0031 0.0025	0.0031 0.0025	0.0039 0.0031	0.0049 0.0039
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	80 65	0.0003 0.0003	0.0006 0.0005	0.0016 0.0013	0.0020 0.0016	0.0025 0.0020	0.0031 0.0025	0.0031 0.0025	0.0039 0.0031	0.0049 0.0039
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	80 50	0.0003 0.0003	0.0005 0.0005	0.0013 0.0013	0.0016 0.0016	0.0020 0.0020	0.0025 0.0025	0.0025 0.0025	0.0031 0.0031	0.0039 0.0039
High speed steels	≤ 43	≤ 402	50	0.0003	0.0005	0.0013	0.0016	0.0020	0.0025	0.0025	0.0031	0.0039
Spring steels	≤ 38	≤ 354	50	0.0002	0.0003	0.0010	0.0013	0.0016	0.0020	0.0020	0.0025	0.0031
Hardened steels	≤ 48 ≤ 66	≤ 460 -										
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	100 65 50	0.0003 0.0003 0.0003	0.0005 0.0005 0.0005	0.0013 0.0013 0.0013	0.0016 0.0016 0.0016	0.0020 0.0020 0.0020	0.0025 0.0025 0.0025	0.0025 0.0025 0.0025	0.0031 0.0031 0.0031	0.0039 0.0039 0.0039
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	165 165	0.0005 0.0004	0.0007 0.0006	0.0025 0.0020	0.0031 0.0025	0.0039 0.0031	0.0049 0.0039	0.0049 0.0039	0.0063 0.0049	0.0079 0.0063
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	195 165	0.0005 0.0004	0.0007 0.0006	0.0025 0.0020	0.0031 0.0025	0.0039 0.0031	0.0049 0.0039	0.0049 0.0039	0.0063 0.0049	0.0079 0.0063
Chilled cast iron	≤ 38	≤ 354										
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301										
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402										
Special alloys	≤ 54	≤ 549	35	0.0002	0.0002	0.0008	0.0010	0.0013	0.0016	0.0016	0.0020	0.0025
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	35 35	0.0002 0.0002	0.0003 0.0003	0.0010 0.0010	0.0013 0.0013	0.0016 0.0016	0.0020 0.0020	0.0020 0.0020	0.0025 0.0025	0.0031 0.0031
Aluminium and Al-alloys	-	≤ 120	525	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al wrought alloys	-	≤ 200	525	0.0006	0.0008	0.0031	0.0039	0.0049	0.0063	0.0063	0.0079	0.0098
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	330 330	0.0005 0.0005	0.0007 0.0007	0.0025 0.0025	0.0031 0.0031	0.0039 0.0039	0.0049 0.0049	0.0049 0.0049	0.0063 0.0063	0.0079 0.0079
Magnesium alloys	-	≤ 120	460	0.0005	0.0007	0.0025	0.0031	0.0039	0.0049	0.0049	0.0063	0.0079
Copper, low-alloyed	-	≤ 150	395	0.0004	0.0006	0.0020	0.0025	0.0031	0.0039	0.0039	0.0049	0.0063
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	460 295	0.0004 0.0004	0.0006 0.0006	0.0020 0.0020	0.0025 0.0025	0.0031 0.0031	0.0039 0.0039	0.0039 0.0039	0.0049 0.0049	0.0063 0.0063
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	230 195	0.0003 0.0003	0.0006 0.0006	0.0016 0.0016	0.0020 0.0020	0.0025 0.0025	0.0031 0.0031	0.0031 0.0031	0.0039 0.0039	0.0049 0.0049
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	130 115	0.0003 0.0003	0.0006 0.0006	0.0016 0.0016	0.0020 0.0020	0.0025 0.0025	0.0031 0.0031	0.0031 0.0031	0.0039 0.0039	0.0049 0.0049
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			130 195	0.0003 0.0004	0.0006 0.0006	0.0016 0.0020	0.0020 0.0025	0.0025 0.0031	0.0031 0.0039	0.0031 0.0039	0.0039 0.0049	0.0049 0.0063

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150											
	≤ 32	≤ 301											
Free-cutting steels	≤ 25	≤ 255											
	≤ 32	≤ 301											
Unalloyed heat-treatable steels	≤ 20	≤ 220											
	≤ 25	≤ 255											
	≤ 32	≤ 301											
Alloyed heat-treatable steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Nitriding steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Tool steels	≤ 25	≤ 255											
	≤ 43	≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273											
austenitic	≤ 36	≤ 337											
martensitic	≤ 46	≤ 435											
Cast iron	≤ 23	≤ 242	260		0.0065	0.0100	0.0125	0.0160	0.0180	0.0200			
	≤ 38	≤ 354	130		0.0020	0.0030	0.0040	0.0050	0.0055	0.0065			
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242											
	≤ 38	≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549	295		0.0065	0.0100	0.0125	0.0160	0.0180	0.0200			
Ti and Ti-alloys	≤ 25	≤ 255											
	≤ 43	≤ 402											
Aluminium and Al-alloys	-	≤ 120	1080		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220			
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180											
≤ 24 % Si	-	≤ 180	920		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220			
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	360		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Brass, short-chipping	-	≤ 180	260		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
long-chipping	-	≤ 180											
Bronze, short-chipping	-	≤ 180											
	≤ 25	≤ 255											
Bronze, long-chipping	≤ 25	≤ 255											
	≤ 32	≤ 301											
Duroplastics													
Thermoplastics													
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Series # 769

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150											
	≤ 32	≤ 301											
Free-cutting steels	≤ 25	≤ 255											
	≤ 32	≤ 301											
Unalloyed heat-treatable steels	≤ 20	≤ 220											
	≤ 25	≤ 255											
	≤ 32	≤ 301											
Alloyed heat-treatable steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Nitriding steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Tool steels	≤ 25	≤ 255											
	≤ 43	≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273											
austenitic	≤ 36	≤ 337											
martensitic	≤ 46	≤ 435											
Cast iron	≤ 23	≤ 242	395		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
	≤ 38	≤ 354	330		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Spheroidal graphite iron and	≤ 23	≤ 242	295		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
malleable cast iron	≤ 38	≤ 354	260		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Chilled cast iron	≤ 38	≤ 354	130		0.0020	0.0030	0.0040	0.0050	0.0055	0.0065			
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25	≤ 255											
	≤ 43	≤ 402											
Aluminium and Al-alloys	-	≤ 120	1345		0.0080	0.0125	0.0160	0.0200	0.0220	0.0245			
Al wrought alloys	-	≤ 200	1345		0.0080	0.0125	0.0160	0.0200	0.0220	0.0245			
Al cast alloys ≤ 10 % Si	-	≤ 180	1245		0.0080	0.0125	0.0160	0.0200	0.0220	0.0245			
≤ 24 % Si	-	≤ 180	1080		0.0080	0.0125	0.0160	0.0200	0.0220	0.0245			
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping	-	≤ 180	920		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
long-chipping	-	≤ 180											
Bronze, short-chipping	-	≤ 180	360		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
	≤ 25	≤ 255	260		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
Bronze, long-chipping	≤ 25	≤ 255											
	≤ 32	≤ 301											
Duroplastics													
Thermoplastics													
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Series # 773

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150											
	≤ 32	≤ 301											
Free-cutting steels	≤ 25	≤ 255											
	≤ 32	≤ 301											
Unalloyed heat-treatable steels	≤ 20	≤ 220											
	≤ 25	≤ 255											
	≤ 32	≤ 301											
Alloyed heat-treatable steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Nitriding steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Tool steels	≤ 25	≤ 255											
	≤ 43	≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273											
austenitic	≤ 36	≤ 337											
martensitic	≤ 46	≤ 435											
Cast iron	≤ 23	≤ 242	395		0.0030	0.0050	0.0070	0.0080	0.0100	0.0125			
	≤ 38	≤ 354	330		0.0030	0.0050	0.0070	0.0080	0.0100	0.0125			
Spheroidal graphite iron and	≤ 23	≤ 242	295		0.0030	0.0050	0.0070	0.0080	0.0100	0.0125			
malleable cast iron	≤ 38	≤ 354	260		0.0030	0.0050	0.0070	0.0080	0.0100	0.0125			
Chilled cast iron	≤ 38	≤ 354	130		0.0013	0.0020	0.0025	0.0030	0.0040	0.0050			
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25	≤ 255											
	≤ 43	≤ 402											
Aluminium and Al-alloys	-	≤ 120	1345		0.0050	0.0080	0.0120	0.0125	0.0160	0.0200			
Al wrought alloys	-	≤ 200	1345		0.0050	0.0080	0.0120	0.0125	0.0160	0.0200			
Al cast alloys ≤ 10 % Si	-	≤ 180	1245		0.0050	0.0080	0.0120	0.0125	0.0160	0.0200			
≤ 24 % Si	-	≤ 180	1080		0.0050	0.0080	0.0120	0.0125	0.0160	0.0200			
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping	-	≤ 180	920		0.0040	0.0060	0.0090	0.0100	0.0125	0.0160			
long-chipping	-	≤ 180											
Bronze, short-chipping	-	≤ 180	360		0.0030	0.0050	0.0070	0.0080	0.0100	0.0125			
	≤ 25	≤ 255	260		0.0025	0.0040	0.0050	0.0060	0.0080	0.0100			
Bronze, long-chipping	≤ 25	≤ 255											
	≤ 32	≤ 301											
Duroplastics													
Thermoplastics													
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Series # 1018

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/64 in. .5 mm	1/16 in. 1.59 mm	1/8 in. 3.17 mm	1/4 in. 6.35 mm	3/8 in. 9.52 mm	1/2 in. 12.70 mm	5/8 in. 15.87 mm
Common structural steels	-	≤ 150	115	0.0005	0.0007	0.0039	0.0063	0.0098	0.0098	0.0124
	≤ 32	≤ 301	100	0.0004	0.0006	0.0031	0.0049	0.0079	0.0079	0.0098
Free-cutting steels	≤ 25	≤ 255	130	0.0005	0.0007	0.0039	0.0063	0.0098	0.0098	0.0124
	≤ 32	≤ 301	130	0.0004	0.0006	0.0031	0.0049	0.0079	0.0079	0.0098
Unalloyed heat-treatable steels	≤ 20	≤ 220	130	0.0004	0.0006	0.0031	0.0049	0.0079	0.0079	0.0098
	≤ 25	≤ 255	130	0.0004	0.0006	0.0031	0.0049	0.0079	0.0079	0.0098
	≤ 32	≤ 301	115	0.0003	0.0006	0.0025	0.0039	0.0063	0.0063	0.0079
Alloyed heat-treatable steels	≤ 32	≤ 301	65	0.0003	0.0006	0.0025	0.0039	0.0063	0.0063	0.0079
	≤ 43	≤ 402	50	0.0003	0.0005	0.0020	0.0031	0.0049	0.0049	0.0063
Unalloyed case hardened steels	≤ 25	≤ 255	120	0.0005	0.0007	0.0039	0.0063	0.0098	0.0098	0.0124
Alloyed case hardened steels	≤ 32	≤ 301	65	0.0003	0.0005	0.0020	0.0031	0.0049	0.0049	0.0063
	≤ 43	≤ 402	50	0.0003	0.0005	0.0020	0.0031	0.0049	0.0049	0.0063
Nitriding steels	≤ 32	≤ 301	50	0.0003	0.0006	0.0025	0.0039	0.0063	0.0063	0.0079
	≤ 43	≤ 402	40	0.0003	0.0005	0.0020	0.0031	0.0049	0.0049	0.0063
Tool steels	≤ 25	≤ 255	50	0.0003	0.0005	0.0020	0.0031	0.0049	0.0049	0.0063
	≤ 43	≤ 402	40	0.0003	0.0005	0.0020	0.0031	0.0049	0.0049	0.0063
High speed steels	≤ 43	≤ 402	50	0.0003	0.0005	0.0020	0.0031	0.0049	0.0049	0.0063
Spring steels	≤ 38	≤ 354	25	0.0002	0.0003	0.0016	0.0025	0.0039	0.0039	0.0049
Stainless steels, sulphured	≤ 28	≤ 273	60	0.0003	0.0005	0.0020	0.0031	0.0049	0.0049	0.0063
austenitic	≤ 36	≤ 337	45	0.0003	0.0005	0.0020	0.0031	0.0049	0.0049	0.0063
martensitic	≤ 46	≤ 435	50	0.0003	0.0005	0.0020	0.0031	0.0049	0.0049	0.0063
Hardened steels	≤ 48	≤ 460	15	0.0002	0.0002	0.0013	0.0020	0.0031	0.0031	0.0039
	≤ 66	-								
Cast iron	≤ 23	≤ 242	115	0.0005	0.0007	0.0039	0.0063	0.0098	0.0098	0.0124
	≤ 38	≤ 354	100	0.0005	0.0007	0.0039	0.0063	0.0098	0.0098	0.0124
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	100	0.0005	0.0007	0.0039	0.0063	0.0098	0.0098	0.0124
	≤ 38	≤ 354	90	0.0005	0.0007	0.0039	0.0063	0.0098	0.0098	0.0124
Chilled cast iron	≤ 38	≤ 354	35	0.0003	0.0005	0.0020	0.0031	0.0049	0.0049	0.0063
New cast materials GGV	≤ 20	≤ 220								
	≤ 32	≤ 301								
New cast materials ADI	≤ 32	≤ 301								
	≤ 43	≤ 402								
Special alloys	≤ 54	≤ 549	25	0.0002	0.0002	0.0013	0.0020	0.0031	0.0031	0.0039
Ti and Ti-alloys	≤ 25	≤ 255	35	0.0002	0.0003	0.0016	0.0025	0.0039	0.0039	0.0049
	≤ 43	≤ 402	20	0.0002	0.0003	0.0016	0.0025	0.0039	0.0039	0.0049
Aluminium and Al-alloys	-	≤ 120	295	0.0006	0.0008	0.0049	0.0079	0.0124	0.0124	0.0157
Al wrought alloys	-	≤ 200	295	0.0006	0.0008	0.0049	0.0079	0.0124	0.0124	0.0157
Al cast alloys ≤ 10 % Si	-	≤ 180	260	0.0006	0.0008	0.0049	0.0079	0.0124	0.0124	0.0157
≤ 24 % Si	-	≤ 180	230	0.0005	0.0007	0.0039	0.0063	0.0098	0.0098	0.0124
Magnesium alloys	-	≤ 120	230	0.0005	0.0007	0.0039	0.0063	0.0098	0.0098	0.0124
Copper, low-alloyed	-	≤ 150	230	0.0004	0.0006	0.0031	0.0049	0.0079	0.0079	0.0098
Brass, short-chipping	-	≤ 180	195	0.0004	0.0006	0.0031	0.0049	0.0079	0.0079	0.0098
long-chipping	-	≤ 180	130	0.0004	0.0006	0.0031	0.0049	0.0079	0.0079	0.0098
Bronze, short-chipping	-	≤ 180	115	0.0003	0.0006	0.0025	0.0039	0.0063	0.0063	0.0079
	≤ 25	≤ 255	110	0.0003	0.0006	0.0025	0.0039	0.0063	0.0063	0.0079
Bronze, long-chipping	≤ 25	≤ 255	65	0.0003	0.0006	0.0025	0.0039	0.0063	0.0063	0.0079
	≤ 32	≤ 301	50	0.0003	0.0006	0.0025	0.0039	0.0063	0.0063	0.0079
Duroplastics			65	0.0003	0.0006	0.0025	0.0039	0.0063	0.0063	0.0079
Thermoplastics			100	0.0004	0.0006	0.0031	0.0049	0.0079	0.0079	0.0098

Insert 1047 - Body 5242

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR ≤16.000 mm	41/64 - 25/32 in. 16.001 - 20.000 mm	51/64 - 31/32 in. 20.001 - 25.000 mm	63/64 - 1 17/64 in. 25.001 - 31.500 mm	1 1/4 - 1 9/16 in. 31.501 - 40.000 mm	1 37/64 - 1 61/64 in. 40.001 - 50.000 mm
Common structural steels	-	≤ 150	330	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 32	≤ 301	280	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Free-cutting steels	≤ 25	≤ 255	330	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
	≤ 32	≤ 301	280	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Unalloyed heat-treatable steels	≤ 20	≤ 220	330	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 25	≤ 255	315	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 32	≤ 301	280	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Alloyed heat-treatable steels	≤ 32	≤ 301	280	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 43	≤ 402	230	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Unalloyed case hardened steels	≤ 25	≤ 255	330	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Alloyed case hardened steels	≤ 32	≤ 301	280	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 43	≤ 402	185	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Nitriding steels	≤ 32	≤ 301	265	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 43	≤ 402	185	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Tool steels	≤ 25	≤ 255	135	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 43	≤ 402	115	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
High speed steels	≤ 43	≤ 402	135	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
Spring steels	≤ 38	≤ 354	115	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Hardened steels	≤ 48	≤ 460	70	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
	≤ 66	-							
Stainless steels, sulphured	≤ 28	≤ 273	135	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
austenitic	≤ 36	≤ 337	100	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
martensitic	≤ 46	≤ 435	85	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
Cast iron	≤ 23	≤ 242	520	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
	≤ 38	≤ 354	390	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	390	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
	≤ 38	≤ 354	325	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Chilled cast iron	≤ 38	≤ 354	85	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Special alloys	≤ 54	≤ 549	70	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Ti and Ti-alloys	≤ 25	≤ 255	100	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
	≤ 43	≤ 402	85	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Aluminium and Al-alloys	-	≤ 120	725	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Al wrought alloys	-	≤ 200	660	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Al cast alloys ≤ 10 % Si	-	≤ 180	590	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
≤ 24 % Si	-	≤ 180	490	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Magnesium alloys	-	≤ 120	655	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Copper, low-alloyed	-	≤ 150	260	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Brass, short-chipping	-	≤ 180	685	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
long-chipping	-	≤ 180	455	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Bronze, short-chipping	-	≤ 180	260	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 25	≤ 255	210	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Bronze, long-chipping	≤ 25	≤ 255	160	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 32	≤ 301	130	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Duroplastics			260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Thermoplastics			260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Reinforced plastics - Kevlar			260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Reinforced plastics - GFK / CFK			260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200

Insert 1047 - Body 5243

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR ≤16.000 mm	41/64 - 25/32 in. 16.001 - 20.000 mm	51/64 - 31/32 in. 20.001 - 25.000 mm	63/64 - 1 17/64 in. 25.001 - 31.500 mm	1 1/4 - 1 9/16 in. 31.501 - 40.000 mm	1 37/64 - 1 61/64 in. 40.001 - 50.000 mm
Common structural steels	-	≤ 150	315	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 32	≤ 301	265	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Free-cutting steels	≤ 25	≤ 255	315	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
	≤ 32	≤ 301	265	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Unalloyed heat-treatable steels	≤ 20	≤ 220	315	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 25	≤ 255	300	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 32	≤ 301	265	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Alloyed heat-treatable steels	≤ 32	≤ 301	265	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 43	≤ 402	215	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Unalloyed case hardened steels	≤ 25	≤ 255	315	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Alloyed case hardened steels	≤ 32	≤ 301	265	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 43	≤ 402	185	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Nitriding steels	≤ 32	≤ 301	265	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 43	≤ 402	185	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Tool steels	≤ 25	≤ 255	135	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 43	≤ 402	115	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
High speed steels	≤ 43	≤ 402	135	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
Spring steels	≤ 38	≤ 354	115	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Hardened steels	≤ 48	≤ 460	70	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
	≤ 66	-							
Stainless steels, sulphured	≤ 28	≤ 273	135	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
austenitic	≤ 36	≤ 337	100	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
martensitic	≤ 46	≤ 435	85	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
Cast iron	≤ 23	≤ 242	490	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
	≤ 38	≤ 354	360	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Spheroidal graphite iron and	≤ 23	≤ 242	360	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
malleable cast iron	≤ 38	≤ 354	295	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Chilled cast iron	≤ 38	≤ 354	85	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Special alloys	≤ 54	≤ 549	70	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Ti and Ti-alloys	≤ 25	≤ 255	100	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
	≤ 43	≤ 402	85	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Aluminium and Al-alloys	-	≤ 120	660	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Al wrought alloys	-	≤ 200	660	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Al cast alloys ≤ 10 % Si	-	≤ 180	555	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
≤ 24 % Si	-	≤ 180	455	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Magnesium alloys	-	≤ 120	655	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Copper, low-alloyed	-	≤ 150	260	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Brass, short-chipping	-	≤ 180	685	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
long-chipping	-	≤ 180	455	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Bronze, short-chipping	-	≤ 180	260	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 25	≤ 255	210	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Bronze, long-chipping	≤ 25	≤ 255	160	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 32	≤ 301	130	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Duroplastics			260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Thermoplastics			260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Reinforced plastics - Kevlar			260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Reinforced plastics - GFK / CFK			260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200

Insert 1047 - Body 5248

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR ≤16.000 mm	41/64 - 25/32 in. 16.001 - 20.000 mm	51/64 - 31/32 in. 20.001 - 25.000 mm	63/64 - 1 17/64 in. 25.001 - 31.500 mm	1 1/4 - 1 9/16 in. 31.501 - 40.000 mm	1 37/64 - 1 61/64 in. 40.001 - 50.000 mm
Common structural steels	-	≤ 150	300	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 32	≤ 301	265	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Free-cutting steels	≤ 25	≤ 255	300	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 32	≤ 301	265	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Unalloyed heat-treatable steels	≤ 20	≤ 220	300	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 25	≤ 255	280	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 32	≤ 301	250	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Alloyed heat-treatable steels	≤ 32	≤ 301	250	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 43	≤ 402	215	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Unalloyed case hardened steels	≤ 25	≤ 255	300	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Alloyed case hardened steels	≤ 32	≤ 301	250	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 43	≤ 402	185	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Nitriding steels	≤ 32	≤ 301	265	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
	≤ 43	≤ 402	185	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
Tool steels	≤ 25	≤ 255	135	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
	≤ 43	≤ 402	115	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
High speed steels	≤ 43	≤ 402	135	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Spring steels	≤ 38	≤ 354	115	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Hardened steels	≤ 48	≤ 460	70	0.0035	0.0040	0.0050	0.0065	0.0065	0.0080
	≤ 66	-							
Stainless steels, sulphured	≤ 28	≤ 273	135	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
austenitic	≤ 36	≤ 337	100	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
martensitic	≤ 46	≤ 435	85	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Cast iron	≤ 23	≤ 242	490	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 38	≤ 354	360	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Spheroidal graphite iron and	≤ 23	≤ 242	360	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
malleable cast iron	≤ 38	≤ 354	295	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Chilled cast iron	≤ 38	≤ 354	85	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Special alloys	≤ 54	≤ 549	70	0.0035	0.0040	0.0050	0.0065	0.0065	0.0080
Ti and Ti-alloys	≤ 25	≤ 255	100	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
	≤ 43	≤ 402	85	0.0035	0.0040	0.0050	0.0065	0.0065	0.0080
Aluminium and Al-alloys	-	≤ 120	660	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Al wrought alloys	-	≤ 200	660	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Al cast alloys ≤ 10 % Si	-	≤ 180	555	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
≤ 24 % Si	-	≤ 180	455	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Magnesium alloys	-	≤ 120	655	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Copper, low-alloyed	-	≤ 150	260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Brass, short-chipping	-	≤ 180	685	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
long-chipping	-	≤ 180	455	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Bronze, short-chipping	-	≤ 180	260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 25	≤ 255	210	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Bronze, long-chipping	≤ 25	≤ 255	160	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 32	≤ 301	130	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Duroplastics			260	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Thermoplastics			260	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Reinforced plastics - Kevlar			260	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Reinforced plastics - GFK / CFK			260	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160

Series # 1131

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	155 120		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140			
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	155 120		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140			
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	155 120 65		0.0050 0.0050 0.0040	0.0080 0.0080 0.0065	0.0100 0.0100 0.0080	0.0125 0.0125 0.0100	0.0125 0.0125 0.0100	0.0140 0.0140 0.0110			
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	80 65		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090			
Unalloyed case hardened steels	≤ 25	≤ 255	160		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	70 50		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090			
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65 45		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090			
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	75 45		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090			
High speed steels	≤ 43	≤ 402	45		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
Spring steels	≤ 38	≤ 354	35		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
Hardened steels	≤ 48 ≤ 66	≤ 460 -	10		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	65 45 50		0.0040 0.0030 0.0030	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0100 0.0080 0.0080	0.0100 0.0080 0.0080	0.0110 0.0090 0.0090			
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	155 120		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160	0.0180 0.0180			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	135 95		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160	0.0180 0.0180			
Chilled cast iron	≤ 38	≤ 354	35		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	30		0.0020	0.0030	0.0040	0.0050	0.0050	0.0055			
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	45 30		0.0025 0.0025	0.0040 0.0040	0.0050 0.0050	0.0065 0.0065	0.0065 0.0065	0.0070 0.0070			
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	310 245		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160	0.0220 0.0180			
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	155		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	195		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	135		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	120 95		0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110			
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			120		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			

Series # 1132

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	195 155		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140			
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	195 155		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140			
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	195 155 80		0.0050 0.0050 0.0040	0.0080 0.0080 0.0065	0.0100 0.0100 0.0080	0.0125 0.0125 0.0100	0.0125 0.0125 0.0100	0.0140 0.0140 0.0110			
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	95 80		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090			
Unalloyed case hardened steels	≤ 25	≤ 255	200		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	90 65		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090			
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	80 55		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090			
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	95 55		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090			
High speed steels	≤ 43	≤ 402	55		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
Spring steels	≤ 38	≤ 354	45		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
Hardened steels	≤ 48 ≤ 66	≤ 460 -	15 45		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	80 55 65		0.0040 0.0030 0.0030	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0100 0.0080 0.0080	0.0100 0.0080 0.0080	0.0110 0.0090 0.0090			
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	195 155		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160	0.0180 0.0180			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	170 120		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160	0.0180 0.0180			
Chilled cast iron	≤ 38	≤ 354	45		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	35		0.0020	0.0030	0.0040	0.0050	0.0050	0.0055			
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	55 35		0.0025 0.0025	0.0040 0.0040	0.0050 0.0050	0.0065 0.0065	0.0065 0.0065	0.0070 0.0070			
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	390 310		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160	0.0220 0.0180			
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	195		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	245		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	170		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	155 120		0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110			
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			155		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			

Series # 1133

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	140 120		0.0039 0.0031	0.0063 0.0049	0.0098 0.0079	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	155 140		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	145 145 130		0.0039 0.0039 0.0031	0.0063 0.0063 0.0049	0.0098 0.0098 0.0079	0.0098 0.0098 0.0079	0.0124 0.0124 0.0098	0.0157 0.0157 0.0124	0.0197 0.0197 0.0157		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	90 70		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Unalloyed case hardened steels	≤ 25	≤ 255	120		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	70 60		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	60 50		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	70 50		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
High speed steels	≤ 43	≤ 402	40		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Spring steels	≤ 38	≤ 354	35		0.0016	0.0025	0.0039	0.0039	0.0049	0.0063	0.0079		
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	125 115		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	110 90		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	25		0.0013	0.0020	0.0031	0.0031	0.0039	0.0049	0.0063		
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	35 25		0.0016 0.0016	0.0025 0.0025	0.0039 0.0039	0.0039 0.0039	0.0049 0.0049	0.0063 0.0063	0.0079 0.0079		
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200	280		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	215 215		0.0049 0.0039	0.0079 0.0063	0.0124 0.0098	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157	0.0248 0.0197		
Magnesium alloys	-	≤ 120	260		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Copper, low-alloyed	-	≤ 150	230		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	245 165		0.0031 0.0031	0.0049 0.0049	0.0079 0.0079	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	150 130		0.0031 0.0025	0.0049 0.0039	0.0079 0.0063	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	80 65		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			80 130		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		

Series # 1134

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	115 100		0.0039 0.0031	0.0063 0.0049	0.0098 0.0079	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	130 130		0.0031 0.0031	0.0049 0.0049	0.0079 0.0079	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	115 115 100		0.0031 0.0031 0.0025	0.0049 0.0049 0.0039	0.0079 0.0079 0.0063	0.0079 0.0079 0.0063	0.0098 0.0098 0.0079	0.0124 0.0124 0.0098	0.0157 0.0157 0.0124		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	70 55		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Unalloyed case hardened steels	≤ 25	≤ 255	110		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65 50		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 40		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	60 40		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
High speed steels	≤ 43	≤ 402	25		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Spring steels	≤ 38	≤ 354	25		0.0016	0.0025	0.0039	0.0039	0.0049	0.0063	0.0079		
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	40 35 35		0.0020 0.0020 0.0020	0.0031 0.0031 0.0031	0.0049 0.0049 0.0049	0.0049 0.0049 0.0049	0.0063 0.0063 0.0063	0.0079 0.0079 0.0079	0.0098 0.0098 0.0098		
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	110 110		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	100 80		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	20		0.0013	0.0020	0.0031	0.0031	0.0039	0.0049	0.0063		
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	25 20		0.0016 0.0016	0.0025 0.0025	0.0039 0.0039	0.0039 0.0039	0.0049 0.0049	0.0063 0.0063	0.0079 0.0079		
Aluminium and Al-alloys	-	≤ 120	260		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al wrought alloys	-	≤ 200	260		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	195 195		0.0049 0.0039	0.0079 0.0063	0.0124 0.0098	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157	0.0248 0.0197		
Magnesium alloys	-	≤ 120	230		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Copper, low-alloyed	-	≤ 150	215		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	230 150		0.0031 0.0031	0.0049 0.0049	0.0079 0.0079	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	115 110		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	65 50		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			70 120		0.0025 0.0031	0.0039 0.0049	0.0063 0.0079	0.0063 0.0079	0.0079 0.0098	0.0098 0.0124	0.0124 0.0157		

Series # 1135

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	140 120		0.0039 0.0031	0.0063 0.0049	0.0098 0.0079	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	155 140		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	145 145 130		0.0039 0.0039 0.0031	0.0063 0.0063 0.0049	0.0098 0.0098 0.0079	0.0098 0.0098 0.0079	0.0124 0.0124 0.0098	0.0157 0.0157 0.0124	0.0197 0.0197 0.0157		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	90 70		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Unalloyed case hardened steels	≤ 25	≤ 255	120		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	70 60		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	60 50		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	70 50		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
High speed steels	≤ 43	≤ 402	40		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Spring steels	≤ 38	≤ 354	35		0.0016	0.0025	0.0039	0.0039	0.0049	0.0063	0.0079		
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	125 115		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	110 90		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	25		0.0013	0.0020	0.0031	0.0031	0.0039	0.0049	0.0063		
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	35 25		0.0016 0.0016	0.0025 0.0025	0.0039 0.0039	0.0039 0.0039	0.0049 0.0049	0.0063 0.0063	0.0079 0.0079		
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200	280		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	215 215		0.0049 0.0039	0.0079 0.0063	0.0124 0.0098	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157	0.0248 0.0197		
Magnesium alloys	-	≤ 120	260		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Copper, low-alloyed	-	≤ 150	230		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	245 165		0.0031 0.0031	0.0049 0.0049	0.0079 0.0079	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	150 130		0.0031 0.0025	0.0049 0.0039	0.0079 0.0063	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	80 65		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			80 130		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		

Series # 1136

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	115 100		0.0039 0.0031	0.0063 0.0049	0.0098 0.0079	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	130 130		0.0031 0.0031	0.0049 0.0049	0.0079 0.0079	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	115 115 100		0.0031 0.0031 0.0025	0.0049 0.0049 0.0039	0.0079 0.0079 0.0063	0.0079 0.0079 0.0063	0.0098 0.0098 0.0079	0.0124 0.0124 0.0098	0.0157 0.0157 0.0124		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	70 55		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Unalloyed case hardened steels	≤ 25	≤ 255	110		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65 50		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 40		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	60 40		0.0025 0.0020	0.0039 0.0031	0.0063 0.0049	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098		
High speed steels	≤ 43	≤ 402	25		0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Spring steels	≤ 38	≤ 354	25		0.0016	0.0025	0.0039	0.0039	0.0049	0.0063	0.0079		
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	40 35 35		0.0020 0.0020 0.0020	0.0031 0.0031 0.0031	0.0049 0.0049 0.0049	0.0049 0.0049 0.0049	0.0063 0.0063 0.0063	0.0079 0.0079 0.0079	0.0098 0.0098 0.0098		
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	110 110		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	100 80		0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	20		0.0013	0.0020	0.0031	0.0031	0.0039	0.0049	0.0063		
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	25 20		0.0016 0.0016	0.0025 0.0025	0.0039 0.0039	0.0039 0.0039	0.0049 0.0049	0.0063 0.0063	0.0079 0.0079		
Aluminium and Al-alloys	-	≤ 120	260		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al wrought alloys	-	≤ 200	260		0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	195 195		0.0049 0.0039	0.0079 0.0063	0.0124 0.0098	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157	0.0248 0.0197		
Magnesium alloys	-	≤ 120	230		0.0039	0.0063	0.0098	0.0098	0.0124	0.0157	0.0197		
Copper, low-alloyed	-	≤ 150	215		0.0031	0.0049	0.0079	0.0079	0.0098	0.0124	0.0157		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	230 150		0.0031 0.0031	0.0049 0.0049	0.0079 0.0079	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	115 110		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	65 50		0.0025 0.0025	0.0039 0.0039	0.0063 0.0063	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098	0.0124 0.0124		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			70 120		0.0025 0.0031	0.0039 0.0049	0.0063 0.0079	0.0063 0.0079	0.0079 0.0098	0.0098 0.0124	0.0124 0.0157		

Series # 1183

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	360 295		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110			
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	425 360		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160	0.0180 0.0180			
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	325 310 295		0.0065 0.0050 0.0050	0.0100 0.0080 0.0080	0.0125 0.0100 0.0100	0.0160 0.0125 0.0125	0.0160 0.0125 0.0125	0.0180 0.0140 0.0140			
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	295 260		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140			
Unalloyed case hardened steels	≤ 25	≤ 255	360		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	295 210		0.0050 0.0030	0.0080 0.0050	0.0100 0.0065	0.0125 0.0080	0.0125 0.0080	0.0140 0.0090			
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	260 245		0.0050 0.0030	0.0080 0.0050	0.0100 0.0065	0.0125 0.0080	0.0125 0.0080	0.0140 0.0090			
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	180 130		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090			
High speed steels	≤ 43	≤ 402	145		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
Spring steels	≤ 38	≤ 354	145		0.0020	0.0030	0.0040	0.0050	0.0050	0.0055			
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	145 130 110		0.0030 0.0030 0.0030	0.0050 0.0050 0.0050	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0080 0.0080 0.0080	0.0090 0.0090 0.0090			
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	620 360		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200	0.0220 0.0220			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	360 310		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160	0.0220 0.0180			
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	785		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220			
Al wrought alloys	-	≤ 200	785		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220			
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	655 555		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200	0.0220 0.0220			
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 1184

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	330 280		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125			
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	360 280		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160			
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	260 280 260		0.0050 0.0050 0.0050	0.0080 0.0080 0.0080	0.0100 0.0100 0.0100	0.0125 0.0125 0.0125	0.0140 0.0140 0.0140	0.0160 0.0160 0.0160			
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	260 245		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125			
Unalloyed case hardened steels	≤ 25	≤ 255	330		0.0065	0.0100	0.0125	0.0160	0.0180	0.0200			
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	295 215		0.0050 0.0030	0.0080 0.0050	0.0100 0.0065	0.0125 0.0080	0.0140 0.0090	0.0160 0.0100			
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	245 230		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0110 0.0090	0.0125 0.0100			
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	165 130		0.0050 0.0030	0.0080 0.0050	0.0100 0.0065	0.0125 0.0080	0.0140 0.0090	0.0160 0.0100			
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354	115		0.0020	0.0030	0.0040	0.0050	0.0055	0.0065			
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	95 90 90		0.0025 0.0025 0.0020	0.0040 0.0040 0.0030	0.0050 0.0050 0.0040	0.0065 0.0065 0.0050	0.0065 0.0065 0.0050	0.0080 0.0080 0.0065			
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	525 395		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	395 310		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160			
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	655		0.0080	0.0125	0.0160	0.0200	0.0220	0.0245			
Al wrought alloys	-	≤ 200	655		0.0080	0.0125	0.0160	0.0200	0.0220	0.0245			
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	560 460		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0220 0.0180	0.0245 0.0200			
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 1221

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	130	0.0017	0.0050	0.0080	0.0100	0.0125					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	70	0.0015	0.0040	0.0065	0.0080	0.0100					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	85 65	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Unalloyed case hardened steels	≤ 25	≤ 255	180	0.0020	0.0065	0.0100	0.0125	0.0160					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	70 55	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65 45	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	85 45	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
High speed steels	≤ 43	≤ 402	45	0.0012	0.0030	0.0050	0.0065	0.0080					
Spring steels	≤ 38	≤ 354	35	0.0010	0.0025	0.0040	0.0050	0.0065					
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	65 55	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 1223

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	130		0.0040	0.0065	0.0080	0.0100					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	180 130		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	120 100		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160					
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	345		0.0080	0.0125	0.0160	0.0200					
Al wrought alloys	-	≤ 200	260		0.0080	0.0125	0.0160	0.0200					
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	340 260		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160					
Magnesium alloys	-	≤ 120	345		0.0065	0.0100	0.0125	0.0160					
Copper, low-alloyed	-	≤ 150	180		0.0050	0.0080	0.0100	0.0125					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	130 100		0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			85		0.0040	0.0065	0.0080	0.0100					

Series # 1242

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	330 280		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125			
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	360 280		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160			
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	260 280 260		0.0050 0.0050 0.0050	0.0080 0.0080 0.0080	0.0100 0.0100 0.0100	0.0125 0.0125 0.0125	0.0140 0.0140 0.0140	0.0160 0.0160 0.0160			
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	260 245		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125			
Unalloyed case hardened steels	≤ 25	≤ 255	330		0.0065	0.0100	0.0125	0.0160	0.0180	0.0200			
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	295 215		0.0050 0.0030	0.0080 0.0050	0.0100 0.0065	0.0125 0.0080	0.0140 0.0090	0.0160 0.0100			
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	245 230		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0110 0.0090	0.0125 0.0100			
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	165 130		0.0050 0.0030	0.0080 0.0050	0.0100 0.0065	0.0125 0.0080	0.0140 0.0090	0.0160 0.0100			
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354	115		0.0020	0.0030	0.0040	0.0050	0.0055	0.0065			
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	95 90 90		0.0025 0.0025 0.0020	0.0040 0.0040 0.0030	0.0050 0.0050 0.0040	0.0065 0.0065 0.0050	0.0065 0.0065 0.0050	0.0080 0.0080 0.0065			
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	525 395		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	395 310		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160			
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	655		0.0080	0.0125	0.0160	0.0200	0.0220	0.0245			
Al wrought alloys	-	≤ 200	655		0.0080	0.0125	0.0160	0.0200	0.0220	0.0245			
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	560 460		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0220 0.0180	0.0245 0.0200			
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 1243

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	330 280		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125			
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	360 280		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160			
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	260 280 260		0.0050 0.0050 0.0050	0.0080 0.0080 0.0080	0.0100 0.0100 0.0100	0.0125 0.0125 0.0125	0.0140 0.0140 0.0140	0.0160 0.0160 0.0160			
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	260 245		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125			
Unalloyed case hardened steels	≤ 25	≤ 255	330		0.0065	0.0100	0.0125	0.0160	0.0180	0.0200			
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	295 215		0.0050 0.0030	0.0080 0.0050	0.0100 0.0065	0.0125 0.0080	0.0140 0.0090	0.0160 0.0100			
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	245 230		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0110 0.0090	0.0125 0.0100			
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	165 130		0.0050 0.0030	0.0080 0.0050	0.0100 0.0065	0.0125 0.0080	0.0140 0.0090	0.0160 0.0100			
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354	115		0.0020	0.0030	0.0040	0.0050	0.0055	0.0065			
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	95 90 90		0.0025 0.0025 0.0020	0.0040 0.0040 0.0030	0.0050 0.0050 0.0040	0.0065 0.0065 0.0050	0.0065 0.0065 0.0050	0.0080 0.0080 0.0065			
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	525 395		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	395 310		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160			
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	655		0.0080	0.0125	0.0160	0.0200	0.0220	0.0245			
Al wrought alloys	-	≤ 200	655		0.0080	0.0125	0.0160	0.0200	0.0220	0.0245			
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	560 460		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0220 0.0180	0.0245 0.0200			
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 1452

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	280		0.0030	0.0050	0.0065	0.0080	0.0080				
	≤ 32	≤ 301	250		0.0025	0.0040	0.0050	0.0065	0.0065				
Free-cutting steels	≤ 25	≤ 255	300		0.0040	0.0065	0.0080	0.0100	0.0100				
	≤ 32	≤ 301	220		0.0030	0.0050	0.0065	0.0080	0.0080				
Unalloyed heat-treatable steels	≤ 20	≤ 220	195		0.0030	0.0050	0.0065	0.0080	0.0080				
	≤ 25	≤ 255	185		0.0030	0.0050	0.0065	0.0080	0.0080				
	≤ 32	≤ 301	170		0.0030	0.0050	0.0065	0.0080	0.0080				
Alloyed heat-treatable steels	≤ 32	≤ 301	170		0.0030	0.0050	0.0065	0.0080	0.0080				
	≤ 43	≤ 402	140		0.0025	0.0040	0.0050	0.0065	0.0065				
Unalloyed case hardened steels	≤ 25	≤ 255	195		0.0040	0.0065	0.0080	0.0100	0.0100				
Alloyed case hardened steels	≤ 32	≤ 301	170		0.0030	0.0050	0.0065	0.0080	0.0080				
	≤ 43	≤ 402	140		0.0025	0.0040	0.0050	0.0065	0.0065				
Nitriding steels	≤ 32	≤ 301	185		0.0025	0.0040	0.0050	0.0065	0.0065				
	≤ 43	≤ 402	155		0.0025	0.0040	0.0050	0.0065	0.0065				
Tool steels	≤ 25	≤ 255	95		0.0025	0.0040	0.0050	0.0065	0.0065				
	≤ 43	≤ 402	80		0.0025	0.0040	0.0050	0.0065	0.0065				
High speed steels	≤ 43	≤ 402	70		0.0020	0.0030	0.0040	0.0050	0.0050				
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273	55		0.0030	0.0050	0.0065	0.0080	0.0080				
austenitic	≤ 36	≤ 337	55		0.0030	0.0050	0.0065	0.0080	0.0080				
martensitic	≤ 46	≤ 435	40		0.0025	0.0040	0.0050	0.0065	0.0065				
Cast iron	≤ 23	≤ 242	360		0.0050	0.0080	0.0100	0.0125	0.0125				
	≤ 38	≤ 354	255		0.0050	0.0080	0.0100	0.0125	0.0125				
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	255		0.0050	0.0080	0.0100	0.0125	0.0125				
	≤ 38	≤ 354	230		0.0050	0.0080	0.0100	0.0125	0.0125				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25	≤ 255	50		0.0030	0.0050	0.0065	0.0080	0.0080				
	≤ 43	≤ 402	40		0.0025	0.0040	0.0050	0.0065	0.0065				
Aluminium and Al-alloys	-	≤ 120	435		0.0065	0.0100	0.0125	0.0160	0.0160				
Al wrought alloys	-	≤ 200	360		0.0050	0.0080	0.0100	0.0125	0.0125				
Al cast alloys ≤ 10 % Si	-	≤ 180	435		0.0065	0.0100	0.0125	0.0160	0.0160				
≤ 24 % Si	-	≤ 180	360		0.0050	0.0080	0.0100	0.0125	0.0125				
Magnesium alloys	-	≤ 120	510		0.0050	0.0080	0.0100	0.0125	0.0125				
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping	-	≤ 180	535		0.0050	0.0080	0.0100	0.0125	0.0125				
long-chipping	-	≤ 180	500		0.0040	0.0065	0.0080	0.0100	0.0100				
Bronze, short-chipping	-	≤ 180											
	≤ 25	≤ 255											
Bronze, long-chipping	≤ 25	≤ 255											
	≤ 32	≤ 301											
Duroplastics													
Thermoplastics													
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Series # 1662

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	360		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
	≤ 32	≤ 301	295		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
Free-cutting steels	≤ 25	≤ 255	425		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
	≤ 32	≤ 301	360		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Unalloyed heat-treatable steels	≤ 20	≤ 220	325		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
	≤ 25	≤ 255	310		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
	≤ 32	≤ 301	295		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
Alloyed heat-treatable steels	≤ 32	≤ 301	295		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
	≤ 43	≤ 402	260		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
Unalloyed case hardened steels	≤ 25	≤ 255	360		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Alloyed case hardened steels	≤ 32	≤ 301	295		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
	≤ 43	≤ 402	210		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
Nitriding steels	≤ 32	≤ 301	260		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
	≤ 43	≤ 402	245		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
Tool steels	≤ 25	≤ 255	180		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
	≤ 43	≤ 402	130		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
High speed steels	≤ 43	≤ 402	145		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
Spring steels	≤ 38	≤ 354	145		0.0020	0.0030	0.0040	0.0050	0.0050	0.0055	0.0065		
Hardened steels	≤ 48	≤ 460	130		0.0020	0.0030	0.0040	0.0050	0.0050	0.0055	0.0065		
	≤ 66	-	80		0.0015	0.0025	0.0030	0.0040	0.0040	0.0045	0.0050		
Stainless steels, sulphured	≤ 28	≤ 273	145		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
austenitic	≤ 36	≤ 337	130		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
martensitic	≤ 46	≤ 435	110		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
Cast iron	≤ 23	≤ 242	620		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
	≤ 38	≤ 354	360		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	360		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
	≤ 38	≤ 354	310		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Chilled cast iron	≤ 38	≤ 354	95		0.0020	0.0030	0.0040	0.0050	0.0050	0.0055	0.0065		
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549	80		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
Ti and Ti-alloys	≤ 25	≤ 255	110		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
	≤ 43	≤ 402	95		0.0020	0.0030	0.0040	0.0050	0.0050	0.0055	0.0065		
Aluminium and Al-alloys	-	≤ 120	785		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Al wrought alloys	-	≤ 200	785		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Al cast alloys ≤ 10 % Si	-	≤ 180	655		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
≤ 24 % Si	-	≤ 180	555		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Magnesium alloys	-	≤ 120	750		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Copper, low-alloyed	-	≤ 150	310		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
Brass, short-chipping	-	≤ 180	820		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
long-chipping	-	≤ 180	555		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
Bronze, short-chipping	-	≤ 180	310		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
	≤ 25	≤ 255	260		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
Bronze, long-chipping	≤ 25	≤ 255	225		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
	≤ 32	≤ 301	195		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
Duroplastics													
Thermoplastics													
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Series # 1702

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	325 275		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	360 275		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	295 275 260		0.0050 0.0050 0.0050	0.0080 0.0080 0.0080	0.0100 0.0100 0.0100	0.0125 0.0125 0.0125	0.0125 0.0125 0.0125				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	260 245		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Unalloyed case hardened steels	≤ 25	≤ 255	325		0.0065	0.0100	0.0125	0.0160	0.0160				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	295 210		0.0050 0.0030	0.0080 0.0050	0.0100 0.0065	0.0125 0.0080	0.0125 0.0080				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	245 225		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	160 130		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080				
High speed steels	≤ 43	≤ 402	130		0.0025	0.0040	0.0050	0.0065	0.0065				
Spring steels	≤ 38	≤ 354	110		0.0020	0.0030	0.0040	0.0050	0.0050				
Hardened steels	≤ 48 ≤ 66	≤ 460 -	110 65		0.0020 0.0015	0.0030 0.0025	0.0040 0.0030	0.0050 0.0040	0.0050 0.0040				
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	115 110 110		0.0025 0.0025 0.0020	0.0040 0.0040 0.0030	0.0050 0.0050 0.0040	0.0065 0.0065 0.0050	0.0065 0.0065 0.0050				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	520 390		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	390 310		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160				
Chilled cast iron	≤ 38	≤ 354	80		0.0020	0.0030	0.0040	0.0050	0.0050				
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	65		0.0025	0.0040	0.0050	0.0065	0.0065				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	95 80		0.0020 0.0020	0.0030 0.0030	0.0040 0.0040	0.0050 0.0050	0.0050 0.0050				
Aluminium and Al-alloys	-	≤ 120	655		0.0080	0.0125	0.0160	0.0200	0.0200				
Al wrought alloys	-	≤ 200	655		0.0080	0.0125	0.0160	0.0200	0.0200				
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	555 455		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160				
Magnesium alloys	-	≤ 120	655		0.0065	0.0100	0.0125	0.0160	0.0160				
Copper, low-alloyed	-	≤ 150	260		0.0050	0.0080	0.0100	0.0125	0.0125				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	685 455		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	260 210		0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100				
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	195 145		0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 2458

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	75	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	55	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
High speed steels	≤ 43	≤ 402	55	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Spring steels	≤ 38	≤ 354	40	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Hardened steels	≤ 48 ≤ 66	≤ 460 -	20	0.0005	0.0015	0.0025	0.0030	0.0040	0.0040				
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	75 60 65	0.0012 0.0010 0.0010	0.0030 0.0025 0.0025	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0080 0.0065 0.0065				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354	40	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	30	0.0005	0.0015	0.0025	0.0030	0.0040	0.0040				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	50 30	0.0007 0.0007	0.0020 0.0020	0.0030 0.0030	0.0040 0.0040	0.0050 0.0050	0.0050 0.0050				
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	100	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 2463

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	340 300	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	340 300	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	340 300 255	0.0015 0.0015 0.0015	0.0040 0.0040 0.0040	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0100 0.0100 0.0100					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	255	0.0015	0.0040	0.0065	0.0080	0.0100					
Unalloyed case hardened steels	≤ 25	≤ 255	340	0.0017	0.0050	0.0080	0.0100	0.0125					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	255	0.0015	0.0040	0.0065	0.0080	0.0100					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	215	0.0015	0.0040	0.0065	0.0080	0.0100					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	215	0.0012	0.0030	0.0050	0.0065	0.0080					
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354	105	0.0010	0.0025	0.0040	0.0050	0.0065					
Hardened steels	≤ 48 ≤ 66	≤ 460 -	85	0.0012	0.0030	0.0050	0.0065	0.0080					
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	105 105 105	0.0015 0.0012 0.0012	0.0040 0.0030 0.0030	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0100 0.0080 0.0080					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	385 340	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	300 340	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	65	0.0010	0.0025	0.0040	0.0050	0.0065					
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	85 65	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065					
Aluminium and Al-alloys	-	≤ 120	855	0.0025	0.0080	0.0125	0.0160	0.0200					
Al wrought alloys	-	≤ 200	855	0.0025	0.0080	0.0125	0.0160	0.0200					
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	640 510	0.0020 0.0020	0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160					
Magnesium alloys	-	≤ 120	770	0.0017	0.0050	0.0080	0.0100	0.0125					
Copper, low-alloyed	-	≤ 150	340	0.0017	0.0050	0.0080	0.0100	0.0125					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	770 770	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125					
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	510 510	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125					
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	300 215	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			215 170 340	0.0015 0.0012 0.0012	0.0040 0.0030 0.0030	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0100 0.0080 0.0080					

Series # 2464

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	330 295	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	330 295	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	330 295 260	0.0015 0.0015 0.0015	0.0040 0.0040 0.0040	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0100 0.0100 0.0100					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	260	0.0015	0.0040	0.0065	0.0080	0.0100					
Unalloyed case hardened steels	≤ 25	≤ 255	330	0.0017	0.0050	0.0080	0.0100	0.0125					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	260	0.0015	0.0040	0.0065	0.0080	0.0100					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	215	0.0015	0.0040	0.0065	0.0080	0.0100					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	215	0.0012	0.0030	0.0050	0.0065	0.0080					
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354	100	0.0010	0.0025	0.0040	0.0050	0.0065					
Hardened steels	≤ 48 ≤ 66	≤ 460 -	80	0.0012	0.0030	0.0050	0.0065	0.0080					
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	100 100 100	0.0015 0.0012 0.0012	0.0040 0.0030 0.0030	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0100 0.0080 0.0080					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	375 360	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	295 260	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	65	0.0010	0.0025	0.0040	0.0050	0.0065					
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	80 65	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065					
Aluminium and Al-alloys	-	≤ 120	855	0.0025	0.0080	0.0125	0.0160	0.0200					
Al wrought alloys	-	≤ 200	855	0.0025	0.0080	0.0125	0.0160	0.0200					
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	640 510	0.0020 0.0020	0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160					
Magnesium alloys	-	≤ 120	770	0.0017	0.0050	0.0080	0.0100	0.0125					
Copper, low-alloyed	-	≤ 150	340	0.0017	0.0050	0.0080	0.0100	0.0125					
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	770 770	0.0017 0.0170	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125					
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	510 510	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125					
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	300 215	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			165 215 330	0.0015 0.0012 0.0012	0.0040 0.0030 0.0030	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0100 0.0080 0.0080					

Insert 2485 - Body 5242

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR ≤16.000 mm	41/64 - 25/32 in. 16.001 - 20.000 mm	51/64 - 31/32 in. 20.001 - 25.000 mm	63/64 - 1 17/64 in. 25.001 - 31.500 mm	1 1/4 - 1 9/16 in. 31.501 - 40.000 mm	1 37/64 - 1 61/64 in. 40.001 - 50.000 mm
Common structural steels	-	≤ 150	430	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 32	≤ 301	365	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Free-cutting steels	≤ 25	≤ 255	430	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
	≤ 32	≤ 301	365	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Unalloyed heat-treatable steels	≤ 20	≤ 220	430	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 25	≤ 255	410	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 32	≤ 301	365	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Alloyed heat-treatable steels	≤ 32	≤ 301	365	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 43	≤ 402	300	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Unalloyed case hardened steels	≤ 25	≤ 255	430	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Alloyed case hardened steels	≤ 32	≤ 301	365	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 43	≤ 402	230	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Nitriding steels	≤ 32	≤ 301	345	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 43	≤ 402	230	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Tool steels	≤ 25	≤ 255	185	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 43	≤ 402	165	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
High speed steels	≤ 43	≤ 402	185	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
Spring steels	≤ 38	≤ 354	165	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Hardened steels	≤ 48	≤ 460	85	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Stainless steels, sulphured	≤ 28	≤ 273	185	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
austenitic	≤ 36	≤ 337	135	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
martensitic	≤ 46	≤ 435	115	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
Cast iron	≤ 23	≤ 242	685	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
	≤ 38	≤ 354	505	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Spheroidal graphite iron and	≤ 23	≤ 242	505	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
malleable cast iron	≤ 38	≤ 354	425	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Chilled cast iron	≤ 38	≤ 354	115	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Special alloys	≤ 54	≤ 549	85	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Ti and Ti-alloys	≤ 25	≤ 255	135	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
	≤ 43	≤ 402	115	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Aluminium and Al-alloys	-	≤ 120	955	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Al wrought alloys	-	≤ 200	855	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Al cast alloys ≤ 10 % Si	-	≤ 180	770	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
≤ 24 % Si	-	≤ 180	635	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Magnesium alloys	-	≤ 120	850	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Copper, low-alloyed	-	≤ 150	340	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Brass, short-chipping	-	≤ 180	885	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
long-chipping	-	≤ 180	590	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Bronze, short-chipping	-	≤ 180	340	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 25	≤ 255	275	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Bronze, long-chipping	≤ 25	≤ 255	210	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 32	≤ 301	180	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Duroplastics			340	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Thermoplastics			340	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Reinforced plastics - Kevlar			340	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Reinforced plastics - GFK / CFK			340	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200

Insert 2485 - Body 5243

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR ≤16.000 mm	41/64 - 25/32 in. 16.001 - 20.000 mm	51/64 - 31/32 in. 20.001 - 25.000 mm	63/64 - 1 17/64 in. 25.001 - 31.500 mm	1 1/4 - 1 9/16 in. 31.501 - 40.000 mm	1 37/64 - 1 61/64 in. 40.001 - 50.000 mm
Common structural steels	-	≤ 150	410	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 32	≤ 301	345	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Free-cutting steels	≤ 25	≤ 255	410	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
	≤ 32	≤ 301	345	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Unalloyed heat-treatable steels	≤ 20	≤ 220	410	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 25	≤ 255	395	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 32	≤ 301	345	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Alloyed heat-treatable steels	≤ 32	≤ 301	345	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 43	≤ 402	280	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Unalloyed case hardened steels	≤ 25	≤ 255	410	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Alloyed case hardened steels	≤ 32	≤ 301	345	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 43	≤ 402	230	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Nitriding steels	≤ 32	≤ 301	345	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 43	≤ 402	230	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Tool steels	≤ 25	≤ 255	185	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 43	≤ 402	165	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
High speed steels	≤ 43	≤ 402	185	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
Spring steels	≤ 38	≤ 354	165	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Hardened steels	≤ 48	≤ 460	85	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Stainless steels, sulphured	≤ 28	≤ 273	185	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
austenitic	≤ 36	≤ 337	135	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
martensitic	≤ 46	≤ 435	115	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
Cast iron	≤ 23	≤ 242	635	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
	≤ 38	≤ 354	475	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Spheroidal graphite iron and	≤ 23	≤ 242	475	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
malleable cast iron	≤ 38	≤ 354	390	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Chilled cast iron	≤ 38	≤ 354	115	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Special alloys	≤ 54	≤ 549	85	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Ti and Ti-alloys	≤ 25	≤ 255	135	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
	≤ 43	≤ 402	115	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Aluminium and Al-alloys	-	≤ 120	855	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Al wrought alloys	-	≤ 200	855	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Al cast alloys ≤ 10 % Si	-	≤ 180	720	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
≤ 24 % Si	-	≤ 180	590	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Magnesium alloys	-	≤ 120	850	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Copper, low-alloyed	-	≤ 150	340	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Brass, short-chipping	-	≤ 180	885	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
long-chipping	-	≤ 180	590	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Bronze, short-chipping	-	≤ 180	340	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 25	≤ 255	275	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Bronze, long-chipping	≤ 25	≤ 255	210	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 32	≤ 301	180	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Duroplastics			340	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Thermoplastics			340	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Reinforced plastics - Kevlar			340	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Reinforced plastics - GFK / CFK			340	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR ≤16.000 mm	41/64 - 25/32 in. 16.001 - 20.000 mm	51/64 - 31/32 in. 20.001 - 25.000 mm	63/64 - 1 17/64 in. 25.001 - 31.500 mm	1 1/4 - 1 9/16 in. 31.501 - 40.000 mm	1 37/64 - 1 61/64 in. 40.001 - 50.000 mm
Common structural steels	-	≤ 150	395	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 32	≤ 301	345	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Free-cutting steels	≤ 25	≤ 255	395	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 32	≤ 301	345	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Unalloyed heat-treatable steels	≤ 20	≤ 220	395	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 25	≤ 255	365	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 32	≤ 301	330	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Alloyed heat-treatable steels	≤ 32	≤ 301	330	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 43	≤ 402	280	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Unalloyed case hardened steels	≤ 25	≤ 255	395	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Alloyed case hardened steels	≤ 32	≤ 301	330	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 43	≤ 402	230	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Nitriding steels	≤ 32	≤ 301	345	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
	≤ 43	≤ 402	230	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
Tool steels	≤ 25	≤ 255	185	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
	≤ 43	≤ 402	165	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
High speed steels	≤ 43	≤ 402	185	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Spring steels	≤ 38	≤ 354	165	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Hardened steels	≤ 48	≤ 460	85	0.0035	0.0040	0.0050	0.0065	0.0065	0.0080
Stainless steels, sulphured	≤ 28	≤ 273	185	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
austenitic	≤ 36	≤ 337	135	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
martensitic	≤ 46	≤ 435	115	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Cast iron	≤ 23	≤ 242	635	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 38	≤ 354	475	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Spheroidal graphite iron and	≤ 23	≤ 242	475	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
malleable cast iron	≤ 38	≤ 354	390	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Chilled cast iron	≤ 38	≤ 354	115	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Special alloys	≤ 54	≤ 549	85	0.0035	0.0040	0.0050	0.0065	0.0065	0.0080
Ti and Ti-alloys	≤ 25	≤ 255	135	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
	≤ 43	≤ 402	115	0.0035	0.0040	0.0050	0.0065	0.0065	0.0080
Aluminium and Al-alloys	-	≤ 120	855	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Al wrought alloys	-	≤ 200	855	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Al cast alloys ≤ 10 % Si	-	≤ 180	720	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
≤ 24 % Si	-	≤ 180	590	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Magnesium alloys	-	≤ 120	850	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Copper, low-alloyed	-	≤ 150	340	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Brass, short-chipping	-	≤ 180	885	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
long-chipping	-	≤ 180	590	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Bronze, short-chipping	-	≤ 180	340	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 25	≤ 255	275	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Bronze, long-chipping	≤ 25	≤ 255	210	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 32	≤ 301	180	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Duroplastics			340	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Thermoplastics			340	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Reinforced plastics - Kevlar			340	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Reinforced plastics - GFK / CFK			340	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160

Note: When drilling from solid with #5248 holder, spot drilling (>140° point angle to a depth

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150											
	≤ 32	≤ 301											
Free-cutting steels	≤ 25	≤ 255											
	≤ 32	≤ 301	185		0.0040	0.0065	0.0080	0.0100					
Unalloyed heat-treatable steels	≤ 20	≤ 220											
	≤ 25	≤ 255	185		0.0040	0.0065	0.0080	0.0100					
	≤ 32	≤ 301	100		0.0030	0.0050	0.0065	0.0080					
Alloyed heat-treatable steels	≤ 32	≤ 301	120		0.0030	0.0050	0.0065	0.0080					
	≤ 43	≤ 402	90		0.0025	0.0040	0.0050	0.0065					
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32	≤ 301	105		0.0030	0.0050	0.0065	0.0080					
	≤ 43	≤ 402	80		0.0025	0.0040	0.0050	0.0065					
Nitriding steels	≤ 32	≤ 301	90		0.0030	0.0050	0.0065	0.0080					
	≤ 43	≤ 402	65		0.0025	0.0040	0.0050	0.0065					
Tool steels	≤ 25	≤ 255	120		0.0030	0.0050	0.0065	0.0080					
	≤ 43	≤ 402	65		0.0025	0.0040	0.0050	0.0065					
High speed steels	≤ 43	≤ 402	65		0.0025	0.0040	0.0050	0.0065					
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273	90		0.0030	0.0050	0.0065	0.0080					
austenitic	≤ 36	≤ 337											
martensitic	≤ 46	≤ 435	80		0.0025	0.0040	0.0050	0.0065					
Cast iron	≤ 23	≤ 242	235		0.0050	0.0080	0.0100	0.0125					
	≤ 38	≤ 354	185		0.0050	0.0080	0.0100	0.0125					
Spheroidal graphite iron and	≤ 23	≤ 242	200		0.0050	0.0080	0.0100	0.0125					
malleable cast iron	≤ 38	≤ 354	145		0.0050	0.0080	0.0100	0.0125					
Chilled cast iron	≤ 38	≤ 354	50		0.0025	0.0040	0.0050	0.0065					
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25	≤ 255											
	≤ 43	≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180	460		0.0065	0.0100	0.0125	0.0160					
≤ 24 % Si	-	≤ 180	360		0.0040	0.0065	0.0080	0.0100					
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	235		0.0040	0.0065	0.0080	0.0100					
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180	295		0.0040	0.0065	0.0080	0.0100					
Bronze, short-chipping	-	≤ 180											
	≤ 25	≤ 255											
Bronze, long-chipping	≤ 25	≤ 255	185		0.0030	0.0050	0.0065	0.0080					
	≤ 32	≤ 301	145		0.0030	0.0050	0.0065	0.0080					
Duroplastics			120		0.0030	0.0050	0.0065	0.0080					
Thermoplastics													
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Series # 2602

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150											
	≤ 32	≤ 301											
Free-cutting steels	≤ 25	≤ 255											
	≤ 32	≤ 301	235		0.0040	0.0065	0.0080	0.0100					
Unalloyed heat-treatable steels	≤ 20	≤ 220											
	≤ 25	≤ 255	210		0.0040	0.0065	0.0080	0.0100					
	≤ 32	≤ 301	120		0.0030	0.0050	0.0065	0.0080					
Alloyed heat-treatable steels	≤ 32	≤ 301	145		0.0030	0.0050	0.0065	0.0080					
	≤ 43	≤ 402	120		0.0025	0.0040	0.0050	0.0065					
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32	≤ 301	130		0.0030	0.0050	0.0065	0.0080					
	≤ 43	≤ 402	100		0.0025	0.0040	0.0050	0.0065					
Nitriding steels	≤ 32	≤ 301	120		0.0030	0.0050	0.0065	0.0080					
	≤ 43	≤ 402	85		0.0025	0.0040	0.0050	0.0065					
Tool steels	≤ 25	≤ 255	145		0.0030	0.0050	0.0065	0.0080					
	≤ 43	≤ 402	85		0.0025	0.0040	0.0050	0.0065					
High speed steels	≤ 43	≤ 402	85		0.0025	0.0040	0.0050	0.0065					
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273	120		0.0030	0.0050	0.0065	0.0080					
austenitic	≤ 36	≤ 337											
martensitic	≤ 46	≤ 435	100		0.0025	0.0040	0.0050	0.0065					
Cast iron	≤ 23	≤ 242	295		0.0050	0.0080	0.0100	0.0125					
	≤ 38	≤ 354	235		0.0050	0.0080	0.0100	0.0125					
Spheroidal graphite iron and	≤ 23	≤ 242	260		0.0050	0.0080	0.0100	0.0125					
malleable cast iron	≤ 38	≤ 354	185		0.0050	0.0080	0.0100	0.0125					
Chilled cast iron	≤ 38	≤ 354	60		0.0025	0.0040	0.0050	0.0065					
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25	≤ 255											
	≤ 43	≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180	560		0.0065	0.0100	0.0125	0.0160					
≤ 24 % Si	-	≤ 180	460		0.0040	0.0065	0.0080	0.0100					
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	295		0.0040	0.0065	0.0080	0.0100					
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180	340		0.0065	0.0080	0.0100	0.0100					
Bronze, short-chipping	-	≤ 180											
	≤ 25	≤ 255											
Bronze, long-chipping	≤ 25	≤ 255	235		0.0030	0.0050	0.0065	0.0080					
	≤ 32	≤ 301	185		0.0030	0.0050	0.0065	0.0080					
Duroplastics			145		0.0030	0.0050	0.0065	0.0080					
Thermoplastics													
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Insert 2747 - Body 5242

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR ≤16.000 mm	41/64 - 25/32 in. 16.001 - 20.000 mm	51/64 - 31/32 in. 20.001 - 25.000 mm	63/64 - 1 17/64 in. 25.001 - 31.500 mm	1 1/4 - 1 9/16 in. 31.501 - 40.000 mm	1 37/64 - 1 61/64 in. 40.001 - 50.000 mm
Common structural steels	-	≤ 150							
	≤ 32	≤ 301							
Free-cutting steels	≤ 25	≤ 255							
	≤ 32	≤ 301							
Unalloyed heat-treatable steels	≤ 20	≤ 220							
	≤ 25	≤ 255							
	≤ 32	≤ 301							
Alloyed heat-treatable steels	≤ 32	≤ 301							
	≤ 43	≤ 402							
Unalloyed case hardened steels	≤ 25	≤ 255							
Alloyed case hardened steels	≤ 32	≤ 301							
	≤ 43	≤ 402							
Nitriding steels	≤ 32	≤ 301							
	≤ 43	≤ 402							
Tool steels	≤ 25	≤ 255							
	≤ 43	≤ 402							
High speed steels	≤ 43	≤ 402							
Spring steels	≤ 38	≤ 354							
Cast iron	≤ 23	≤ 242	325	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
	≤ 38	≤ 354	260	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Spheroidal graphite iron and	≤ 23	≤ 242	260	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
malleable cast iron	≤ 38	≤ 354	230	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Chilled cast iron	≤ 38	≤ 354	35	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
New cast materials GGV	≤ 20	≤ 220							
	≤ 32	≤ 301							
New cast materials ADI	≤ 32	≤ 301							
	≤ 43	≤ 402							
Special alloys	≤ 54	≤ 549							
Ti and Ti-alloys	≤ 25	≤ 255							
	≤ 43	≤ 402							
Aluminium and Al-alloys	-	≤ 120	660	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Al wrought alloys	-	≤ 200	595	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Al cast alloys ≤ 10 % Si	-	≤ 180	490	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
≤ 24 % Si	-	≤ 180	390	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Magnesium alloys	-	≤ 120	590	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Copper, low-alloyed	-	≤ 150	225	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Brass, short-chipping	-	≤ 180	585	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
long-chipping	-	≤ 180	390	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Bronze, short-chipping	-	≤ 180	230	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 25	≤ 255	160	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Bronze, long-chipping	≤ 25	≤ 255	145	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 32	≤ 301	115	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Duroplastics			165	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Thermoplastics			165	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Reinforced plastics - Kevlar			165	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Reinforced plastics - GFK / CFK			165	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200

Insert 2747 - Body 5243

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR ≤16.000 mm	41/64 - 25/32 in. 16.001 - 20.000 mm	51/64 - 31/32 in. 20.001 - 25.000 mm	63/64 - 1 17/64 in. 25.001 - 31.500 mm	1 1/4 - 1 9/16 in. 31.501 - 40.000 mm	1 37/64 - 1 61/64 in. 40.001 - 50.000 mm
Common structural steels	-	≤ 150							
	≤ 32	≤ 301							
Free-cutting steels	≤ 25	≤ 255							
	≤ 32	≤ 301							
Unalloyed heat-treatable steels	≤ 20	≤ 220							
	≤ 25	≤ 255							
	≤ 32	≤ 301							
Alloyed heat-treatable steels	≤ 32	≤ 301							
	≤ 43	≤ 402							
Unalloyed case hardened steels	≤ 25	≤ 255							
Alloyed case hardened steels	≤ 32	≤ 301							
	≤ 43	≤ 402							
Nitriding steels	≤ 32	≤ 301							
	≤ 43	≤ 402							
Tool steels	≤ 25	≤ 255							
	≤ 43	≤ 402							
High speed steels	≤ 43	≤ 402							
Spring steels	≤ 38	≤ 354							
Cast iron	≤ 23	≤ 242	295	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
	≤ 38	≤ 354	230	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	230	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
	≤ 38	≤ 354	195	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Chilled cast iron	≤ 38	≤ 354	35	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
New cast materials GGV	≤ 20	≤ 220							
	≤ 32	≤ 301							
New cast materials ADI	≤ 32	≤ 301							
	≤ 43	≤ 402							
Special alloys	≤ 54	≤ 549							
Ti and Ti-alloys	≤ 25	≤ 255							
	≤ 43	≤ 402							
Aluminium and Al-alloys	-	≤ 120	595	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Al wrought alloys	-	≤ 200	595	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Al cast alloys ≤ 10 % Si	-	≤ 180	455	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
≤ 24 % Si	-	≤ 180	355	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Magnesium alloys	-	≤ 120	590	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Copper, low-alloyed	-	≤ 150	230	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Brass, short-chipping	-	≤ 180	585	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
long-chipping	-	≤ 180	390	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Bronze, short-chipping	-	≤ 180	230	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 25	≤ 255	160	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Bronze, long-chipping	≤ 25	≤ 255	145	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 32	≤ 301	115	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Duroplastics			165	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Thermoplastics			165	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Reinforced plastics - Kevlar			165	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Reinforced plastics - GFK / CFK			165	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200

Insert 2747 - Body 5248

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR ≤16.000 mm	41/64 - 25/32 in. 16.001 - 20.000 mm	51/64 - 31/32 in. 20.001 - 25.000 mm	63/64 - 1 17/64 in. 25.001 - 31.500 mm	1 1/4 - 1 9/16 in. 31.501 - 40.000 mm	1 37/64 - 1 61/64 in. 40.001 - 50.000 mm
Common structural steels	-	≤ 150							
	≤ 32	≤ 301							
Free-cutting steels	≤ 25	≤ 255							
	≤ 32	≤ 301							
Unalloyed heat-treatable steels	≤ 20	≤ 220							
	≤ 25	≤ 255							
	≤ 32	≤ 301							
Alloyed heat-treatable steels	≤ 32	≤ 301							
	≤ 43	≤ 402							
Unalloyed case hardened steels	≤ 25	≤ 255							
Alloyed case hardened steels	≤ 32	≤ 301							
	≤ 43	≤ 402							
Nitriding steels	≤ 32	≤ 301							
	≤ 43	≤ 402							
Tool steels	≤ 25	≤ 255							
	≤ 43	≤ 402							
High speed steels	≤ 43	≤ 402							
Spring steels	≤ 38	≤ 354							
Cast iron	≤ 23	≤ 242	295	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 38	≤ 354	230	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	230	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	≤ 38	≤ 354	195	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Chilled cast iron	≤ 38	≤ 354	35	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
New cast materials GGV	≤ 20	≤ 220							
	≤ 32	≤ 301							
New cast materials ADI	≤ 32	≤ 301							
	≤ 43	≤ 402							
Special alloys	≤ 54	≤ 549							
Ti and Ti-alloys	≤ 25	≤ 255							
	≤ 43	≤ 402							
Aluminium and Al-alloys	-	≤ 120	595	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Al wrought alloys	-	≤ 200	595	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Al cast alloys ≤ 10 % Si	-	≤ 180	455	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
≤ 24 % Si	-	≤ 180	355	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Magnesium alloys	-	≤ 120	590	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Copper, low-alloyed	-	≤ 150	230	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Brass, short-chipping	-	≤ 180	585	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
long-chipping	-	≤ 180	390	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Bronze, short-chipping	-	≤ 180	230	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 25	≤ 255	160	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Bronze, long-chipping	≤ 25	≤ 255	145	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	≤ 32	≤ 301	115	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Duroplastics			165	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Thermoplastics			165	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Reinforced plastics - Kevlar			165	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Reinforced plastics - GFK / CFK			165	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160

Note: When drilling from solid with #5248 holder, spot drilling (>140° point angle to a depth

Series # 3899

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR .0039 in. .10 mm	.0063 in. .16 mm	.0098 in .25 mm	.0118 in. .30 mm	.0197 in. .50 mm	.0248 in. .63 mm	.0315 in. .8 mm	.0394 in. 1.0 mm	.0591 in. 1.5 mm	.0787 in. 2.0 mm	.1181 in 3.0 mm
Common structural steels	-	≤ 150	330	0.0003	0.0005	0.0008	0.0009	0.0016	0.0024	0.0031	0.0047	0.0063	0.0079	0.0094
	≤ 32	≤ 301	330	0.0003	0.0005	0.0008	0.0009	0.0016	0.0024	0.0031	0.0047	0.0063	0.0079	0.0094
Free-cutting steels	≤ 25	≤ 255	330	0.0003	0.0005	0.0008	0.0009	0.0016	0.0024	0.0031	0.0047	0.0063	0.0079	0.0094
	≤ 32	≤ 301	295	0.0003	0.0004	0.0007	0.0008	0.0014	0.0020	0.0028	0.0039	0.0055	0.0067	0.0083
Unalloyed heat-treatable steels	≤ 20	≤ 220	295	0.0003	0.0005	0.0008	0.0009	0.0016	0.0024	0.0031	0.0047	0.0063	0.0079	0.0094
	≤ 25	≤ 255	295	0.0003	0.0005	0.0008	0.0009	0.0016	0.0024	0.0031	0.0047	0.0063	0.0079	0.0094
	≤ 32	≤ 301	295	0.0003	0.0004	0.0007	0.0008	0.0014	0.0020	0.0028	0.0039	0.0055	0.0067	0.0083
Alloyed heat-treatable steels	≤ 32	≤ 301	295	0.0003	0.0004	0.0007	0.0008	0.0014	0.0020	0.0028	0.0039	0.0055	0.0067	0.0083
	≤ 43	≤ 402	230	0.0002	0.0004	0.0006	0.0007	0.0012	0.0016	0.0016	0.0035	0.0047	0.0059	0.0071
Unalloyed case hardened steels	≤ 25	≤ 255	330	0.0003	0.0004	0.0007	0.0008	0.0014	0.0020	0.0028	0.0039	0.0055	0.0067	0.0083
Alloyed case hardened steels	≤ 32	≤ 301	280	0.0003	0.0004	0.0007	0.0008	0.0014	0.0020	0.0028	0.0039	0.0055	0.0067	0.0083
	≤ 43	≤ 402	230	0.0002	0.0004	0.0006	0.0007	0.0012	0.0016	0.0016	0.0035	0.0047	0.0059	0.0071
Nitriding steels	≤ 32	≤ 301	230	0.0002	0.0004	0.0006	0.0007	0.0012	0.0016	0.0016	0.0035	0.0047	0.0059	0.0071
	≤ 43	≤ 402	195	0.0002	0.0004	0.0006	0.0007	0.0012	0.0016	0.0016	0.0035	0.0047	0.0059	0.0071
Tool steels	≤ 25	≤ 255	165	0.0002	0.0004	0.0006	0.0007	0.0012	0.0016	0.0016	0.0035	0.0047	0.0059	0.0071
	≤ 43	≤ 402	195	0.0002	0.0004	0.0006	0.0007	0.0012	0.0016	0.0016	0.0035	0.0047	0.0059	0.0071
High speed steels	≤ 43	≤ 402												
Spring steels	≤ 38	≤ 354												
Hardened steels	≤ 48	≤ 460												
	≤ 66	-												
Stainless steels, sulphured	≤ 28	≤ 273												
austenitic	≤ 36	≤ 337												
martensitic	≤ 46	≤ 435												
Cast iron	≤ 23	≤ 242	425	0.0004	0.0007	0.0011	0.0013	0.0022	0.0031	0.0043	0.0063	0.0087	0.0106	0.0130
	≤ 38	≤ 354	425	0.0004	0.0007	0.0011	0.0013	0.0022	0.0031	0.0043	0.0063	0.0087	0.0106	0.0130
Spheroidal graphite iron and	≤ 23	≤ 242	425	0.0004	0.0007	0.0011	0.0013	0.0022	0.0031	0.0043	0.0063	0.0087	0.0106	0.0130
malleable cast iron	≤ 38	≤ 354	395	0.0004	0.0006	0.0010	0.0020	0.0020	0.0031	0.0039	0.0059	0.0083	0.0102	0.0122
Chilled cast iron	≤ 38	≤ 354												
New cast materials GGV	≤ 20	≤ 220												
	≤ 32	≤ 301												
New cast materials ADI	≤ 32	≤ 301												
	≤ 43	≤ 402												
Special alloys	≤ 54	≤ 549												
Ti and Ti-alloys	≤ 25	≤ 255												
	≤ 43	≤ 402												
Aluminium and Al-alloys	-	≤ 120												
Al wrought alloys	-	≤ 200												
Al cast alloys ≤ 10 % Si	-	≤ 180												
≤ 24 % Si	-	≤ 180												
Magnesium alloys	-	≤ 120												
Copper, low-alloyed	-	≤ 150												
Brass, short-chipping	-	≤ 180												
long-chipping	-	≤ 180												
Bronze, short-chipping	-	≤ 180												
	≤ 25	≤ 255												
Bronze, long-chipping	≤ 25	≤ 255												
	≤ 32	≤ 301												
Duroplastics														
Thermoplastics														
Reinforced plastics - Kevlar														
Reinforced plastics - GFK / CFK														

Insert 4111 - Body 4105 & 4106

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	425				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 32	≤ 301	360				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Free-cutting steels	≤ 25	≤ 255	425				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
	≤ 32	≤ 301	360				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Unalloyed heat-treatable steels	≤ 20	≤ 220	425				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 25	≤ 255	410				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 32	≤ 301	360				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Alloyed heat-treatable steels	≤ 32	≤ 301	360				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 43	≤ 402	295				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Unalloyed case hardened steels	≤ 25	≤ 255	425				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Alloyed case hardened steels	≤ 32	≤ 301	360				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 43	≤ 402	230				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
Nitriding steels	≤ 32	≤ 301	345				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 43	≤ 402	230				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
Tool steels	≤ 25	≤ 255	195				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 43	≤ 402	180				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
High speed steels	≤ 43	≤ 402	180				0.0050	0.0050	0.0065	0.0080	0.0100	0.0100	0.0125
Spring steels	≤ 38	≤ 354	165				0.0040	0.0040	0.0050	0.0065	0.0080	0.0080	0.0100
Hardened steels	≤ 48	≤ 460	80				0.0040	0.0040	0.0050	0.0065	0.0080	0.0080	0.0100
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273	180				0.0050	0.0050	0.0065	0.0080	0.0100	0.0100	0.0125
austenitic	≤ 36	≤ 337	130				0.0050	0.0050	0.0065	0.0080	0.0100	0.0100	0.0125
martensitic	≤ 46	≤ 435	115				0.0050	0.0050	0.0065	0.0080	0.0100	0.0100	0.0125
Cast iron	≤ 23	≤ 242	330				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 38	≤ 354	295				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Spheroidal graphite iron and	≤ 23	≤ 242	395				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
malleable cast iron	≤ 38	≤ 354	330				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Chilled cast iron	≤ 38	≤ 354	295				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
New cast materials GGV	≤ 20	≤ 220	260				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 32	≤ 301	260				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
New cast materials ADI	≤ 32	≤ 301	260				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 43	≤ 402	260				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Special alloys	≤ 54	≤ 549	80				0.0040	0.0040	0.0050	0.0065	0.0080	0.0080	0.0100
Ti and Ti-alloys	≤ 25	≤ 255	130				0.0050	0.0050	0.0065	0.0080	0.0100	0.0100	0.0125
	≤ 43	≤ 402	115				0.0040	0.0040	0.0050	0.0065	0.0080	0.0080	0.0100
Aluminum and Al-alloys	-	≤ 120	655				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Al wrought alloys	-	≤ 200	590				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Al cast alloys ≤ 10 % Si	-	≤ 180	490				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
≤ 24 % Si	-	≤ 180	395				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Magnesium alloys	-	≤ 120	590				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Copper, low-alloyed	-	≤ 150	230				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Brass, short-chipping	-	≤ 180	590				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
long-chipping	-	≤ 180	395				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Bronze, short-chipping	-	≤ 180	230				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 25	≤ 255	165				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Bronze, long-chipping	≤ 25	≤ 255	150				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 32	≤ 301	115				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195

Speeds & Feeds - Insert 4112

Body 4105 through 4107

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	425				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 32	≤ 301	360				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Free-cutting steels	≤ 25	≤ 255	425				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
	≤ 32	≤ 301	360				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Unalloyed heat-treatable steels	≤ 20	≤ 220	425				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 25	≤ 255	410				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 32	≤ 301	360				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Alloyed heat-treatable steels	≤ 32	≤ 301	360				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 43	≤ 402	295				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Unalloyed case hardened steels	≤ 25	≤ 255	425				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Alloyed case hardened steels	≤ 32	≤ 301	360				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 43	≤ 402	230				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
Nitriding steels	≤ 32	≤ 301	345				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 43	≤ 402	230				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
Tool steels	≤ 25	≤ 255	195				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 43	≤ 402	180				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
High speed steels	≤ 43	≤ 402	180				0.0050	0.0050	0.0065	0.0080	0.0100	0.0100	0.0125
Spring steels	≤ 38	≤ 354	165				0.0040	0.0040	0.0050	0.0065	0.0080	0.0080	0.0100

Body 4108

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	410				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 32	≤ 301	345				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Free-cutting steels	≤ 25	≤ 255	410				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
	≤ 32	≤ 301	345				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Unalloyed heat-treatable steels	≤ 20	≤ 220	410				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 25	≤ 255	395				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 32	≤ 301	345				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Alloyed heat-treatable steels	≤ 32	≤ 301	345				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 43	≤ 402	280				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Unalloyed case hardened steels	≤ 25	≤ 255	410				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Alloyed case hardened steels	≤ 32	≤ 301	345				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 43	≤ 402	230				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
Nitriding steels	≤ 32	≤ 301	345				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 43	≤ 402	230				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
Tool steels	≤ 25	≤ 255	180				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 43	≤ 402	165				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
High speed steels	≤ 43	≤ 402	180				0.0050	0.0050	0.0065	0.0080	0.0100	0.0100	0.0125
Spring steels	≤ 38	≤ 354	165				0.0040	0.0040	0.0050	0.0065	0.0080	0.0080	0.0100

Body 4109

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	395				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 32	≤ 301	345				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
Free-cutting steels	≤ 25	≤ 255	395				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 32	≤ 301	345				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Unalloyed heat-treatable steels	≤ 20	≤ 220	395				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 25	≤ 255	360				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 32	≤ 301	330				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
Alloyed heat-treatable steels	≤ 32	≤ 301	330				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 43	≤ 402	280				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
Unalloyed case hardened steels	≤ 25	≤ 255	395				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Alloyed case hardened steels	≤ 32	≤ 301	330				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 43	≤ 402	230				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
Nitriding steels	≤ 32	≤ 301	345				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
	≤ 43	≤ 402	230				0.0050	0.0050	0.0065	0.0080	0.0100	0.0100	0.0125
Tool steels	≤ 25	≤ 255	180				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
	≤ 43	≤ 402	165				0.0050	0.0050	0.0065	0.0080	0.0100	0.0100	0.0125
High speed steels	≤ 43	≤ 402	180				0.0040	0.0040	0.0050	0.0065	0.0080	0.0080	0.0100
Spring steels	≤ 38	≤ 354	165				0.0040	0.0040	0.0050	0.0065	0.0080	0.0080	0.0100

Body 4110

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	360				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 32	≤ 301	310				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
Free-cutting steels	≤ 25	≤ 255	330				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 32	≤ 301	310				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Unalloyed heat-treatable steels	≤ 20	≤ 220	330				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 25	≤ 255	310				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 32	≤ 301	295				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
Alloyed heat-treatable steels	≤ 32	≤ 301	295				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 43	≤ 402	280				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
Unalloyed case hardened steels	≤ 25	≤ 255	330				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Alloyed case hardened steels	≤ 32	≤ 301	295				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 43	≤ 402	230				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
Nitriding steels	≤ 32	≤ 301	310				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
	≤ 43	≤ 402	230				0.0050	0.0050	0.0065	0.0080	0.0100	0.0100	0.0125
Tool steels	≤ 25	≤ 255	180				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
	≤ 43	≤ 402	165				0.0050	0.0050	0.0065	0.0080	0.0100	0.0100	0.0125
High speed steels	≤ 43	≤ 402	180				0.0040	0.0040	0.0050	0.0065	0.0080	0.0080	0.0100
Spring steels	≤ 38	≤ 354	165				0.0040	0.0040	0.0050	0.0065	0.0080	0.0080	0.0100

Speeds & Feeds - Insert 4113

Body 4105 through 4108

Material group	Hardness		SFM	Feed Rate - IPR									
	HRc	Bhn		1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Cast iron	≤ 23	≤ 242	330				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	< 38	< 354	295				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	395				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
	< 38	< 354	330				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20	≤ 220	260				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	< 32	< 301	260				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
New cast materials ADI	≤ 32	≤ 301	260				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	< 43	< 402	260				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195

Body 4109 & 4110

Material group	Hardness		SFM	Feed Rate - IPR									
	HRc	Bhn		1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Cast iron	≤ 23	≤ 242	260				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	< 38	< 354	230				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	330				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
	< 38	< 354	260				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20	≤ 220	195				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	< 32	< 301	195				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
New cast materials ADI	≤ 32	≤ 301	195				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	< 43	< 402	195				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195

Speeds & Feeds - Insert 4114

Body 4105 through 4107

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Aluminum and Al-alloys	-	≤ 120	655				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Al wrought alloys	-	≤ 200	590				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Al cast alloys ≤ 10 % Si	-	≤ 180	490				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
≤ 24 % Si	-	≤ 180	395				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Magnesium alloys	-	≤ 120	590				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Copper, low-alloyed	-	≤ 150	230				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Brass, short-chipping	-	≤ 180	590				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
long-chipping	-	≤ 180	395				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Bronze, short-chipping	-	≤ 180	230				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 25	≤ 255	165				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Bronze, long-chipping	≤ 25	≤ 255	150				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 32	≤ 301	115				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195

Body 4108

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Aluminum and Al-alloys	-	≤ 120	590				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Al wrought alloys	-	≤ 200	590				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Al cast alloys ≤ 10 % Si	-	≤ 180	460				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
≤ 24 % Si	-	≤ 180	360				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Magnesium alloys	-	≤ 120	590				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Copper, low-alloyed	-	≤ 150	230				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Brass, short-chipping	-	≤ 180	590				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
long-chipping	-	≤ 180	395				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Bronze, short-chipping	-	≤ 180	230				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 25	≤ 255	165				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Bronze, long-chipping	≤ 25	≤ 255	150				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
	≤ 32	≤ 301	115				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195

Body 4109

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Aluminum and Al-alloys	-	≤ 120	590				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Al wrought alloys	-	≤ 200	590				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Al cast alloys ≤ 10 % Si	-	≤ 180	460				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
≤ 24 % Si	-	≤ 180	360				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Magnesium alloys	-	≤ 120	590				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Copper, low-alloyed	-	≤ 150	230				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Brass, short-chipping	-	≤ 180	590				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
long-chipping	-	≤ 180	395				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Bronze, short-chipping	-	≤ 180	230				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 25	≤ 255	165				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Bronze, long-chipping	≤ 25	≤ 255	150				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 32	≤ 301	115				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155

Body 4110

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Aluminum and Al-alloys	-	≤ 120	490				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Al wrought alloys	-	≤ 200	490				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Al cast alloys ≤ 10 % Si	-	≤ 180	425				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
≤ 24 % Si	-	≤ 180	345				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Magnesium alloys	-	≤ 120	490				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Copper, low-alloyed	-	≤ 150	230				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Brass, short-chipping	-	≤ 180	490				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
long-chipping	-	≤ 180	360				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Bronze, short-chipping	-	≤ 180	230				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 25	≤ 255	165				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Bronze, long-chipping	≤ 25	≤ 255	150				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
	≤ 32	≤ 301	115				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155

Speeds & Feeds - Insert 4115

Body 4105 through 4108

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Hardened steels	≤ 48 < 66	≤ 460 -	80				0.0040	0.0040	0.0050	0.0065	0.0080	0.0080	0.0100
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 < 46	≤ 273 ≤ 337 < 435	180 130 115				0.0050 0.0050 0.0050	0.0050 0.0050 0.0050	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0100 0.0100 0.0100	0.0100 0.0100 0.0100	0.0125 0.0125 0.0125
Cast iron	≤ 23 < 38	≤ 242 < 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 < 38	≤ 242 < 354											
Chilled cast iron	≤ 38	≤ 354	295				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
New cast materials GGV	≤ 20 < 32	≤ 220 < 301											
New cast materials ADI	≤ 32 < 43	≤ 301 < 402											
Special alloys	≤ 54	≤ 549	80				0.0040	0.0040	0.0050	0.0065	0.0080	0.0080	0.0100
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	130 115				0.0050 0.0040	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0125 0.0100

Body 4109 & 4110

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Hardened steels	≤ 48 < 66	≤ 460 -	80				0.0030	0.0030	0.0040	0.0050	0.0065	0.0065	0.0080
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 < 46	≤ 273 ≤ 337 < 435	180 130 115				0.0040 0.0040 0.0040	0.0040 0.0040 0.0040	0.0050 0.0050 0.0050	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0080 0.0080 0.0080	0.0100 0.0100 0.0100
Cast iron	≤ 23 < 38	≤ 242 < 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 < 38	≤ 242 < 354											
Chilled cast iron	≤ 38	≤ 354	230				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
New cast materials GGV	≤ 20 < 32	≤ 220 < 301											
New cast materials ADI	≤ 32 < 43	≤ 301 < 402											
Special alloys	≤ 54	≤ 549	80				0.0030	0.0030	0.0040	0.0050	0.0065	0.0065	0.0080
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	130 115				0.0040 0.0030	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0100 0.0080

Speeds & Feeds - Insert 4229

Body 4107 through 4109

Material group	Hardness		SFM	Feed Rate - IPR									
	HRc	Bhn		1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	330 260				0.0080 0.0080	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0155 0.0155	0.0155 0.0155	0.0195 0.0195
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											

Body 4110

Material group	Hardness		SFM	Feed Rate - IPR									
	HRc	Bhn		1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	280 230				0.0065 0.0065	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0155 0.0155
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											

Series # 5020, 5021, 5024, 5026 - EB100 Less than 35xD

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	330	0.0003	0.0006	0.0009	0.0015						
	≤ 32	≤ 301	280	0.0003	0.0006	0.0009	0.0015						
Free-cutting steels	≤ 25	≤ 255	295	0.0003	0.0006	0.0009	0.0015						
	≤ 32	≤ 301	260	0.0003	0.0006	0.0009	0.0015						
Unalloyed heat-treatable steels	≤ 20	≤ 220	295	0.0002	0.0004	0.0005	0.0010						
	≤ 25	≤ 255	260	0.0002	0.0004	0.0005	0.0010						
	≤ 32	≤ 301	245	0.0002	0.0004	0.0005	0.0010						
Alloyed heat-treatable steels	≤ 32	≤ 301	245	0.0002	0.0004	0.0005	0.0010						
	≤ 43	≤ 402	215	0.0002	0.0004	0.0005	0.0010						
Unalloyed case hardened steels	≤ 25	≤ 255	260	0.0003	0.0006	0.0009	0.0015						
Alloyed case hardened steels	≤ 32	≤ 301	245	0.0002	0.0004	0.0005	0.0010						
	≤ 43	≤ 402	215	0.0002	0.0004	0.0005	0.0010						
Nitriding steels	≤ 32	≤ 301	245	0.0002	0.0004	0.0005	0.0010						
	≤ 43	≤ 402	215	0.0002	0.0004	0.0005	0.0010						
Tool steels	≤ 25	≤ 255	245	0.0002	0.0003	0.0004	0.0006						
	≤ 43	≤ 402	215	0.0002	0.0003	0.0004	0.0006						
High speed steels	≤ 43	≤ 402	180	0.0001	0.0002	0.0003	0.0004						
Spring steels	≤ 38	≤ 354	215	0.0002	0.0003	0.0004	0.0006						
Hardened steels	≤ 48	≤ 460	100	0.0002	0.0003	0.0004	0.0006						
	≤ 66	-	80	0.0001	0.0002	0.0003	0.0004						
Stainless steels, sulphured	≤ 28	≤ 273	180	0.0002	0.0004	0.0005	0.0010						
austenitic	≤ 36	≤ 337	150	0.0002	0.0004	0.0005	0.0010						
martensitic	≤ 46	≤ 435	115	0.0002	0.0004	0.0005	0.0010						
Cast iron	≤ 23	≤ 242	280	0.0005	0.0009	0.0014	0.0020						
	≤ 38	≤ 354	260	0.0005	0.0009	0.0014	0.0020						
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	260	0.0003	0.0006	0.0009	0.0015						
	≤ 38	≤ 354	230	0.0003	0.0006	0.0009	0.0015						
Chilled cast iron	≤ 38	≤ 354	180	0.0002	0.0004	0.0005	0.0010						
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549	115	0.0001	0.0002	0.0003	0.0004						
Ti and Ti-alloys	≤ 25	≤ 255	115	0.0001	0.0002	0.0003	0.0004						
	≤ 43	≤ 402	100	0.0001	0.0002	0.0003	0.0004						
Aluminium and Al-alloys	-	≤ 120	490	0.0008	0.0016	0.0024	0.0028						
Al wrought alloys	-	≤ 200	395	0.0008	0.0016	0.0024	0.0028						
Al cast alloys ≤ 10 % Si	-	≤ 180	490	0.0013	0.0024	0.0033	0.0047						
≤ 24 % Si	-	≤ 180	425	0.0013	0.0024	0.0033	0.0047						
Magnesium alloys	-	≤ 120	360	0.0008	0.0016	0.0024	0.0028						
Copper, low-alloyed	-	≤ 150	245	0.0003	0.0006	0.0009	0.0015						
Brass, short-chipping	-	≤ 180	395	0.0013	0.0024	0.0033	0.0047						
long-chipping	-	≤ 180	295	0.0013	0.0024	0.0033	0.0047						
Bronze, short-chipping	-	≤ 180	310	0.0008	0.0016	0.0024	0.0028						
	≤ 25	≤ 255	310	0.0008	0.0016	0.0024	0.0028						
Bronze, long-chipping	≤ 25	≤ 255	230	0.0008	0.0016	0.0024	0.0028						
	≤ 32	≤ 301	230	0.0008	0.0016	0.0024	0.0028						
Duroplastics			245	0.0003	0.0006	0.0009	0.0015						
Thermoplastics			230	0.0003	0.0006	0.0009	0.0015						
Reinforced plastics - Kevlar			195	0.0002	0.0004	0.0005	0.0010						
Reinforced plastics - GFK / CFK			165	0.0002	0.0004	0.0005	0.0010						

Series # 5020, 5021, 5024, 5026 - EB100 Greater than 35xD

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	310	0.0002	0.0004	0.0005	0.0010						
	≤ 32	≤ 301	260	0.0002	0.0004	0.0005	0.0010						
Free-cutting steels	≤ 25	≤ 255	280	0.0002	0.0004	0.0005	0.0010						
	≤ 32	≤ 301	245	0.0002	0.0004	0.0005	0.0010						
Unalloyed heat-treatable steels	≤ 20	≤ 220	280	0.0002	0.0003	0.0004	0.0006						
	≤ 25	≤ 255	245	0.0002	0.0003	0.0004	0.0006						
	≤ 32	≤ 301	230	0.0002	0.0003	0.0004	0.0006						
Alloyed heat-treatable steels	≤ 32	≤ 301	230	0.0002	0.0003	0.0004	0.0006						
	≤ 43	≤ 402	195	0.0002	0.0003	0.0004	0.0006						
Unalloyed case hardened steels	≤ 25	≤ 255	245	0.0002	0.0004	0.0005	0.0010						
Alloyed case hardened steels	≤ 32	≤ 301	230	0.0002	0.0003	0.0004	0.0006						
	≤ 43	≤ 402	195	0.0002	0.0003	0.0004	0.0006						
Nitriding steels	≤ 32	≤ 301	230	0.0002	0.0003	0.0004	0.0006						
	≤ 43	≤ 402	195	0.0002	0.0003	0.0004	0.0006						
Tool steels	≤ 25	≤ 255	230	0.0001	0.0002	0.0003	0.0004						
	≤ 43	≤ 402	195	0.0001	0.0002	0.0003	0.0004						
High speed steels	≤ 43	≤ 402	165	0.0001	0.0002	0.0003	0.0004						
Spring steels	≤ 38	≤ 354	195	0.0002	0.0003	0.0004	0.0006						
Hardened steels	≤ 48	≤ 460	80	0.0001	0.0002	0.0003	0.0004						
	≤ 66	-	65	0.0001	0.0002	0.0003	0.0004						
Stainless steels, sulphured	≤ 28	≤ 273	165	0.0002	0.0003	0.0004	0.0006						
austenitic	≤ 36	≤ 337	130	0.0002	0.0003	0.0004	0.0006						
martensitic	≤ 46	≤ 435	115	0.0002	0.0003	0.0004	0.0006						
Cast iron	≤ 23	≤ 242	260	0.0003	0.0006	0.0009	0.0015						
	≤ 38	≤ 354	245	0.0003	0.0006	0.0009	0.0015						
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	245	0.0002	0.0004	0.0005	0.0010						
	≤ 38	≤ 354	215	0.0002	0.0004	0.0005	0.0010						
Chilled cast iron	≤ 38	≤ 354	165	0.0002	0.0003	0.0004	0.0006						
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549	100	0.0001	0.0002	0.0003	0.0004						
Ti and Ti-alloys	≤ 25	≤ 255	100	0.0001	0.0002	0.0003	0.0004						
	≤ 43	≤ 402	80	0.0001	0.0002	0.0003	0.0004						
Aluminium and Al-alloys	-	≤ 120	460	0.0003	0.0006	0.0009	0.0015						
Al wrought alloys	-	≤ 200	375	0.0003	0.0006	0.0009	0.0015						
Al cast alloys ≤ 10 % Si	-	≤ 180	460	0.0008	0.0016	0.0024	0.0028						
≤ 24 % Si	-	≤ 180	395	0.0008	0.0016	0.0024	0.0028						
Magnesium alloys	-	≤ 120	0	0.0005	0.0009	0.0014	0.0020						
Copper, low-alloyed	-	≤ 150	230	0.0002	0.0004	0.0005	0.0010						
Brass, short-chipping	-	≤ 180	375	0.0008	0.0016	0.0024	0.0028						
long-chipping	-	≤ 180	280	0.0008	0.0016	0.0024	0.0028						
Bronze, short-chipping	-	≤ 180	295	0.0005	0.0009	0.0014	0.0020						
	≤ 25	≤ 255	295	0.0005	0.0009	0.0014	0.0020						
Bronze, long-chipping	≤ 25	≤ 255	215	0.0005	0.0009	0.0014	0.0020						
	≤ 32	≤ 301	215	0.0002	0.0004	0.0005	0.0010						
Duroplastics			230	0.0002	0.0004	0.0005	0.0010						
Thermoplastics			215	0.0002	0.0004	0.0005	0.0010						
Reinforced plastics - Kevlar			180	0.0002	0.0003	0.0004	0.0006						
Reinforced plastics - GFK / CFK			150	0.0002	0.0003	0.0004	0.0006						

Series # 5500, 5501, 5538, 5539

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 6.30 mm	8.00 mm	10.00 mm	12.50 mm	16.00 mm	20.00 mm	25.00 mm	31.50 mm
Common structural steels	-	≤ 150	135	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 32	≤ 301	130	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
Free-cutting steels	≤ 25	≤ 255	135	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 32	≤ 301	130	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
Unalloyed heat-treatable steels	≤ 20	≤ 220	135	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 25	≤ 255	130	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 32	≤ 301	80	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
Alloyed heat-treatable steels	≤ 32	≤ 301	60	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 43	≤ 402	50	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
Unalloyed case hardened steels	≤ 25	≤ 255	105	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
Alloyed case hardened steels	≤ 32	≤ 301	60	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 43	≤ 402	45	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
Nitriding steels	≤ 32	≤ 301	60	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
	≤ 43	≤ 402	50	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
Tool steels	≤ 25	≤ 255	70	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
	≤ 43	≤ 402	60	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
High speed steels	≤ 43	≤ 402	60	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
Spring steels	≤ 38	≤ 354	45	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
Hardened steels	≤ 48	≤ 460									
	≤ 66	-									
Stainless steels, sulphured	≤ 28	≤ 273	65	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
austenitic	≤ 36	≤ 337	50	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
martensitic	≤ 46	≤ 435	60	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
Cast iron	≤ 23	≤ 242	105	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 38	≤ 354	65	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	90	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 38	≤ 354	80	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
Chilled cast iron	≤ 38	≤ 354	35	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
New cast materials GGV	≤ 20	≤ 220	90	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 32	≤ 301	60	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
New cast materials ADI	≤ 32	≤ 301									
	≤ 43	≤ 402									
Special alloys	≤ 54	≤ 549	35	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
Ti and Ti-alloys	≤ 25	≤ 255	60	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
	≤ 43	≤ 402	45	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
Aluminium and Al-alloys	-	≤ 120	375	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Al wrought alloys	-	≤ 200	290	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Al cast alloys ≤ 10 % Si	-	≤ 180	165	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
≤ 24 % Si	-	≤ 180	130	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
Magnesium alloys	-	≤ 120	415	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Copper, low-alloyed	-	≤ 150	250	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Brass, short-chipping	-	≤ 180	330	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
long-chipping	-	≤ 180	210	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Bronze, short-chipping	-	≤ 180	130	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
	≤ 25	≤ 255	110	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Bronze, long-chipping	≤ 25	≤ 255	100	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
	≤ 32	≤ 301	80	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Duroplastics			130	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Thermoplastics			165	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Reinforced plastics - Kevlar											
Reinforced plastics - GFK / CFK											

Series # 5503

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 6.30 mm	8.00 mm	10.00 mm	12.50 mm	16.00 mm	20.00 mm	25.00 mm	31.50 mm
Common structural steels	-	≤ 150	120	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 32	≤ 301	115	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
Free-cutting steels	≤ 25	≤ 255	120	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 32	≤ 301	115	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
Unalloyed heat-treatable steels	≤ 20	≤ 220	120	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 25	≤ 255	115	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 32	≤ 301	75	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
Alloyed heat-treatable steels	≤ 32	≤ 301	55	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 43	≤ 402	45	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
Unalloyed case hardened steels	≤ 25	≤ 255	95	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
Alloyed case hardened steels	≤ 32	≤ 301	55	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 43	≤ 402	40	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
Nitriding steels	≤ 32	≤ 301	55	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
	≤ 43	≤ 402	45	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
Tool steels	≤ 25	≤ 255	65	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
	≤ 43	≤ 402	55	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
High speed steels	≤ 43	≤ 402	55	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
Spring steels	≤ 38	≤ 354	40	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
Hardened steels	≤ 48	≤ 460									
	≤ 66	-									
Stainless steels, sulphured	≤ 28	≤ 273	60	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
austenitic	≤ 36	≤ 337	45	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
martensitic	≤ 46	≤ 435	50	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
Cast iron	≤ 23	≤ 242	95	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 38	≤ 354	60	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 38	≤ 354	75	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
Chilled cast iron	≤ 38	≤ 354	30	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
New cast materials GGV	≤ 20	≤ 220	80	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
	≤ 32	≤ 301	50	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
New cast materials ADI	≤ 32	≤ 301									
	≤ 43	≤ 402									
Special alloys	≤ 54	≤ 549	30	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
Ti and Ti-alloys	≤ 25	≤ 255	55	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0065	0.0030
	≤ 43	≤ 402	40	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0045	0.0015
Aluminium and Al-alloys	-	≤ 120	340	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Al wrought alloys	-	≤ 200	265	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Al cast alloys ≤ 10 % Si	-	≤ 180	150	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
≤ 24 % Si	-	≤ 180	115	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0095	0.0045
Magnesium alloys	-	≤ 120	375	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Copper, low-alloyed	-	≤ 150	225	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Brass, short-chipping	-	≤ 180	300	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
long-chipping	-	≤ 180	190	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Bronze, short-chipping	-	≤ 180	115	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
	≤ 25	≤ 255	100	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Bronze, long-chipping	≤ 25	≤ 255	90	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
	≤ 32	≤ 301	75	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Duroplastics			115	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Thermoplastics			150	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0120	0.0060
Reinforced plastics - Kevlar											
Reinforced plastics - GFK / CFK											

Series # 5510

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	475 395		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140			
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	560 475		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200	0.0220 0.0220			
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	425 410 395		0.0080 0.0065 0.0065	0.0125 0.0100 0.0100	0.0160 0.0125 0.0125	0.0200 0.0160 0.0160	0.0200 0.0160 0.0160	0.0220 0.0180 0.0180			
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 345		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160	0.0180 0.0180			
Unalloyed case hardened steels	≤ 25	≤ 255	475		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220			
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 280		0.0065 0.0040	0.0100 0.0065	0.0125 0.0080	0.0160 0.0100	0.0160 0.0100	0.0180 0.0110			
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	360 345		0.0065 0.0040	0.0100 0.0065	0.0125 0.0080	0.0160 0.0100	0.0160 0.0100	0.0180 0.0110			
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	260 215		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110			
High speed steels	≤ 43	≤ 402	195		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
Spring steels	≤ 38	≤ 354	195		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
Hardened steels	≤ 48 ≤ 66	≤ 460 -	180 115		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050	0.0065 0.0050	0.0070 0.0055			
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	195 180 165		0.0040 0.0040 0.0040	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0100 0.0100 0.0100	0.0100 0.0100 0.0100	0.0110 0.0110 0.0110			
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	690 525		0.0100 0.0100	0.0160 0.0160	0.0200 0.0200	0.0245 0.0245	0.0245 0.0245	0.0265 0.0265			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	460 425		0.0100 0.0080	0.0160 0.0125	0.0200 0.0160	0.0245 0.0200	0.0245 0.0200	0.0265 0.0220			
Chilled cast iron	≤ 38	≤ 354	130		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	115		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	150 130		0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090			
Aluminium and Al-alloys	-	≤ 120	1015		0.0100	0.0160	0.0200	0.0245	0.0245	0.0265			
Al wrought alloys	-	≤ 200	1015		0.0100	0.0160	0.0200	0.0245	0.0245	0.0265			
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	855 720		0.0100 0.0100	0.0160 0.0160	0.0200 0.0200	0.0245 0.0245	0.0245 0.0245	0.0265 0.0265			
Magnesium alloys	-	≤ 120	920		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220			
Copper, low-alloyed	-	≤ 150	410		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	1065 720		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160	0.0220 0.0180			
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	410 345		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140			
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	295 260		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140			
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 5511

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	475 395		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	560 475		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200	0.0220 0.0220	0.0245 0.0245		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	425 410 395		0.0080 0.0065 0.0065	0.0125 0.0100 0.0100	0.0160 0.0125 0.0125	0.0200 0.0160 0.0160	0.0200 0.0160 0.0160	0.0220 0.0180 0.0180	0.0245 0.0200 0.0200		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 345		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160	0.0180 0.0180	0.0200 0.0200		
Unalloyed case hardened steels	≤ 25	≤ 255	475		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 280		0.0065 0.0040	0.0100 0.0065	0.0125 0.0080	0.0160 0.0100	0.0160 0.0100	0.0180 0.0110	0.0200 0.0125		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	350 330		0.0065 0.0040	0.0100 0.0065	0.0125 0.0080	0.0160 0.0100	0.0160 0.0100	0.0180 0.0110	0.0200 0.0125		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	240 180		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125		
High speed steels	≤ 43	≤ 402	195		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
Spring steels	≤ 38	≤ 354	195		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
Hardened steels	≤ 48 ≤ 66	≤ 460 -	180 115		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050	0.0065 0.0050	0.0070 0.0055	0.0080 0.0065		
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	195 180 165		0.0040 0.0040 0.0040	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0100 0.0100 0.0100	0.0100 0.0100 0.0100	0.0110 0.0110 0.0110	0.0125 0.0125 0.0125		
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	690 525		0.0100 0.0100	0.0160 0.0160	0.0200 0.0200	0.0245 0.0245	0.0245 0.0245	0.0265 0.0265	0.0290 0.0290		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	450 425		0.0100 0.0080	0.0160 0.0125	0.0200 0.0160	0.0245 0.0200	0.0245 0.0200	0.0265 0.0220	0.0290 0.0245		
Chilled cast iron	≤ 38	≤ 354	130		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	115		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	150 130		0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070	0.0100 0.0080		
Aluminium and Al-alloys	-	≤ 120	1015		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Al wrought alloys	-	≤ 200	1015		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	855 720		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200	0.0220 0.0220	0.0245 0.0245		
Magnesium alloys	-	≤ 120	920		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Copper, low-alloyed	-	≤ 150	410		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	1065 720		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160	0.0220 0.0180	0.0245 0.0200		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	410 345		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	295 260		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 5512

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	460 395		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	550 480		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160	0.0180 0.0180	0.0200 0.0200		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	415 400 395		0.0065 0.0050 0.0050	0.0100 0.0080 0.0080	0.0125 0.0100 0.0100	0.0160 0.0125 0.0125	0.0160 0.0125 0.0125	0.0180 0.0140 0.0140	0.0200 0.0160 0.0160		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 335		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160		
Unalloyed case hardened steels	≤ 25	≤ 255	465		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 270		0.0050 0.0030	0.0080 0.0050	0.0100 0.0065	0.0125 0.0080	0.0125 0.0080	0.0140 0.0090	0.0160 0.0100		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	340 325		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	230 175		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090	0.0125 0.0100		
High speed steels	≤ 43	≤ 402	195		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
Spring steels	≤ 38	≤ 354	195		0.0020	0.0030	0.0040	0.0050	0.0050	0.0055	0.0065		
Hardened steels	≤ 48 ≤ 66	≤ 460 -	175 110		0.0020 0.0020	0.0030 0.0030	0.0040 0.0040	0.0050 0.0050	0.0050 0.0050	0.0055 0.0055	0.0065 0.0065		
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	195 175 155		0.0030 0.0030 0.0030	0.0050 0.0050 0.0050	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0080 0.0080 0.0080	0.0090 0.0090 0.0090	0.0100 0.0100 0.0100		
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	640 525		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200	0.0220 0.0220	0.0245 0.0245		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	435 415		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160	0.0220 0.0180	0.0245 0.0200		
Chilled cast iron	≤ 38	≤ 354	130		0.0020	0.0030	0.0040	0.0050	0.0050	0.0055	0.0065		
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	110		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	140 130		0.0020 0.0020	0.0030 0.0030	0.0040 0.0040	0.0050 0.0050	0.0050 0.0050	0.0055 0.0055	0.0065 0.0065		
Aluminium and Al-alloys	-	≤ 120	1000		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Al wrought alloys	-	≤ 200	1000		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	845 710		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200	0.0220 0.0220	0.0245 0.0245		
Magnesium alloys	-	≤ 120	900		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Copper, low-alloyed	-	≤ 150	400		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	1050 710		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160	0.0220 0.0180	0.0245 0.0200		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	410 345		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	285 250		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 5513

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	395 330		0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	295 260		0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110			
Chilled cast iron	≤ 38	≤ 354	130		0.0020	0.0030	0.0040	0.0050	0.0055	0.0065			
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	1345		0.0065	0.0100	0.0125	0.0160	0.0180	0.0200			
Al wrought alloys	-	≤ 200	1345		0.0065	0.0100	0.0125	0.0160	0.0180	0.0200			
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	1245 1080		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0180 0.0180	0.0200 0.0200			
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	920		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	360 260		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090			
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Note: Pilot holes (depth >1xD) are recommended when drilling depths greater than 7xD. The pilot hole can be produced with a short, rigid drill. The diameter should be 0.01 - 0.02 mm larger than the diameter of the finish drill. Ratio drills can produce their own pilot hole by reducing speed and feed rates by 30-40%.

Series # 5514

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	425 360		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	475 360		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	395 360 345		0.0065 0.0065 0.0065	0.0100 0.0100 0.0100	0.0125 0.0125 0.0125	0.0160 0.0160 0.0160	0.0160 0.0160 0.0160				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	345 330		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Unalloyed case hardened steels	≤ 25	≤ 255	425		0.0080	0.0125	0.0160	0.0200	0.0200				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 280		0.0065 0.0040	0.0100 0.0065	0.0125 0.0080	0.0160 0.0100	0.0160 0.0100				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	330 295		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	215 180		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
High speed steels	≤ 43	≤ 402	150		0.0030	0.0050	0.0065	0.0080	0.0080				
Spring steels	≤ 38	≤ 354	150		0.0025	0.0040	0.0050	0.0065	0.0065				
Hardened steels	≤ 48 ≤ 66	≤ 460 -	150 80		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050	0.0065 0.0050				
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	180 150 150		0.0030 0.0030 0.0025	0.0050 0.0050 0.0040	0.0065 0.0065 0.0050	0.0080 0.0080 0.0065	0.0080 0.0080 0.0065				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	690 510		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	510 410		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160				
Chilled cast iron	≤ 38	≤ 354	115		0.0025	0.0040	0.0050	0.0065	0.0065				
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	80		0.0030	0.0050	0.0065	0.0080	0.0080				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	130 115		0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Aluminium and Al-alloys	-	≤ 120	855		0.0100	0.0160	0.0200	0.0245	0.0245				
Al wrought alloys	-	≤ 200	855		0.0100	0.0160	0.0200	0.0245	0.0245				
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	720 590		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200				
Magnesium alloys	-	≤ 120	855		0.0080	0.0125	0.0160	0.0200	0.0200				
Copper, low-alloyed	-	≤ 150	360		0.0065	0.0065	0.0100	0.0125	0.0125				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	885 590		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	360 330		0.0065 0.0050	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	240 215		0.0050 0.0050	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 5515

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	425 360		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	475 360		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	395 360 345		0.0065 0.0065 0.0065	0.0100 0.0100 0.0100	0.0125 0.0125 0.0125	0.0160 0.0160 0.0160	0.0160 0.0160 0.0160				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	345 330		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Unalloyed case hardened steels	≤ 25	≤ 255	425		0.0080	0.0125	0.0160	0.0200	0.0200				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 280		0.0065 0.0040	0.0100 0.0065	0.0125 0.0080	0.0160 0.0100	0.0160 0.0100				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	320 280		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	195 145		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
High speed steels	≤ 43	≤ 402	150		0.0030	0.0050	0.0065	0.0080	0.0080				
Spring steels	≤ 38	≤ 354	150		0.0025	0.0040	0.0050	0.0065	0.0065				
Hardened steels	≤ 48 ≤ 66	≤ 460 -	150 80		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050	0.0065 0.0050				
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	180 150 150		0.0030 0.0030 0.0025	0.0050 0.0050 0.0040	0.0065 0.0065 0.0050	0.0080 0.0080 0.0065	0.0080 0.0080 0.0065				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	690 510		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	475 410		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160				
Chilled cast iron	≤ 38	≤ 354	115		0.0025	0.0040	0.0050	0.0065	0.0065				
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	80		0.0030	0.0050	0.0065	0.0080	0.0080				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	130 115		0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Aluminium and Al-alloys	-	≤ 120	855		0.0080	0.0125	0.0160	0.0200	0.0200				
Al wrought alloys	-	≤ 200	855		0.0080	0.0125	0.0160	0.0200	0.0200				
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	700 560		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200				
Magnesium alloys	-	≤ 120	855		0.0080	0.0125	0.0160	0.0200	0.0200				
Copper, low-alloyed	-	≤ 150	360		0.0065	0.0100	0.0100	0.0125	0.0160				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	885 590		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	360 330		0.0065 0.0050	0.0100 0.0080	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125				
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	240 215		0.0050 0.0050	0.0080 0.0080	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 5518

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	260 210		0.0035 0.0025	0.0050 0.0040	0.0080 0.0065	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	295 245		0.0040 0.0035	0.0065 0.0050	0.0100 0.0080	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	225 210 195		0.0035 0.0035 0.0035	0.0050 0.0050 0.0050	0.0080 0.0080 0.0080	0.0080 0.0080 0.0080	0.0100 0.0100 0.0100	0.0125 0.0125 0.0125	0.0160 0.0160 0.0160		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	195 160		0.0035 0.0025	0.0050 0.0040	0.0080 0.0065	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125		
Unalloyed case hardened steels	≤ 25	≤ 255	260		0.0040	0.0065	0.0100	0.0100	0.0125	0.0160	0.0200		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	195 160		0.0035 0.0025	0.0050 0.0040	0.0080 0.0065	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	180 160		0.0025 0.0025	0.0040 0.0040	0.0065 0.0065	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	145 110		0.0025 0.0025	0.0040 0.0040	0.0065 0.0065	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125		
High speed steels	≤ 43	≤ 402	95		0.0020	0.0035	0.0050	0.0050	0.0065	0.0080	0.0100		
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	325 260		0.0040 0.0040	0.0065 0.0065	0.0100 0.0100	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	260 225		0.0040 0.0040	0.0065 0.0065	0.0100 0.0100	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	590		0.0050	0.0080	0.0125	0.0125	0.0160	0.0200	0.0250		
Al wrought alloys	-	≤ 200	520		0.0050	0.0080	0.0125	0.0125	0.0160	0.0200	0.0250		
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	490 390		0.0050 0.0040	0.0080 0.0065	0.0125 0.0100	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0250 0.0200		
Magnesium alloys	-	≤ 120	590		0.0040	0.0065	0.0100	0.0100	0.0125	0.0160	0.0200		
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	590		0.0040	0.0065	0.0100	0.0100	0.0125	0.0160	0.0200		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 5519

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	160 130	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	195 160	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	160 130 80	0.0017 0.0017 0.0015	0.0050 0.0050 0.0040	0.0080 0.0080 0.0065	0.0100 0.0100 0.0080	0.0125 0.0125 0.0100	0.0125 0.0125 0.0100				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	70 45	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Unalloyed case hardened steels	≤ 25	≤ 255	130	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65 45	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55 45	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	70 40	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
High speed steels	≤ 43	≤ 402	40	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	65 45 55	0.0012 0.0012 0.0012	0.0030 0.0030 0.0030	0.0050 0.0050 0.0050	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0080 0.0080 0.0080				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	145 115	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	130 100	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	225	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al wrought alloys	-	≤ 200	225	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	295 260	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Magnesium alloys	-	≤ 120	260	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Copper, low-alloyed	-	≤ 150	100	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	205 130	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	160 95	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	130 95	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			80 80	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				

Series # 5520

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	160 130	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	195 160	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	160 130 80	0.0017 0.0017 0.0015	0.0050 0.0050 0.0040	0.0080 0.0080 0.0065	0.0100 0.0100 0.0080	0.0125 0.0125 0.0100	0.0125 0.0125 0.0100				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	70 45	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Unalloyed case hardened steels	≤ 25	≤ 255	130	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65 45	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55 45	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	70 40	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
High speed steels	≤ 43	≤ 402	40	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	65 45 55	0.0012 0.0012 0.0012	0.0030 0.0030 0.0030	0.0050 0.0050 0.0050	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0080 0.0080 0.0080				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	145 115	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	130 100	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	225	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al wrought alloys	-	≤ 200	225	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	295 260	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Magnesium alloys	-	≤ 120	260	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Copper, low-alloyed	-	≤ 150	100	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	205 130	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	160 95	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	130 95	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			80 80	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				

Series # 5521

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	130 100	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	155 125	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	100 100 80	0.0017 0.0017 0.0015	0.0050 0.0050 0.0040	0.0080 0.0080 0.0065	0.0100 0.0100 0.0080	0.0125 0.0125 0.0100	0.0125 0.0125 0.0100				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	80 80	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Unalloyed case hardened steels	≤ 25	≤ 255	100	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	60 50	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 50	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	60 50	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
High speed steels	≤ 43	≤ 402	50	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Spring steels	≤ 38	≤ 354	30	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	50 35 50	0.0012 0.0010 0.0010	0.0030 0.0025 0.0025	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0080 0.0065 0.0065				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 90	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	100 80	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	30	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	230 185	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Magnesium alloys	-	≤ 120	205	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 5522

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	130 100	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	155 125	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	100 100 80	0.0017 0.0017 0.0015	0.0050 0.0050 0.0040	0.0080 0.0080 0.0065	0.0100 0.0100 0.0080	0.0125 0.0125 0.0100	0.0125 0.0125 0.0100				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	80 80	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Unalloyed case hardened steels	≤ 25	≤ 255	100	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	60 50	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 50	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	60 50	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
High speed steels	≤ 43	≤ 402	50	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Spring steels	≤ 38	≤ 354	30	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	50 35 50	0.0012 0.0010 0.0010	0.0030 0.0025 0.0025	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0080 0.0065 0.0065				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 90	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	100 80	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	30	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	230 185	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Magnesium alloys	-	≤ 120	205	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 5523

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	130 100	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	155 125	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	130 100 65	0.0017 0.0017 0.0015	0.0050 0.0050 0.0040	0.0080 0.0080 0.0065	0.0100 0.0100 0.0080	0.0125 0.0125 0.0100	0.0125 0.0125 0.0100				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55 35	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Unalloyed case hardened steels	≤ 25	≤ 255	100	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	50 35	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 35	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	55 30	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
High speed steels	≤ 43	≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	50 35 45	0.0012 0.0012 0.0012	0.0030 0.0030 0.0030	0.0050 0.0050 0.0050	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0080 0.0080 0.0080				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 90	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	100 80	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	180	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al wrought alloys	-	≤ 200	180	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	230 185	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Magnesium alloys	-	≤ 120	205	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Copper, low-alloyed	-	≤ 150	80	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	165 100	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	130 75	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	100 75	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			65 65	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				

Series # 5524

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	130 100	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	155 125	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	130 100 65	0.0017 0.0017 0.0015	0.0050 0.0050 0.0040	0.0080 0.0080 0.0065	0.0100 0.0100 0.0080	0.0125 0.0125 0.0100	0.0125 0.0125 0.0100				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55 35	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Unalloyed case hardened steels	≤ 25	≤ 255	100	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	50 35	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 35	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	55 30	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				
High speed steels	≤ 43	≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	50 35 45	0.0012 0.0012 0.0012	0.0030 0.0030 0.0030	0.0050 0.0050 0.0050	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0080 0.0080 0.0080				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	115 90	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	100 80	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	180	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al wrought alloys	-	≤ 200	180	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	230 185	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Magnesium alloys	-	≤ 120	205	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Copper, low-alloyed	-	≤ 150	80	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	165 100	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	130 75	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	100 75	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			65 65	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				

Series # 5525

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	290 265		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	325 300		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160	0.0180 0.0180	0.0200 0.0200		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	290 260 265		0.0065 0.0050 0.0050	0.0100 0.0080 0.0080	0.0125 0.0100 0.0100	0.0160 0.0125 0.0125	0.0160 0.0125 0.0125	0.0180 0.0140 0.0140	0.0200 0.0160 0.0160		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	265 195		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160		
Unalloyed case hardened steels	≤ 25	≤ 255	290		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	265 195		0.0050 0.0030	0.0080 0.0050	0.0100 0.0065	0.0125 0.0080	0.0125 0.0080	0.0140 0.0090	0.0160 0.0100		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	190 155		0.0050 0.0030	0.0080 0.0050	0.0100 0.0065	0.0125 0.0080	0.0125 0.0080	0.0140 0.0090	0.0160 0.0100		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	145 110		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090	0.0125 0.0100		
High speed steels	≤ 43	≤ 402	115		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
Spring steels	≤ 38	≤ 354	115		0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050		
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	130 130 140		0.0030 0.0030 0.0030	0.0050 0.0050 0.0050	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0080 0.0080 0.0080	0.0090 0.0090 0.0090	0.0100 0.0100 0.0100		
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	370 350		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200	0.0220 0.0220	0.0245 0.0245		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	245 260		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160	0.0220 0.0180	0.0245 0.0200		
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	485		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Al wrought alloys	-	≤ 200	485		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	490 390		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200	0.0220 0.0220	0.0245 0.0245		
Magnesium alloys	-	≤ 120	485		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Copper, low-alloyed	-	≤ 150	260		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	390 390		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	135		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	125		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Note: Pilot holes (depth >1xD) are recommended when drilling depths greater than 7xD. The pilot hole can be produced with a short, rigid drill. The diameter should be 0.01 - 0.02 mm larger than the diameter of the finish drill. Ratio drills can produce their own pilot hole by reducing speed and feed rates by 30-40%.

Series # 5536

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35	0.0010	0.0025	0.0040	0.0050	0.0065					
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured	≤ 28	≤ 273	35	0.0012	0.0030	0.0050	0.0065	0.0080					
austenitic	≤ 36	≤ 337	25	0.0010	0.0025	0.0040	0.0050	0.0065					
martensitic	≤ 46	≤ 435	30	0.0010	0.0025	0.0040	0.0050	0.0065					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354	15	0.0010	0.0025	0.0040	0.0050	0.0065					
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	15	0.0005	0.0015	0.0025	0.0030	0.0040					
Ti and Ti-alloys	≤ 25	≤ 255	25	0.0007	0.0020	0.0030	0.0040	0.0050					
	≤ 43	≤ 402	15	0.0007	0.0020	0.0030	0.0040	0.0050					
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180											
≤ 24 % Si	-	≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			65	0.0012	0.0030	0.0050	0.0065	0.0080					

Series # 5537

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45	0.0010	0.0025	0.0040	0.0050	0.0065					
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	40	0.0010	0.0025	0.0040	0.0050	0.0065					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065					
High speed steels	≤ 43	≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065					
Spring steels	≤ 38	≤ 354	25	0.0007	0.0020	0.0030	0.0040	0.0050					
Hardened steels	≤ 48 ≤ 66	≤ 460 -	5	0.0005	0.0015	0.0025	0.0030	0.0040					
Stainless steels, sulphured	≤ 28	≤ 273	45	0.0012	0.0030	0.0050	0.0065	0.0080					
austenitic	≤ 36	≤ 337	30	0.0010	0.0025	0.0040	0.0050	0.0065					
martensitic	≤ 46	≤ 435	40	0.0010	0.0025	0.0040	0.0050	0.0065					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354	15	0.0010	0.0025	0.0040	0.0050	0.0065					
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	15	0.0005	0.0015	0.0025	0.0030	0.0040					
Ti and Ti-alloys	≤ 25	≤ 255	30	0.0007	0.0020	0.0030	0.0040	0.0050					
	≤ 43	≤ 402	15	0.0007	0.0020	0.0030	0.0040	0.0050					
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180											
≤ 24 % Si	-	≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	80	0.0012	0.0030	0.0050	0.0065	0.0080					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 5610

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	475 395		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140			
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	560 475		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200	0.0220 0.0220			
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	425 410 395		0.0080 0.0065 0.0065	0.0125 0.0100 0.0100	0.0160 0.0125 0.0125	0.0200 0.0160 0.0160	0.0200 0.0160 0.0160	0.0220 0.0180 0.0180			
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 345		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160	0.0180 0.0180			
Unalloyed case hardened steels	≤ 25	≤ 255	475		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220			
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 280		0.0065 0.0040	0.0100 0.0065	0.0125 0.0080	0.0160 0.0100	0.0160 0.0100	0.0180 0.0110			
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	360 345		0.0065 0.0040	0.0100 0.0065	0.0125 0.0080	0.0160 0.0100	0.0160 0.0100	0.0180 0.0110			
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	260 215		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110			
High speed steels	≤ 43	≤ 402	195		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
Spring steels	≤ 38	≤ 354	195		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
Hardened steels	≤ 48 ≤ 66	≤ 460 -	180 115		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050	0.0065 0.0050	0.0070 0.0055			
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	195 180 165		0.0040 0.0040 0.0040	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0100 0.0100 0.0100	0.0100 0.0100 0.0100	0.0110 0.0110 0.0110			
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	690 525		0.0100 0.0100	0.0160 0.0160	0.0200 0.0200	0.0245 0.0245	0.0245 0.0245	0.0265 0.0265			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	460 425		0.0100 0.0080	0.0160 0.0125	0.0200 0.0160	0.0245 0.0200	0.0245 0.0200	0.0265 0.0220			
Chilled cast iron	≤ 38	≤ 354	130		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	115		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	150 130		0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090			
Aluminium and Al-alloys	-	≤ 120	1015		0.0100	0.0160	0.0200	0.0245	0.0245	0.0265			
Al wrought alloys	-	≤ 200	1015		0.0100	0.0160	0.0200	0.0245	0.0245	0.0265			
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	855 720		0.0100 0.0100	0.0160 0.0160	0.0200 0.0200	0.0245 0.0245	0.0245 0.0245	0.0265 0.0265			
Magnesium alloys	-	≤ 120	920		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220			
Copper, low-alloyed	-	≤ 150	410		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	1065 720		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160	0.0220 0.0180			
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	410 345		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140			
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	295 260		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140			
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 5611

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	475 395		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	560 475		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200	0.0220 0.0220	0.0245 0.0245		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	425 410 395		0.0080 0.0065 0.0065	0.0125 0.0100 0.0100	0.0160 0.0125 0.0125	0.0200 0.0160 0.0160	0.0200 0.0160 0.0160	0.0220 0.0180 0.0180	0.0245 0.0200 0.0200		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 345		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160	0.0180 0.0180	0.0200 0.0200		
Unalloyed case hardened steels	≤ 25	≤ 255	475		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 280		0.0065 0.0040	0.0100 0.0065	0.0125 0.0080	0.0160 0.0100	0.0160 0.0100	0.0180 0.0110	0.0200 0.0125		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	350 330		0.0065 0.0040	0.0100 0.0065	0.0125 0.0080	0.0160 0.0100	0.0160 0.0100	0.0180 0.0110	0.0200 0.0125		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	240 180		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125		
High speed steels	≤ 43	≤ 402	195		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
Spring steels	≤ 38	≤ 354	195		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
Hardened steels	≤ 48 ≤ 66	≤ 460 -	180 115		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050	0.0065 0.0050	0.0070 0.0055	0.0080 0.0065		
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	195 180 165		0.0040 0.0040 0.0040	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0100 0.0100 0.0100	0.0100 0.0100 0.0100	0.0110 0.0110 0.0110	0.0125 0.0125 0.0125		
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	690 525		0.0100 0.0100	0.0160 0.0160	0.0200 0.0200	0.0245 0.0245	0.0245 0.0245	0.0265 0.0265	0.0290 0.0290		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	450 425		0.0100 0.0080	0.0160 0.0125	0.0200 0.0160	0.0245 0.0200	0.0245 0.0200	0.0265 0.0220	0.0290 0.0245		
Chilled cast iron	≤ 38	≤ 354	130		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	115		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	150 130		0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0090 0.0070	0.0100 0.0080		
Aluminium and Al-alloys	-	≤ 120	1015		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Al wrought alloys	-	≤ 200	1015		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	855 720		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200	0.0220 0.0220	0.0245 0.0245		
Magnesium alloys	-	≤ 120	920		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Copper, low-alloyed	-	≤ 150	410		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	1065 720		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160	0.0220 0.0180	0.0245 0.0200		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	410 345		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	295 260		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 5612

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	460 395		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	550 480		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160	0.0180 0.0180	0.0200 0.0200		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	415 400 395		0.0065 0.0050 0.0050	0.0100 0.0080 0.0080	0.0125 0.0100 0.0100	0.0160 0.0125 0.0125	0.0160 0.0125 0.0125	0.0180 0.0140 0.0140	0.0200 0.0160 0.0160		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 335		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160		
Unalloyed case hardened steels	≤ 25	≤ 255	465		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 270		0.0050 0.0030	0.0080 0.0050	0.0100 0.0065	0.0125 0.0080	0.0125 0.0080	0.0140 0.0090	0.0160 0.0100		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	340 325		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	230 175		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090	0.0125 0.0100		
High speed steels	≤ 43	≤ 402	195		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
Spring steels	≤ 38	≤ 354	195		0.0020	0.0030	0.0040	0.0050	0.0050	0.0055	0.0065		
Hardened steels	≤ 48 ≤ 66	≤ 460 -	175 110		0.0020 0.0020	0.0030 0.0030	0.0040 0.0040	0.0050 0.0050	0.0050 0.0050	0.0055 0.0055	0.0065 0.0065		
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	195 175 155		0.0030 0.0030 0.0030	0.0050 0.0050 0.0050	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0080 0.0080 0.0080	0.0090 0.0090 0.0090	0.0100 0.0100 0.0100		
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	640 525		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200	0.0220 0.0220	0.0245 0.0245		
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	435 415		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160	0.0220 0.0180	0.0245 0.0200		
Chilled cast iron	≤ 38	≤ 354	130		0.0020	0.0030	0.0040	0.0050	0.0050	0.0055	0.0065		
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	110		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	140 130		0.0020 0.0020	0.0030 0.0030	0.0040 0.0040	0.0050 0.0050	0.0050 0.0050	0.0055 0.0055	0.0065 0.0065		
Aluminium and Al-alloys	-	≤ 120	1000		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Al wrought alloys	-	≤ 200	1000		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	845 710		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200	0.0220 0.0220	0.0245 0.0245		
Magnesium alloys	-	≤ 120	900		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Copper, low-alloyed	-	≤ 150	400		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	1050 710		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160	0.0220 0.0180	0.0245 0.0200		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	410 345		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	285 250		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 5641

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	330 280	0.0002 0.0002	0.0003 0.0003	0.0005 0.0005	0.0009 0.0009	0.0011 0.0011	0.0014 0.0014				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	295 265	0.0002 0.0002	0.0003 0.0003	0.0005 0.0005	0.0009 0.0009	0.0011 0.0011	0.0014 0.0014				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	295 265 245	0.0002 0.0002 0.0002	0.0002 0.0002 0.0002	0.0004 0.0004 0.0004	0.0006 0.0006 0.0006	0.0006 0.0006 0.0006	0.0010 0.0010 0.0010				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	245 215	0.0002 0.0002	0.0002 0.0002	0.0004 0.0004	0.0006 0.0006	0.0006 0.0006	0.0010 0.0010				
Unalloyed case hardened steels	≤ 25	≤ 255	265	0.0002	0.0003	0.0005	0.0009	0.0011	0.0014				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	245 215	0.0002 0.0002	0.0002 0.0002	0.0004 0.0004	0.0006 0.0006	0.0006 0.0006	0.0010 0.0010				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	245 215	0.0002 0.0002	0.0002 0.0002	0.0004 0.0004	0.0006 0.0006	0.0006 0.0006	0.0010 0.0010				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	245 215	0.0001 0.0001	0.0002 0.0002	0.0003 0.0003	0.0004 0.0004	0.0005 0.0005	0.0008 0.0008				
High speed steels	≤ 43	≤ 402	180	0.0001	0.0002	0.0003	0.0004	0.0005	0.0008				
Spring steels	≤ 38	≤ 354	215	0.0001	0.0002	0.0003	0.0004	0.0005	0.0008				
Hardened steels	≤ 48 ≤ 66	≤ 460 -	100 85	0.0001 0.0001	0.0002 0.0002	0.0003 0.0003	0.0004 0.0004	0.0005 0.0005	0.0008 0.0008				
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	180 150 115	0.0002 0.0002 0.0002	0.0002 0.0002 0.0002	0.0004 0.0004 0.0004	0.0006 0.0006 0.0006	0.0006 0.0006 0.0006	0.0010 0.0010 0.0010				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	180 160	0.0003 0.0003	0.0005 0.0005	0.0009 0.0009	0.0013 0.0013	0.0016 0.0016	0.0020 0.0020				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	260 230	0.0002 0.0002	0.0003 0.0003	0.0005 0.0005	0.0009 0.0009	0.0011 0.0011	0.0014 0.0014				
Chilled cast iron	≤ 38	≤ 354	180	0.0002	0.0002	0.0004	0.0006	0.0006	0.0010				
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	115	0.0001	0.0002	0.0003	0.0004	0.0005	0.0008				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	115 100	0.0001 0.0001	0.0002 0.0002	0.0003 0.0003	0.0004 0.0004	0.0005 0.0005	0.0008 0.0008				
Aluminium and Al-alloys	-	≤ 120	590	0.0005	0.0007	0.0014	0.0018	0.0022	0.0026				
Al wrought alloys	-	≤ 200	655	0.0003	0.0005	0.0009	0.0013	0.0016	0.0020				
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	525 395	0.0005 0.0005	0.0007 0.0007	0.0014 0.0014	0.0018 0.0018	0.0022 0.0022	0.0026 0.0026				
Magnesium alloys	-	≤ 120	245	0.0005	0.0007	0.0014	0.0018	0.0022	0.0026				
Copper, low-alloyed	-	≤ 150	395	0.0002	0.0003	0.0005	0.0009	0.0011	0.0014				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	295 215	0.0008 0.0008	0.0012 0.0012	0.0024 0.0024	0.0027 0.0027	0.0030 0.0030	0.0033 0.0033				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	245	0.0005	0.0007	0.0014	0.0018	0.0022	0.0026				
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	230	0.0005	0.0007	0.0014	0.0018	0.0022	0.0026				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			230 200 165	0.0002 0.0002 0.0002	0.0003 0.0003 0.0002	0.0005 0.0005 0.0004	0.0009 0.0009 0.0006	0.0011 0.0011 0.0006	0.0014 0.0014 0.0010				

Series # 5642

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	330	0.0002	0.0003	0.0005	0.0009	0.0011	0.0014				
	≤ 32	≤ 301	280	0.0002	0.0003	0.0005	0.0009	0.0011	0.0014				
Free-cutting steels	≤ 25	≤ 255	295	0.0002	0.0003	0.0005	0.0009	0.0011	0.0014				
	≤ 32	≤ 301	265	0.0002	0.0003	0.0005	0.0009	0.0011	0.0014				
Unalloyed heat-treatable steels	≤ 20	≤ 220	295	0.0002	0.0002	0.0004	0.0006	0.0006	0.0010				
	≤ 25	≤ 255	265	0.0002	0.0002	0.0004	0.0006	0.0006	0.0010				
	≤ 32	≤ 301	245	0.0002	0.0002	0.0004	0.0006	0.0006	0.0010				
Alloyed heat-treatable steels	≤ 32	≤ 301	245	0.0002	0.0002	0.0004	0.0006	0.0006	0.0010				
	≤ 43	≤ 402	215	0.0002	0.0002	0.0004	0.0006	0.0006	0.0010				
Unalloyed case hardened steels	≤ 25	≤ 255	265	0.0002	0.0003	0.0005	0.0009	0.0011	0.0014				
Alloyed case hardened steels	≤ 32	≤ 301	245	0.0002	0.0002	0.0004	0.0006	0.0006	0.0010				
	≤ 43	≤ 402	215	0.0002	0.0002	0.0004	0.0006	0.0006	0.0010				
Nitriding steels	≤ 32	≤ 301	245	0.0002	0.0002	0.0004	0.0006	0.0006	0.0010				
	≤ 43	≤ 402	215	0.0002	0.0002	0.0004	0.0006	0.0006	0.0010				
Tool steels	≤ 25	≤ 255	245	0.0001	0.0002	0.0003	0.0004	0.0005	0.0008				
	≤ 43	≤ 402	215	0.0001	0.0002	0.0003	0.0004	0.0005	0.0008				
High speed steels	≤ 43	≤ 402	180	0.0001	0.0002	0.0003	0.0004	0.0005	0.0008				
Spring steels	≤ 38	≤ 354	215	0.0001	0.0002	0.0003	0.0004	0.0005	0.0008				
Hardened steels	≤ 48	≤ 460	100	0.0001	0.0002	0.0003	0.0004	0.0005	0.0008				
	≤ 66	-	85	0.0001	0.0002	0.0003	0.0004	0.0005	0.0008				
Stainless steels, sulphured	≤ 28	≤ 273	180	0.0002	0.0002	0.0004	0.0006	0.0006	0.0010				
austenitic	≤ 36	≤ 337	150	0.0002	0.0002	0.0004	0.0006	0.0006	0.0010				
martensitic	≤ 46	≤ 435	115	0.0002	0.0002	0.0004	0.0006	0.0006	0.0010				
Cast iron	≤ 23	≤ 242	180	0.0003	0.0005	0.0009	0.0013	0.0016	0.0020				
	≤ 38	≤ 354	160	0.0003	0.0005	0.0009	0.0013	0.0016	0.0020				
Spheroidal graphite iron and	≤ 23	≤ 242	260	0.0002	0.0003	0.0005	0.0009	0.0011	0.0014				
malleable cast iron	≤ 38	≤ 354	230	0.0002	0.0003	0.0005	0.0009	0.0011	0.0014				
Chilled cast iron	≤ 38	≤ 354	180	0.0002	0.0002	0.0004	0.0006	0.0006	0.0010				
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549	115	0.0001	0.0002	0.0003	0.0004	0.0005	0.0008				
Ti and Ti-alloys	≤ 25	≤ 255	115	0.0001	0.0002	0.0003	0.0004	0.0005	0.0008				
	≤ 43	≤ 402	100	0.0001	0.0002	0.0003	0.0004	0.0005	0.0008				
Aluminium and Al-alloys	-	≤ 120	590	0.0005	0.0007	0.0014	0.0018	0.0022	0.0026				
Al wrought alloys	-	≤ 200	655	0.0003	0.0005	0.0009	0.0013	0.0016	0.0020				
Al cast alloys ≤ 10 % Si	-	≤ 180	525	0.0005	0.0007	0.0014	0.0018	0.0022	0.0026				
≤ 24 % Si	-	≤ 180	395	0.0005	0.0007	0.0014	0.0018	0.0022	0.0026				
Magnesium alloys	-	≤ 120	245	0.0005	0.0007	0.0014	0.0018	0.0022	0.0026				
Copper, low-alloyed	-	≤ 150	395	0.0002	0.0003	0.0005	0.0009	0.0011	0.0014				
Brass, short-chipping	-	≤ 180	295	0.0008	0.0012	0.0024	0.0027	0.0030	0.0033				
long-chipping	-	≤ 180	215	0.0008	0.0012	0.0024	0.0027	0.0030	0.0033				
Bronze, short-chipping	-	≤ 180	245	0.0005	0.0007	0.0014	0.0018	0.0022	0.0026				
	≤ 25	≤ 255											
Bronze, long-chipping	≤ 25	≤ 255	230	0.0005	0.0007	0.0014	0.0018	0.0022	0.0026				
	≤ 32	≤ 301											
Duroplastics			230	0.0002	0.0003	0.0005	0.0009	0.0011	0.0014				
Thermoplastics			200	0.0002	0.0003	0.0005	0.0009	0.0011	0.0014				
Reinforced plastics - Kevlar			165	0.0002	0.0002	0.0004	0.0006	0.0006	0.0010				
Reinforced plastics - GFK / CFK													

Series # 5646

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	330	0.0003	0.0006	0.0009	0.0015						
	≤ 32	≤ 301	280	0.0003	0.0006	0.0009	0.0015						
Free-cutting steels	≤ 25	≤ 255	295	0.0003	0.0006	0.0009	0.0015						
	≤ 32	≤ 301	260	0.0003	0.0006	0.0009	0.0015						
Unalloyed heat-treatable steels	≤ 20	≤ 220	295	0.0002	0.0004	0.0005	0.0010						
	≤ 25	≤ 255	260	0.0002	0.0004	0.0005	0.0010						
	≤ 32	≤ 301	245	0.0002	0.0004	0.0005	0.0010						
Alloyed heat-treatable steels	≤ 32	≤ 301	245	0.0002	0.0004	0.0005	0.0010						
	≤ 43	≤ 402	215	0.0002	0.0004	0.0005	0.0010						
Unalloyed case hardened steels	≤ 25	≤ 255	260	0.0003	0.0006	0.0009	0.0015						
Alloyed case hardened steels	≤ 32	≤ 301	245	0.0002	0.0004	0.0005	0.0010						
	≤ 43	≤ 402	215	0.0002	0.0004	0.0005	0.0010						
Nitriding steels	≤ 32	≤ 301	245	0.0002	0.0004	0.0005	0.0010						
	≤ 43	≤ 402	215	0.0002	0.0004	0.0005	0.0010						
Tool steels	≤ 25	≤ 255	245	0.0002	0.0003	0.0004	0.0006						
	≤ 43	≤ 402	215	0.0002	0.0003	0.0004	0.0006						
High speed steels	≤ 43	≤ 402	180	0.0001	0.0002	0.0003	0.0004						
Spring steels	≤ 38	≤ 354	215	0.0002	0.0003	0.0004	0.0006						
Hardened steels	≤ 48	≤ 460	100	0.0002	0.0003	0.0004	0.0006						
	≤ 66	-	80	0.0001	0.0002	0.0003	0.0004						
Stainless steels, sulphured	≤ 28	≤ 273	180	0.0002	0.0004	0.0005	0.0010						
austenitic	≤ 36	≤ 337	150	0.0002	0.0004	0.0005	0.0010						
martensitic	≤ 46	≤ 435	115	0.0002	0.0004	0.0005	0.0010						
Cast iron	≤ 23	≤ 242	280	0.0005	0.0009	0.0014	0.0020						
	≤ 38	≤ 354	260	0.0005	0.0009	0.0014	0.0020						
Spheroidal graphite iron and	≤ 23	≤ 242	260	0.0003	0.0006	0.0009	0.0015						
malleable cast iron	≤ 38	≤ 354	230	0.0003	0.0006	0.0009	0.0015						
Chilled cast iron	≤ 38	≤ 354	180	0.0002	0.0004	0.0005	0.0010						
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549	115	0.0001	0.0002	0.0003	0.0004						
Ti and Ti-alloys	≤ 25	≤ 255	115	0.0001	0.0002	0.0003	0.0004						
	≤ 43	≤ 402	100	0.0001	0.0002	0.0003	0.0004						
Aluminium and Al-alloys	-	≤ 120	490	0.0008	0.0016	0.0024	0.0028						
Al wrought alloys	-	≤ 200	395	0.0008	0.0016	0.0024	0.0028						
Al cast alloys ≤ 10 % Si	-	≤ 180	490	0.0013	0.0024	0.0033	0.0047						
≤ 24 % Si	-	≤ 180	425	0.0013	0.0024	0.0033	0.0047						
Magnesium alloys	-	≤ 120	360	0.0008	0.0016	0.0024	0.0028						
Copper, low-alloyed	-	≤ 150	245	0.0003	0.0006	0.0009	0.0015						
Brass, short-chipping	-	≤ 180	395	0.0013	0.0024	0.0033	0.0047						
long-chipping	-	≤ 180	295	0.0013	0.0024	0.0033	0.0047						
Bronze, short-chipping	-	≤ 180	310	0.0008	0.0016	0.0024	0.0028						
	≤ 25	≤ 255	310	0.0008	0.0016	0.0024	0.0028						
Bronze, long-chipping	≤ 25	≤ 255	230	0.0008	0.0016	0.0024	0.0028						
	≤ 32	≤ 301	230	0.0008	0.0016	0.0024	0.0028						
Duroplastics			245	0.0003	0.0006	0.0009	0.0015						
Thermoplastics			230	0.0003	0.0006	0.0009	0.0015						
Reinforced plastics - Kevlar			195	0.0002	0.0004	0.0005	0.0010						
Reinforced plastics - GFK / CFK			165	0.0002	0.0004	0.0005	0.0010						

Series # 5647

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	310	0.0002	0.0004	0.0005	0.0010						
	≤ 32	≤ 301	260	0.0002	0.0004	0.0005	0.0010						
Free-cutting steels	≤ 25	≤ 255	280	0.0002	0.0004	0.0005	0.0010						
	≤ 32	≤ 301	245	0.0002	0.0004	0.0005	0.0010						
Unalloyed heat-treatable steels	≤ 20	≤ 220	280	0.0002	0.0003	0.0004	0.0006						
	≤ 25	≤ 255	245	0.0002	0.0003	0.0004	0.0006						
	≤ 32	≤ 301	230	0.0002	0.0003	0.0004	0.0006						
Alloyed heat-treatable steels	≤ 32	≤ 301	230	0.0002	0.0003	0.0004	0.0006						
	≤ 43	≤ 402	195	0.0002	0.0003	0.0004	0.0006						
Unalloyed case hardened steels	≤ 25	≤ 255	245	0.0002	0.0004	0.0005	0.0010						
Alloyed case hardened steels	≤ 32	≤ 301	230	0.0002	0.0003	0.0004	0.0006						
	≤ 43	≤ 402	195	0.0002	0.0003	0.0004	0.0006						
Nitriding steels	≤ 32	≤ 301	230	0.0002	0.0003	0.0004	0.0006						
	≤ 43	≤ 402	195	0.0002	0.0003	0.0004	0.0006						
Tool steels	≤ 25	≤ 255	230	0.0001	0.0002	0.0003	0.0004						
	≤ 43	≤ 402	195	0.0001	0.0002	0.0003	0.0004						
High speed steels	≤ 43	≤ 402	165	0.0001	0.0002	0.0003	0.0004						
Spring steels	≤ 38	≤ 354	195	0.0002	0.0003	0.0004	0.0006						
Hardened steels	≤ 48	≤ 460	80	0.0001	0.0002	0.0003	0.0004						
	≤ 66	-	65	0.0001	0.0002	0.0003	0.0004						
Stainless steels, sulphured	≤ 28	≤ 273	165	0.0002	0.0003	0.0004	0.0006						
austenitic	≤ 36	≤ 337	130	0.0002	0.0003	0.0004	0.0006						
martensitic	≤ 46	≤ 435	115	0.0002	0.0003	0.0004	0.0006						
Cast iron	≤ 23	≤ 242	260	0.0003	0.0006	0.0009	0.0015						
	≤ 38	≤ 354	245	0.0003	0.0006	0.0009	0.0015						
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	245	0.0002	0.0004	0.0005	0.0010						
	≤ 38	≤ 354	215	0.0002	0.0004	0.0005	0.0010						
Chilled cast iron	≤ 38	≤ 354	165	0.0002	0.0003	0.0004	0.0006						
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549	100	0.0001	0.0002	0.0003	0.0004						
Ti and Ti-alloys	≤ 25	≤ 255	100	0.0001	0.0002	0.0003	0.0004						
	≤ 43	≤ 402	80	0.0001	0.0002	0.0003	0.0004						
Aluminium and Al-alloys	-	≤ 120	460	0.0003	0.0006	0.0009	0.0015						
Al wrought alloys	-	≤ 200	375	0.0003	0.0006	0.0009	0.0015						
Al cast alloys ≤ 10 % Si	-	≤ 180	460	0.0008	0.0016	0.0024	0.0028						
≤ 24 % Si	-	≤ 180	395	0.0008	0.0016	0.0024	0.0028						
Magnesium alloys	-	≤ 120	0	0.0005	0.0009	0.0014	0.0020						
Copper, low-alloyed	-	≤ 150	230	0.0002	0.0004	0.0005	0.0010						
Brass, short-chipping	-	≤ 180	375	0.0008	0.0016	0.0024	0.0028						
long-chipping	-	≤ 180	280	0.0008	0.0016	0.0024	0.0028						
Bronze, short-chipping	-	≤ 180	295	0.0005	0.0009	0.0014	0.0020						
	≤ 25	≤ 255	295	0.0005	0.0009	0.0014	0.0020						
Bronze, long-chipping	≤ 25	≤ 255	215	0.0005	0.0009	0.0014	0.0020						
	≤ 32	≤ 301	215	0.0002	0.0004	0.0005	0.0010						
Duroplastics			230	0.0002	0.0004	0.0005	0.0010						
Thermoplastics			215	0.0002	0.0004	0.0005	0.0010						
Reinforced plastics - Kevlar			180	0.0002	0.0003	0.0004	0.0006						
Reinforced plastics - GFK / CFK			150	0.0002	0.0003	0.0004	0.0006						

Series # 5648

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	310	0.0002	0.0004	0.0005	0.0010						
	≤ 32	≤ 301	260	0.0002	0.0004	0.0005	0.0010						
Free-cutting steels	≤ 25	≤ 255	280	0.0002	0.0004	0.0005	0.0010						
	≤ 32	≤ 301	245	0.0002	0.0004	0.0005	0.0010						
Unalloyed heat-treatable steels	≤ 20	≤ 220	280	0.0002	0.0003	0.0004	0.0006						
	≤ 25	≤ 255	245	0.0002	0.0003	0.0004	0.0006						
	≤ 32	≤ 301	230	0.0002	0.0003	0.0004	0.0006						
Alloyed heat-treatable steels	≤ 32	≤ 301	230	0.0002	0.0003	0.0004	0.0006						
	≤ 43	≤ 402	195	0.0002	0.0003	0.0004	0.0006						
Unalloyed case hardened steels	≤ 25	≤ 255	245	0.0002	0.0004	0.0005	0.0010						
Alloyed case hardened steels	≤ 32	≤ 301	230	0.0002	0.0003	0.0004	0.0006						
	≤ 43	≤ 402	195	0.0002	0.0003	0.0004	0.0006						
Nitriding steels	≤ 32	≤ 301	230	0.0002	0.0003	0.0004	0.0006						
	≤ 43	≤ 402	195	0.0002	0.0003	0.0004	0.0006						
Tool steels	≤ 25	≤ 255	230	0.0001	0.0002	0.0003	0.0004						
	≤ 43	≤ 402	195	0.0001	0.0002	0.0003	0.0004						
High speed steels	≤ 43	≤ 402	165	0.0001	0.0002	0.0003	0.0004						
Spring steels	≤ 38	≤ 354	195	0.0002	0.0003	0.0004	0.0006						
Hardened steels	≤ 48	≤ 460	80	0.0001	0.0002	0.0003	0.0004						
	≤ 66	-	65	0.0001	0.0002	0.0003	0.0004						
Stainless steels, sulphured	≤ 28	≤ 273	165	0.0002	0.0003	0.0004	0.0006						
austenitic	≤ 36	≤ 337	130	0.0002	0.0003	0.0004	0.0006						
martensitic	≤ 46	≤ 435	115	0.0002	0.0003	0.0004	0.0006						
Cast iron	≤ 23	≤ 242	260	0.0003	0.0006	0.0009	0.0015						
	≤ 38	≤ 354	245	0.0003	0.0006	0.0009	0.0015						
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	245	0.0002	0.0004	0.0005	0.0010						
	≤ 38	≤ 354	215	0.0002	0.0004	0.0005	0.0010						
Chilled cast iron	≤ 38	≤ 354	165	0.0002	0.0003	0.0004	0.0006						
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549	100	0.0001	0.0002	0.0003	0.0004						
Ti and Ti-alloys	≤ 25	≤ 255	100	0.0001	0.0002	0.0003	0.0004						
	≤ 43	≤ 402	80	0.0001	0.0002	0.0003	0.0004						
Aluminium and Al-alloys	-	≤ 120	460	0.0003	0.0006	0.0009	0.0015						
Al wrought alloys	-	≤ 200	375	0.0003	0.0006	0.0009	0.0015						
Al cast alloys ≤ 10 % Si	-	≤ 180	460	0.0008	0.0016	0.0024	0.0028						
≤ 24 % Si	-	≤ 180	395	0.0008	0.0016	0.0024	0.0028						
Magnesium alloys	-	≤ 120	0	0.0005	0.0009	0.0014	0.0020						
Copper, low-alloyed	-	≤ 150	230	0.0002	0.0004	0.0005	0.0010						
Brass, short-chipping	-	≤ 180	375	0.0008	0.0016	0.0024	0.0028						
long-chipping	-	≤ 180	280	0.0008	0.0016	0.0024	0.0028						
Bronze, short-chipping	-	≤ 180	295	0.0005	0.0009	0.0014	0.0020						
	≤ 25	≤ 255	295	0.0005	0.0009	0.0014	0.0020						
Bronze, long-chipping	≤ 25	≤ 255	215	0.0005	0.0009	0.0014	0.0020						
	≤ 32	≤ 301	215	0.0002	0.0004	0.0005	0.0010						
Duroplastics			230	0.0002	0.0004	0.0005	0.0010						
Thermoplastics			215	0.0002	0.0004	0.0005	0.0010						
Reinforced plastics - Kevlar			180	0.0002	0.0003	0.0004	0.0006						
Reinforced plastics - GFK / CFK			150	0.0002	0.0003	0.0004	0.0006						

Series # 5741

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	425 360		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125					
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	475 360		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	395 360 345		0.0065 0.0065 0.0065	0.0100 0.0100 0.0100	0.0125 0.0125 0.0125	0.0160 0.0160 0.0160					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	345 330		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125					
Unalloyed case hardened steels	≤ 25	≤ 255	425		0.0080	0.0125	0.0160	0.0200					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 280		0.0065 0.0040	0.0100 0.0065	0.0125 0.0080	0.0160 0.0100					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	330 295		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	215 180		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
High speed steels	≤ 43	≤ 402	150		0.0030	0.0050	0.0065	0.0080					
Spring steels	≤ 38	≤ 354	150		0.0025	0.0040	0.0050	0.0065					
Hardened steels	≤ 48 ≤ 66	≤ 460 -	150 80		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	180 150 150		0.0030 0.0030 0.0025	0.0050 0.0050 0.0040	0.0065 0.0065 0.0050	0.0080 0.0080 0.0065					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	690 510		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	510 410		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160					
Chilled cast iron	≤ 38	≤ 354	115		0.0025	0.0040	0.0050	0.0065					
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	80		0.0030	0.0050	0.0065	0.0080					
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	130 115		0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065					
Aluminium and Al-alloys	-	≤ 120	855										
Al wrought alloys	-	≤ 200	855										
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	720 590										
Magnesium alloys	-	≤ 120	855										
Copper, low-alloyed	-	≤ 150	360										
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	885 590										
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	360 330										
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	240 215										
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 5744

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	475 395		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125					
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	560 475		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	425 410 395		0.0080 0.0065 0.0065	0.0125 0.0100 0.0100	0.0160 0.0125 0.0125	0.0200 0.0160 0.0160					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 345		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160					
Unalloyed case hardened steels	≤ 25	≤ 255	475		0.0080	0.0125	0.0160	0.0200					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 280		0.0065 0.0040	0.0100 0.0065	0.0125 0.0080	0.0160 0.0100					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	350 330		0.0065 0.0040	0.0100 0.0065	0.0125 0.0080	0.0160 0.0100					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	240 180		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
High speed steels	≤ 43	≤ 402	195		0.0030	0.0050	0.0065	0.0080					
Spring steels	≤ 38	≤ 354	195		0.0025	0.0040	0.0050	0.0065					
Hardened steels	≤ 48 ≤ 66	≤ 460 -	180 115		0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	195 180 165		0.0040 0.0040 0.0040	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080	0.0100 0.0100 0.0100					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	690 525		0.0100 0.0100	0.0160 0.0160	0.0200 0.0200	0.0245 0.0245					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	450 425		0.0100 0.0080	0.0160 0.0125	0.0200 0.0160	0.0245 0.0200					
Chilled cast iron	≤ 38	≤ 354	130		0.0025	0.0040	0.0050	0.0065					
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	115		0.0030	0.0050	0.0065	0.0080					
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	150 130		0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065					
Aluminium and Al-alloys	-	≤ 120	1015										
Al wrought alloys	-	≤ 200	1015										
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	855 720										
Magnesium alloys	-	≤ 120	920										
Copper, low-alloyed	-	≤ 150	410										
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	1065 720										
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	410 345										
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	295 260										
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 5746

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	460 395		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	550 480		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	415 400 395		0.0065 0.0050 0.0050	0.0100 0.0080 0.0080	0.0125 0.0100 0.0100	0.0160 0.0125 0.0125					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 335		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125					
Unalloyed case hardened steels	≤ 25	≤ 255	465		0.0065	0.0100	0.0125	0.0160					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 270		0.0050 0.0030	0.0080 0.0050	0.0100 0.0065	0.0125 0.0080					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	340 325		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	230 175		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
High speed steels	≤ 43	≤ 402	195		0.0025	0.0040	0.0050	0.0065					
Spring steels	≤ 38	≤ 354	195		0.0020	0.0030	0.0040	0.0050					
Hardened steels	≤ 48 ≤ 66	≤ 460 -	175 110		0.0020 0.0020	0.0030 0.0030	0.0040 0.0040	0.0050 0.0050					
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	195 175 155		0.0030 0.0030 0.0030	0.0050 0.0050 0.0050	0.0065 0.0065 0.0065	0.0080 0.0080 0.0080					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	640 525		0.0080 0.0080	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	435 415		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160					
Chilled cast iron	≤ 38	≤ 354	130		0.0020	0.0030	0.0040	0.0050					
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	110		0.0025	0.0040	0.0050	0.0065					
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	140 130		0.0020 0.0020	0.0030 0.0030	0.0040 0.0040	0.0050 0.0050					
Aluminium and Al-alloys	-	≤ 120	1000										
Al wrought alloys	-	≤ 200	1000										
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	845 710										
Magnesium alloys	-	≤ 120	900										
Copper, low-alloyed	-	≤ 150	400										
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	1050 710										
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	410 345										
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	285 250										
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 5768

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	1150			0.0065	0.0125	0.0155	0.0195	0.0250	0.0250		
Al wrought alloys	-	≤ 200	1150			0.0065	0.0125	0.0155	0.0195	0.0250	0.0250		
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	1050 920			0.0065 0.0050	0.0100 0.0080	0.0155 0.0125	0.0155 0.0125	0.0195 0.0155	0.0250 0.0195		
Magnesium alloys	-	≤ 120	1050			0.0050	0.0080	0.0125	0.0125	0.0155	0.0195		
Copper, low-alloyed	-	≤ 150	625			0.0050	0.0080	0.0125	0.0125	0.0155	0.0195		
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	525 525			0.0040 0.0040	0.0065 0.0065	0.0100 0.0100	0.0100 0.0100	0.0125 0.0125	0.0155 0.0155		
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	525 525			0.0040 0.0040	0.0065 0.0065	0.0100 0.0100	0.0100 0.0100	0.0125 0.0125	0.0155 0.0155		
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	490 490			0.0040 0.0040	0.0065 0.0065	0.0100 0.0100	0.0100 0.0100	0.0125 0.0125	0.0155 0.0155		
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			330 330 330			0.0020 0.0020 0.0015	0.0030 0.0030 0.0025	0.0050 0.0050 0.0040	0.0050 0.0050 0.0040	0.0065 0.0065 0.0050	0.0080 0.0080 0.0065		

Series # 5759

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	475 395		0.0065 0.0050	0.0100 0.0080	0.0155 0.0125	0.0155 0.0125	0.0195 0.0155	0.0250 0.0195			
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	560 475		0.0065 0.0065	0.0100 0.0100	0.0155 0.0155	0.0155 0.0155	0.0195 0.0195	0.0250 0.0250			
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	425 410 395		0.0065 0.0050 0.0050	0.0100 0.0080 0.0080	0.0155 0.0125 0.0125	0.0155 0.0125 0.0125	0.0195 0.0155 0.0155	0.0250 0.0195 0.0195			
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 345		0.0050 0.0050	0.0080 0.0080	0.0125 0.0125	0.0125 0.0125	0.0155 0.0155	0.0195 0.0195			
Unalloyed case hardened steels	≤ 25	≤ 255	475		0.0065	0.0100	0.0155	0.0155	0.0195	0.0250			
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 345		0.0050 0.0040	0.0080 0.0065	0.0125 0.0100	0.0125 0.0100	0.0155 0.0125	0.0195 0.0155			
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	360 330		0.0050 0.0030	0.0080 0.0050	0.0125 0.0080	0.0125 0.0080	0.0155 0.0100	0.0195 0.0125			
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	230 180		0.0040 0.0030	0.0065 0.0050	0.0100 0.0080	0.0100 0.0080	0.0125 0.0100	0.0155 0.0125			
High speed steels	≤ 43	≤ 402	195		0.0030	0.0050	0.0080	0.0080	0.0100	0.0125			
Spring steels	≤ 38	≤ 354	195		0.0030	0.0050	0.0080	0.0080	0.0100	0.0125			
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 5760

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	475 395		0.0050 0.0040	0.0080 0.0065	0.0125 0.0100	0.0125 0.0100	0.0155 0.0125	0.0195 0.0155			
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	560 475		0.0050 0.0050	0.0080 0.0080	0.0125 0.0125	0.0125 0.0125	0.0155 0.0155	0.0195 0.0195			
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	425 410 395		0.0050 0.0040 0.0040	0.0080 0.0065 0.0065	0.0125 0.0100 0.0100	0.0125 0.0100 0.0100	0.0155 0.0125 0.0125	0.0195 0.0155 0.0155			
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 345		0.0040 0.0040	0.0065 0.0065	0.0100 0.0100	0.0100 0.0100	0.0125 0.0125	0.0155 0.0155			
Unalloyed case hardened steels	≤ 25	≤ 255	475		0.0050	0.0080	0.0125	0.0125	0.0155	0.0195			
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 345		0.0040 0.0030	0.0065 0.0050	0.0100 0.0080	0.0100 0.0080	0.0125 0.0100	0.0155 0.0125			
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	360 330		0.0040 0.0025	0.0065 0.0040	0.0100 0.0065	0.0100 0.0065	0.0125 0.0080	0.0155 0.0100			
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	230 215		0.0030 0.0025	0.0050 0.0040	0.0080 0.0065	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100			
High speed steels	≤ 43	≤ 402	195		0.0025	0.0040	0.0065	0.0065	0.0080	0.0100			
Spring steels	≤ 38	≤ 354	195		0.0025	0.0040	0.0065	0.0065	0.0080	0.0100			
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 6068

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	395 330		0.0050 0.0050	0.0080 0.0080	0.0120 0.0120	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	295 260		0.0050 0.0050	0.0080 0.0080	0.0120 0.0120	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200			
Chilled cast iron	≤ 38	≤ 354	130		0.0016	0.0025	0.0035	0.0040	0.0050	0.0060			
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	1345		0.0050	0.0080	0.0125	0.0125	0.0160	0.0200			
Al wrought alloys	-	≤ 200	1345		0.0050	0.0080	0.0125	0.0125	0.0160	0.0200			
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	1245 1080		0.0050 0.0050	0.0080 0.0080	0.0125 0.0125	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200			
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	920		0.0060	0.0125	0.0160	0.0200	0.0250	0.0250			
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	360 260		0.0040 0.0030	0.0060 0.0050	0.0100 0.0080	0.0100 0.0080	0.0120 0.0100	0.0160 0.0125			
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 6069

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	395 330		0.0050 0.0050	0.0080 0.0080	0.0120 0.0120	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	295 260		0.0050 0.0050	0.0080 0.0080	0.0120 0.0120	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200			
Chilled cast iron	≤ 38	≤ 354	130		0.0016	0.0025	0.0035	0.0040	0.0050	0.0060			
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	1345		0.0050	0.0080	0.0120	0.0125	0.0160	0.0200			
Al wrought alloys	-	≤ 200	1345		0.0050	0.0080	0.0120	0.0125	0.0160	0.0200			
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	1245 1080		0.0050 0.0050	0.0080 0.0080	0.0120 0.0120	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200			
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	920		0.0050	0.0080	0.0120	0.0125	0.0160	0.0200			
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	360 260		0.0040 0.0030	0.0060 0.0050	0.0095 0.0075	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125			
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	• •	•	•	•	•	•	•	•	•	•	•
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			• • • •	•	•	•	•	•	•	•	•	•	•

Series # 6070

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	395 330		0.0040 0.0040	0.0060 0.0060	0.0090 0.0090	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	295 260		0.0040 0.0040	0.0060 0.0060	0.0090 0.0090	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160			
Chilled cast iron	≤ 38	≤ 354	130		0.0013	0.0020	0.0025	0.0030	0.0040	0.0050			
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	1345		0.0040	0.0060	0.0090	0.0100	0.0125	0.0160			
Al wrought alloys	-	≤ 200	1345		0.0040	0.0060	0.0090	0.0100	0.0125	0.0160			
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	1245 1080		0.0040 0.0040	0.0060 0.0060	0.0090 0.0090	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160			
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	920		0.0050	0.0080	0.0120	0.0125	0.0160	0.0200			
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	360 260		0.0040 0.0030	0.0060 0.0050	0.0090 0.0070	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125			
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Note: Pilot holes (depth >1xD) are recommended when drilling depths greater than 7xD. The pilot hole can be produced with a short, rigid drill. The diameter should be 0.01 - 0.02 mm larger than the diameter of the finish drill. Ratio drills can produce their own pilot hole by reducing speed and feed rates by 30-40%.

Series # 6400

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 0.0197 in. 0.5 mm	0.0315 in. 0.8 mm	0.0394 in. 1.0 mm	0.0591 in. 1.5 mm	0.0787 in. 2.0 mm	0.0984 in. 2.5 mm	0.1181 in. 3.0 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	330 330	0.0020 0.0020	0.0031 0.0031	0.0039 0.0039	0.0059 0.0059	0.0079 0.0079	0.0098 0.0098	0.0118 0.0118
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	330 295	0.0020 0.0018	0.0031 0.0028	0.0039 0.0035	0.0059 0.0051	0.0079 0.0071	0.0098 0.0087	0.0118 0.0106
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	295 295 295	0.0020 0.0020 0.0018	0.0031 0.0031 0.0028	0.0039 0.0039 0.0035	0.0059 0.0059 0.0051	0.0079 0.0079 0.0071	0.0098 0.0098 0.0087	0.0118 0.0118 0.0106
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	295 230	0.0018 0.0016	0.0028 0.0024	0.0035 0.0031	0.0051 0.0047	0.0071 0.0063	0.0087 0.0079	0.0106 0.0094
Unalloyed case hardened steels	≤ 25	≤ 255	330	0.0018	0.0028	0.0035	0.0051	0.0071	0.0087	0.0106
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	280 230	0.0018 0.0016	0.0028 0.0024	0.0035 0.0031	0.0051 0.0047	0.0071 0.0063	0.0087 0.0079	0.0106 0.0094
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	230 195	0.0016 0.0016	0.0024 0.0024	0.0031 0.0031	0.0047 0.0047	0.0063 0.0063	0.0079 0.0079	0.0094 0.0094
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	165 195	0.0016 0.0016	0.0024 0.0024	0.0031 0.0031	0.0047 0.0047	0.0063 0.0063	0.0079 0.0079	0.0094 0.0094
High speed steels	≤ 43	≤ 402	195	0.0005	0.0006	0.0009	0.0014	0.0020	0.0028	0.0035
Spring steels	≤ 38	≤ 354	195	0.0005	0.0006	0.0009	0.0014	0.0020	0.0028	0.0035
Hardened steels	≤ 48 ≤ 66	≤ 460 -								
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	100 50 100	0.0005 0.0002 0.0005	0.0006 0.0003 0.0006	0.0009 0.0005 0.0009	0.0014 0.0008 0.0014	0.0020 0.0013 0.0020	0.0028 0.0018 0.0028	0.0035 0.0024 0.0035
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	425 425	0.0024 0.0024	0.0035 0.0035	0.0047 0.0047	0.0071 0.0071	0.0094 0.0094	0.0118 0.0118	0.0142 0.0142
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	425 395	0.0024 0.0024	0.0035 0.0035	0.0047 0.0043	0.0071 0.0067	0.0094 0.0091	0.0118 0.0110	0.0142 0.0134
Chilled cast iron	≤ 38	≤ 354								
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301	50	0.0002	0.0003	0.0005	0.0008	0.0013	0.0018	0.0024
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402								
Special alloys	≤ 54	≤ 549								
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	35 50	0.0002 0.0002	0.0003 0.0003	0.0005 0.0005	0.0008 0.0008	0.0013 0.0013	0.0018 0.0018	0.0024 0.0024
Aluminium and Al-alloys	-	≤ 120	230	0.0024	0.0035	0.0047	0.0071	0.0094	0.0118	0.0142
Al wrought alloys	-	≤ 200	230	0.0024	0.0035	0.0047	0.0071	0.0094	0.0118	0.0142
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	445 445	0.0009 0.0009	0.0013 0.0013	0.0017 0.0017	0.0026 0.0026	0.0036 0.0036	0.0047 0.0047	0.0059 0.0059
Magnesium alloys	-	≤ 120								
Copper, low-alloyed	-	≤ 150								
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180								
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255								
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301								
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK										

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 0.0197 in. 0.5 mm	0.0315 in. 0.8 mm	0.0394 in. 1.0 mm	0.0591 in. 1.5 mm	0.0787 in. 2.0 mm	0.0984 in. 2.5 mm	0.1181 in. 3.0 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	330 330	0.0016 0.0016	0.0024 0.0024	0.0031 0.0031	0.0047 0.0047	0.0063 0.0063	0.0079 0.0079	0.0094 0.0094
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	330 295	0.0016 0.0014	0.0024 0.0020	0.0031 0.0028	0.0047 0.0039	0.0063 0.0055	0.0079 0.0067	0.0094 0.0083
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	295 295 295	0.0016 0.0016 0.0014	0.0024 0.0024 0.0020	0.0031 0.0031 0.0028	0.0047 0.0047 0.0039	0.0063 0.0063 0.0055	0.0079 0.0079 0.0067	0.0094 0.0094 0.0083
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	295 230	0.0014 0.0012	0.0020 0.0016	0.0028 0.0016	0.0039 0.0035	0.0055 0.0047	0.0067 0.0059	0.0083 0.0071
Unalloyed case hardened steels	≤ 25	≤ 255	330	0.0014	0.0020	0.0028	0.0039	0.0055	0.0067	0.0083
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	280 230	0.0014 0.0012	0.0020 0.0016	0.0028 0.0016	0.0039 0.0035	0.0055 0.0047	0.0067 0.0059	0.0083 0.0071
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	230 195	0.0012 0.0012	0.0016 0.0016	0.0016 0.0016	0.0035 0.0035	0.0047 0.0047	0.0059 0.0059	0.0071 0.0071
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	165 195	0.0012 0.0012	0.0016 0.0016	0.0016 0.0016	0.0035 0.0035	0.0047 0.0047	0.0059 0.0059	0.0071 0.0071
High speed steels	≤ 43	≤ 402	195	0.0005	0.0006	0.0009	0.0014	0.0020	0.0028	0.0035
Spring steels	≤ 38	≤ 354	195	0.0005	0.0006	0.0009	0.0014	0.0020	0.0028	0.0035
Hardened steels	≤ 48 ≤ 66	≤ 460 -								
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	100 50 100	0.0005 0.0002 0.0005	0.0006 0.0003 0.0006	0.0009 0.0005 0.0009	0.0014 0.0008 0.0014	0.0020 0.0013 0.0020	0.0028 0.0018 0.0028	0.0035 0.0024 0.0035
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	425 425	0.0022 0.0022	0.0031 0.0031	0.0043 0.0043	0.0063 0.0063	0.0087 0.0087	0.0106 0.0106	0.0130 0.0130
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	425 395	0.0022 0.0020	0.0031 0.0031	0.0043 0.0039	0.0063 0.0059	0.0087 0.0083	0.0106 0.0102	0.0130 0.0122
Chilled cast iron	≤ 38	≤ 354								
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301	50	0.0002	0.0003	0.0005	0.0008	0.0013	0.0018	0.0024
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402								
Special alloys	≤ 54	≤ 549								
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	35 50	0.0002 0.0002	0.0003 0.0003	0.0005 0.0005	0.0008 0.0008	0.0013 0.0013	0.0018 0.0018	0.0024 0.0024
Aluminium and Al-alloys	-	≤ 120	230	0.0024	0.0035	0.0047	0.0071	0.0094	0.0118	0.0142
Al wrought alloys	-	≤ 200	230	0.0024	0.0035	0.0047	0.0071	0.0094	0.0118	0.0142
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	445 445	0.0009 0.0009	0.0013 0.0013	0.0017 0.0017	0.0026 0.0026	0.0036 0.0036	0.0047 0.0047	0.0059 0.0059
Magnesium alloys	-	≤ 120								
Copper, low-alloyed	-	≤ 150								
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180								
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255								
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301								
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK										

Series # 6405

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 0.0197 in. 0.5 mm	0.0315 in. 0.8 mm	0.0394 in. 1.0 mm	0.0591 in. 1.5 mm	0.0787 in. 2.0 mm	0.0984 in. 2.5 mm	0.1181 in. 3.0 mm
Common structural steels	-	≤ 150	345			0.0031	0.0047	0.0063	0.0079	0.0094
	≤ 32	≤ 301	330			0.0031	0.0047	0.0063	0.0079	0.0094
Free-cutting steels	≤ 25	≤ 255	345			0.0031	0.0047	0.0063	0.0079	0.0094
	≤ 32	≤ 301	295			0.0028	0.0039	0.0055	0.0067	0.0083
Unalloyed heat-treatable steels	≤ 20	≤ 220	310			0.0031	0.0047	0.0063	0.0079	0.0094
	≤ 25	≤ 255	310			0.0031	0.0047	0.0063	0.0079	0.0094
	≤ 32	≤ 301	295			0.0028	0.0039	0.0055	0.0067	0.0083
Alloyed heat-treatable steels	≤ 32	≤ 301	295			0.0028	0.0039	0.0055	0.0067	0.0083
	≤ 43	≤ 402	230			0.0016	0.0035	0.0047	0.0059	0.0071
Unalloyed case hardened steels	≤ 25	≤ 255	330			0.0028	0.0039	0.0055	0.0067	0.0083
Alloyed case hardened steels	≤ 32	≤ 301	280			0.0028	0.0039	0.0055	0.0067	0.0083
	≤ 43	≤ 402	230			0.0016	0.0035	0.0047	0.0059	0.0071
Nitriding steels	≤ 32	≤ 301	230			0.0016	0.0035	0.0047	0.0059	0.0071
	≤ 43	≤ 402	195			0.0016	0.0035	0.0047	0.0059	0.0071
Tool steels	≤ 25	≤ 255	165			0.0016	0.0035	0.0047	0.0059	0.0071
	≤ 43	≤ 402	165			0.0016	0.0035	0.0047	0.0059	0.0071
High speed steels	≤ 43	≤ 402	165			0.0009	0.0014	0.0020	0.0028	0.0035
Spring steels	≤ 38	≤ 354	165			0.0009	0.0014	0.0020	0.0028	0.0035
Hardened steels	≤ 48	≤ 460								
	≤ 66	-								
Stainless steels, sulphured	≤ 28	≤ 273	230			0.0009	0.0014	0.0020	0.0028	0.0035
austenitic	≤ 36	≤ 337	195			0.0005	0.0008	0.0013	0.0018	0.0024
martensitic	≤ 46	≤ 435	230			0.0009	0.0014	0.0020	0.0028	0.0035
Cast iron	≤ 23	≤ 242	490			0.0016	0.0035	0.0047	0.0059	0.0071
	≤ 38	≤ 354	460			0.0016	0.0035	0.0047	0.0059	0.0071
Spheroidal graphite iron and	≤ 23	≤ 242	460			0.0016	0.0035	0.0047	0.0059	0.0071
malleable cast iron	≤ 38	≤ 354	425			0.0016	0.0035	0.0047	0.0059	0.0071
Chilled cast iron	≤ 38	≤ 354								
New cast materials GGV	≤ 20	≤ 220	115			0.0005	0.0008	0.0013	0.0018	0.0024
	≤ 32	≤ 301								
New cast materials ADI	≤ 32	≤ 301								
	≤ 43	≤ 402								
Special alloys	≤ 54	≤ 549								
Ti and Ti-alloys	≤ 25	≤ 255	80			0.0005	0.0008	0.0013	0.0018	0.0024
	≤ 43	≤ 402	115			0.0005	0.0008	0.0013	0.0018	0.0024
Aluminium and Al-alloys	-	≤ 120	230			0.0047	0.0071	0.0094	0.0118	0.0142
Al wrought alloys	-	≤ 200	230			0.0047	0.0071	0.0094	0.0118	0.0142
Al cast alloys ≤ 10 % Si	-	≤ 180	445			0.0017	0.0026	0.0036	0.0047	0.0059
≤ 24 % Si	-	≤ 180	445			0.0017	0.0026	0.0036	0.0047	0.0059
Magnesium alloys	-	≤ 120								
Copper, low-alloyed	-	≤ 150								
Brass, short-chipping	-	≤ 180								
long-chipping	-	≤ 180								
Bronze, short-chipping	-	≤ 180								
	≤ 25	≤ 255								
Bronze, long-chipping	≤ 25	≤ 255								
	≤ 32	≤ 301								
Duroplastics										
Thermoplastics										
Reinforced plastics - Kevlar										
Reinforced plastics - GFK / CFK										

Series # 6408

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 0.0197 in. 0.5 mm	0.0315 in. 0.8 mm	0.0394 in. 1.0 mm	0.0591 in. 1.5 mm	0.0787 in. 2.0 mm	0.0984 in. 2.5 mm	0.1181 in. 3.0 mm
Common structural steels	-	≤ 150	345			0.0013	0.0020	0.0028	0.0037	0.0047
	≤ 32	≤ 301	330			0.0013	0.0020	0.0028	0.0037	0.0047
Free-cutting steels	≤ 25	≤ 255	345			0.0017	0.0026	0.0036	0.0047	0.0059
	≤ 32	≤ 301	295			0.0017	0.0026	0.0036	0.0047	0.0059
Unalloyed heat-treatable steels	≤ 20	≤ 220	310			0.0013	0.0020	0.0028	0.0037	0.0047
	≤ 25	≤ 255	310			0.0013	0.0020	0.0028	0.0037	0.0047
	≤ 32	≤ 301	295			0.0013	0.0020	0.0028	0.0037	0.0047
Alloyed heat-treatable steels	≤ 32	≤ 301	295			0.0013	0.0020	0.0028	0.0037	0.0047
	≤ 43	≤ 402	230			0.0013	0.0020	0.0028	0.0037	0.0047
Unalloyed case hardened steels	≤ 25	≤ 255	330			0.0009	0.0014	0.0020	0.0028	0.0035
Alloyed case hardened steels	≤ 32	≤ 301	280			0.0013	0.0020	0.0028	0.0037	0.0047
	≤ 43	≤ 402	230			0.0013	0.0020	0.0028	0.0037	0.0047
Nitriding steels	≤ 32	≤ 301	230			0.0009	0.0014	0.0020	0.0028	0.0035
	≤ 43	≤ 402	195			0.0009	0.0014	0.0020	0.0028	0.0035
Tool steels	≤ 25	≤ 255	165			0.0013	0.0020	0.0028	0.0037	0.0047
	≤ 43	≤ 402	165			0.0013	0.0020	0.0028	0.0037	0.0047
High speed steels	≤ 43	≤ 402	165			0.0009	0.0014	0.0020	0.0028	0.0035
Spring steels	≤ 38	≤ 354	165			0.0009	0.0014	0.0020	0.0028	0.0035
Hardened steels	≤ 48	≤ 460								
	≤ 66	-								
Stainless steels, sulphured	≤ 28	≤ 273	230			0.0009	0.0014	0.0020	0.0028	0.0035
austenitic	≤ 36	≤ 337	195			0.0005	0.0008	0.0013	0.0018	0.0024
martensitic	≤ 46	≤ 435	230			0.0009	0.0014	0.0020	0.0028	0.0035
Cast iron	≤ 23	≤ 242	490			0.0016	0.0035	0.0047	0.0059	0.0071
	≤ 38	≤ 354	460			0.0016	0.0035	0.0047	0.0059	0.0071
Spheroidal graphite iron and	≤ 23	≤ 242	460			0.0016	0.0035	0.0047	0.0059	0.0071
malleable cast iron	≤ 38	≤ 354	425			0.0016	0.0035	0.0047	0.0059	0.0071
Chilled cast iron	≤ 38	≤ 354								
New cast materials GGV	≤ 20	≤ 220	115			0.0005	0.0008	0.0013	0.0018	0.0024
	≤ 32	≤ 301								
New cast materials ADI	≤ 32	≤ 301								
	≤ 43	≤ 402								
Special alloys	≤ 54	≤ 549								
Ti and Ti-alloys	≤ 25	≤ 255	80			0.0005	0.0008	0.0013	0.0018	0.0024
	≤ 43	≤ 402	115			0.0005	0.0008	0.0013	0.0018	0.0024
Aluminium and Al-alloys	-	≤ 120	230			0.0047	0.0071	0.0094	0.0118	0.0142
Al wrought alloys	-	≤ 200	230			0.0047	0.0071	0.0094	0.0118	0.0142
Al cast alloys ≤ 10 % Si	-	≤ 180	445			0.0017	0.0026	0.0036	0.0047	0.0059
≤ 24 % Si	-	≤ 180	445			0.0017	0.0026	0.0036	0.0047	0.0059
Magnesium alloys	-	≤ 120								
Copper, low-alloyed	-	≤ 150								
Brass, short-chipping	-	≤ 180								
long-chipping	-	≤ 180								
Bronze, short-chipping	-	≤ 180								
	≤ 25	≤ 255								
Bronze, long-chipping	≤ 25	≤ 255								
	≤ 32	≤ 301								
Duroplastics										
Thermoplastics										
Reinforced plastics - Kevlar										
Reinforced plastics - GFK / CFK										

Series # 6412

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 0.0197 in. 0.5 mm	0.0315 in. 0.8 mm	0.0394 in. 1.0 mm	0.0591 in. 1.5 mm	0.0787 in. 2.0 mm	0.0984 in. 2.5 mm	0.1181 in. 3.0 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	345 330			0.0013 0.0013	0.0020 0.0020	0.0028 0.0028	0.0037 0.0037	0.0047 0.0047
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	345 295			0.0017 0.0017	0.0026 0.0026	0.0036 0.0036	0.0047 0.0047	0.0059 0.0059
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	310 310 295			0.0013 0.0013 0.0013	0.0020 0.0020 0.0020	0.0028 0.0028 0.0028	0.0037 0.0037 0.0037	0.0047 0.0047 0.0047
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	295 230			0.0013 0.0013	0.0020 0.0020	0.0028 0.0028	0.0037 0.0037	0.0047 0.0047
Unalloyed case hardened steels	≤ 25	≤ 255	330			0.0009	0.0014	0.0020	0.0028	0.0035
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	280 230			0.0013 0.0013	0.0020 0.0020	0.0028 0.0028	0.0037 0.0037	0.0047 0.0047
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	230 195			0.0009 0.0009	0.0014 0.0014	0.0020 0.0020	0.0028 0.0028	0.0035 0.0035
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	165 165			0.0013 0.0013	0.0020 0.0020	0.0028 0.0028	0.0037 0.0037	0.0047 0.0047
High speed steels	≤ 43	≤ 402	165			0.0009	0.0014	0.0020	0.0028	0.0035
Spring steels	≤ 38	≤ 354	165			0.0009	0.0014	0.0020	0.0028	0.0035
Hardened steels	≤ 48 ≤ 66	≤ 460 -								
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	230 195 230			0.0009 0.0005 0.0009	0.0014 0.0008 0.0014	0.0020 0.0013 0.0020	0.0028 0.0018 0.0028	0.0035 0.0024 0.0035
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	490 460			0.0016 0.0016	0.0035 0.0035	0.0047 0.0047	0.0059 0.0059	0.0071 0.0071
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	460 425			0.0016 0.0016	0.0035 0.0035	0.0047 0.0047	0.0059 0.0059	0.0071 0.0071
Chilled cast iron	≤ 38	≤ 354								
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301	115			0.0005	0.0008	0.0013	0.0018	0.0024
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402								
Special alloys	≤ 54	≤ 549								
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	80 115			0.0005 0.0005	0.0008 0.0008	0.0013 0.0013	0.0018 0.0018	0.0024 0.0024
Aluminium and Al-alloys	-	≤ 120	230			0.0047	0.0071	0.0094	0.0118	0.0142
Al wrought alloys	-	≤ 200	230			0.0047	0.0071	0.0094	0.0118	0.0142
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	445 445			0.0017 0.0017	0.0026 0.0026	0.0036 0.0036	0.0047 0.0047	0.0059 0.0059
Magnesium alloys	-	≤ 120								
Copper, low-alloyed	-	≤ 150								
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180								
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255								
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301								
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK										

Series # 6501

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	685 520		0.0060 0.0060	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0250 0.0250	0.0250 0.0250			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	520 425		0.0060 0.0060	0.0125 0.0100	0.0160 0.0160	0.0200 0.0160	0.0250 0.0200	0.0250 0.0250			
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301	425 330	0.0010 0.0010	0.0065 0.0065	0.0100 0.0100	0.0155 0.0155	0.0155 0.0155	0.0195 0.0195	0.0250 0.0250	0.0315 0.0315	0.0315 0.0315	0.0395 0.0395
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402	260 195	0.0010 0.0010	0.0065 0.0065	0.0100 0.0100	0.0155 0.0155	0.0155 0.0155	0.0195 0.0195	0.0250 0.0250	0.0315 0.0315	0.0315 0.0315	0.0395 0.0395
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	425 325		0.0060 0.0060	0.0100 0.0100	0.0150 0.0150	0.0160 0.0160	0.0200 0.0200	0.0250 0.0250			
Aluminium and Al-alloys	-	≤ 120	260		0.0060	0.0100	0.0150	0.0160	0.0200	0.0250			
Al wrought alloys	-	≤ 200	195		0.0060	0.0100	0.0150	0.0160	0.0200	0.0250			
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 6502

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	685 520		0.0060 0.0060	0.0100 0.0100	0.0160 0.0160	0.0160 0.0160	0.0200 0.0200	0.0250 0.0250			
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	520 425		0.0060 0.0050	0.0100 0.0080	0.0160 0.0125	0.0160 0.0125	0.0200 0.0160	0.0250 0.0200			
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301	425 330	0.0010 0.0010	0.0050 0.0050	0.0080 0.0080	0.0125 0.0125	0.0125 0.0125	0.0155 0.0155	0.0195 0.0195	0.0250 0.0250	0.0250 0.0250	0.0315 0.0315
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402	260 195	0.0010 0.0010	0.0050 0.0050	0.0080 0.0080	0.0125 0.0125	0.0125 0.0125	0.0155 0.0155	0.0195 0.0195	0.0250 0.0250	0.0250 0.0250	0.0315 0.0315
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	425 325		0.0050 0.0050	0.0080 0.0080	0.0120 0.0120	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200			
Aluminium and Al-alloys	-	≤ 120	260		0.0050	0.0080	0.0120	0.0125	0.0160	0.0200			
Al wrought alloys	-	≤ 200	195		0.0050	0.0080	0.0120	0.0125	0.0160	0.0200			
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 6509

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	360 360	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	395 395	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	360 360 330	0.0030 0.0040 0.0030	0.0040 0.0060 0.0050	0.0060 0.0100 0.0080	0.0090 0.0140 0.0110	0.0100 0.0160 0.0120	0.0120 0.0200 0.0160				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	360 360	0.0030 0.0030	0.0050 0.0040	0.0080 0.0060	0.0110 0.0090	0.0120 0.0100	0.0160 0.0120				
Unalloyed case hardened steels	≤ 25	≤ 255	360	0.0040	0.0060	0.0100	0.0140	0.0160	0.0200				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	360 360	0.0030 0.0030	0.0050 0.0040	0.0080 0.0060	0.0110 0.0090	0.0120 0.0100	0.0160 0.0120				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	330 260	0.0020 0.0020	0.0030 0.0030	0.0050 0.0050	0.0070 0.0070	0.0080 0.0080	0.0100 0.0100				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	330 260	0.0030 0.0020	0.0040 0.0030	0.0060 0.0050	0.0090 0.0070	0.0100 0.0080	0.0120 0.0100				
High speed steels	≤ 43	≤ 402	165	0.0020	0.0030	0.0050	0.0070	0.0080	0.0100				
Spring steels	≤ 38	≤ 354	165	0.0020	0.0030	0.0050	0.0070	0.0080	0.0100				
Hardened steels	≤ 48 ≤ 66	≤ 460 -	165 165	0.0020 0.0010	0.0020 0.0020	0.0040 0.0040	0.0060 0.0060	0.0060 0.0060	0.0080 0.0080				
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	330 230 330	0.0020 0.0010 0.0020	0.0030 0.0020 0.0030	0.0050 0.0020 0.0050	0.0070 0.0040 0.0070	0.0080 0.0040 0.0080	0.0100 0.0050 0.0100				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	460 330	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	460 330	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301	330 330	0.0005 0.0005	0.0040 0.0040	0.0065 0.0065	0.0100 0.0100	0.0100 0.0100	0.0125 0.0125				
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402	295	0.0010	0.0065	0.0100	0.0155	0.0155	0.0195				
Special alloys	≤ 54	≤ 549	100	0.0040	0.0020	0.0020	0.0040	0.0040	0.0050				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	395		0.0010	0.0020	0.0030	0.0030	0.0040				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	395	0.0040	0.0060	0.0100	0.0140	0.0160	0.0200				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 6511

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	360 360	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	395 395	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	360 360 330	0.0030 0.0040 0.0030	0.0040 0.0060 0.0050	0.0060 0.0100 0.0080	0.0090 0.0140 0.0110	0.0100 0.0160 0.0120	0.0120 0.0200 0.0160				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	360 360	0.0030 0.0030	0.0050 0.0040	0.0080 0.0060	0.0110 0.0090	0.0120 0.0100	0.0160 0.0120				
Unalloyed case hardened steels	≤ 25	≤ 255	360	0.0040	0.0060	0.0100	0.0140	0.0160	0.0200				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	360 360	0.0030 0.0030	0.0050 0.0040	0.0080 0.0060	0.0110 0.0090	0.0120 0.0100	0.0160 0.0120				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	330 260	0.0020 0.0020	0.0030 0.0030	0.0050 0.0050	0.0070 0.0070	0.0080 0.0080	0.0100 0.0100				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	330 260	0.0030 0.0020	0.0040 0.0030	0.0060 0.0050	0.0090 0.0070	0.0100 0.0080	0.0120 0.0100				
High speed steels	≤ 43	≤ 402	165	0.0020	0.0030	0.0050	0.0070	0.0080	0.0100				
Spring steels	≤ 38	≤ 354	165	0.0020	0.0030	0.0050	0.0070	0.0080	0.0100				
Hardened steels	≤ 48 ≤ 66	≤ 460 -	165 165	0.0020 0.0010	0.0020 0.0020	0.0040 0.0040	0.0060 0.0060	0.0060 0.0060	0.0080 0.0080				
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	330 230 330	0.0020 0.0010 0.0020	0.0030 0.0020 0.0030	0.0050 0.0020 0.0050	0.0070 0.0040 0.0070	0.0080 0.0040 0.0080	0.0100 0.0050 0.0100				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	460 330	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	460 330	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301	330 330	0.0005 0.0005	0.0040 0.0040	0.0065 0.0065	0.0100 0.0100	0.0100 0.0100	0.0125 0.0125				
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402	295	0.0010	0.0065	0.0100	0.0155	0.0155	0.0195				
Special alloys	≤ 54	≤ 549	100	0.0040	0.0020	0.0020	0.0040	0.0040	0.0050				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	395		0.0010	0.0020	0.0030	0.0030	0.0040				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	395	0.0040	0.0060	0.0100	0.0140	0.0160	0.0200				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 6512

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	330 330	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	395 330	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	360 330 330	0.0030 0.0040 0.0030	0.0040 0.0060 0.0050	0.0060 0.0100 0.0080	0.0090 0.0140 0.0110	0.0100 0.0160 0.0120	0.0120 0.0200 0.0160				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	330 330	0.0030 0.0030	0.0050 0.0040	0.0080 0.0060	0.0110 0.0090	0.0120 0.0100	0.0160 0.0120				
Unalloyed case hardened steels	≤ 25	≤ 255	330	0.0040	0.0060	0.0100	0.0140	0.0160	0.0200				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	330 330	0.0030 0.0030	0.0050 0.0040	0.0080 0.0060	0.0110 0.0090	0.0120 0.0100	0.0160 0.0120				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	260 195	0.0020 0.0020	0.0030 0.0030	0.0050 0.0050	0.0070 0.0070	0.0080 0.0080	0.0100 0.0100				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	295 230	0.0030 0.0020	0.0040 0.0020	0.0060 0.0040	0.0090 0.0060	0.0100 0.0060	0.0120 0.0080				
High speed steels	≤ 43	≤ 402	165	0.0020	0.0020	0.0040	0.0060	0.0060	0.0080				
Spring steels	≤ 38	≤ 354	165	0.0020	0.0020	0.0040	0.0060	0.0060	0.0080				
Hardened steels	≤ 48 ≤ 66	≤ 460 -	165 165	0.0020 0.0010	0.0020 0.0020	0.0040 0.0040	0.0060 0.0060	0.0060 0.0060	0.0080 0.0080				
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	330 230 330	0.0020 0.0010 0.0020	0.0030 0.0020 0.0030	0.0050 0.0020 0.0050	0.0070 0.0040 0.0070	0.0080 0.0040 0.0080	0.0100 0.0050 0.0100				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	425 295	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	425 295	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301	295 295	0.0005 0.0005	0.0040 0.0040	0.0065 0.0065	0.0100 0.0100	0.0100 0.0100	0.0125 0.0125				
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402	260	0.0010	0.0065	0.0100	0.0155	0.0155	0.0195				
Special alloys	≤ 54	≤ 549	100	0.0040	0.0020	0.0020	0.0040	0.0040	0.0050				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	395		0.0010	0.0020	0.0030	0.0030	0.0040				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	360	0.0040	0.0060	0.0100	0.0140	0.0160	0.0200				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 6513

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	260 260	0.0030 0.0030	0.0050 0.0050	0.0080 0.0080	0.0120 0.0120	0.0120 0.0120	0.0160 0.0160				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	360 330	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0150 0.0150	0.0160 0.0160	0.0200 0.0200				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	360 260 260	0.0030 0.0030 0.0030	0.0040 0.0050 0.0050	0.0060 0.0080 0.0080	0.0090 0.0120 0.0120	0.0100 0.0120 0.0120	0.0120 0.0160 0.0160				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	260 260	0.0030 0.0030	0.0050 0.0040	0.0080 0.0060	0.0120 0.0090	0.0120 0.0100	0.0160 0.0120				
Unalloyed case hardened steels	≤ 25	≤ 255	260	0.0030	0.0050	0.0080	0.0120	0.0120	0.0160				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	260 260	0.0030 0.0030	0.0040 0.0040	0.0060 0.0060	0.0090 0.0090	0.0100 0.0100	0.0120 0.0120				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	260 195	0.0020 0.0020	0.0030 0.0030	0.0050 0.0050	0.0070 0.0070	0.0080 0.0080	0.0100 0.0100				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	260 230	0.0030 0.0020	0.0040 0.0020	0.0060 0.0040	0.0090 0.0060	0.0100 0.0060	0.0120 0.0080				
High speed steels	≤ 43	≤ 402	165	0.0020	0.0020	0.0040	0.0060	0.0060	0.0080				
Spring steels	≤ 38	≤ 354	165	0.0020	0.0020	0.0040	0.0060	0.0060	0.0080				
Hardened steels	≤ 48 ≤ 66	≤ 460 -	165 165	0.0020 0.0020	0.0020 0.0020	0.0040 0.0040	0.0060 0.0060	0.0060 0.0060	0.0080 0.0080				
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	260 230 260	0.0020 0.0010 0.0020	0.0030 0.0020 0.0030	0.0050 0.0030 0.0050	0.0070 0.0050 0.0070	0.0080 0.0050 0.0080	0.0100 0.0060 0.0100				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	395 260	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0150 0.0150	0.0160 0.0160	0.0200 0.0200				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	395 260	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0150 0.0150	0.0160 0.0160	0.0200 0.0200				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301	260 260	0.0005 0.0005	0.0040 0.0040	0.0065 0.0065	0.0100 0.0100	0.0100 0.0100	0.0125 0.0125				
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402	230	0.0010	0.0065	0.0100	0.0155	0.0155	0.0195				
Special alloys	≤ 54	≤ 549	100	0.0010	0.0020	0.0020	0.0040	0.0040	0.0050				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	395	0.0010	0.0010	0.0020	0.0040	0.0030	0.0040				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	330	0.0040	0.0060	0.0100	0.0150	0.0160	0.0200				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 6514

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	260 260	0.0030 0.0030	0.0050 0.0050	0.0080 0.0080	0.0120 0.0120	0.0120 0.0120	0.0160 0.0160				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	330 330	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0150 0.0150	0.0160 0.0160	0.0200 0.0200				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	360 260 260	0.0030 0.0030 0.0030	0.0040 0.0050 0.0050	0.0060 0.0080 0.0080	0.0090 0.0120 0.0120	0.0100 0.0120 0.0120	0.0120 0.0160 0.0160				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	260 260	0.0030 0.0030	0.0050 0.0040	0.0080 0.0060	0.0120 0.0090	0.0120 0.0100	0.0160 0.0120				
Unalloyed case hardened steels	≤ 25	≤ 255	260	0.0030	0.0050	0.0080	0.0120	0.0120	0.0160				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	260 260	0.0030 0.0030	0.0040 0.0040	0.0060 0.0060	0.0090 0.0090	0.0100 0.0100	0.0120 0.0120				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	260 195	0.0020 0.0020	0.0030 0.0030	0.0050 0.0050	0.0070 0.0070	0.0080 0.0080	0.0100 0.0100				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	260 230	0.0030 0.0020	0.0040 0.0020	0.0060 0.0040	0.0090 0.0060	0.0100 0.0060	0.0120 0.0080				
High speed steels	≤ 43	≤ 402	165	0.0020	0.0020	0.0040	0.0060	0.0060	0.0080				
Spring steels	≤ 38	≤ 354	165	0.0020	0.0020	0.0040	0.0060	0.0060	0.0080				
Hardened steels	≤ 48 ≤ 66	≤ 460 -	165 165	0.0020 0.0020	0.0020 0.0020	0.0040 0.0040	0.0060 0.0060	0.0060 0.0060	0.0080 0.0080				
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	260 230 260	0.0020 0.0010 0.0020	0.0030 0.0020 0.0030	0.0050 0.0030 0.0050	0.0070 0.0050 0.0070	0.0080 0.0050 0.0080	0.0100 0.0060 0.0100				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	395 260	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0150 0.0150	0.0160 0.0160	0.0200 0.0200				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	395 260	0.0040 0.0040	0.0060 0.0060	0.0100 0.0100	0.0150 0.0150	0.0160 0.0160	0.0200 0.0200				
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301	260 260	0.0005 0.0005	0.0040 0.0040	0.0065 0.0065	0.0100 0.0100	0.0100 0.0100	0.0125 0.0125				
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402	230	0.0010	0.0065	0.0100	0.0155	0.0155	0.0195				
Special alloys	≤ 54	≤ 549	100	0.0010	0.0020	0.0020	0.0040	0.0040	0.0050				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	395	0.0010	0.0010	0.0020	0.0040	0.0030	0.0040				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	330	0.0040	0.0060	0.0100	0.0150	0.0160	0.0200				
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 8510

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	475		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
	≤ 32	≤ 301	395		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Free-cutting steels	≤ 25	≤ 255	560		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220			
	≤ 32	≤ 301	475		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220			
Unalloyed heat-treatable steels	≤ 20	≤ 220	425		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220			
	≤ 25	≤ 255	410		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
	≤ 32	≤ 301	395		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Alloyed heat-treatable steels	≤ 32	≤ 301	395		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
	≤ 43	≤ 402	345		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Unalloyed case hardened steels	≤ 25	≤ 255	475		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220			
Alloyed case hardened steels	≤ 32	≤ 301	395		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
	≤ 43	≤ 402	280		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
Nitriding steels	≤ 32	≤ 301	360		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
	≤ 43	≤ 402	345		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
Tool steels	≤ 25	≤ 255	260		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
	≤ 43	≤ 402	215		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
High speed steels	≤ 43	≤ 402	195		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
Spring steels	≤ 38	≤ 354	195		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
Hardened steels	≤ 48	≤ 460	180		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
	≤ 66	-	115		0.0020	0.0030	0.0040	0.0050	0.0050	0.0055			
Stainless steels, sulphured	≤ 28	≤ 273	195		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
austenitic	≤ 36	≤ 337	180		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
martensitic	≤ 46	≤ 435	165		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110			
Cast iron	≤ 23	≤ 242	690		0.0100	0.0160	0.0200	0.0245	0.0245	0.0265			
	≤ 38	≤ 354	525		0.0100	0.0160	0.0200	0.0245	0.0245	0.0265			
Spheroidal graphite iron and	≤ 23	≤ 242	460		0.0100	0.0160	0.0200	0.0245	0.0245	0.0265			
malleable cast iron	≤ 38	≤ 354	425		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220			
Chilled cast iron	≤ 38	≤ 354	130		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070			
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549	115		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
Ti and Ti-alloys	≤ 25	≤ 255	150		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
	≤ 43	≤ 402	130		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090			
Aluminium and Al-alloys	-	≤ 120	1015		0.0100	0.0160	0.0200	0.0245	0.0245	0.0265			
Al wrought alloys	-	≤ 200	1015		0.0100	0.0160	0.0200	0.0245	0.0245	0.0265			
Al cast alloys ≤ 10 % Si	-	≤ 180	855		0.0100	0.0160	0.0200	0.0245	0.0245	0.0265			
≤ 24 % Si	-	≤ 180	720		0.0100	0.0160	0.0200	0.0245	0.0245	0.0265			
Magnesium alloys	-	≤ 120	920		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220			
Copper, low-alloyed	-	≤ 150	410		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Brass, short-chipping	-	≤ 180	1065		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220			
long-chipping	-	≤ 180	720		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
Bronze, short-chipping	-	≤ 180	410		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180			
	≤ 25	≤ 255	345		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Bronze, long-chipping	≤ 25	≤ 255	295		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
	≤ 32	≤ 301	260		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140			
Duroplastics													
Thermoplastics													
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Series # 8511

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	-	≤ 150	475		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
	≤ 32	≤ 301	395		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
Free-cutting steels	≤ 25	≤ 255	560		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
	≤ 32	≤ 301	475		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Unalloyed heat-treatable steels	≤ 20	≤ 220	425		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
	≤ 25	≤ 255	410		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
	≤ 32	≤ 301	395		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Alloyed heat-treatable steels	≤ 32	≤ 301	395		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
	≤ 43	≤ 402	345		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Unalloyed case hardened steels	≤ 25	≤ 255	475		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Alloyed case hardened steels	≤ 32	≤ 301	395		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
	≤ 43	≤ 402	280		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
Nitriding steels	≤ 32	≤ 301	350		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
	≤ 43	≤ 402	330		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
Tool steels	≤ 25	≤ 255	240		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
	≤ 43	≤ 402	180		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
High speed steels	≤ 43	≤ 402	195		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
Spring steels	≤ 38	≤ 354	195		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
Hardened steels	≤ 48	≤ 460	180		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
	≤ 66	-	115		0.0020	0.0030	0.0040	0.0050	0.0050	0.0055	0.0065		
Stainless steels, sulphured	≤ 28	≤ 273	195		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
austenitic	≤ 36	≤ 337	180		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
martensitic	≤ 46	≤ 435	165		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125		
Cast iron	≤ 23	≤ 242	690		0.0100	0.0160	0.0200	0.0245	0.0245	0.0265	0.0290		
	≤ 38	≤ 354	525		0.0100	0.0160	0.0200	0.0245	0.0245	0.0265	0.0290		
Spheroidal graphite iron and	≤ 23	≤ 242	450		0.0100	0.0160	0.0200	0.0245	0.0245	0.0265	0.0290		
malleable cast iron	≤ 38	≤ 354	425		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Chilled cast iron	≤ 38	≤ 354	130		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549	115		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
Ti and Ti-alloys	≤ 25	≤ 255	150		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100		
	≤ 43	≤ 402	130		0.0025	0.0040	0.0050	0.0065	0.0065	0.0070	0.0080		
Aluminium and Al-alloys	-	≤ 120	1015		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Al wrought alloys	-	≤ 200	1015		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Al cast alloys ≤ 10 % Si	-	≤ 180	855		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
≤ 24 % Si	-	≤ 180	720		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Magnesium alloys	-	≤ 120	920		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
Copper, low-alloyed	-	≤ 150	410		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Brass, short-chipping	-	≤ 180	1065		0.0080	0.0125	0.0160	0.0200	0.0200	0.0220	0.0245		
long-chipping	-	≤ 180	720		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
Bronze, short-chipping	-	≤ 180	410		0.0065	0.0100	0.0125	0.0160	0.0160	0.0180	0.0200		
	≤ 25	≤ 255	345		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
Bronze, long-chipping	≤ 25	≤ 255	295		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
	≤ 32	≤ 301	260		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160		
Duroplastics													
Thermoplastics													
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Series # 8520

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	475 395	0.0028 0.0016	0.0050 0.0039	0.0080 0.0063	0.0120 0.0098	0.0120 0.0098	0.0160 0.0124	0.0200 0.0157	0.0250 0.0197		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	560 475	0.0011 0.0011	0.0063 0.0063	0.0098 0.0098	0.0150 0.0150	0.0157 0.0157	0.0197 0.0197	0.0248 0.0248	0.0315 0.0315		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	425 410 395	0.0011 0.0028 0.0028	0.0063 0.0049 0.0049	0.0098 0.0079 0.0079	0.0150 0.0124 0.0124	0.0157 0.0124 0.0124	0.0197 0.0157 0.0157	0.0248 0.0197 0.0197	0.0315 0.0248 0.0248		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 345	0.0028 0.0028	0.0049 0.0049	0.0079 0.0079	0.0124 0.0124	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197	0.0248 0.0248		
Unalloyed case hardened steels	≤ 25	≤ 255	475	0.0011	0.0063	0.0098	0.0150	0.0157	0.0197	0.0248	0.0315		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 280	0.0028 0.0007	0.0049 0.0031	0.0079 0.0049	0.0124 0.0075	0.0124 0.0079	0.0157 0.0098	0.0197 0.0124	0.0248 0.0157		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	360 345	0.0028 0.0007	0.0049 0.0031	0.0079 0.0049	0.0124 0.0075	0.0124 0.0079	0.0157 0.0098	0.0197 0.0124	0.0248 0.0157		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	260 215	0.0016 0.0007	0.0039 0.0031	0.0063 0.0049	0.0098 0.0075	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157		
High speed steels	≤ 43	≤ 402	195	0.0007	0.0025	0.0039	0.0059	0.0063	0.0079	0.0098	0.0124		
Spring steels	≤ 38	≤ 354	195	0.0008	0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Hardened steels	≤ 48 ≤ 66	≤ 460 -	180 115	0.0008 0.0004	0.0020 0.0016	0.0031 0.0025	0.0049 0.0039		0.0063 0.0049	0.0079 0.0063	0.0098 0.0079		
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	115	0.0007	0.0025	0.0039	0.0059		0.0079	0.0098	0.0124		
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	150 130	0.0007 0.0008	0.0025 0.0020	0.0039 0.0031	0.0059 0.0049		0.0049 0.0063	0.0098 0.0079	0.0124 0.0098		
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 8521

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	475 395	0.0028 0.0016	0.0050 0.0039	0.0080 0.0063	0.0120 0.0098	0.0120 0.0098	0.0160 0.0124	0.0200 0.0157	0.0250 0.0197		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	560 475	0.0011 0.0011	0.0063 0.0063	0.0098 0.0098	0.0150 0.0150	0.0157 0.0157	0.0197 0.0197	0.0248 0.0248	0.0315 0.0315		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	425 410 395	0.0011 0.0028 0.0028	0.0063 0.0049 0.0049	0.0098 0.0079 0.0079	0.0150 0.0124 0.0124	0.0157 0.0124 0.0124	0.0197 0.0157 0.0157	0.0248 0.0197 0.0197	0.0315 0.0248 0.0248		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 345	0.0028 0.0028	0.0049 0.0049	0.0079 0.0079	0.0124 0.0124	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197	0.0248 0.0248		
Unalloyed case hardened steels	≤ 25	≤ 255	475	0.0011	0.0063	0.0098	0.0150	0.0157	0.0197	0.0248	0.0315		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 280	0.0028 0.0007	0.0049 0.0031	0.0079 0.0049	0.0124 0.0075	0.0124 0.0079	0.0157 0.0098	0.0197 0.0124	0.0248 0.0157		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	360 345	0.0028 0.0007	0.0049 0.0031	0.0079 0.0049	0.0124 0.0075	0.0124 0.0079	0.0157 0.0098	0.0197 0.0124	0.0248 0.0157		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	260 215	0.0016 0.0007	0.0039 0.0031	0.0063 0.0049	0.0098 0.0075	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157		
High speed steels	≤ 43	≤ 402	195	0.0007	0.0025	0.0039	0.0059	0.0063	0.0079	0.0098	0.0124		
Spring steels	≤ 38	≤ 354	195	0.0008	0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Hardened steels	≤ 48 ≤ 66	≤ 460 -	180 115	0.0008 0.0004	0.0020 0.0016	0.0031 0.0025	0.0049 0.0039		0.0063 0.0049	0.0079 0.0063	0.0098 0.0079		
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	115	0.0007	0.0025	0.0039	0.0059		0.0079	0.0098	0.0124		
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	150 130	0.0007 0.0008	0.0025 0.0020	0.0039 0.0031	0.0059 0.0049		0.0049 0.0063	0.0098 0.0079	0.0124 0.0098		
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 8522

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	475 395	0.0160 0.0007	0.0040 0.0031	0.0060 0.0049	0.0100 0.0075	0.0100 0.0079	0.0120 0.0098	0.0160 0.0124	0.0200 0.0157		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	560 475	0.0028 0.0028	0.0049 0.0049	0.0079 0.0079	0.0124 0.0124	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197	0.0248 0.0248		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	425 410 395	0.0028 0.0016 0.0016	0.0049 0.0039 0.0039	0.0079 0.0063 0.0063	0.0124 0.0098 0.0098	0.0124 0.0098 0.0098	0.0157 0.0124 0.0124	0.0197 0.0157 0.0157	0.0248 0.0197 0.0197		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 345	0.0016 0.0016	0.0039 0.0039	0.0063 0.0063	0.0098 0.0098	0.0098 0.0098	0.0124 0.0124	0.0157 0.0157	0.0197 0.0197		
Unalloyed case hardened steels	≤ 25	≤ 255	475	0.0028	0.0049	0.0079	0.0124	0.0124	0.0157	0.0197	0.0248		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 280	0.0016 0.0007	0.0039 0.0025	0.0063 0.0039	0.0098 0.0059	0.0098 0.0063	0.0124 0.0079	0.0157 0.0098	0.0197 0.0124		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	360 345	0.0016 0.0007	0.0039 0.0025	0.0063 0.0039	0.0098 0.0059	0.0098 0.0063	0.0124 0.0079	0.0157 0.0098	0.0197 0.0124		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	260 215	0.0007 0.0007	0.0031 0.0025	0.0049 0.0039	0.0075 0.0059	0.0079 0.0063	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124		
High speed steels	≤ 43	≤ 402	195	0.0008	0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Spring steels	≤ 38	≤ 354	195	0.0004	0.0016	0.0025	0.0039	0.0039	0.0049	0.0063	0.0079		
Hardened steels	≤ 48 ≤ 66	≤ 460 -	180 115	0.0004 0.0007	0.0016 0.0013	0.0025 0.0020	0.0039 0.0031	0.0039 0.0031	0.0049 0.0039	0.0063 0.0049	0.0079 0.0063		
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	115	0.0008	0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	150 130	0.0008 0.0008	0.0020 0.0020	0.0031 0.0031	0.0049 0.0049	0.0049 0.0049	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098		
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

Series # 8524

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	425 360	0.0028 0.0016	0.0050 0.0039	0.0080 0.0063	0.0120 0.0098	0.0120 0.0098	0.0160 0.0124	0.0200 0.0157	0.0250 0.0197		
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	475 360	0.0011 0.0031	0.0063 0.0049	0.0098 0.0079	0.0150 0.0124	0.0157 0.0124	0.0197 0.0157	0.0248 0.0197	0.0315 0.0248		
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	395 360 345	0.0031 0.0028 0.0028	0.0049 0.0049 0.0049	0.0079 0.0079 0.0079	0.0124 0.0124 0.0124	0.0124 0.0214 0.0214	0.0157 0.0157 0.0157	0.0197 0.0197 0.0197	0.0248 0.0248 0.0248		
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	345 330	0.0028 0.0025	0.0049 0.0039	0.0079 0.0063	0.0124 0.0098	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157	0.0248 0.0197		
Unalloyed case hardened steels	≤ 25	≤ 255	425	0.0011	0.0063	0.0098	0.0150	0.0157	0.0124	0.0248	0.0315		
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	395 280	0.0028 0.0007	0.0049 0.0031	0.0079 0.0049	0.0124 0.0075	0.0124 0.0079	0.0157 0.0098	0.0197 0.0124	0.0248 0.0157		
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	330 295	0.0025 0.0007	0.0039 0.0031	0.0063 0.0049	0.0098 0.0075	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157		
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	215 180	0.0016 0.0007	0.0039 0.0031	0.0063 0.0049	0.0098 0.0750	0.0098 0.0079	0.0124 0.0098	0.0157 0.0124	0.0197 0.0157		
High speed steels	≤ 43	≤ 402	180	0.0007	0.0025	0.0039	0.0059	0.0063	0.0079	0.0098	0.0124		
Spring steels	≤ 38	≤ 354	150	0.0008	0.0020	0.0031	0.0049	0.0049	0.0063	0.0079	0.0098		
Hardened steels	≤ 48 ≤ 66	≤ 460 -	150 80	0.0008 0.0004	0.0020 0.0016	0.0031 0.0025	0.0049 0.0039	0.0049 0.0039	0.0063 0.0049	0.0079 0.0063	0.0098 0.0079		
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	80	0.0007	0.0025	0.0039	0.0059	0.0063	0.0079	0.0098	0.0124		
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	130 115	0.0013 0.0008	0.0020 0.0020	0.0031 0.0031	0.0049 0.0049	0.0049 0.0049	0.0063 0.0063	0.0079 0.0079	0.0098 0.0098		
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													

SERIES NO. INDEX

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Series no.	Page	Feeds & Speeds	Description	Tool Material	Finish
205	124	476	General purpose (Type N), jobber length, 118° point, standard straight shank	HSS	bright/steam oxide
206	139	476	Low Helix (Type H), jobber length, 118° point, standard straight shank	HSS	bright finish
207	142	477	High Helix (Type W), jobber length, 130° point, standard straight shank	HSS	bright finish
208	130	477	General purpose (Type N), jobber length, 118° point, standard straight shank	HSS	bright/steam oxide
217	189	478	General purpose (Type N), taper length, 118° point, standard straight shank	HSS	bright/steam oxide
219	194	478	High Helix (Type W), taper length, 130° point, standard straight shank	HSS	bright finish
223	90	479	General purpose (Type N), stub length, 118° point, standard straight shank	HSS	bright/steam oxide
224	100	479	Low Helix (Type H), stub length, 118° point, standard straight shank	HSS	bright finish
225	102	480	High Helix (Type W), stub length, 130° point, standard straight shank	HSS	bright finish
226	94	480	General purpose (Type N), stub length, 118° point, standard straight shank, LH	HSS	bright/steam oxide
235	218	481	General purpose (Type N), extra length #1, 118° point, standard straight shank	HSS	bright/steam oxide
245	232	481	General purpose (Type N), Standard (MTS), 118° point, Morse Taper shank	HSS	bright/steam oxide
257	239	482	General purpose (Type N), Bushing (MTS), 118° point, Morse Taper shank	HSS	surface treated
266	242	482	General purpose (Type N), extra length #1, 118° point, Morse Taper shank	HSS	surface treated
280	47	483	Form A center drill, Extra long, 60°, non-flatted body, bright finish	HSS	bright finish
281	44	483	Form A center drill, 60°, non-flatted body, bright finish	HSS	bright finish
282	45	484	Form A center drill, 60°, non-flatted body, bright finish, LH	HSS	bright finish
283	51	484	Form R center drill, Radiused. 60°, non-flatted body, bright finish	HSS	bright finish
284	52	485	Form R center drill, Radiused, 60°, non-flatted body, bright finish, LH	HSS	bright finish
285	60	485	Form B center drill, 60°/120° double angle, non-flatted body, bright finish	HSS	bright finish
287	54	486	Form A center drill, 60°, Flatted body, bright finish	HSS	bright finish
288	56	507	Form R center drill, Radiused, 60°, Flatted body, bright finish	HSS	bright finish
289	63	487	Form B center drill, 60°/120° double angle, Flatted body, bright finish	HSS	bright finish
292	42	487	Form A center drill, 60°, non-flatted body, bright finish	HSS	bright finish
294	43	488	Form A center drill, 60°, non-flatted body, bright finish, LH	HSS	bright finish
301	82	483	Micro-Precision (Type N), 118° point, reinforced straight shank	Cobalt	bright finish
303	84	483	Micro-Precision (Type N), 118° point, reinforced straight shank, LH	Cobalt	bright finish
305	153	484	General purpose (Type N), jobber length, 118° point, standard straight shank	Cobalt	bright/steam oxide
308	157	484	General purpose (Type N), jobber length, 118° point, straight shank, LH	Cobalt	bright/steam oxide
317	205	485	General purpose (Type N), taper length, 118° point, standard straight shank	Cobalt	bright/steam oxide
329	109	485	Heavy Duty (Type GV120), stub length, 130° point, standard straight shank	Cobalt	bright/steam oxide
336	210	486	GT 100 deep hole, taper length, 130° point, standard straight shank	Cobalt	bright/nitrided lands
345	237	486	General purpose (Type N), Standard (MTS), 118° point, Morse Taper shank	Cobalt	surface treated
381	40	492	Form A center drill, 60°, non-flatted body, bright finish	Cobalt	bright finish
390	204	487	GT 100 IC deep hole, taper length, 130° point, standard straight shank	HSS	bright finish
501	196	487	GT 50 deep hole, taper length, 130° point, standard straight shank	HSS	bright finish

Series no.	Page	Feeds & Speeds	Description	Tool Material	Finish
502	221	488	General purpose (Type N), extra length #1, 130° point, standard straight shank	HSS	bright/nitrided lands
503	225	488	GT 100 deep hole, extra length #2, 130° point, standard straight shank	HSS	bright/nitrided lands
504	228	489	GT 100 deep hole, extra length #3, 130° point, standard straight shank	HSS	nitrided lands
515	120	489	GT 500 DZ high performance, stub length, 130° cone-relief point	PM-Cobalt	FIREX®
524	220	490	GT 50 deep hole, extra length #1, 130° point, standard straight shank	HSS	bright finish
526	243	490	GT 100 deep hole, extra length #1, 118° point, Morse Taper shank	HSS	nitrided lands/steam oxide
527	244	491	GT 100 deep hole, extra length #2, 130° point, Morse Taper shank	HSS	nitrided lands/steam oxide
530	184	491	GT 500 DZ high performance, jobber length, 130° cone relief point	PM-Cobalt	FIREX®
535	199	492	GT 100 deep hole, taper length, 130° point, standard straight shank	HSS	bright/nitrided lands
546	75	498	NC Spot • Short, NC Spot, 142° point, standard straight shank	Carbide	bright finish
549	145	492	GT 100 deep hole, jobber length, 130° point, standard straight shank	HSS	bright/nitrided lands
550	148	493	GT 100 deep hole, jobber length, 130° point, standard straight shank, LH	HSS	bright/nitrided lands
551	241	493	GT 100 deep hole, Bushing (MTS), 130° point, Morse Taper shank	HSS	nitrided lands/steam oxide
552	104	494	GT 80 deep hole, stub length, 130° point, standard straight shank	HSS	bright/nitrided lands/steam
553	107	494	GT 80 deep hole, stub length, 130° point, standard straight shank, LH	HSS	bright/nitrided lands/steam
556	70	501	NC Spot • Short, NC Spot, 120° point, standard straight shank	HSS	bright finish
557	64	502	NC Spot • Short, NC Spot, 90° point, standard straight shank	HSS	bright finish
559	66	502	NC Spot • Long, NC Spot, 90° point, standard straight shank	HSS	bright finish
567	71	503	NC Spot • Short, NC Spot, 120° point, standard straight shank	HSS	TiN
568	65	503	NC Spot • Short, NC Spot, 90° point, standard straight shank	HSS	TiN
581	36	504	Form A center drill, 60°, non-flatted body, bright finish	HSS	bright finish
582	38	504	Form A center drill, 60°, non-flatted body, bright finish, LH	HSS	bright finish
583	48	505	Form R center drill, Radiused, 60°, non-flatted body, bright finish	HSS	bright finish
584	50	505	Form R center drill, Radiused, 60°, non-flatted body, bright finish, LH	HSS	bright finish
585	57	506	Form B center drill, 60°/120° double angle, non-flatted body, bright finish	HSS	bright finish
586	58	506	Form B center drill, 60°, non-flatted body, bright finish, LH	HSS	bright finish
587	53	507	Form A center drill, 60°, Flatted body, bright finish	HSS	bright finish
588	55	588	Form R center drill, Radiused, 60°, Flatted body, bright finish	HSS	bright finish
589	62	508	Form B center drill, 60°/120° double angle, Flatted body, bright finish,	HSS	bright finish
590	39	508	Form A center drill, Reinforced neck, 60°, non-flatted body, bright finish,	HSS	bright finish
591	59	509	Form B center drill, Reinforced neck, 60°/120° double angle, non-flatted body, bright finish,	HSS	bright finish
594	41	509	Form A center drill, 60°, non-flatted body, bright finish,	HSS	bright finish
595	61	510	Form B center drill, 60°/120° double angle, non-flatted body, bright finish,	HSS	bright finish
605	159	495	Heavy Duty Split Point (Type Ti), jobber length, self-centering 130° split point, standard str shank	Cobalt	bright finish
609	322	495	GS 200 U three-flute high precision, 5xD, self-centering 150° point, standard straight shank	Carbide	TiN
613	37	512	Form A center drill, 60°, non-flatted body, TiN coated,	HSS	TiN

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Series no.	Page	Feeds & Speeds	Description	Tool Material	Finish
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617	207	496	Heavy Duty Split Point (Type Ti), taper length, self-centering 130° split point, standard str shank	Cobalt	bright finish
618	224	496	GT 100 deep hole, extra length #1, 130° point, standard straight shank	Cobalt	nitrided lands
619	227	497	GT 100 deep hole, extra length #2, 130° point, standard straight shank	Cobalt	nitrided lands
622	168	497	GT 100 deep hole, jobber length, 130° point, standard straight shank	Cobalt	bright/nitrided lands
651	133	498	General purpose (Type N), jobber length, 118° point, standard straight shank	HSS	TiN
652	150	498	GT 100 deep hole, jobber length, 130° point, standard straight shank	HSS	TiN
653	97	499	General purpose (Type N), stub length, 118° point, standard straight shank	HSS	TiN
654	235	499	General purpose (Type N), Standard (MTS), 118° point, Morse Taper shank	HSS	TIN
657	162	500	Heavy Duty Split Point (Type Ti), jobber length, self-centering 130° split point, standard str shank	Cobalt	TiN
658	171	500	GT 100 deep hole, jobber length, 130° point, standard straight shank	Cobalt	TiN
659	112	112	Heavy Duty (Type GV120), stub length, 130° point, standard straight shank	Cobalt	TiN
660	86	501	Micro-Precision (Type N), micro-precision, 118° point, reinforced straight shank	Cobalt	TiN
664	137	502	General purpose (Type N), jobber length, 118° point, standard straight shank, LH	HSS	TiN
666	188	502	General purpose (Type N), Bushing length, 118° point, standard straight (tang >3mm) shank	HSS	TiN
667	192	503	General purpose (Type N), taper length, 118° point, standard straight shank	HSS	TiN
668	202	503	GT 100 deep hole, taper length, 130° point, standard straight shank	HSS	TiN
669	209	504	Heavy Duty Split Point (Type Ti), taper length, self-centering 130° split point, standard str shank	Cobalt	TiN
670	223	504	GT 100 deep hole, extra length #1, 130° point, standard straight shank	HSS	TiN
671	226	505	GT 100 deep hole, extra length #2, 130° point, standard straight shank	HSS	TiN
723	69	523	NC Spot • Short, NC Spot, 90° point, standard straight shank	Carbide	bright finish
724	74	523	NC Spot • Short, NC Spot, 120° point, standard straight shank	Carbide	bright finish
730	258	505	General purpose (Type N), stub length, 118° point, standard straight shank	Carbide	bright finish
732	264	506	General purpose (Type N), jobber length, 118° point, standard straight shank	Carbide	bright finish
736	46	524	Form A center drill, 60°, non-flatted body, bright finish,	Carbide	bright finish
768	344	506	RT 150 GG straight flute high penetration, 4xD, 120° point, reinforced straight shank	Carbide	bright finish
769	348	507	RT 150 GG straight flute high penetration, 7xD, 120° point, reinforced straight shank	Carbide	bright finish
773	352	507	RT 150 GG straight flute high penetration, 15xD, 120° point, reinforced straight shank	Carbide	bright finish
1018	180	508	AeroX, jobber length, 135° NAS 907 split point, standard straight shank	M42	bronze oxide
1047	407	509	RT 800 WP Indexable insert, self-centering 140° SF point,	Carbide	TiN
1131	166	510	GT 80 IC deep hole, jobber length, 130° point, reinforced straight shank	Cobalt	bright finish
1132	167	510	GT 80 IC deep hole, jobber length, 130° point, reinforced straight shank	Cobalt	bright finish
1133	68	530	NC Spot Drill - 90° point angle	HSCO	nano-FIREX®
1134	72	530	NC Spot Drill - 120° point angle	HSCO	bright finish
1135	73	531	NC Spot Drill - 120° point angle	HSCO	nano-FIREX®
1136	67	531	NC Spot Drill - 90° point angle	HSCO	bright finish

Series no.	Page	Feeds & Speeds	Description	Tool Material	Finish
1183	302	511	RT 100 U high penetration, 5xD, self-centering 140° SU point, reinforced str shank w/whistle notch	Carbide	TiN
1184	278	511	RT 100 U high penetration, 3xD, self-centering 140° SU point, reinforced str shank w/whistle notch	Carbide	FIREX®
1221	173	512	GT 100 deep hole, jobber length, 130° point, standard straight shank	Cobalt	TiCN
1223	174	512	GT 100 deep hole, jobber length, 130° point, standard straight shank	Cobalt	TiAlN
1242	276	513	RT 100 U high penetration, 3xD, self-centering 140° SU point, standard straight shank	Carbide	TiN
1243	296	513	RT 100 U high penetration, 5xD, self-centering 140° SU point, standard straight shank	Carbide	TiN
1452	320	514	GS 200 U three-flute high precision, 5xD, self-centering 150° point, standard straight shank	Carbide	bright finish
1662	300	514	RT 100 F high penetration, 5xD, self-centering 140° SF point, reinforced straight shank	Carbide	TiN
1702	274	515	RT 100 U high penetration, 3xD, self-centering 140° SU point, standard straight shank	Carbide	TiN
2458	164	515	Heavy Duty Split Point (Type Ti), jobber length, self-centering 130° split point, standard str shank	Cobalt	FIREX®
2463	260	516	General purpose (Type N), stub length, 118° point, standard straight shank	Carbide	FIREX®
2464	266	516	General purpose (Type N), jobber length, 118° point, standard straight shank	Carbide	FIREX®
2485	409	517	RT 800 WP Indexable insert, self-centering 140° SF point,	Carbide	FIREX®
2601	268	518	GT 100 deep hole, jobber length, 130° point, standard straight shank	Carbide	bright finish
2602	270	519	GT 100 deep hole, jobber length, 130° point, standard straight shank	Carbide	TiN
2747	411	519	RT 800 WP Indexable insert, self-centering 140° SF point,	Carbide	bright finish
3899	248	521	Carbide, Micro Drill, 135° 4-facet ground hone point (Type N), reinforced straight shank	Carbide	TiAiN
4105	372	—	HT 800 WP body, coolant through, 1xD w/countersink, straight shank w/whistle notch	HSS	Nickel
4106	373	—	HT 800 WP body, coolant through, 1.5xD full-helical flute, straight shank w/whistle notch	HSS	Nickel
4107	375	—	HT 800 WP body, coolant through, 3xD full-helical flute, straight shank w/whistle notch	HSS	Nickel
4108	377	—	HT 800 WP body, coolant through, 5xD full-helical flute, straight shank w/whistle notch	HSS	Nickel
4109	379	—	HT 800 WP body, coolant through, 7xD full-helical flute, straight shank w/whistle notch	HSS	Nickel
4110	381	—	HT 800 WP body, coolant through, 10xD full-helical flute, straight shank w/whistle notch	HSS	Nickel
4111	383	522	HT 800 WP indexable insert, self-centering 145° SF point,	Carbide	nano-A®
4112	392	523	HT 800 WP indexable insert, self-centering 140° SF point	Carbide	nano-FIREX®
4113	386	524	HT 800 WP indexable insert, self-centering 140° SF point	Carbide	FIREX®
4114	389	525	HT 800 WP indexable insert, self-centering 140° SF point	Carbide	bright finish
4115	395	526	HT 800 WP indexable insert, self-centering 140° SF point	Carbide	nano-A®
4229	398	527	HT 800 WP indexable insert, self-centering 140° SF point	Carbide	FIREX®
5020	366	528	EB 100 straight-flute gun drills, 80mm flute length, type G point, reinforced straight shank	Carbide	bright finish
5021	366	528	EB 100 straight-flute gun drills, 160mm flute length, type G point, reinforced straight shank	Carbide	bright finish
5024	366	528	EB 100 straight-flute gun drills, 45mm flute length, type G point, reinforced straight shank	Carbide	bright finish
5026	366	528	EB 100 straight-flute gun drills, 120mm flute length, type G point, reinforced straight shank	Carbide	bright finish
5242	404	—	RT 800 WP body, coolant through, 3xD full-helical flute, straight shank w/whistle notch	HSS	Nickel
5243	405	—	RT 800 WP body, coolant through, 5xD full-helical flute, straight shank w/whistle notch	HSS	Nickel
5248	406	—	RT 800 WP body, coolant through, 7xD full-helical flute, straight shank w/whistle notch	HSS	Nickel

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5500	76	529	90° Countersinks, SpyroTec	HSCO	nano-A®
5501	77	529	90° Countersinks, SpyroTec	HSCO	nano-A®
5503	78	529	90° Countersinks, SpyroTec	HSCO	nano-A®
5510	286	530	RT 100 U high penetration, 3xD, self-centering140° SU point, reinforced straight shank	Carbide	FIREX®
5511	304	530	RT 100 U high penetration, 5xD, self-centering140° SU point, reinforced straight shank	Carbide	FIREX®
5512	328	531	RT 100 U high penetration, 7xD, self-centering140° SU point, reinforced straight shank	Carbide	FIREX®
5513	350	531	RT 150 GG straight flute high penetration, 10xD, 120° point, reinforced straight shank	Carbide	bright finish
5514	280	532	RT 100 U high penetration, 3xD, self-centering 140° SU point, reinforced straight shank	Carbide	FIREX®
5515	298	532	RT 100 U high penetration, 5xD, self-centering140° SU point, reinforced straight shank	Carbide	FIREX®
5518	324	533	GS 200 G three-flute high precision, 5xD, self-centering130° point, reinforced straight shank	Carbide	bright finish
5519	178	533	GU 500 DZ universal, jobber length, 118° 4-facet split point, standard straight shank	Cobalt	TiN
5520	116	534	GU 500 DZ universal, stub length, 118° 4-facet split point, standard straight shank	Cobalt	TiN
5521	118	534	GT 500 DZ high performance, stub length, 130° cone-relief point, standard straight shank	PM-Cobalt	TiN
5522	182	535	GT 500 DZ high performance, jobber length, 130° cone relief point, standard straight shank	PM-Cobalt	TiN
5523	176	535	GU 500 DZ universal, jobber length, 118° 4-facet split point, standard straight shank	Cobalt	bright finish
5524	114	536	GU 500 DZ universal, stub length, 118° 4-facet split point, standard straight shank	Cobalt	bright finish
5525	339	536	RT 100 C high penetration, 12xD, self-centering 135°, double margins point, reinforced str shank	Carbide	FIREX®
5536	212	537	GU 500 DZ universal, 10xD, 118° 4-facet split point, standard straight shank	Cobalt	bright finish
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5610	288	538	RT 100 U high penetration, 3xD, self-centering 140° SU point, reinforced shank w/whistle notch	Carbide	FIREX®
5611	306	538	RT 100 U high penetration, 5xD, self-centering 140° SU point, reinforced shank w/whistle notch	Carbide	FIREX®
5612	330	539	RT 100 U high penetration, 7xD, self-centering 140° SU point, reinforced shank w/whistle notch	Carbide	FIREX®
5641	367	539	EB 80, Single flute gun drill, 40xD, type G point, standard driver, reinforced straight shank	Carbide	TiCN
5642	367	540	EB 80, Single flute gun drill, 80xD, type G point, standard driver, reinforced straight shank	Carbide	TiCN
5646	364	540	EB 100, Single flute gun drill, 25xD, type G point, standard driver, reinforced straight shank	Carbide	nano-A™
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5648	365	541	EB 100, Single flute gun drill, 75xD, type G point, standard driver, reinforced straight shank	Carbide	nano-A™
5741	282	542	RT 100 US high penetration, 3xD, self-centering 140° SU point, reinforced straight shank	Carbide	nano-A™
5744	312	542	RT 100 US high penetration, 5xD, self-centering 140° SU point, reinforced straight shank	Carbide	nano-A™
5746	332	543	RT 100 US high penetration, 7xD, self-centering 140° SU point, reinforced straight shank	Carbide	nano-A™
5759	308	544	RT 100 S coolant fed drill for steels, 5xD, 140° point with facet point grind	Carbide	nano-FIREX®
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5768	310	543	RT 100 Al coolant fed drill for aluminum, 5xD, 140° point with facet point grind	Carbide	bright finish
6068	346	545	RT 150 GG straight flute high penetration, 4xD, 130° point, reinforced straight shank	Carbide	bright finish
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Series no.	Page	Feeds & Speeds	Description	Tool Material	Finish
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6412	254	549	Exclusive Line Micro Drills, 15xD, 135° 4-facet ground hone point, reinforced straight shank	Carbide	TiAlN
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7645	400	—	Countersinking insert HT 800	Carbide	TiN
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8511	314	553	RT 100 VA high penetration, 5xD, self-centering 140° VA point, reinforced straight shank	Carbide	nano-A™
8520	292	554	RT 100 HF high penetration, 3xD, self-centering 140° HF point, reinforced straight shank	Carbide	nano-Si™
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8522	334	555	RT 100 HF high penetration, 7xD, self-centering 140° HF point, reinforced straight shank	Carbide	nano-Si™
8524	284	555	RT 100 HF high penetration, 3xD, self-centering 140° HF point, reinforced straight shank	Carbide	nano-Si™

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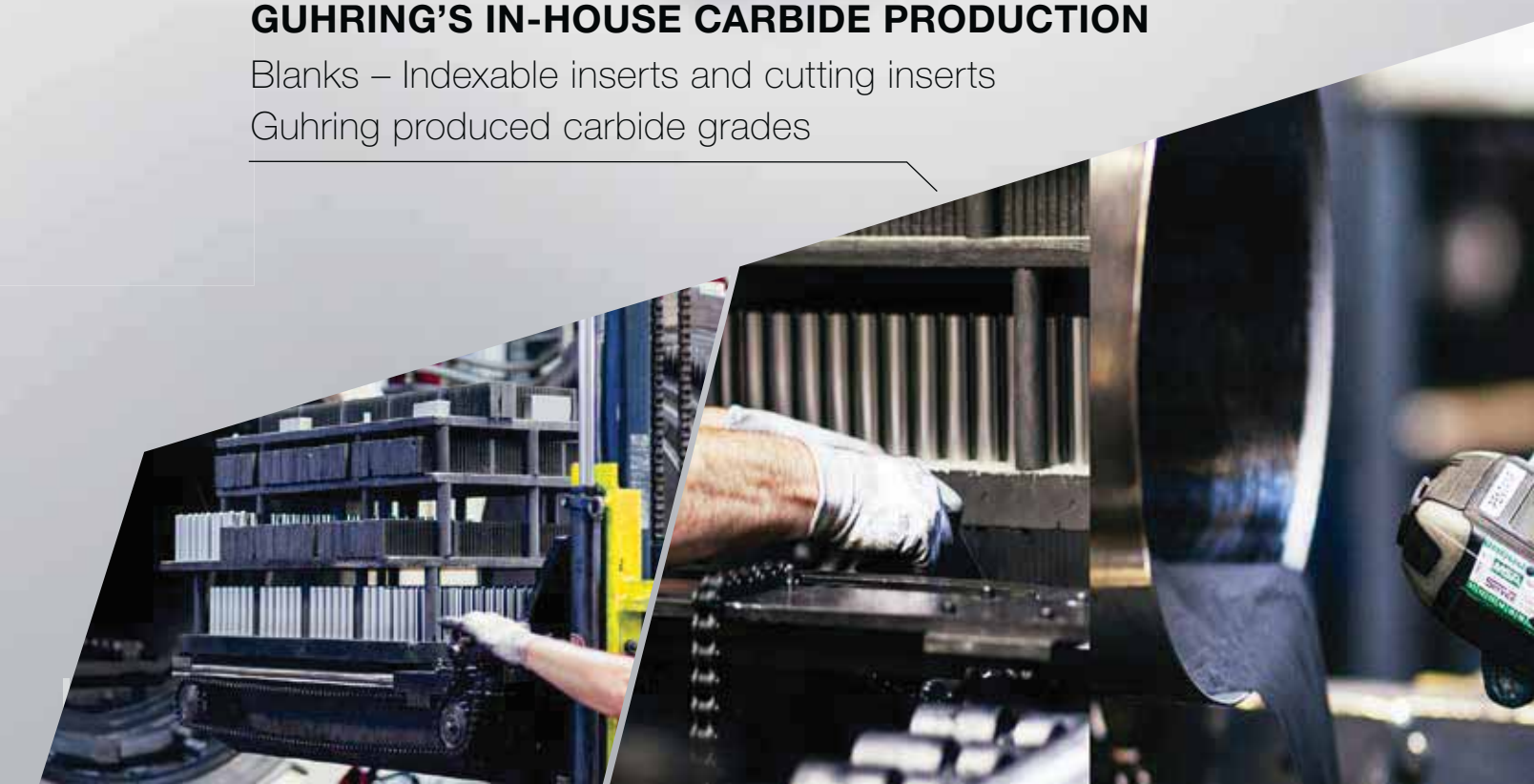

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