STELLRAM®

CUTTING TOOLS

Stellram® Cutting Tools



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Since its founding in 1938, Kennametal has developed solutions to improve manufacturing performance and profitability — by innovating high performance products and services to reduce operating costs and lead times.

This catalog brings you the latest in the Stellram® brand of indexable milling, solid carbide milling, turning and threading tools — all specifically engineered to enhance overall productivity, even in the most challenging metalworking applications.

Rely on Kennametal to significantly boost manufacturing competitiveness. To learn more, contact your Kennametal Representative or Authorized Kennametal Distributor.

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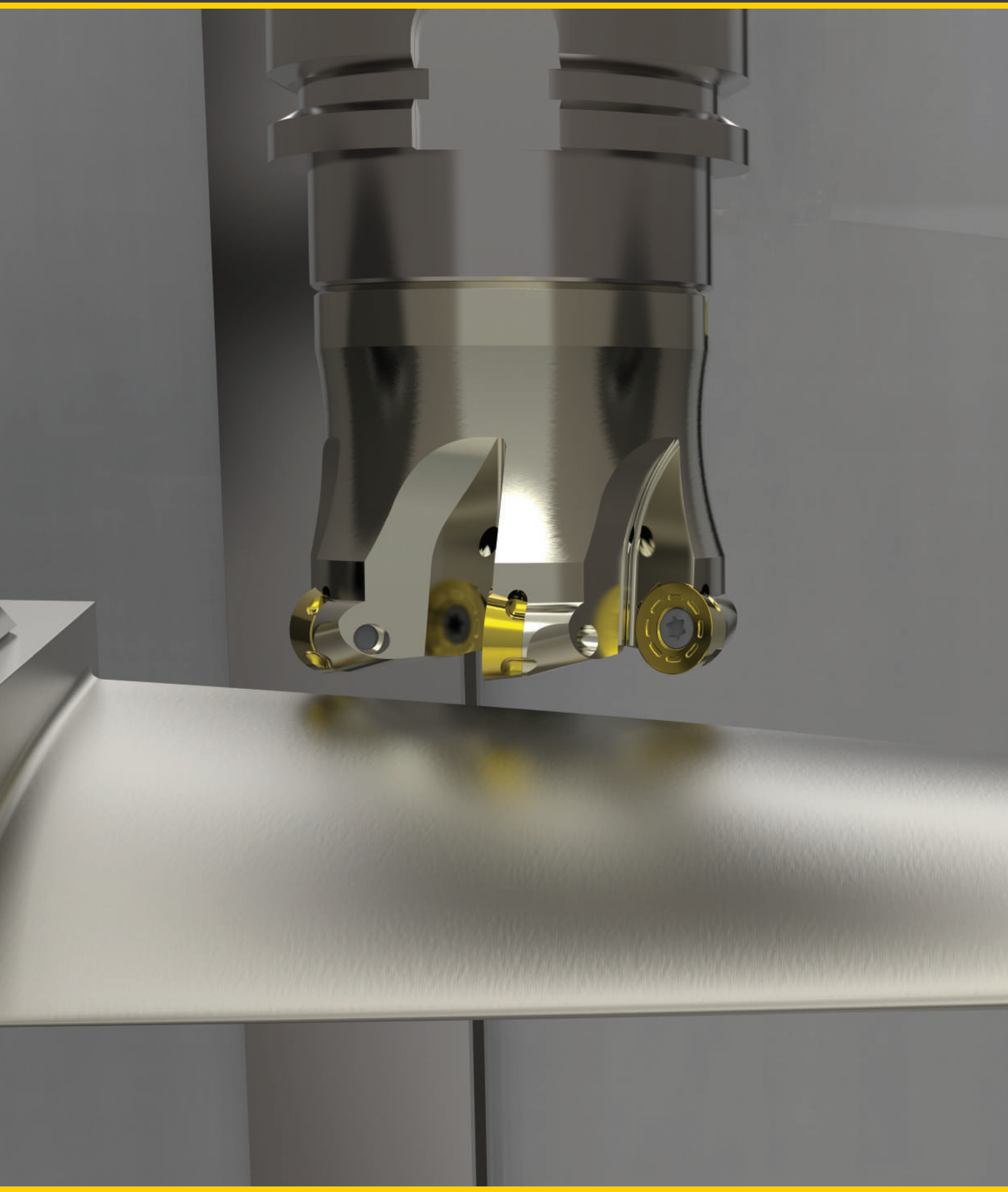
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MILLING

Indexable Milling Solutions

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This milling catalog is your best source for a broad range of advanced indexable and solid carbide machining solutions. These “best in class” milling products include …

- A complete range of PVD and CVD “First Choice” insert grades featuring the advanced and patented X Grade™ Technology that provides up to 3 times the metal removal rate with no sacrifice in tool life and less risk of tool failure and expensive component damage.
- Geometries that also offer a “First Choice” range from rough to finish machining to meet the increasing demands for greater chip control.
- A comprehensive range of milling products to choose from: facing, slotting, contouring, profiling, ramping, pocketing, helical Interpolation, plunging and chamfering applications.
- A solid carbide end mill program that features XE, XER and RSM technologies specifically designed for machining high performance metals. Their advanced geometric designs featuring deep flutes and robust high helix cutting edges are the result of Stellram’s continuous improvement program in Aerospace machining.
- Application and customer service support from our sales engineers ready to address your on-site needs and backed by an experienced customer service team.

Rely on Kennametal to achieve “Best in Class” machining solutions for your high performance milling applications.

Please contact us for additional information on any of the products illustrated in this catalog or any other part of Kennametal’s comprehensive tooling program.

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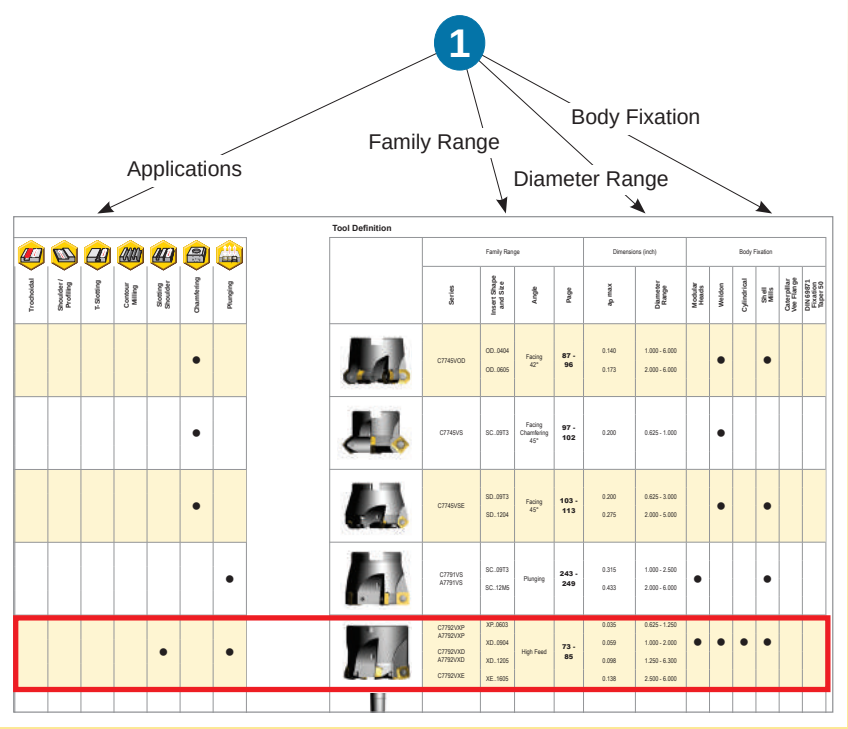
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Indexable Milling

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This new Milling Selection Guide leads you easily to the tool selection and to the corresponding user information. 6 steps enable you to select the suitable cutter, insert geometry and grade in relation with recommended parameters for Feed and Speeds.



6 Step Tool Selection

1 Go to the ***Tool guide*** on pages A6 - A13. ***Select the milling family*** according to the application.

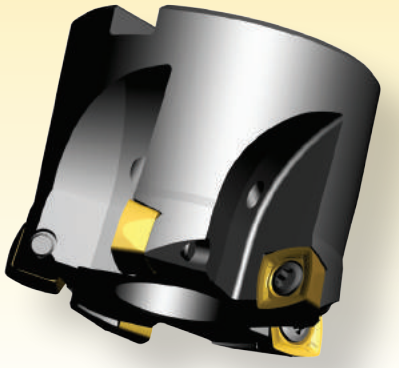
Available diameters, body fixation and type of inserts can also be found. (7792VX family selected)

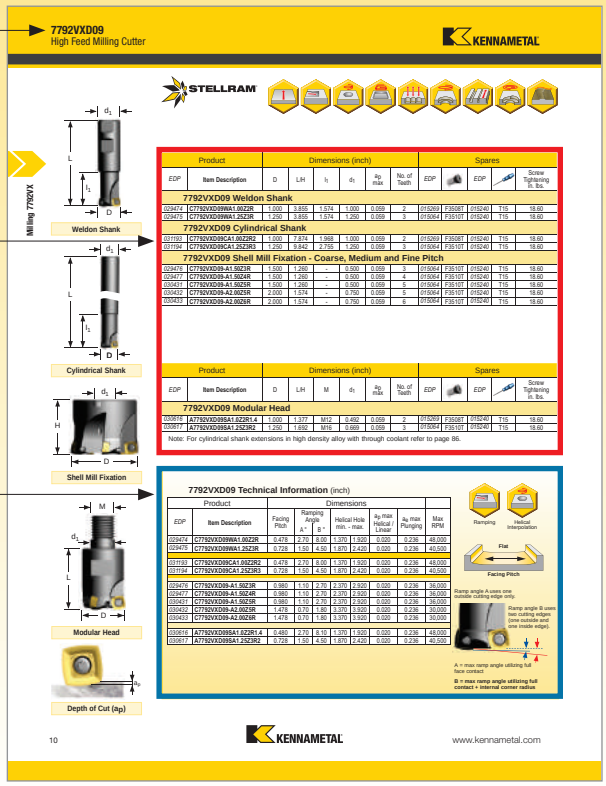
2 Go to the referred Family page with the ***entire product range*** and ***technical information***

2.1 ***Select a Cutter Body Diameter***

2.2 ***Technical Information***

- Facing pitch
- Ramping angles
- Helical hole (min - max)
- a_p max Helical / Linear
- a_e max plunging
  (for 7792VX and 7791VS only)
- RPM max





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6 Step Tool Selection *(continued)*

3 ***Select the Insert*** according to the application and material to be machined.

3.1 ***Application Section***
- Facing, Semi-Finishing and Finishing
Or
- Facing, Slotting and Plunging (7792VX series)

3.2 ***Material to be machined***
For each insert, a colored symbol will advise you about the performance, as well as the materials which can be machined. The color of the symbol corresponds to the ISO Material designation.

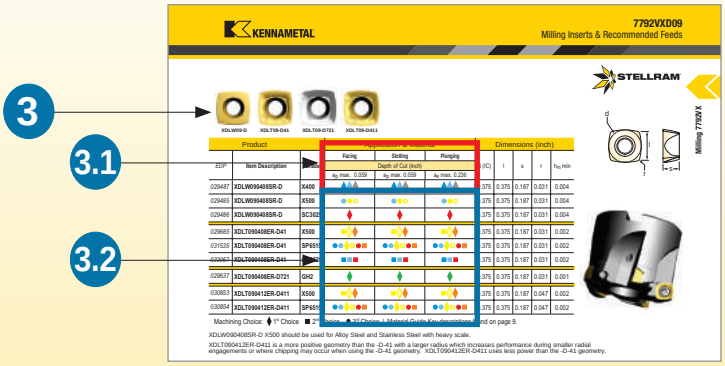
Symbol explanation:

♦ 1st choice: Excellent performance

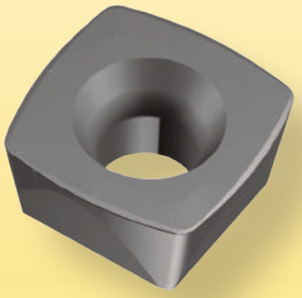
■ 2nd choice: Good performance

● 3rd choice: Alternative option

ISO Material designation:



Example:
Material: Alloyed Steel
facing operation
XDLW090408SR-D X400
1st Choice grade /
geometry



Material Guide – Key to Recommended Inserts

Material Designation

P	Unalloyed Steels	P	Alloyed Steels	M	Stainless Steels	M	PH Stainless	K	Cast Irons	N	Aluminum & Alloys	S	High Temp. Alloys	H	Hard Materials

4 Select the recommended Feed range according to the operation and the material to be machined.

Example:
Feed range for
XDLW090408**SR-D X400**
for **Facing** in **Alloyed Steel**
0.012" – 0.079"

7792VXD09 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Martensitic/PH	Grey Iron	Spheroidal-Graphite Iron	Malleable Iron	Aluminum & Alloys >6% to 10% Si	Aluminum & Silicon >10% to 13% Si	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >HRC 50	Chilled Cast Iron >HRC 50
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
SR-D	X400	Facing	0.012 - 0.079	0.012 - 0.079	-	-	-	-	-	-	-	-	-	-	-	0.012 - 0.032	0.012 - 0.039
SR-D	X400	Slotting	0.012 - 0.059	0.012 - 0.059	-	-	-	-	-	-	-	-	-	-	-	0.012 - 0.024	0.012 - 0.032
SR-D	X400	Plunging	0.004 - 0.010	0.004 - 0.008	-	-	-	-	-	-	-	-	-	-	-	0.004 - 0.005	0.004 - 0.005
SR-D	X500	Facing	-	0.012 - 0.079	0.012 - 0.097	0.012 - 0.090	-	-	-	-	-	-	-	-	-	-	-
SR-D	X500	Slotting	-	0.012 - 0.059	0.012 - 0.035	0.012 - 0.032	-	-	-	-	-	-	-	-	-	-	-
SR-D	X500	Plunging	-	0.004 - 0.008	0.004 - 0.008	0.004 - 0.006	-	-	-	-	-	-	-	-	-	-	-
SR-D	SC3025	Facing	-	-	-	-	0.012 - 0.079	0.012 - 0.071	0.012 - 0.059	-	-	-	-	-	-	-	-
SR-D	SC3025	Slotting	-	-	-	-	0.012 - 0.067	0.012 - 0.059	0.012 - 0.051	-	-	-	-	-	-	-	-
SR-D	SC3025	Plunging	-	-	-	-	0.004 - 0.010	0.004 - 0.008	0.004 - 0.008	-	-	-	-	-	-	-	-
ER-D41	X500	Facing	-	0.012 - 0.059	0.008 - 0.039	0.008 - 0.030	-	-	-	-	-	0.008 - 0.024	0.008 - 0.024	0.008 - 0.024	0.008 - 0.032	-	-
ER-D41	X500	Slotting	-	0.012 - 0.043	0.008 - 0.032	0.006 - 0.025	-	-	-	-	-	0.004 - 0.020	0.004 - 0.020	0.004 - 0.020	0.004 - 0.028	-	-
ER-D41	X500	Plunging	-	0.004 - 0.007	0.004 - 0.006	0.003 - 0.005	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	-	-
ER-D41	SP6519	Facing	0.012 - 0.059	0.012 - 0.051	0.008 - 0.039	0.008 - 0.024	0.012 - 0.059	0.012 - 0.051	-	-	-	0.008 - 0.024	0.008 - 0.024	0.008 - 0.024	0.008 - 0.032	-	-
ER-D41	SP6519	Slotting	0.012 - 0.051	0.012 - 0.039	0.008 - 0.032	0.006 - 0.020	0.012 - 0.051	0.012 - 0.039	-	-	-	0.004 - 0.020	0.004 - 0.020	0.004 - 0.020	0.004 - 0.028	-	-
ER-D41	SP6519	Plunging	0.004 - 0.008	0.004 - 0.006	0.004 - 0.006	0.002 - 0.003	0.004 - 0.008	0.004 - 0.006	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	-	-
ER-D41	SC6525	Facing	0.008 - 0.047	0.008 - 0.039	-	-	0.012 - 0.059	0.012 - 0.051	-	-	-	-	-	-	-	-	-
ER-D41	SC6525	Slotting	0.008 - 0.040	0.008 - 0.032	-	-	0.012 - 0.051	0.012 - 0.039	-	-	-	-	-	-	-	-	-
ER-D41	SC6525	Plunging	0.004 - 0.008	0.004 - 0.006	-	-	0.004 - 0.008	0.004 - 0.006	-	-	-	-	-	-	-	-	-
ER-D721	GH2	Facing	-	-	-	-	-	-	-	0.012 - 0.039	0.012 - 0.039	-	-	-	-	-	-
ER-D721	GH2	Slotting	-	-	-	-	-	-	-	0.012 - 0.039	0.012 - 0.039	-	-	-	-	-	-
ER-D721	GH2	Plunging	-	-	-	-	-	-	-	0.004 - 0.012	0.004 - 0.012	-	-	-	-	-	-
ER-D411	X500	Facing	-	-	0.008 - 0.039	0.008 - 0.032	-	-	-	-	-	0.008 - 0.024	0.008 - 0.024	0.008 - 0.024	0.008 - 0.032	-	-
ER-D411	X500	Slotting	-	-	0.008 - 0.032	0.006 - 0.028	-	-	-	-	-	0.004 - 0.020	0.004 - 0.020	0.004 - 0.020	0.004 - 0.028	-	-
ER-D411	X500	Plunging	-	-	0.004 - 0.006	0.003 - 0.005	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	-	-
ER-D411	SP6519	Facing	0.012 - 0.059	0.012 - 0.051	0.008 - 0.006	0.008 - 0.024	0.012 - 0.059	0.012 - 0.051	-	-	-	0.008 - 0.024	0.008 - 0.024	0.008 - 0.024	0.008 - 0.032	-	-
ER-D411	SP6519	Slotting	0.012 - 0.051	0.012 - 0.039	0.008 - 0.032	0.006 - 0.020	0.012 - 0.051	0.012 - 0.039	-	-	-	0.004 - 0.020	0.004 - 0.020	0.004 - 0.020	0.004 - 0.028	-	-
ER-D411	SP6519	Plunging	0.004 - 0.008	0.004 - 0.006	0.004 - 0.006	0.002 - 0.003	0.004 - 0.008	0.004 - 0.006	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	-	-

Note: HTA = High Temperature Alloys

Note: Speed recommendations can be found on page 82.

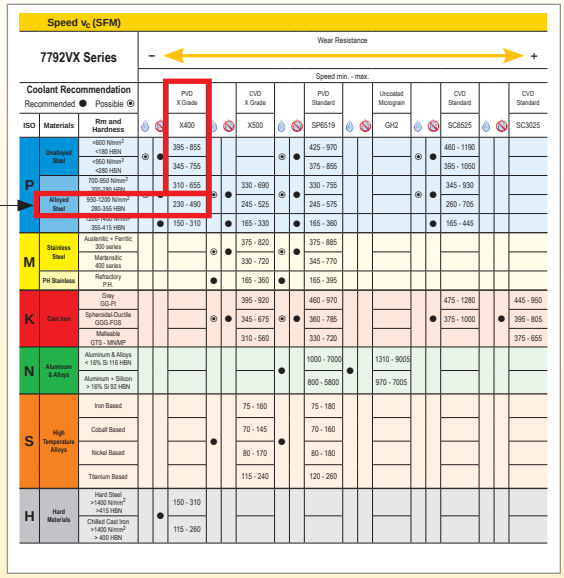
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6 Step Tool Selection *(continued)*

5 Select the recommended ***Cutting Speed (vc)*** and ***Coolant recommendations*** according to the material to be machined.

Example:
Speed range for XDLW090408SR-D ***X400*** for Facing in ***Alloyed Steel (Rm 950-1200 N/mm2 and 280-355 HBN)***
230 – 490 SFM

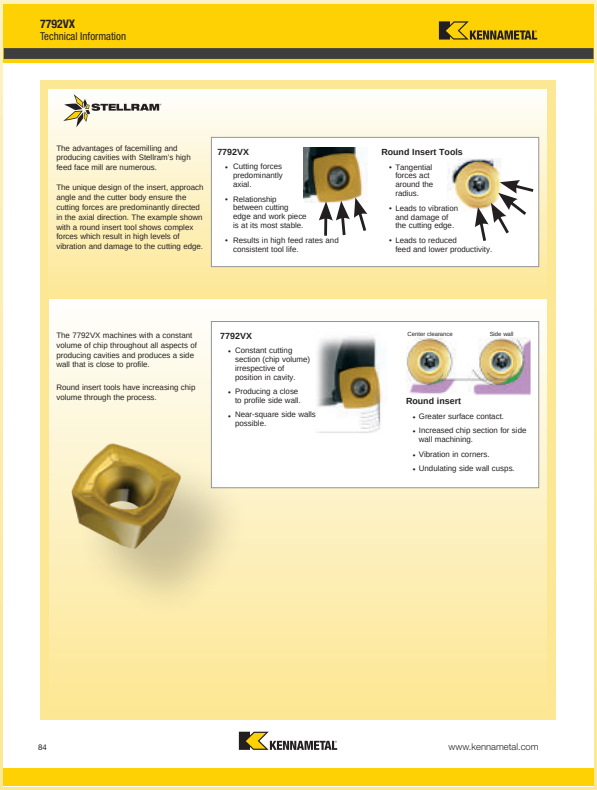
Material specifications can be found in the Materials Reference Charts pages D1 - D35.

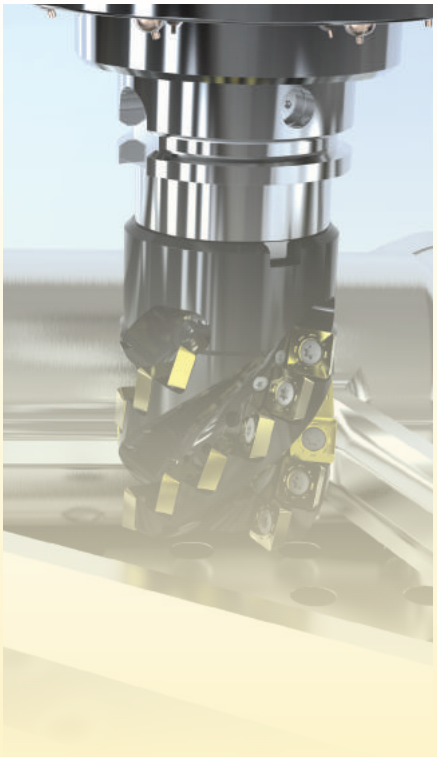


Commercial Name	UNS Number	UK: BS,EN	Sweden: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
Alloyed Steels										
T4 / Z80WKCV18050401		BT4		T4	1.3255	S18.1.2.5	Z80WKCV18050401	X78WCo1805KU	HS18.1.1.5	SKH3
Z2NKDT18-10-5					1.2709	X3NiCoMoTi18.9.5	Z2NKDT18-10-5			
Z3BCDV5-3					1.2367	X40CrMoV53	Z3BCDV5-3	Z155CVD12-1		
Stainless Steels										
50	UNS S20910									
202		284S16		202	1.4371	X3CrMnNiN18-8-7	Z8CMN18.08.05			
215										
284										
301			2331	301	1.4310	X12CrNi17-7	Z12CN17.07	X12CrNi17 07	F.3517	SUS301
302		302S31	2330	302	1.4319	X12CrNi18-9	Z10CN18.09	X10CrNi18 09	F.314	
303		303S21, 58M	2346	303	1.4305	X8CrNiS18-9	Z10CNF18.09	X10CrNiS 18.09	F.3508	SUS303
304		304S31, 58E	23323333	304	1.4360	X5CrNi18-9	Z6CN18.09	X5CrNi18 10	F.3551,F.3541,F.3604	SUS304
305		305S19		305	1.4312	X8CrNi18-12		X8CrNi1910	F.3603	

6 ***Technical information*** can be found at the end of each selected family which contains calculation formulas, mounting instructions, etc…







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Unalloyed Steels	P
Alloyed Steels	P
Stainless Steels	M
PH Stainless	M
Cast Irons	K
Aluminum & Alloys	N
High Temperature Alloys	S
Hard Materials (52-56 HRC)	H

Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

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Application

Facing	Shoulder / Profiling / Slotting	Ramping	Pocketing	Helical Interpolation	Helical Interpolation with Bore Hole	Copy / 3D	Spiral / Circular	Trochoidal	Shoulder / Profiling	T-Slotting	Contour Milling	Slotting Shoulder	Chamfering	Plunging
●	●	●	●	●	●	●	●							
	●													
	●													
						●					●			
						●					●			

Tool Definition

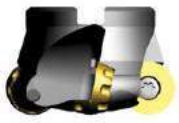
	Family Range				Dimensions (inch)		Body Fixation					
	Series	Insert Shape and Size	Angle	Page	ap max	Diameter Range	Modular Heads	Weldon	Cylindrical	Shell Mills	Caterpillar Vee Flange	DIN 69871 Fixation Taper 50
	C5182VZ	ZE..32T3 ZD..3304 ZD..5304	Profiling/ Pocketing 90°	**A219 - A223**	1.250 1.300 2.080	1.250 1.500 2.000 - 2.500					●	
	C5230VS	SD..09T3 SD..1204	Cheveron Long Edge Cutter (Porcupine) 90°	**A165 - A176**	2.010 - 4.000 2.244 - 5.236	2.000 2.500 - 4.000			●	●		
	C5315VA	AD..12T3	Long Edge Cutter (Porcupine) 90°	**A177 - A182**	0.900 - 1.770	1.000 - 1.500		●		●		
	C5500V A5500V	RG_S 0.375, 0.500, 0.625, 0.750, 1.00	Finishing Ball Nose	**A189 - A194**	0.016 - 0.490	0.375 - 1.000	●		●			
	C5505V A5505V	XPNT 05, 06, 08, 10, 12 & 16	Ball Nose	**A184 - A188**	0.625 - 2.000	0.625 - 2.000	●	●	●			

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Application

 Facing	 Shoulder / Profiling / Slotting	 Ramping	 Pocketing	 Helical Interpolation	 Helical Interpolation with Bore Hole	 Copy / 3D	 Spiral / Circular	 Trochoidal	 Shoulder / Profiling	 T-Slotting	 Contour Milling	 Slotting Shoulder	 Chamfering	 Plunging
●	●	●	●	●	●	●	●							
●	●	●	●	●	●	●	●							
●	●	●	●	●	●		●	●						
●		●	●	●	●	●	●							
●		●	●	●	●	●	●							
●	●	●	●	●	●	●	●							

Tool Definition

	Family Range				Dimensions (inch)		Body Fixation					
	Series	Insert Shape and Size	Angle	Page	ap max	Diameter Range	Modular Heads	Weldon	Cylindrical	Shell Mills	Caterpillar Vee Flange	DIN 69871 Fixation Taper 50
	C5702VZD	ZD..1403	Profiling Pocketing Shoulder 90°	**A225 - A234**	0.472	0.750			●			
	C5720VZ A5720VZ	ZD..16M5	Profiling Pocketing Shoulder 90°	**A225 - A234**	0.630	1.000 - 3.000	●		●	●		
	C7690VA A7690VA C7690VAP A7690VAP	AD..0903 AD..12T3 AP..1604	Finishing Shoulder 90°	**A47 - A64**	0.335 0.433 0.600	0.375 - 2.500 0.750 - 3.000 0.750 - 5.000	●	●	●	●		
	C7700VR A7700VR	RP..0803 RP..10T3	Copy Contour	**A195 - A202**	0.157 0.197	0.625 - 1.250 1.000 - 1.250	●		●			
	C7710VRD20	RD..2006	Copy Contour	**A203 - A208**	0.394	2.500 - 8.500				●		
	C7713VR A7713VR	RP..10T3 RP..1204	Copy Contour	**A209 - A218**	0.197 0.240	1.000 - 2.500 1.000 - 3.000	●		●	●		

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Application

 Facing	 Shoulder / Profiling / Slotting	 Ramping	 Pocketing	 Helical Interpolation	 Helical Interpolation with Bore Hole	 Copy / 3D	 Spiral / Circular	 Trochoidal	 Shoulder / Profiling	 T-Slotting	 Contour Milling	 Slotting Shoulder	 Chamfering	 Plunging
●	●	●	●	●	●	●	●						●	
●													●	
●		●					●						●	
														●
●		●	●	●	●	●	●					●		●

Tool Definition

	Family Range				Dimensions (inch)		Body Fixation					
	Series	Insert Shape and Size	Angle	Page	ap max	Diameter Range	Modular Heads	Weldon	Cylindrical	Shell Mills	Caterpillar Vee Flange	DIN 69871 Fixation Taper 50
	C7745VOD	OD..0404 OD..0605	Facing 42°	**A79 - A88**	0.140 0.173	1.000 - 6.000 2.000 - 6.000		●		●		
	C7745VS	SC..09T3	Facing Chamfering 45°	**A89 - A94**	0.200	0.625 - 1.000		●				
	C7745VSE	SD..09T3 SD..1204	Facing 45°	**A95 - A105**	0.200 0.275	0.625 - 3.000 2.000 - 5.000		●		●		
	C7791VS A7791VS	SC..09T3 SC..12M5	Plunging	**A235 - A241**	0.315 0.433	1.000 - 2.500 2.000 - 6.000	●			●		
	C7792VXP A7792VXP C7792VXD A7792VXD C7792VXE	XP..0603 XD..0904 XD..1205 XE..1605	High Feed	**A65 - A77**	0.035 0.059 0.098 0.138	0.625 - 1.250 1.000 - 2.000 1.250 - 6.300 2.500 - 6.000	●	●	●	●		
	Tungsten Cylindrical Shank Extensions	-	-	**A78**	-	0.625 - 1.250			●			

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Application

 Facing	 Shoulder / Profiling / Slotting	 Ramping	 Pocketing	 Helical Interpolation	 Helical Interpolation with Bore Hole	 Copy / 3D	 Spiral / Circular	 Trochoidal	 Shoulder / Profiling	 T-Slotting	 Contour Milling	 Slotting Shoulder	 Chamfering	 Plunging
●	●													
●		●	●	●	●		●					●		
●	●	●	●	●	●		●						●	
●														
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●		●	●	●	●									
●		●	●	●	●									

Tool Definition

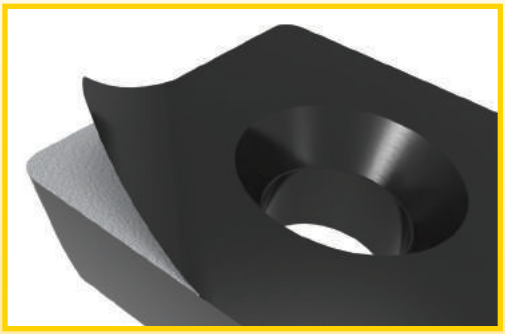
	Family Range				Dimensions (inch)		Body Fixation					
	Series	Insert Shape and Size	Angle	Page	ap max	Diameter Range	Modular Heads	Weldon	Cylindrical	Shell Mills	Caterpillar Vee Flange	DIN 69871 Fixation Taper 50
	A8000V-A8010V Bodies	-	Facing	**A107 - A110**	-	3.940 - 15.750				●		
	A80_0VA90-_R-16 Assembly	AP..1604	Facing 90°	**A111 - A116**	0.600	4.170 - 15.984				●		
	A80_0VX..92-_R-12 Assembly A80_0VX..92-_R-16 Assembly	XD..1205 XE..1605	High Feed Facing	**A117 - A124**	0.098 0.138	3.463 - 9.368 3.234 - 9.140				●		
	A80_0VOD45-_R-04 Assembly A80_0VOD45-_R-06 Assembly	OD..0404 OD..0605	Facing 42°	**A125 - A134**	0.140 0.173	3.937 - 15.748				●		
	A80_0VS45-_R-12 Assembly	SC..12M5	Facing 45°	**A135 - A140**	0.275	3.937 - 15.748				●		
	A80_0VSE45-_R-12 Assembly	SD..1204	Facing 45°	**A141 - A148**	0.275	3.937 - 15.748				●		
	A80_0VR00-_R-16 Assembly	RP..1606	Facing	**A149 - A154**	0.315	3.937 - 15.748				●		
	A80_0VRD00-_R-20 Assembly	RD..2006	Facing	**A155 - A160**	0.394	3.780 - 15.591				●		

STELLRAM

Grade descriptions are listed by toughness to most wear resistant.

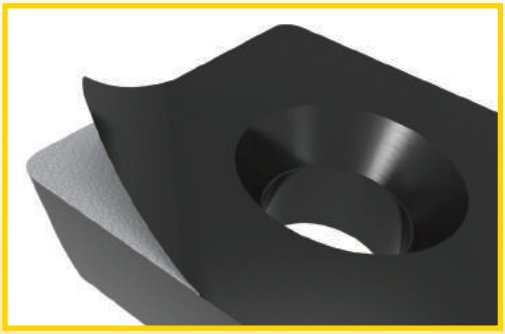
SP5419

Coating Type: PVD, TiAlN
The combination of a tough substrate with a new generation of TiAlN super nano coating, makes this new PVD grade virtually free of residual stress and extremely hard for unmatched performance. Used in Steel and Steel Alloys.



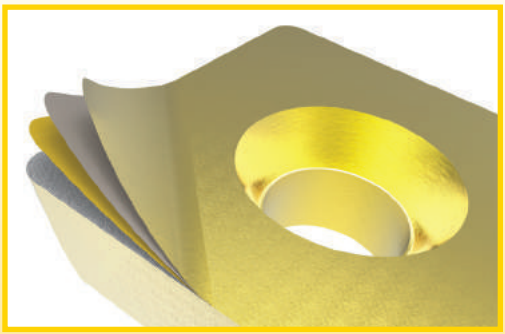
X400

Coating Type: PVD, TiAlN, X-Grade™ Technology
A patented high performance premium carbide grade with a high level of toughness and high wear resistant, thin layer PVD coating. For use in demanding conditions of high metal removal rates or interrupted cuts. This specifically designed grade allows high levels of cutting pressure and offers increased security of the cutting edge. For use on Steel and Steel Alloys, Tool Steels and Hardened Steel (415 - 480 HBN).



X500

Coating Type: CVD, TiN-TiC-TiN, X-Grade™ Technology
This high performance premium grade with a high level of shock resistance. This unique grade operates at the low to medium cutting speeds and is capable of high metal removal rates, while retaining a secure cutting edge. First choice for Stainless Steel and High Temperature Alloys as well as other materials where conditions are unstable.

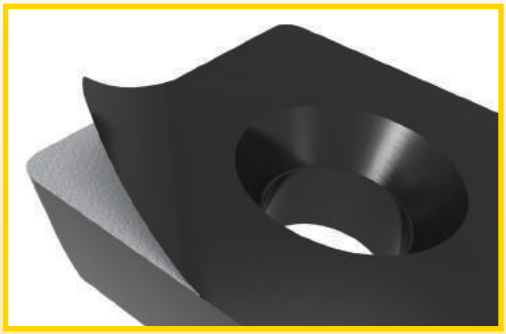


STELLRAM

X700

Coating Type: PVD, TiAlN, X-Grade™ Technology

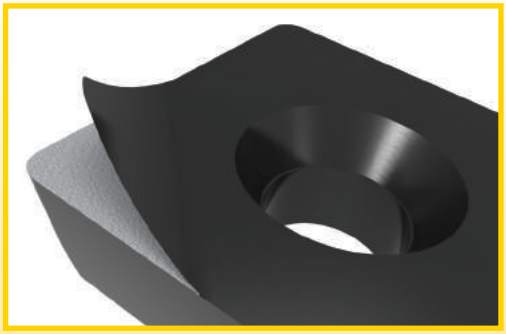
This patented high performance premium carbide grade is the latest in the X-Grade™ Technology program of coated milling inserts. It is designed for the toughest of applications in Nickel Based Alloys, Cobalt Based Alloys, Titanium and Titanium Alloys, as well as Stainless Steels. It is a combination of a highly durable TiAlN PVD coating and specially developed carbide substrate that gives an excellent tool life during long contact times of the cutting edge.



SP6519

Coating Type: PVD, TiAlN

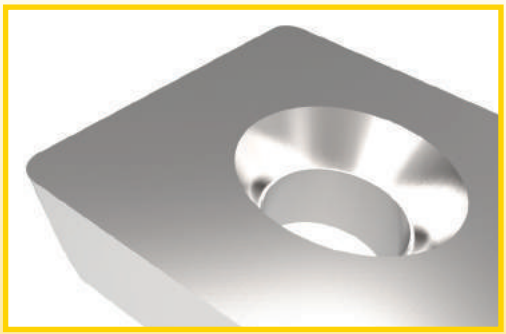
The combination of a tough substrate with a new generation of TiAlN super nano coating, makes this new PVD coating virtually free of residual stress and extremely hard for unmatched performance. Primarily used in Stainless Steel, High Temperature Alloys & Titanium with stable conditions. Also can be used in Steel, Steel Alloys and Cast Irons.



GH2

Uncoated, Micrograin

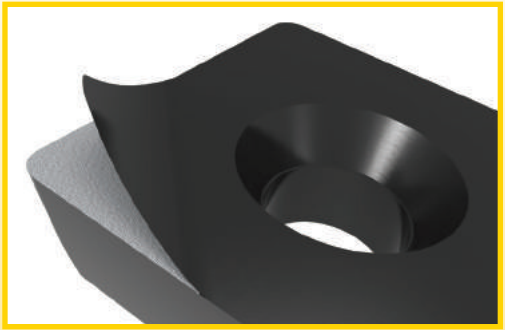
Micrograin grade designed for use on Cast Irons, Bronzes, Aluminums, Kevlar, etc. This grade is tough and able to handle high pressure, vibration and shock.



STELLRAM

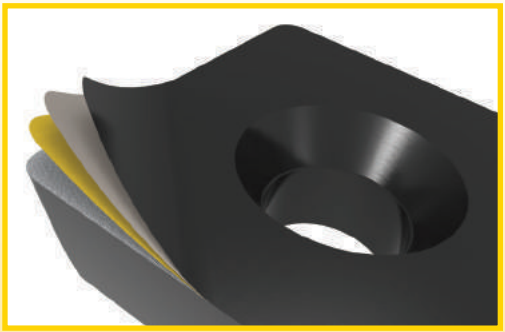
SP4019

Coating Type: PVD, TiAlN Micrograin
A hard grade for light roughing and finishing operations with lower chip sections. Principle applications are in Stainless Steels, High Temperature Alloys and Cast Irons. Can also be used in Steel, Steel Alloys and Hardened Steels.



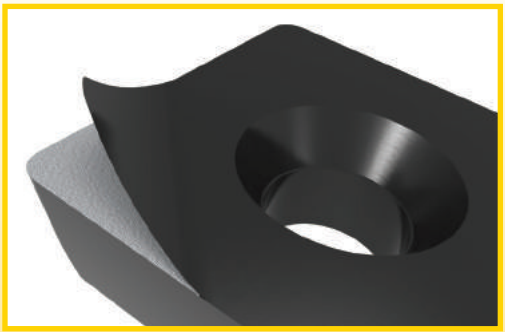
MP91M

Coating Type: CVD, TiN-MT-TiCN-Al_2O_3
Primarily used on Steel, Steel Alloys and Cast Iron. Can also be used in Hardened Steels. With its aluminum oxide coating, this grade is recommended every time wear characteristics are more important than toughness.



SC6525

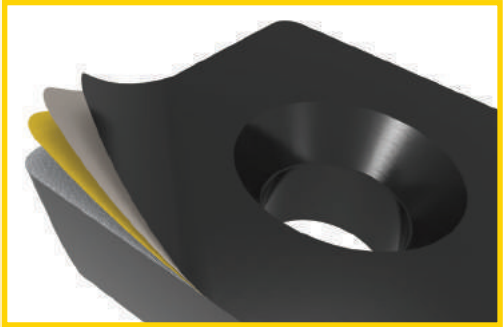
Coating Type: CVD, TiN-TiCN-Al_2O_3
SC6525 has a unique substrate/coating combination, designed specifically for high performance machining of Steel, Steel Alloys and Cast Irons at elevated surface speeds and feeds.



STELLRAM

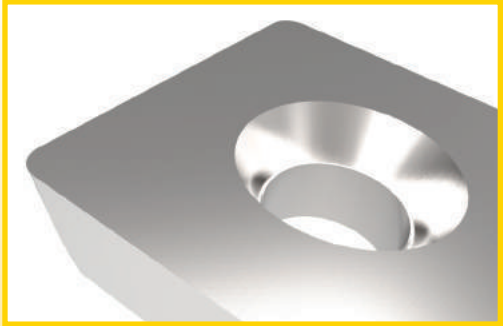
SC3025

Coating Type: CVD, TiN - TiCN - Al_2O_3
A high performance milling grade with multi-layer CVD coating designed to offer wear and abrasion resistance in Cast Iron materials.



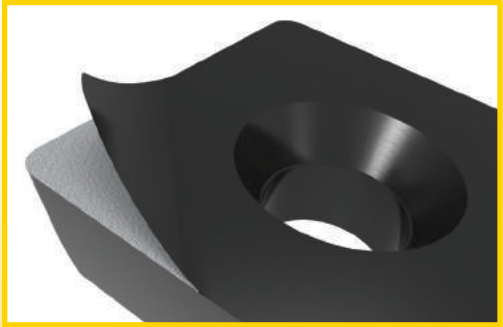
GH1

Uncoated, Micrograin
This micrograin grade is designed for use on Cast Irons, and also Bronzes, Aluminums, Kevlar, etc. The grade GH1 works well with or without coolant with low cutting pressure at high speeds due to sharp cutting edge.



SP1019

Coating Type: PVD, TiAlN, Micrograin
Micrograin carbide substrate with a new generation of TiAlN super nano coating, makes this PVD grade virtually free of residual stress and extremely hard for unmatched performance. Ideal for ball nose cutters at higher surface speeds, or for greater wear resistance. Used in finish machining, all Alloys.

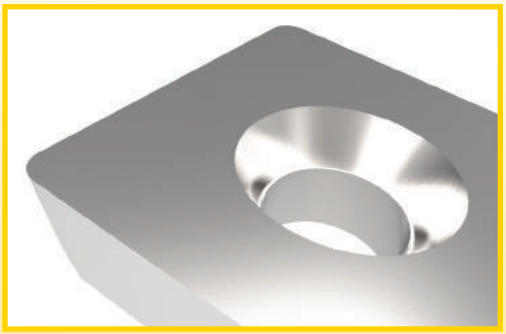


STELLRAM

SA9808

Uncoated Cermet (TiCN)

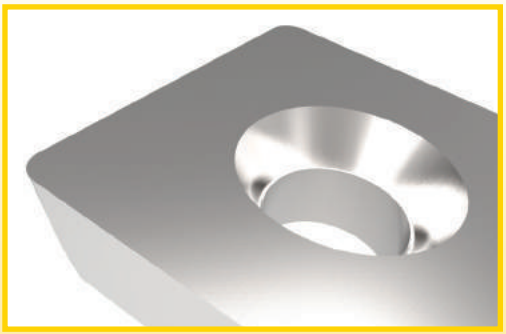
Uncoated Cermet for applications with limited interruptions. Excellent thermal conductivity and wear resistance, providing an excellent surface finish. For finish face milling of Steel, Steel Alloys, Stainless Steels and Cast Irons.



SA9608

Uncoated Cermet (TiCN)

Uncoated Cermet for finishing applications. Excellent thermal conductivity and wear resistance, providing an excellent surface finish. For finish face milling of Steel, Steel Alloys, Stainless Steel and Cast Irons with wiper insert SPHX12M512EN.



STELLRAM

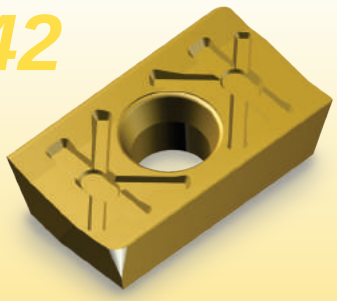
-41

Is a general purpose geometry applied to utility ground inserts. This economical geometry is available with a number of insert styles for use in all approach angles. This geometry has positive cutting action and reinforced cutting edge for roughing applications in Steel, Steel Alloys, Stainless Steel and Cast Iron.



-42

Is a general purpose geometry. The positive rake and T-land combine to create a strong cutting edge. The -42 geometry withstands high cutting forces and interrupted cuts. This geometry can be used for roughing and semi-finishing in Steel, Steel Alloys, Titanium, High Temperature Alloys and Stainless Steel with excellent results.



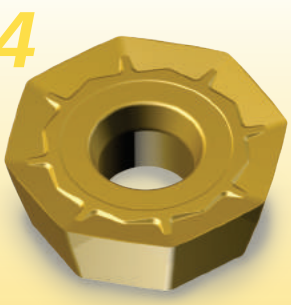
-43

This is a general purpose geometry designed to handle tough conditions and interruped cuts with larger axial depth of cuts. It is applied to utility ground inserts with ground wiper edges for closer axial runout tolerance. This geometry is primarily used in Steel, Steel Alloys, Stainless Steels and Cast Irons.



-44

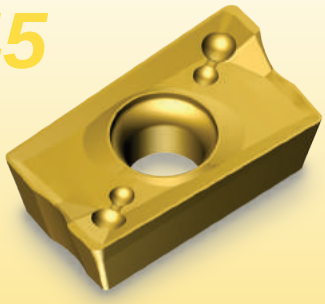
This geometry is peripheral ground with a ground facet for producing the best surface quality in most materials while reducing cutting pressure and power consumption. For finishing applications in Steel, Steel Alloys, Stainless Steels, High Temperature Alloys and Cast Iron.



STELLRAM

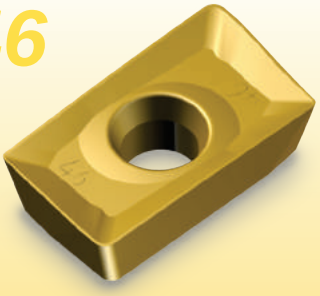
-45

This geometry is designed for machining a wide range of materials and applications. It is available on utility ground inserts with ground wiper edges. The –45 geometry provides freer cutting operations and reduces the “suction effect” associated with higher helical geometries. This geometry is qualified for Steel, Steel Alloys, Stainless Steels, and Cast Iron.



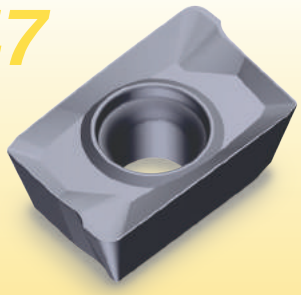
-46

This positive geometry with high accuracy periphery grinding gives a positive cutting action. The precise treatment of the cutting edge ensures effective machining in roughing, semi-finishing and finishing applications, all materials.



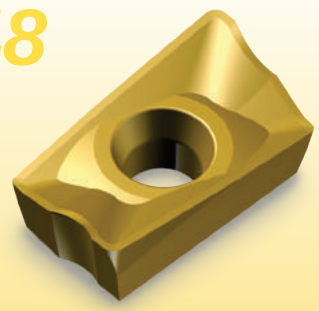
-47

–47 geometry has similar cutting applications as the –45 geometry, with a slightly lower cutting pressure and performs well with High Temperature Alloys.



-48

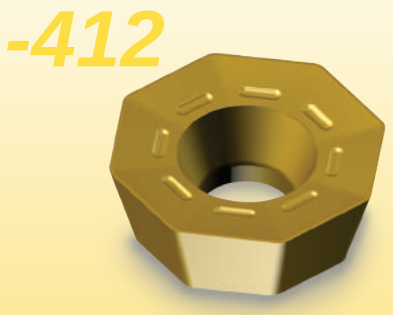
The geometry design of this insert provides a smooth cutting action with excellent chip control. Once positioned in the cutter body the combined effective cutting geometry produces lower radial forces, specifically in the direction of the feed, leading to a more stable cutting environment. For machining in Steel, Stainless Steel, Titanium and High Temperature Alloys.



STELLRAM

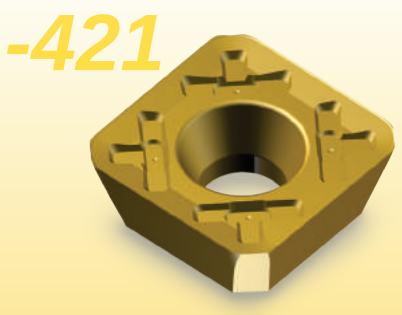
-412

This high positive gometry is slightly more positive than the -41. This geometry improves tool life on several applications when machining Stainless Steel and High Temperature Alloys.



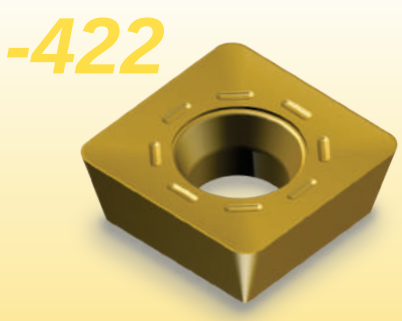
-421

This high positive geometry with high accuracy periphery grinding. For use in semi-finishing and finishing applications. Due to the precise control of the cutting edge, this geometry provides excellent results when machining High Temperature Alloys.



-422

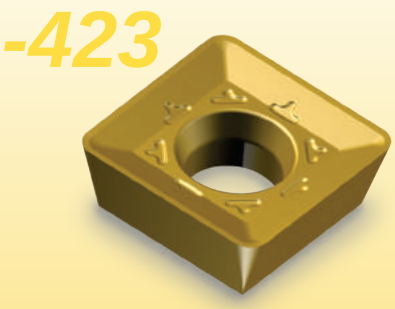
This positive geometry with a 11º chip angle and an “E” edge preparation for roughing and semi finishing applications. Primarily for machining of Stainless Steels and High Temperature Alloys. Also can be used in Steel, Steel Alloys and Cast Irons with very good results.



STELLRAM

-423

A strong positive geometry first with a smaller primary angle and a small controlled hone to reduce cutting pressures, followed by a higher secondary angle to allow free cutting of the chip without rubbing on the insert rake face. Chip flow compresses the chip for easy evacuation. For roughing and semi-finishing of Nickel Based Alloys, Cobalt Alloys, Stainless Steels, Titanium Alloys and High Temperature Alloys.



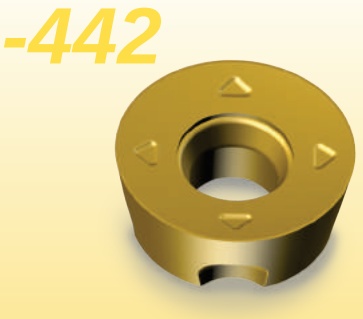
-441

This geometry is a peripheral ground insert with a sharp cutting edge for use on Aluminum Alloys, Copper and Brass. The –441 geometry provides freer cutting operations and reduces the “suction effect” associated with higher helical geometries.



-442

This NEW positive geometry minimizes the pressure from the chip formation. Utilizing an 11º chip angle and and “E” edge preparation for roughing and semi finishing applications in Stainless Steel and High Temperature Alloys. This -442 geometry can also be used in machining Steel, Steel Alloys, and Cast Irons with very good results.



STELLRAM

-701

This extreme high positive geometry is highly suitable for finishing a wide range of materials at low feedrates. This geometry provides a freer cutting action particulary in Aluminum. Titanium and High Temperature Alloys can also be finished machined when the -701 geometry is combined with grade SP4019 or SP6519. This geometry is precision ground and gives excellent performance when machining thin-walled components.



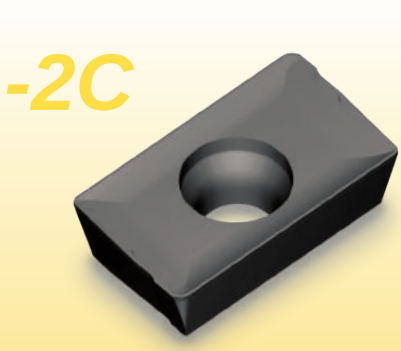
-721

This geometry is periphery ground with a pressed, polished top rake face reducing built up edge. This economical geometry gives excellent results in machining Aluminum Alloys, Copper and Brass.



-2C

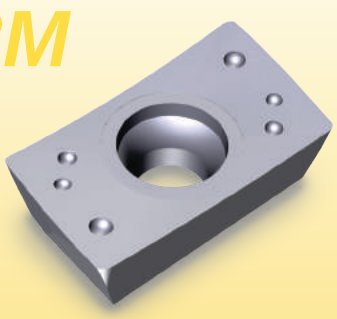
This geometry has an open chip breaker that reduces cutting pressure while maintaining insert strength. - 2C is ideal for machining Low Carbon Steels.



STELLRAM

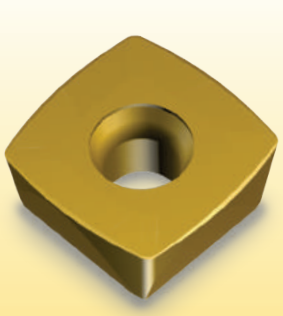
-3M

This geometry has the strength of a flat top “W” insert, however its helical cutting edges helps to reduce machine power consumption.



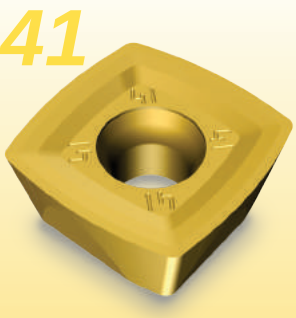
-D

This High Feed geometry fully ground with flat top and variable hone has been designed to machine Steel, Steel Alloys, Tool Steel, Cast Irons and Hardened Materials up to 534HBN.



-D41

This positive High Feed geometry primarily used to machine Stainless Steel, High Temperature Alloys and Titanium. It can also be used for machining Steel, Steel Alloys and Cast Iron with excellent results. The -D41 geometry also reduces power consumtion .

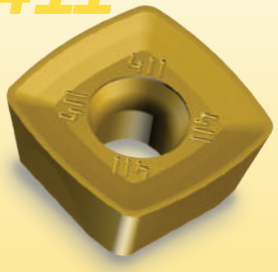


STELLRAM

-D411

This positive High Feed geometry with larger corner radius (0.047”) 1,2mm reduces cutting energy and provides better edge protection during lower radial engagement applications. Mainly for machining Titanium, High Temperture Alloys and Stainless Steel. It can also be used for machining Steel, Steel Alloys and Cast Irons with extremely good results.

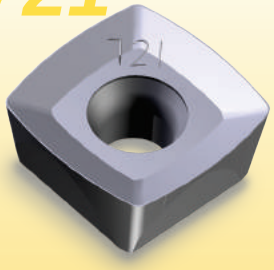
-D411



-D721

This highly positive High Feed geometry is designed for machining Aluminum, Copper and Brass. The periphery ground, polished top rake face and sharp edge allows a freer cutting action and reduces built-up edge.

-D721



-F

This geometry is a roughing ball nose fully ground insert for roughing and semi-finishing of all Materials except Aluminum. This geometry is designed with chip grooves for better chip control.

-F

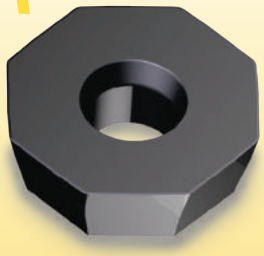


STELLRAM

-RA

This geometry is a precision insert for milling Cast Iron. The extended wiper-facet on this insert geometry allows a 50% higher feed rate for higher productivity. This geometry is available with SC3025, our leading Cast Iron milling grade.

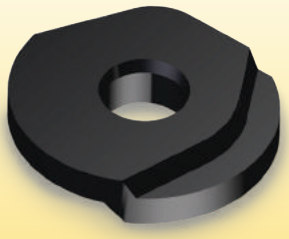
-RA



-RG..S

This geometry is designed for finish machining of 3D profiles. It is extremely accurate and delivers a very long tool life. The RG..S is excellent when machining a side wall that is close to 90˚. Suitable for machining of all materials.

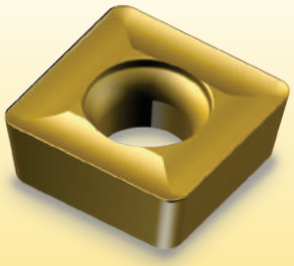
-RG..S



-T

This geometry is for general purpose applications when a strong cutting and excellent chip breaking capibility is required. This geometry is found on a wide range of Stellram inserts. The design is nearly as tough as flat-top inserts. Mainly to be used when machining Steel, Steel Alloys, Cast Irons and Hardened Steels.

-T

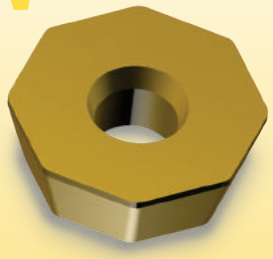


STELLRAM

-TN

This geometry is a flat top design with a strong T-land edge preparation for preventing chipping in unstable conditions. This geometry is similar to the -SN geometry, but has a smaller edge preparation which reduces machine power consumption. For machining Steel, Steel Alloys and Cast Iron. Should also be used to machine Stainless Steel and Titanium with heavy scale.

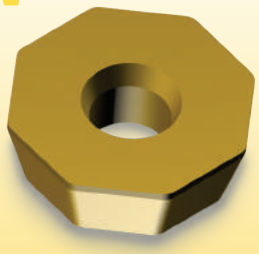
-TN



-SN

This geometry is our strongest cutting edge for general purpose applications and is ideal for unstable cutting conditions, long overhangs and very high feedrates. For heavy duty applications when machining Steel, Steel Alloys and Cast Iron. Ideal solution for heavy scale applications.

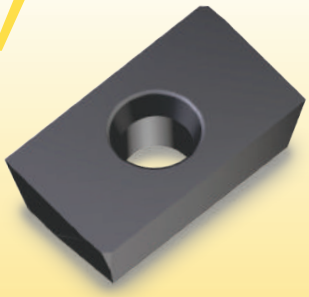
-SN



-W

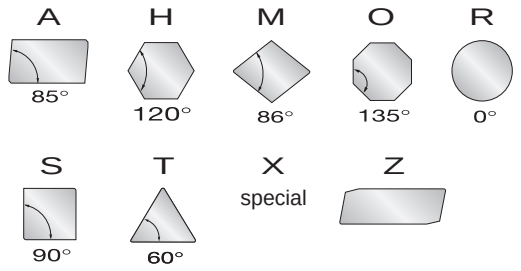
This geometry is offered in a number of flat-top inserts for numerous milling applications in a wide range of materials. The flat-top inserts are the best choice when toughness is required for all milling applications. This geometry offers a stronger cutting edge than a chip-groove insert.

-W

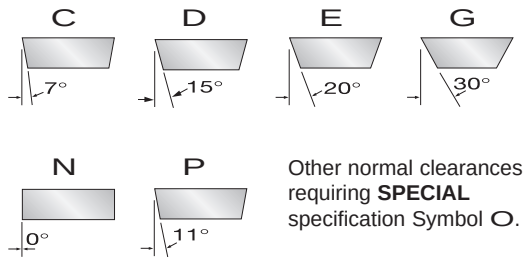


A	P	F	W	16
1	2	3	4	5

1 Shape

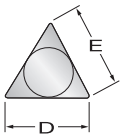


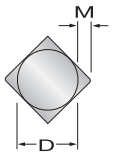
2 Clearance

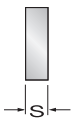


Other normal clearances requiring **SPECIAL** specification Symbol O.

3 Tolerance



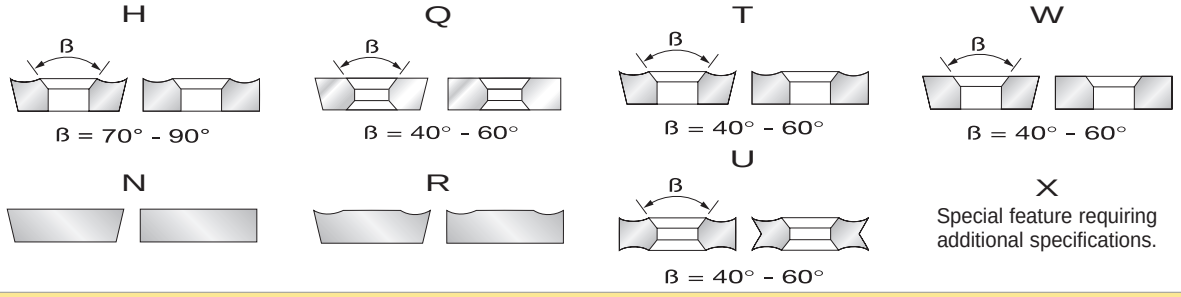




Class		D	M	S
A(1)	inch	±0.001	±0.0002	±0.001
C(1)	inch	±0.001	±0.0005	±0.001
E(1)	inch	±0.001	±0.001	±0.001
F(1)	inch	±0.0005	±0.0002	±0.001
G	inch	±0.001	±0.001	±0.005
H(1)	inch	±0.0005	±0.0005	±0.001
J(1)	inch	from ±0.002 to ±0.006	±0.0002	±0.001
K(1)	inch	from ±0.002 to ±0.006	±0.0005	±0.001
L(1)	inch	from ±0.002 to ±0.006	±0.001	±0.001
M	inch	from ±0.002 to ±0.006	from ±0.003 to ±0.008	±0.005
N	inch	from ±0.002 to ±0.006	from ±0.003 to ±0.008	±0.001
U	v	from ±0.003 to ±0.010	from ±0.005 to ±0.015	±0.005

(1) Indexable inserts with ground wiper edges. (2) Dependent upon the insert size (see ISO 1832 standard)

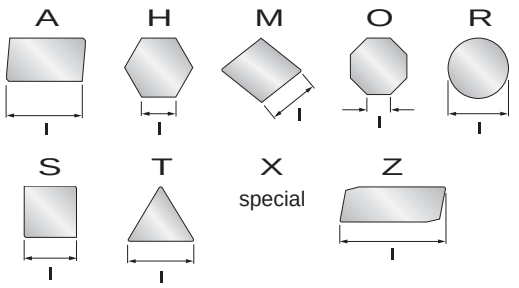
4 Type



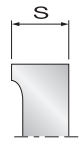
04 PD T R -

6 7 8 9 10

5 Size



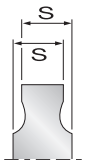
6 Thickness



02 = 0.094 in.
03 = 0.125 in.



T3 = 0.156 in.
04 = 0.187 in.



M5 = 0.196 in.
05 = 0.218 in.
06 = 0.250 in.

7 Corner



Rounded Corner Inserts

Value of corner radius given in (0.004") 1/10 mm

Note: For sharp corner Symbol = **00**

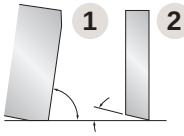


Rounded Inserts

Symbol = **00**
If the Ø is converted from an inch value.

Symbol = **M0**
If the Ø is converted from a metric value.

7 Corner *continued*



Inserts With Wiper Edges.

Two Letter Symbol:

1 For cutting edge angle χ_r

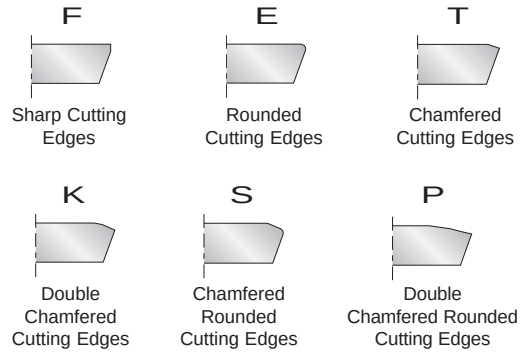
A = 45°
D = 60°
E = 75°
F = 85°
P = 90°

Z = Any other wiper edge clearance.

2 For wiper edge normal clearance

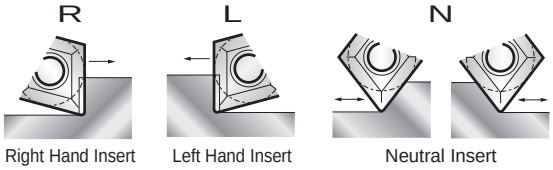
A = 3°
B = 5°
C = 7°
D = 15°
E = 20°
F = 25°
G = 30°
N = 0°
P = 11°

8 Edge Condition



OPTIONAL SYMBOL

9 Cutting Direction

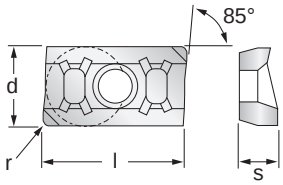


OPTIONAL SYMBOL

10 Optional

Manufacturers optional symbol consisting of numbers or letters; shall be separated from the standardized designation by a dash (-).

OPTIONAL SYMBOL



Product			Dimensions (inch)				
EDP	**Item Description**	**Grade**	d (IC)	l	s	r	h_m min
031075	**ADET090308SR-42**	SP6519	0.250	0.362	0.125	0.031	0.004
031076	**ADET090308SR-42**	X500	0.250	0.362	0.125	0.031	0.004
031094	**ADET090310SR-42**	SP6519	0.250	0.362	0.125	0.039	0.004
024913	**ADET090310SR-42**	X500	0.250	0.362	0.125	0.039	0.004
031096	**ADET090312SR-42**	SP6519	0.250	0.362	0.125	0.047	0.004
031095	**ADET090312SR-42**	X500	0.250	0.362	0.125	0.047	0.004
030980	**ADET090316SR-42**	SP6519	0.250	0.362	0.125	0.063	0.004
030942	**ADET090316SR-42**	X500	0.250	0.362	0.125	0.063	0.004
031098	**ADET090320SR-42**	SP6519	0.250	0.362	0.125	0.079	0.004
031097	**ADET090320SR-42**	X500	0.250	0.362	0.125	0.079	0.004
031100	**ADET090324SR-42**	SP6519	0.250	0.362	0.125	0.094	0.004
031099	**ADET090324SR-42**	X500	0.250	0.362	0.125	0.094	0.004
031102	**ADET090330SR-42**	SP6519	0.250	0.362	0.125	0.118	0.004
031101	**ADET090330SR-42**	X500	0.250	0.362	0.125	0.118	0.004
031104	**ADET090332SR-42**	SP6519	0.250	0.362	0.125	0.126	0.004
031103	**ADET090332SR-42**	X500	0.250	0.362	0.125	0.126	0.004
031093	**ADET0903PDSR-42**	SP6519	0.250	0.362	0.125	Facet	0.004
031092	**ADET0903PDSR-42**	X500	0.250	0.362	0.125	Facet	0.004



ADET_-42

Ground circumference ⋋ 90° one face pressed chip-breaker

030857	**ADET12T308ER-48**	SP6519	0.310	0.500	0.148	0.031	0.002
030856	**ADET12T308ER-48**	X500	0.310	0.500	0.148	0.031	0.002
030800	**ADET12T312ER-48**	SP6519	0.310	0.500	0.148	0.047	0.002
030808	**ADET12T312ER-48**	X500	0.310	0.500	0.148	0.047	0.002
030771	**ADET12T316ER-48**	SP6519	0.310	0.500	0.148	0.063	0.002
030809	**ADET12T316ER-48**	X500	0.310	0.500	0.148	0.063	0.002
030909	**ADET12T320ER-48**	SP6519	0.310	0.500	0.148	0.079	0.002
030908	**ADET12T320ER-48**	X500	0.310	0.500	0.148	0.079	0.002
030859	**ADET12T324ER-48**	SP6519	0.310	0.500	0.148	0.094	0.002
030858	**ADET12T324ER-48**	X500	0.310	0.500	0.148	0.094	0.002
030911	**ADET12T330ER-48**	SP6519	0.310	0.500	0.148	0.118	0.002
030910	**ADET12T330ER-48**	X500	0.310	0.500	0.148	0.118	0.002
030772	**ADET12T332ER-48**	SP6519	0.310	0.500	0.148	0.126	0.002
030810	**ADET12T332ER-48**	X500	0.310	0.500	0.148	0.126	0.002
030913	**ADET12T340ER-48**	SP6519	0.310	0.500	0.148	0.157	0.002
030912	**ADET12T340ER-48**	X500	0.310	0.500	0.148	0.157	0.002
030770	**ADET12T3PDER-48**	SP6519	0.310	0.500	0.148	Facet	0.002
030807	**ADET12T3PDER-48**	X500	0.310	0.500	0.148	Facet	0.002



ADET_-48

Ground circumference ⋋ 90° one face pressed chip-breaker

024916	**ADET0903PDFR-441**	GH1	0.250	0.362	0.125	Facet	0.001



ADET_-441

Ground circumference ⋋ 90° one face pressed chip-breaker

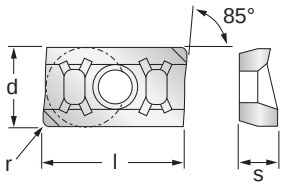
029098	**ADGT12T3PDFR-721**	GH1	0.310	0.500	0.148	Facet	0.002



ADGT_-721

Ground circumference ⋋ 90° one face pressed chip-breaker

STELLRAM



Product			Dimensions (inch)				
EDP	**Item Description**	**Grade**	d (IC)	l	s	r	h_m min
031526	**ADHT12T308ER-46**	SP6519	0.310	0.500	0.148	0.031	0.002
029329	**ADHT12T308ER-46**	X500	0.310	0.500	0.148	0.031	0.002
030406	**ADHT12T308ER-46**	X700	0.310	0.500	0.148	0.031	0.002
031527	**ADHT12T316ER-46**	SP6519	0.310	0.500	0.148	0.063	0.002
029331	**ADHT12T316ER-46**	X500	0.310	0.500	0.148	0.063	0.002
030407	**ADHT12T316ER-46**	X700	0.310	0.500	0.148	0.063	0.002
031530	**ADHT12T320ER-46**	SP6519	0.310	0.500	0.148	0.079	0.002
029337	**ADHT12T320ER-46**	X500	0.310	0.500	0.148	0.079	0.002
030408	**ADHT12T320ER-46**	X700	0.310	0.500	0.148	0.079	0.002
031528	**ADHT12T324ER-46**	SP6519	0.310	0.500	0.148	0.094	0.002
029333	**ADHT12T324ER-46**	X500	0.310	0.500	0.148	0.094	0.002
031531	**ADHT12T330ER-46**	SP6519	0.310	0.500	0.148	0.118	0.002
029339	**ADHT12T330ER-46**	X500	0.310	0.500	0.148	0.118	0.002
031515	**ADHT12T332ER-46**	SP6519	0.310	0.500	0.148	0.126	0.002
029036	**ADHT12T332ER-46**	X500	0.310	0.500	0.148	0.126	0.002
030409	**ADHT12T332ER-46**	X700	0.310	0.500	0.148	0.126	0.002
031529	**ADHT12T340ER-46**	SP6519	0.310	0.500	0.148	0.157	0.002
029335	**ADHT12T340ER-46**	X500	0.310	0.500	0.148	0.157	0.002
031525	**ADHT12T3PDER-46**	SP6519	0.310	0.500	0.148	Facet	0.002
029327	**ADHT12T3PDER-46**	X500	0.310	0.500	0.148	Facet	0.002
017286	**ADKT0903PDER-43**	MP91M	0.250	0.362	0.125	Facet	0.002
031463	**ADKT0903PDER-43**	SP6519	0.250	0.362	0.125	Facet	0.002
015150	**ADKT0903PDER-43**	X500	0.250	0.362	0.125	Facet	0.002
027915	**ADKT12T3PDER-45**	MP91M	0.310	0.500	0.148	Facet	0.002
027916	**ADKT12T3PDER-45**	SC3025	0.310	0.500	0.148	Facet	0.002
031514	**ADKT12T3PDER-45**	SP6519	0.310	0.500	0.148	Facet	0.002
027913	**ADKT12T3PDER-45**	X500	0.310	0.500	0.148	Facet	0.002
023082	**ADKT1505PDER-45**	MP91M	0.380	0.632	0.219	Facet	0.002
031464	**ADKT1505PDER-45**	SP6519	0.380	0.632	0.219	Facet	0.002
023083	**ADKT1505PDER-45**	X500	0.380	0.632	0.219	Facet	0.002
022226	**ADKT1505PDER-47**	MP91M	0.380	0.632	0.219	Facet	0.002
031499	**ADKT1505PDER-47**	SP6519	0.380	0.632	0.219	Facet	0.002
033179	**APET160402TR-42**	SP6519	0.375	0.656	0.187	0.008	0.004
033180	**APET160408TR-42**	SP6519	0.375	0.656	0.187	0.031	0.004
033181	**APET160410TR-42**	SP6519	0.375	0.656	0.187	0.039	0.004
033182	**APET160415TR-42**	SP6519	0.375	0.656	0.187	0.059	0.004
033183	**APET160420TR-42**	SP6519	0.375	0.656	0.187	0.079	0.004
033184	**APET160425TR-42**	SP6519	0.375	0.656	0.187	0.098	0.004
033185	**APET160430TR-42**	SP6519	0.375	0.656	0.187	0.118	0.004
033186	**APET160440TR-42**	SP6519	0.375	0.656	0.187	0.157	0.004
033187	**APET160460TR-42**	SP6519	0.375	0.656	0.187	0.236	0.004



ADHT_-46

Ground circumference ϰ 90° one face pressed chip-breaker



ADKT_-43

Ground wiper edges ϰ 90° one face pressed chip-breaker



ADKT_-45

Ground wiper edges ϰ 90° one face pressed chip-breaker



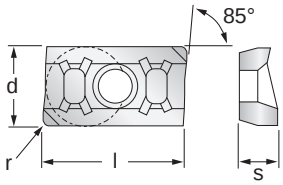
ADKT_-47

Ground wiper edges ϰ 90° one face pressed chip-breaker



APET_-42

Ground circumference ϰ 90° one face pressed chip-breaker



Product			Dimensions (inch)				
EDP	**Item Description**	**Grade**	d (IC)	l	s	r	h_m min
030861	**APET160408ER-48**	SP6519	0.375	0.656	0.187	0.031	0.002
030860	**APET160408ER-48**	X500	0.375	0.656	0.187	0.031	0.002
030799	**APET160412ER-48**	SP6519	0.375	0.656	0.187	0.047	0.002
030812	**APET160412ER-48**	X500	0.375	0.656	0.187	0.047	0.002
030774	**APET160416ER-48**	SP6519	0.375	0.656	0.187	0.063	0.002
030813	**APET160416ER-48**	X500	0.375	0.656	0.187	0.063	0.002
030915	**APET160420ER-48**	SP6519	0.375	0.656	0.187	0.079	0.002
030914	**APET160420ER-48**	X500	0.375	0.656	0.187	0.079	0.002
030917	**APET160424ER-48**	SP6519	0.375	0.656	0.187	0.094	0.002
030916	**APET160424ER-48**	X500	0.375	0.656	0.187	0.094	0.002
030919	**APET160430ER-48**	SP6519	0.375	0.656	0.187	0.118	0.002
030918	**APET160430ER-48**	X500	0.375	0.656	0.187	0.118	0.002
030775	**APET160432ER-48**	SP6519	0.375	0.656	0.187	0.126	0.002
030814	**APET160432ER-48**	X500	0.375	0.656	0.187	0.126	0.002
030906	**APET160440ER-48**	SP6519	0.375	0.656	0.187	0.157	0.002
030907	**APET160440ER-48**	X500	0.375	0.656	0.187	0.157	0.002
030921	**APET160450ER-48**	SP6519	0.375	0.656	0.187	0.197	0.002
030920	**APET160450ER-48**	X500	0.375	0.656	0.187	0.197	0.002
030923	**APET160460ER-48**	SP6519	0.375	0.656	0.187	0.236	0.002
030922	**APET160460ER-48**	X500	0.375	0.656	0.187	0.236	0.002
030925	**APET160464ER-48**	SP6519	0.375	0.656	0.187	0.252	0.002
030924	**APET160464ER-48**	X500	0.375	0.656	0.187	0.252	0.002
030773	**APET1604PDER-48**	SP6519	0.375	0.656	0.187	Facet	0.002
030811	**APET1604PDER-48**	X500	0.375	0.656	0.187	Facet	0.002



APET_-48

Ground circumference ϰ 90° one face pressed chip-breaker

033188	**APEX1604PDER-701**	SP6519	0.375	0.656	0.187	Facet	0.001
017624	**APEX1604PDFL-701**	GH1	0.375	0.656	0.187	Facet	0.001
014066	**APEX1604PDFR-701**	GH1	0.375	0.656	0.187	Facet	0.001
033189	**APEX1604PDFR-701**	SP4019	0.375	0.656	0.187	Facet	0.001



APEX_-701

Completely ground ϰ 90° concave cutting face

017291	**APFW1604PDER**	MP91M	0.375	0.656	0.187	Facet	0.002
017630	**APFW1604PDTL**	GH1	0.375	0.656	0.187	Facet	0.004
034692	**APFW1604PDTL**	SP4019	0.375	0.656	0.187	Facet	0.004
017628	**APFW1604PDTR**	GH1	0.375	0.656	0.187	Facet	0.004
027883	**APFW1604PDTR**	SC3025	0.375	0.656	0.187	Facet	0.004
033191	**APFW1604PDTR**	SP4019	0.375	0.656	0.187	Facet	0.004
033190	**APFW1604PDTR**	X400	0.375	0.656	0.187	Facet	0.004



APFW_

Ground circumference ϰ 90° without chip-breaker

033192	**APHT1604PDER**	SP4019	0.375	0.656	0.187	Facet	0.002
015154	**APHT1604PDFR**	GH1	0.375	0.656	0.187	Facet	0.001



APHT_

Ground circumference ϰ 90° one face pressed chip-breaker

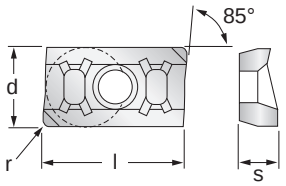
017292	**APHT1604PDTL-42**	MP91M	0.375	0.656	0.187	Facet	0.004
031513	**APHT1604PDTL-42**	SP6519	0.375	0.656	0.187	Facet	0.004
017635	**APHT1604PDTL-42**	X500	0.375	0.656	0.187	Facet	0.004
017293	**APHT1604PDTR-42**	MP91M	0.375	0.656	0.187	Facet	0.004
031466	**APHT1604PDTR-42**	SP6519	0.375	0.656	0.187	Facet	0.004
015155	**APHT1604PDTR-42**	X500	0.375	0.656	0.187	Facet	0.004



APHT_-42

Ground circumference ϰ 90° one face pressed chip-breaker

STELLRAM



Product			Dimensions (inch)				
EDP	**Item Description**	**Grade**	d (IC)	l	s	r	h_m min
031495	**APHT160408ER-46**	SP6519	0.375	0.656	0.187	0.031	0.004
027869	**APHT160408ER-46**	X500	0.375	0.656	0.187	0.031	0.004
031496	**APHT160416ER-46**	SP6519	0.375	0.656	0.187	0.063	0.004
027870	**APHT160416ER-46**	X500	0.375	0.656	0.187	0.063	0.004
031497	**APHT160424ER-46**	SP6519	0.375	0.656	0.187	0.094	0.004
027871	**APHT160424ER-46**	X500	0.375	0.656	0.187	0.094	0.004
031397	**APHT160432ER-46**	SP6519	0.375	0.656	0.187	0.126	0.004
027872	**APHT160432ER-46**	X500	0.375	0.656	0.187	0.126	0.004
031542	**APHT160440ER-46**	SP6519	0.375	0.656	0.187	0.157	0.004
027873	**APHT160440ER-46**	X500	0.375	0.656	0.187	0.157	0.004
031498	**APHT160450ER-46**	SP6519	0.375	0.656	0.187	0.197	0.004
027874	**APHT160450ER-46**	X500	0.375	0.656	0.187	0.197	0.004
031541	**APHT160464ER-46**	SP6519	0.375	0.656	0.187	0.252	0.004
027875	**APHT160464ER-46**	X500	0.375	0.656	0.187	0.252	0.004



APHT_-46

Ground circumference ϰ 90° one face pressed chip-breaker

011488	**APKT160408E-2C**	MP91M	0.375	0.656	0.187	0.031	0.004
034667	**APKT160408E-2C**	SP6519	0.375	0.656	0.187	0.031	0.004



APKT_-2C

Ground wiper edges ϰ 90° one face pressed chip-breaker

011676	**APKT1003PDER-3M**	MP91M	0.263	0.413	0.125	Facet	0.002
017861	**APKT1003PDFR-3M**	GH1	0.263	0.413	0.125	Facet	0.002
011649	**APKT1604PDER-3M**	MP91M	0.375	0.656	0.187	Facet	0.004



APKT_-3M

Ground wiper edges ϰ 90° one face pressed chip-breaker

017294	**APKT1604PDER-43**	MP91M	0.375	0.656	0.187	Facet	0.003
027887	**APKT1604PDER-43**	SC3025	0.375	0.656	0.187	Facet	0.003
031468	**APKT1604PDER-43**	SP6519	0.375	0.656	0.187	Facet	0.003
015156	**APKT1604PDER-43**	X500	0.375	0.656	0.187	Facet	0.003



APKT_-43

Ground wiper edges ϰ 90° one face pressed chip-breaker

023112	**APKT1003PDER-45**	MP91M	0.263	0.413	0.125	Facet	0.002
031467	**APKT1003PDER-45**	SP6519	0.263	0.413	0.125	Facet	0.002
023113	**APKT1003PDER-45**	X500	0.263	0.413	0.125	Facet	0.002
023114	**APKT1604PDER-45**	MP91M	0.375	0.656	0.187	Facet	0.002
031469	**APKT1604PDER-45**	SP6519	0.375	0.656	0.187	Facet	0.002
023115	**APKT1604PDER-45**	X500	0.375	0.656	0.187	Facet	0.002



APKT_-45

Ground wiper edges ϰ 90° one face pressed chip-breaker

026579	**APKT1003PDER-47**	MP91M	0.263	0.413	0.125	Facet	0.002
031500	**APKT1003PDER-47**	SP6519	0.263	0.413	0.125	Facet	0.002
026580	**APKT1003PDER-47**	X500	0.263	0.413	0.125	Facet	0.002



APKT_-47

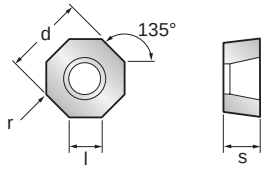
Ground wiper edges ϰ 90° one face pressed chip-breaker

017228	**APMT160412E-2C**	MP91M	0.375	0.656	0.187	0.047	0.004
013944	**APMT160416E-2C**	MP91M	0.375	0.656	0.187	0.063	0.004
013945	**APMT160424E-2C**	MP91M	0.375	0.656	0.187	0.094	0.004
013946	**APMT160432E-2C**	MP91M	0.375	0.656	0.187	0.126	0.004
017229	**APMT160440E-2C**	MP91M	0.375	0.656	0.187	0.157	0.004
017230	**APMT160448E-2C**	MP91M	0.375	0.656	0.187	0.189	0.004
013947	**APMT160464E-2C**	MP91M	0.375	0.656	0.187	0.252	0.004



APMT_-2C

As pressed circumference ϰ 90° one faced chip-breaker



Product			Dimensions (inch)				
EDP	**Item Description**	**Grade**	d (IC)	l	s	r	h_m min
022199	**ODET0404APEN-44**	MP91M	0.500	0.157	0.187	Facet	0.002
031470	**ODET0404APEN-44**	SP6519	0.500	0.157	0.187	Facet	0.002
022198	**ODET0404APEN-44**	X500	0.500	0.157	0.187	Facet	0.002
026591	**ODET0605APEN-44**	MP91M	0.630	0.236	0.219	Facet	0.002
034513	**ODET0605APEN-44**	SP4019	0.630	0.236	0.219	Facet	0.002
031501	**ODET0605APEN-44**	SP6519	0.630	0.236	0.219	Facet	0.002
026592	**ODET0605APEN-44**	X500	0.630	0.236	0.219	Facet	0.002
024911	**ODET0404APFN-441**	GH1	0.500	0.157	0.187	Facet	0.001
026588	**ODET0605APFN-441**	GH1	0.630	0.236	0.219	Facet	0.001
027884	**ODEW0404APTR-RA**	SC3025	0.500	0.157	0.187	Facet	0.007
027885	**ODEW0605APTR-RA**	SC3025	0.630	0.236	0.219	Facet	0.007
017303	**ODMT040408EN-41**	MP91M	0.500	0.157	0.187	0.031	0.002
031471	**ODMT040408EN-41**	SP6519	0.500	0.157	0.187	0.031	0.002
015143	**ODMT040408EN-41**	X500	0.500	0.157	0.187	0.031	0.002
030330	**ODMT040408EN-41**	X700	0.500	0.157	0.187	0.031	0.002
017775	**ODMT0404APEN-41**	MP91M	0.500	0.157	0.187	Facet	0.002
031472	**ODMT0404APEN-41**	SP6519	0.500	0.157	0.187	Facet	0.002
022061	**ODMT0404APEN-41**	X500	0.500	0.157	0.187	Facet	0.002
026589	**ODMT0605APEN-41**	MP91M	0.630	0.236	0.219	Facet	0.002
034514	**ODMT0605APEN-41**	SP4019	0.630	0.236	0.219	Facet	0.002
031502	**ODMT0605APEN-41**	SP6519	0.630	0.236	0.219	Facet	0.002
026590	**ODMT0605APEN-41**	X500	0.630	0.236	0.219	Facet	0.002
031540	**ODMT040408EN-412**	SP6519	0.500	0.157	0.187	0.031	0.002
030768	**ODMT040408EN-412**	X500	0.500	0.157	0.187	0.031	0.002
030769	**ODMT040408EN-412**	X700	0.500	0.157	0.187	0.031	0.002
017304	**ODMW040408SN**	MP91M	0.500	0.157	0.187	0.031	0.011
029096	**ODMW040408SN**	SC3025	0.500	0.157	0.187	0.031	0.011
031462	**ODMW040408SN**	SP6519	0.500	0.157	0.187	0.031	0.011
017672	**ODMW040408SN**	X500	0.500	0.157	0.187	0.031	0.011
025836	**ODMW060512SN**	MP91M	0.630	0.236	0.219	0.047	0.011
029097	**ODMW060512SN**	SC3025	0.630	0.236	0.219	0.047	0.011
031483	**ODMW060512SN**	SP6519	0.630	0.236	0.219	0.047	0.011
025838	**ODMW060512SN**	X500	0.630	0.236	0.219	0.047	0.011
026595	**ODMW060512TN**	MP91M	0.630	0.236	0.219	0.047	0.007
034515	**ODMW060512TN**	SP4019	0.630	0.236	0.219	0.047	0.007
031503	**ODMW060512TN**	SP6519	0.630	0.236	0.219	0.047	0.007
026596	**ODMW060512TN**	X500	0.630	0.236	0.219	0.047	0.007
031533	**RDHT2006M0E-42-X8**	SP6519	0.787	-	0.250	0.394	0.003
029310	**RDHT2006M0E-42-X8**	X500	0.787	-	0.250	0.394	0.003



ODET_-44

Ground circumference ϰ 42° one face pressed chip-breaker



ODET_-441

Ground circumference ϰ 42° one face pressed chip-breaker



ODEW_-RA

Ground circumference ϰ 42° without chip-breaker



ODMT_-41

As pressed circumference ϰ 42° one face pressed chip-breaker



ODMT_-412

As pressed circumference ϰ 42° one face pressed chip-breaker



ODMW_-SN

As pressed circumference ϰ 42° without chip-breaker



ODMW_-TN

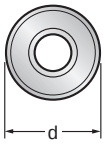
As pressed circumference ϰ 42° without chip-breaker



RDHT_-42

Ground circumference one face pressed chip-breaker

STELLRAM





Product			Dimensions (inch)				
EDP	**Item Description**	**Grade**	d (IC)	l	s	r	h_m min
029309	**RDHW2006M0E-X8**	X500	0.787	-	0.250	0.394	0.004
031576	**RDHW2006M0S-25-X8**	SP6519	0.787	-	0.250	0.394	0.010
031660	**RDHW2006M0S-25-X8**	X500	0.787	-	0.250	0.394	0.010
031662	**RDHW2006M0S-X8**	SP6519	0.787	-	0.250	0.394	0.005
031661	**RDHW2006M0S-X8**	X500	0.787	-	0.250	0.394	0.005
031490	**RG.375S**	SP1019	0.015	-	0.003	0.007	0.001
031491	**RG.500S**	SP1019	0.020	-	0.004	0.010	0.001
031492	**RG.625S**	SP1019	0.025	-	0.005	0.012	0.001
031493	**RG.750S**	SP1019	0.030	-	0.005	0.015	0.001
031494	**RG1.00S**	SP1019	0.039	-	0.006	0.020	0.001
031484	**RG08S**	SP1019	0.315	-	0.069	0.157	0.001
031485	**RG10S**	SP1019	0.394	-	0.079	0.197	0.001
031486	**RG12S**	SP1019	0.472	-	0.098	0.236	0.001
031487	**RG16S**	SP1019	0.630	-	0.118	0.315	0.001
031488	**RG20S**	SP1019	0.787	-	0.138	0.394	0.001
031489	**RG25S**	SP1019	0.984	-	0.157	0.492	0.001
034549	**RPET1204M0E-X4**	SP4019	0.472	-	0.187	0.236	0.001
034543	**RPEX0803M3E-701**	SP6519	0.315	-	0.125	0.157	0.001
031312	**RPEX0803M3E-701**	X500	0.315	-	0.125	0.157	0.001
023315	**RPEX0803M3F-701**	GH1	0.315	-	0.125	0.157	0.001
034544	**RPEX0803M3F-701**	SP4019	0.315	-	0.125	0.157	0.001
034545	**RPEX10T3M0E-701-X4**	SP6519	0.394	-	0.156	0.197	0.001
030456	**RPEX10T3M0F-701-X4**	GH1	0.394	-	0.156	0.197	0.001
034546	**RPEX10T3M0F-701-X4**	SP4019	0.394	-	0.156	0.197	0.001
029282	**RPEX1204M0E-701-X4**	X500	0.472	-	0.187	0.236	0.001
029284	**RPEX1204M0F-701-X4**	GH1	0.472	-	0.187	0.236	0.001
031555	**RPHT10T3M0T-X4**	SP6519	0.394	-	0.156	0.197	0.003
030329	**RPHT10T3M0T-X4**	X500	0.394	-	0.156	0.197	0.003
031516	**RPHT1204M0T-X4**	SP6519	0.472	-	0.187	0.236	0.004
029034	**RPHT1204M0T-X4**	X500	0.472	-	0.187	0.236	0.004
029699	**RPHT1204M0T-X4**	X700	0.472	-	0.187	0.236	0.004
030390	**RPHT1606M0S**	X400	0.630	-	0.250	0.314	0.006
034566	**RPHT1606M0T**	SP6519	0.630	-	0.250	0.314	0.004
017692	**RPHT1606M0T**	X500	0.630	-	0.250	0.314	0.004
030449	**RPHT10T3M0E-421-X4**	X500	0.394	-	0.156	0.197	0.002
030410	**RPHT10T3M0E-421-X4**	X700	0.394	-	0.156	0.197	0.002
029286	**RPHT1204M0E-421-X4**	X500	0.472	-	0.187	0.236	0.002
029700	**RPHT1204M0E-421-X4**	X700	0.472	-	0.187	0.236	0.002



RDHW_

Ground circumference without chip-breaker



RG..S_

Completely ground



RPET_

Ground circumference one face pressed chip-breaker



RPEX_-701

Completely ground concave cutting face



RPHT_

Ground circumference one face pressed chip-breaker



RPHT_-421

Ground circumference one face pressed chip-breaker

STELLRAM





Product			Dimensions (inch)				
EDP	**Item Description**	**Grade**	d (IC)	l	s	r	h_m min
031187	**RPHT0803M3E-422**	SP6519	0.315	-	0.125	0.157	0.001
031186	**RPHT0803M3E-422**	X500	0.315	-	0.125	0.157	0.001
031185	**RPHT0803M3E-422**	X700	0.315	-	0.125	0.157	0.001
030862	**RPHT10T3M0E-422-X4**	SP6519	0.394	-	0.156	0.197	0.001
030697	**RPHT10T3M0E-422-X4**	X500	0.394	-	0.156	0.197	0.001
030767	**RPHT10T3M0E-422-X4**	X700	0.394	-	0.156	0.197	0.001
031359	**RPHT1204M0E-422-X4**	SP6519	0.472	-	0.187	0.236	0.002
030399	**RPHT1204M0E-422-X4**	X500	0.472	-	0.187	0.236	0.002
030600	**RPHT1204M0E-422-X4**	X700	0.472	-	0.187	0.236	0.002
032128	**RPHT1204M0E-442-X4**	SP6519	0.472	-	0.187	0.236	0.002
032129	**RPHT1204M0E-442-X4**	X500	0.472	-	0.187	0.236	0.002
032130	**RPHT1204M0E-442-X4**	X700	0.472	-	0.187	0.236	0.002
030327	**RPMT10T3M0T-X4**	X500	0.394	-	0.156	0.197	0.002
017308	**RPMT0803M3E-41**	MP91M	0.315	-	0.125	0.157	0.002
031473	**RPMT0803M3E-41**	SP6519	0.315	-	0.125	0.157	0.002
015220	**RPMT0803M3E-41**	X500	0.315	-	0.125	0.157	0.002
030451	**RPMT10T3M0E-41-X4**	MP91M	0.394	-	0.156	0.197	0.002
031539	**RPMT10T3M0E-41-X4**	SP6519	0.394	-	0.156	0.197	0.002
030452	**RPMT10T3M0E-41-X4**	X500	0.394	-	0.156	0.197	0.002
029291	**RPMT1204M0E-41-X4**	MP91M	0.472	-	0.187	0.236	0.002
031517	**RPMT1204M0E-41-X4**	SP6519	0.472	-	0.187	0.236	0.002
029272	**RPMT1204M0E-41-X4**	X500	0.472	-	0.187	0.236	0.002
030454	**RPMW10T3M0T-X4**	X500	0.394	-	0.156	0.197	0.005
029294	**RPMW1204M0T-X4**	MP91M	0.472	-	0.187	0.236	0.005
031518	**RPMW1204M0T-X4**	SP6519	0.472	-	0.187	0.236	0.005
029295	**RPMW1204M0T-X4**	X500	0.472	-	0.187	0.236	0.005
017312	**SCCT12M5ACER**	MP91M	0.500	0.500	0.197	Facet	0.001
017695	**SCCT12M5ACTR**	GH1	0.500	0.500	0.197	Facet	0.006
034552	**SCCT12M5ACTR**	SP4019	0.500	0.500	0.197	Facet	0.006
034591	**SCCT12M5ACTR**	X400	0.500	0.500	0.197	Facet	0.006
017313	**SCHT12M5ACTN**	MP91M	0.500	0.500	0.197	Facet	0.006
031504	**SCHT12M5ACTN**	SP6519	0.500	0.500	0.197	Facet	0.006
017698	**SCHT12M5ACTN**	X500	0.500	0.500	0.197	Facet	0.006
030671	**SCHT12M512EN-422**	X700	0.500	0.500	0.197	0.047	0.005



RPHT_-422

Ground circumference one face pressed chip-breaker



RPHT_-442

Ground circumference one face pressed chip-breaker



RPMT_

As pressed circumference one face pressed chip-breaker



RPMT_-41

As pressed circumference one face pressed chip-breaker



RPMW_

As pressed circumference without chip-breaker



SCCT_

Ground circumference one face pressed chip-breaker



SCHT_

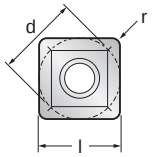
Ground circumference χ 45° one face pressed chip-breaker



SCHT_-422

Ground circumference χ 45° or 90° one face pressed chip-breaker

STELLRAM



Product			Dimensions (inch)				
EDP	**Item Description**	**Grade**	d (IC)	l	s	r	h_m min
017314	**SCKT12M5ACSN-41**	MP91M	0.500	0.500	0.197	Facet	0.005
031556	**SCKT12M5ACSN-41**	SP6519	0.500	0.500	0.197	Facet	0.005
015144	**SCKT12M5ACSN-41**	X500	0.500	0.500	0.197	Facet	0.005



SCKT_-41

Ground wiper facet χ 45° one face pressed chip-breaker

034668	**SCMT09T304T**	SP6519	0.375	0.375	0.156	0.016	0.006
034551	**SCMT09T308T**	SP4019	0.375	0.375	0.156	0.031	0.006
031568	**SCMT09T308T**	SP6519	0.375	0.375	0.156	0.031	0.006
034550	**SCMT09T308T**	X400	0.375	0.375	0.156	0.031	0.006
034669	**SCMT12M508E**	SP6519	0.500	0.500	0.197	Facet	0.006
017316	**SCMT12M512T**	MP91M	0.500	0.500	0.197	0.047	0.006
034553	**SCMT12M512T**	SP4019	0.500	0.500	0.197	0.047	0.006
034555	**SCMT12M512T**	SP6519	0.500	0.500	0.197	0.047	0.006
034554	**SCMT12M512T**	X400	0.500	0.500	0.197	0.047	0.006
024129	**SCMT12M512T**	X500	0.500	0.500	0.197	0.047	0.006



SCMT_

As pressed circumference one face pressed chip-breaker

017315	**SCMT09T308EN-41**	MP91M	0.375	0.375	0.156	0.031	0.006
031474	**SCMT09T308EN-41**	SP6519	0.375	0.375	0.156	0.031	0.006
015147	**SCMT09T308EN-41**	X500	0.375	0.375	0.156	0.031	0.006
017317	**SCMT12M512EN-41**	MP91M	0.500	0.500	0.197	0.047	0.002
031475	**SCMT12M512EN-41**	SP6519	0.500	0.500	0.197	0.047	0.002
015226	**SCMT12M512EN-41**	X500	0.500	0.500	0.197	0.047	0.002



SCMT_-41

As pressed circumference one face pressed chip-breaker

031246	**SDCT09T3AEEN**	SP4019	0.375	0.375	0.156	Facet	0.001
017242	**SDCT09T3AEFN**	GH1	0.375	0.375	0.156	Facet	0.001
017243	**SDCT1204AEFN**	GH1	0.500	0.500	0.187	Facet	0.001



SDCT_

Ground circumference χ 45° one face pressed chip-breaker

025843	**SDCW09T3EEFR**	GH1	0.375	0.375	0.156	Facet	0.001



SDCW_-FR

Ground circumference χ 75° without chip-breaker

031404	**SDCW1204AETN**	SA9808	0.500	0.500	0.187	Facet	0.007
034516	**SDCW1204AETN**	SP4019	0.500	0.500	0.187	Facet	0.004
034517	**SDCW1204AETN**	X400	0.500	0.500	0.187	Facet	0.006



SDCW_-TN

Ground circumference χ 45° without chip-breaker

034520	**SDET09T308EN**	SP6519	0.375	0.375	0.156	0.031	0.001
017725	**SDET09T308FN**	GH1	0.375	0.375	0.156	0.031	0.001



SDET_

Ground circumference χ 45° one face chip-breaker

015148	**SDEX09T3AEFN-701**	GH1	0.375	0.375	0.156	Facet	0.001
034519	**SDEX09T3AEFN-701**	SP4019	0.375	0.375	0.156	Facet	0.001
015149	**SDEX1204AEFN-701**	GH1	0.500	0.500	0.187	Facet	0.001
034522	**SDEX1204AEFN-701**	SP4019	0.500	0.500	0.187	Facet	0.001



SDEX_-701

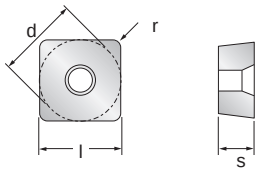
Completely ground χ 45° concave cutting face

017322	**SDHT1204AETN-42**	MP91M	0.500	0.500	0.187	Facet	0.006
031478	**SDHT1204AETN-42**	SP6519	0.500	0.500	0.187	Facet	0.006
017729	**SDHT1204AETN-42**	X500	0.500	0.500	0.187	Facet	0.006



SDHT_-42

Ground circumference χ 45° one face pressed chip-breaker



Product			Dimensions (inch)				
EDP	**Item Description**	**Grade**	d (IC)	l	s	r	h_m min
017320	**SDHT09T3AEEN-421**	MP91M	0.375	0.375	0.156	Facet	0.001
031476	**SDHT09T3AEEN-421**	SP6519	0.375	0.375	0.156	Facet	0.001
015186	**SDHT09T3AEEN-421**	X500	0.375	0.375	0.156	Facet	0.001
017321	**SDHT1204AEEN-421**	MP91M	0.500	0.500	0.187	Facet	0.002
031477	**SDHT1204AEEN-421**	SP6519	0.500	0.500	0.187	Facet	0.002
015187	**SDHT1204AEEN-421**	X500	0.500	0.500	0.187	Facet	0.002
033075	**SDHT09T308EN-422**	SP6519	0.375	0.375	0.156	0.031	0.002
031261	**SDHT09T308EN-422**	X500	0.375	0.375	0.156	0.031	0.002
030890	**SDHT09T3AEEN-422**	SP6519	0.375	0.375	0.156	Facet	0.002
030766	**SDHT09T3AEEN-422**	X500	0.375	0.375	0.156	Facet	0.002
030728	**SDHT120412EN-422**	SP6519	0.500	0.500	0.187	0.047	0.002
030717	**SDHT120412EN-422**	X500	0.500	0.500	0.187	0.047	0.002
033074	**SDHT09T308EN-423**	SP6519	0.375	0.375	0.156	0.031	0.002
031260	**SDHT09T308EN-423**	X500	0.375	0.375	0.156	0.031	0.002
031321	**SDHT120412EN-423**	SP6519	0.500	0.500	0.187	0.047	0.002
031218	**SDHT120412EN-423**	X500	0.500	0.500	0.187	0.047	0.002
017323	**SDHW09T3AETN**	MP91M	0.375	0.375	0.156	Facet	0.004
031575	**SDHW09T3AETN**	SP6519	0.375	0.375	0.156	Facet	0.004
015231	**SDHW09T3AETN**	X500	0.375	0.375	0.156	Facet	0.004
017324	**SDHW1204AETN**	MP91M	0.500	0.500	0.187	Facet	0.006
017730	**SDHW1204AETN**	X500	0.500	0.500	0.187	Facet	0.006
017731	**SDHW1505AETN**	X500	0.625	0.625	0.219	Facet	0.006
026600	**SDKT09T3AEEN-45**	MP91M	0.375	0.375	0.156	Facet	0.002
031481	**SDKT09T3AEEN-45**	SP6519	0.375	0.375	0.156	Facet	0.002
026602	**SDKT09T3AEEN-45**	X500	0.375	0.375	0.156	Facet	0.002
029456	**SDKT1204AEEN-45**	MP91M	0.500	0.500	0.187	Facet	0.002
031532	**SDKT1204AEEN-45**	SP6519	0.500	0.500	0.187	Facet	0.002
029457	**SDKT1204AEEN-45**	X500	0.500	0.500	0.187	Facet	0.002
017325	**SDMT09T308EN-41**	MP91M	0.375	0.375	0.156	0.031	0.002
031479	**SDMT09T308EN-41**	SP6519	0.375	0.375	0.156	0.031	0.002
014410	**SDMT09T308EN-41**	X500	0.375	0.375	0.156	0.031	0.002
017326	**SDMT120412EN-41**	MP91M	0.500	0.500	0.187	0.047	0.002
031480	**SDMT120412EN-41**	SP6519	0.500	0.500	0.187	0.047	0.002
014411	**SDMT120412EN-41**	X500	0.500	0.500	0.187	0.047	0.002
017327	**SDMW09T308TN**	MP91M	0.375	0.375	0.156	0.031	0.006
031482	**SDMW09T308TN**	SP6519	0.375	0.375	0.156	0.031	0.006
015232	**SDMW09T308TN**	X500	0.375	0.375	0.156	0.031	0.006
034518	**SDMW120412TN**	SP6519	0.500	0.500	0.187	0.047	0.006
015233	**SDMW120412TN**	X500	0.500	0.500	0.187	0.047	0.006
012470	**SEHT1204AFER**	MP91M	0.500	0.500	0.187	Facet	0.005
034670	**SEHT1204AFER**	SP6519	0.500	0.500	0.187	Facet	0.005



SDHT_-421

Ground circumference ϰ 45° one face pressed chip-breaker



SDHT_-422

Ground circumference ϰ 45° or 90° one face pressed chip-breaker



SDHT_-423

Ground circumference ϰ 45° or 90° one face pressed chip-breaker



SDHW_

Ground circumference ϰ 45° without chip-breaker



SDKT_-45

Ground wiper facet ϰ 45° one face pressed chip-breaker



SDMT_-41

As pressed circumference one face pressed chip-breaker



SDMW_

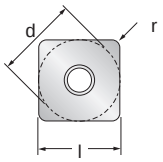
As pressed circumference without chip-breaker



SEHT_

Ground circumference ϰ 45° one face pressed chip-breaker

STELLRAM



Product			Dimensions (inch)				
EDP	**Item Description**	**Grade**	d (IC)	l	s	r	h_m min
012990	**SEHW1204AFER**	MP91M	0.500	0.500	0.187	Facet	0.005
012991	**SEHW1504AFER**	MP91M	0.625	0.625	0.187	Facet	0.005



SEHW_

Ground circumference ⋋ 45° without chip-breaker

034699	**SEKN1203AFEN**	MP91M	0.500	0.500	0.125	Facet	0.005
034671	**SEKN1203AFEN**	SP6519	0.500	0.500	0.125	Facet	0.005
034700	**SEKN1204AFEN**	MP91M	0.500	0.500	0.187	Facet	0.005
034701	**SEKN1504AFEN**	MP91M	0.625	0.625	0.187	Facet	0.005
034672	**SEKN1504AFEN**	SP6519	0.625	0.625	0.187	Facet	0.005



SEKN_

As pressed circumference with ground wiper facets ⋋ 45° one face without chip-breaker

034702	**SEKR1203AFEN**	MP91M	0.500	0.500	0.125	Facet	0.005
034673	**SEKR1203AFEN**	SP6519	0.500	0.500	0.125	Facet	0.005
017863	**SEKR1203AFFN**	GH1	0.500	0.500	0.125	Facet	0.001
031505	**SEKR1203AFTN**	SP6519	0.500	0.500	0.125	Facet	0.005
034703	**SEKR1204AFEN**	MP91M	0.500	0.500	0.187	Facet	0.005
034704	**SEKR1504AFEN**	MP91M	0.625	0.625	0.187	Facet	0.005



SEKR_

As pressed circumference with ground wiper facets ⋋ 45° one face without chip-breaker

030387	**SEKT13T3AZEN-41**	MP91M	0.528	0.528	0.156	Facet	0.002
030386	**SEKT13T3AZEN-41**	SC3025	0.528	0.528	0.156	Facet	0.002
031537	**SEKT13T3AZEN-41**	SP6519	0.528	0.528	0.156	Facet	0.002
030384	**SEKT13T3AZEN-41**	X500	0.528	0.528	0.156	Facet	0.002



SEKT_-41

As pressed circumference with ground wiper facets ⋋ 45° with one face pressed chip-breaker

022114	**SEKT1204AFER-45**	MP91M	0.500	0.500	0.187	Facet	0.002
022113	**SEKT1204AFER-45**	X500	0.500	0.500	0.187	Facet	0.002



SEKT_-45

As pressed circumference with ground wiper facets ⋋ 45° with one face pressed chip-breaker

029693	**SEMN1203AFEN**	MP91M	0.500	0.500	0.125	Facet	0.004



SEMN_

As pressed circumference without chip-breaker

029694	**SEMR1203AFEN**	MP91M	0.500	0.500	0.125	Facet	0.004



SEMR_

As pressed circumference one face pressed chip-breaker

017329	**SOMT12M612SN-B**	MP91M	0.500	0.500	0.236	0.047	0.006
031506	**SOMT12M612SN-B**	SP6519	0.500	0.500	0.236	0.047	0.006
015190	**SOMT12M612SN-B**	X500	0.500	0.500	0.236	0.047	0.006
017330	**SOMT15M612SN-B**	MP91M	0.625	0.625	0.236	0.047	0.006
031557	**SOMT15M612SN-B**	SP6519	0.625	0.625	0.236	0.047	0.006
015192	**SOMT15M612SN-B**	X500	0.625	0.625	0.236	0.047	0.006



SOMT_

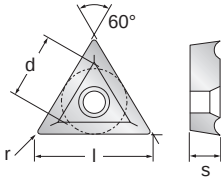
As pressed circumference one face pressed chip-breaker

014413	**SPEW060304SN**	X500	0.250	0.250	0.125	0.016	0.006



SPEW_

Ground circumference without chip-breaker



Product			Dimensions (inch)				
EDP	**Item Description**	**Grade**	d (IC)	l	s	r	h_m min
034674	**SPGH120412E-2C**	SP6519	0.500	0.476	0.187	0.047	0.002



SPGH_-2C

Ground circumference one face pressed chip-breaker

011341	**SPGN090308E**	MP91M	0.375	0.375	0.125	0.031	0.001
011342	**SPGN120308E**	MP91M	0.500	0.500	0.125	0.031	0.001
011343	**SPGN120412E**	MP91M	0.500	0.500	0.187	0.047	0.001
011641	**SPGN190412E**	MP91M	0.750	0.750	0.187	0.047	0.002



SPGN_

Ground circumferenceone face without chip-breaker

017237	**SPHX12M512EN**	GH1	0.500	0.500	0.197	0.047	0.001
031455	**SPHX12M512EN**	SA9608	0.500	0.500	0.197	0.047	0.001



SPHX_

Ground circumference with ground chip-breaker–special wiper insert

034675	**SPKN1203EDR**	SP6519	0.500	0.500	0.125	Facet	0.004
000458	**SPKN1203EDFR**	GH1	0.500	0.500	0.125	Facet	0.001
012476	**SPKN1203EDKR**	MP91M	0.500	0.500	0.125	Facet	0.008



SPKN_

As pressed circumference ϰ 45° with ground facet without chip-breaker

034676	**TCLT16T3PPTR**	SP4019	0.375	0.650	0.156	Facet	0.006



TCLT_

As pressed circumference one face pressed chip-breaker

034677	**TCMT22M512T**	SP6519	0.500	0.866	0.197	0.047	0.001



TCMT_

As pressed circumference one face pressed chip-breaker

034535	**TCMX16T308E-ZR**	SP4019	0.375	0.650	0.156	0.031	0.002



TCMX_-ZR

Ground clearance ϰ 45° especially for 7745VT 16 WA020R, with pressed chip-breaker

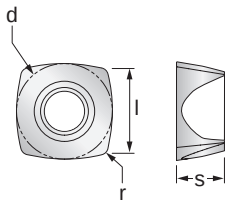
011340	**TPGN160308E**	MP91M	0.375	0.650	0.125	0.031	0.002



TPGN_

Ground circumference without chip-breaker

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Product			Dimensions (inch)				
EDP	**Item Description**	**Grade**	d (IC)	l	s	r	h_m min
012499	**TPKN1603PDTR**	MP91M	0.375	0.650	0.125	Facet	0.002
034681	**TPKN1603PDTR**	SP6519	0.375	0.650	0.125	Facet	0.002
012501	**TPKN2204PDTR**	MP91M	0.500	0.866	0.187	Facet	0.002
034682	**TPKN2204PDTR**	SP6519	0.500	0.866	0.187	Facet	0.002



TPKN_

As pressed circumference ϰ 60° with ground facet without chip-breaker

034683	**TPKR2204PDER**	SP6519	0.500	0.866	0.187	Facet	0.002



TPKR_

As pressed circumference ϰ 60° with one face pressed chip-breaker

024947	**TPMT110204E-M**	X500	0.250	0.433	0.094	0.016	0.001



TPMT_-M

As pressed circumference one face pressed chip-breaker ϰ 45° and ϰ 60°.

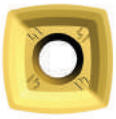
012503	**TPUN220408E**	MP91M	0.500	0.866	0.187	0.031	0.002



TPUN_

As pressed circumference without chip-breaker

033067	**XDLT090408ER-D41**	SC6525	0.375	0.375	0.187	0.031	0.002
031535	**XDLT090408ER-D41**	SP6519	0.375	0.375	0.187	0.031	0.002
029685	**XDLT090408ER-D41**	X500	0.375	0.375	0.187	0.031	0.002
033068	**XDLT120508ER-D41**	SC6525	0.500	0.500	0.219	0.031	0.002
031534	**XDLT120508ER-D41**	SP6519	0.500	0.500	0.219	0.031	0.002
029682	**XDLT120508ER-D41**	X500	0.500	0.500	0.219	0.031	0.002



XDLT_-D41

Ground circumference one face pressed chip-breaker

030854	**XDLT090412ER-D411**	SP6519	0.375	0.375	0.187	0.047	0.002
030853	**XDLT090412ER-D411**	X500	0.375	0.375	0.187	0.047	0.002
030792	**XDLT120512ER-D411**	SP6519	0.500	0.500	0.219	0.047	0.002
030783	**XDLT120512ER-D411**	X500	0.500	0.500	0.219	0.047	0.002



XDLT_-D411

Ground circumference one face pressed chip-breaker

029637	**XDLT090408ER-D721**	GH2	0.375	0.375	0.187	0.031	0.001
029638	**XDLT120508ER-D721**	GH2	0.500	0.500	0.219	0.031	0.001



XDLT_-D721

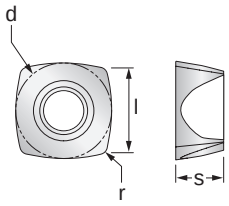
Ground circumference one face pressed chip-breaker

029486	**XDLW090408SR-D**	SC3025	0.375	0.375	0.187	0.031	0.010
029487	**XDLW090408SR-D**	X400	0.375	0.375	0.187	0.031	0.010
029485	**XDLW090408SR-D**	X500	0.375	0.375	0.187	0.031	0.010
029489	**XDLW120508SR-D**	SC3025	0.500	0.500	0.219	0.031	0.012
029490	**XDLW120508SR-D**	X400	0.500	0.500	0.219	0.031	0.012
029488	**XDLW120508SR-D**	X500	0.500	0.500	0.219	0.031	0.012



XDLW_-D

Ground circumference without chip-breaker



Product			Dimensions (inch)				
EDP	**Item Description**	**Grade**	d (IC)	l	s	r	h_m min
033069	**XELT160512ER-D41**	SC6525	0.661	0.661	0.219	0.047	0.004
031294	**XELT160512ER-D41**	SP6519	0.661	0.661	0.219	0.047	0.004
031293	**XELT160512ER-D41**	X500	0.661	0.661	0.219	0.047	0.004



XELT_-D41

Ground circumference one face pressed chip-breaker

031292	**XELW160512SR-D**	SC3025	0.661	0.661	0.219	0.047	0.012
031291	**XELW160512SR-D**	X400	0.661	0.661	0.219	0.047	0.012



XELW_-D

Ground circumference without chip-breaker

033066	**XPLT060308ER-D41**	SC6525	0.276	0.276	0.125	0.031	0.002
031538	**XPLT060308ER-D41**	SP6519	0.276	0.276	0.125	0.031	0.002
030403	**XPLT060308ER-D41**	X400	0.276	0.276	0.125	0.031	0.002
030402	**XPLT060308ER-D41**	X500	0.276	0.276	0.125	0.031	0.002



XPLT_-D41

Ground circumference one face pressed chip-breaker

030740	**XPNT06/062.51.5.R-F**	SP6519	0.336	0.783	0.156	0.375	0.002
030752	**XPNT12/1254.R-F**	SP6519	0.669	1.575	0.312	0.750	0.002
030737	**XPNT05/0522.R-F**	SP6519	0.291	0.685	0.125	0.312	0.002
030743	**XPNT20/20T306.R-F**	SP6519	0.354	0.821	0.156	10mm	0.002
030746	**XPNT08/0832.R-F**	SP6519	0.433	1.024	0.187	0.500	0.002
030749	**XPNT10/1043.R-F**	SP6519	0.555	1.315	0.250	0.625	0.002
030755	**XPNT40/40T716.R-F**	SP6519	0.709	1.647	0.313	20mm	0.002
030758	**XPNT16/1654.R-F**	SP6519	0.876	2.081	0.313	1.000	0.002



XPNT_-F

Ground circumference one face pressed chip-breaker

029028	**ZDCX140320FR-701**	GH1	0.299	0.663	0.125	0.079	0.001
026019	**ZDCX140325FR-701**	GH1	0.299	0.663	0.125	0.098	0.001
029029	**ZDCX140330FR-701**	GH1	0.299	0.663	0.125	0.118	0.001
026020	**ZDCX140340FR-701**	GH1	0.299	0.663	0.125	0.157	0.001
029027	**ZDCX1403PDFR-701**	GH1	0.299	0.663	0.125	Facet	0.001



ZDCX_-701

Completely ground ϰ 90° concave cutting face

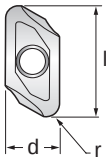
025785	**ZDCX330402ER-701**	GH2	0.531	1.457	0.187	0.008	0.001
023734	**ZDCX330425ER-701**	GH2	0.531	1.457	0.187	0.098	0.001
034684	**ZDCX330430ER-701**	GH2	0.531	1.457	0.187	0.118	0.001
025786	**ZDCX330440ER-701**	GH2	0.531	1.457	0.187	0.157	0.001
034685	**ZDCX330450ER-701**	GH2	0.531	1.457	0.187	0.197	0.001
034686	**ZDCX330460ER-701**	GH2	0.531	1.457	0.187	0.236	0.001
034687	**ZDCX330480ER-701**	GH2	0.531	1.457	0.187	0.315	0.001
025770	**ZDCX530402ER-701**	GH2	0.583	2.520	0.187	0.008	0.001
034688	**ZDCX530425ER-701**	GH2	0.583	2.520	0.187	0.098	0.001
017479	**ZDCX530430ER-701**	GH2	0.583	2.520	0.187	0.118	0.001
025769	**ZDCX530440ER-701**	GH2	0.583	2.520	0.187	0.157	0.001
034689	**ZDCX530450ER-701**	GH2	0.583	2.520	0.187	0.197	0.001
027195	**ZDCX530460ER-701**	GH2	0.583	2.520	0.187	0.236	0.001
034693	**ZDCX530480ER-701**	GH2	0.583	2.520	0.187	0.315	0.001



ZDCX_-701

Completely ground ϰ 90° concave cutting face

STELLRAM



Product			Dimensions (inch)				
EDP	**Item Description**	**Grade**	d (IC)	l	s	r	h_m min
031384	**ZDET16M504FR-721**	GH1	0.445	0.902	0.197	0.016	0.001
030928	**ZDET16M508FR-721**	GH1	0.445	0.902	0.197	0.031	0.001
031385	**ZDET16M512FR-721**	GH1	0.445	0.902	0.197	0.047	0.001
030929	**ZDET16M516FR-721**	GH1	0.445	0.902	0.197	0.063	0.001
030930	**ZDET16M520FR-721**	GH1	0.445	0.902	0.197	0.079	0.001
030931	**ZDET16M525FR-721**	GH1	0.445	0.902	0.197	0.098	0.001
030932	**ZDET16M530FR-721**	GH1	0.445	0.902	0.197	0.118	0.001
030933	**ZDET16M532FR-721**	GH1	0.445	0.902	0.197	0.125	0.001
030934	**ZDET16M540FR-721**	GH1	0.445	0.902	0.197	0.157	0.001
030935	**ZDET16M550FR-721**	GH1	0.445	0.902	0.197	0.197	0.001
030936	**ZDET16M560FR-721**	GH1	0.445	0.902	0.197	0.236	0.001
030927	**ZDET16M5PDFR-721**	GH1	0.445	0.902	0.197	Facet	0.001
025787	**ZECX32T302ER-701**	GH2	0.469	1.457	0.156	0.008	0.001
029643	**ZECX32T325ER-701**	GH2	0.469	1.457	0.156	0.098	0.001
017485	**ZECX32T330ER-701**	GH2	0.469	1.457	0.156	0.118	0.001
025788	**ZECX32T340ER-701**	GH2	0.469	1.457	0.156	0.157	0.001
029644	**ZECX32T350ER-701**	GH2	0.469	1.457	0.156	0.197	0.001
034690	**ZECX32T360ER-701**	GH2	0.469	1.457	0.156	0.236	0.001
034691	**ZECX32T380ER-701**	GH2	0.469	1.457	0.156	0.315	0.001



ZDET_-721

Ground circumference ϰ 90° one face pressed chip-breaker



ZECX_-701

Completely ground ϰ 90° concave cutting face

3 Examples *(continued on next page)*

A	5505	V	X	-	08	S
C	5182	V	Z	-	32	F
C	7792	V	X	D	09	C
1	2	3	4	5	6	7

1 Unit Measure

A = Shank or Cutting diameter: Inch or Metric
C = Shank and Cutting diameter: Inch

A with body fixation (7), type S = Modular body fixation:
Metric shank / Inch Cutting diameter

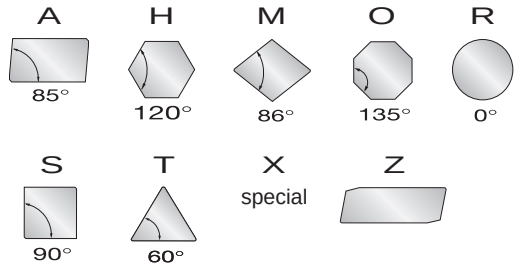
2 Series Type

Series Number 5505

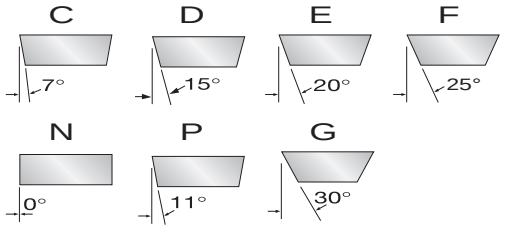
3 Insert Fixation

V = Screw

4 Insert Shape



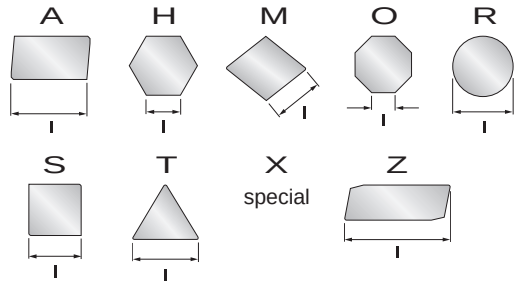
5 Insert Clearance Angle



Other normal clearances requiring **SPECIAL** specification Symbol O.

6 Insert Size

Insert Edge Length l = (mm) millimeters



7 Body Fixation

– = Shell Mill
C = Cylindrical Shank
F = Caterpillar Vee Flange
G50 = ISO 50 Taper DIN 6987
H = HSK
S = Modular head
W = Weldon Shank

A	-	1.00		-		R	2.37		-				
A	50	/	1.25	-		R	3.00	-	4				
A	-		1.25	Z03		R	3		-				
8		9		10		11		12		13		14	

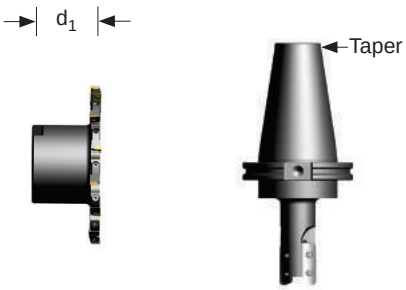
8 Coolant

A = Through tool coolant

No “A” = without through tool coolant

9 Shank Diameter

or CAT-VEE flange Taper size



If different to the cutting diameter D

or taper size if integral CAT-VEE.

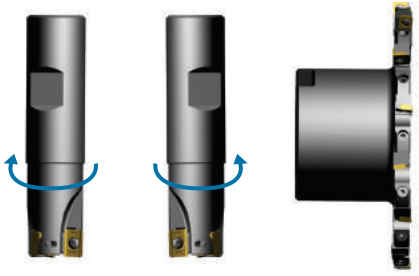
10 Cutting Diameter



11 Teeth

Z = number of teeth or flutes

12 Position

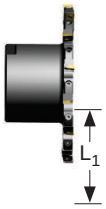


R Right Hand

L Left Hand

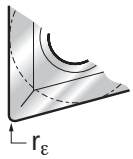
N Neutral Hand

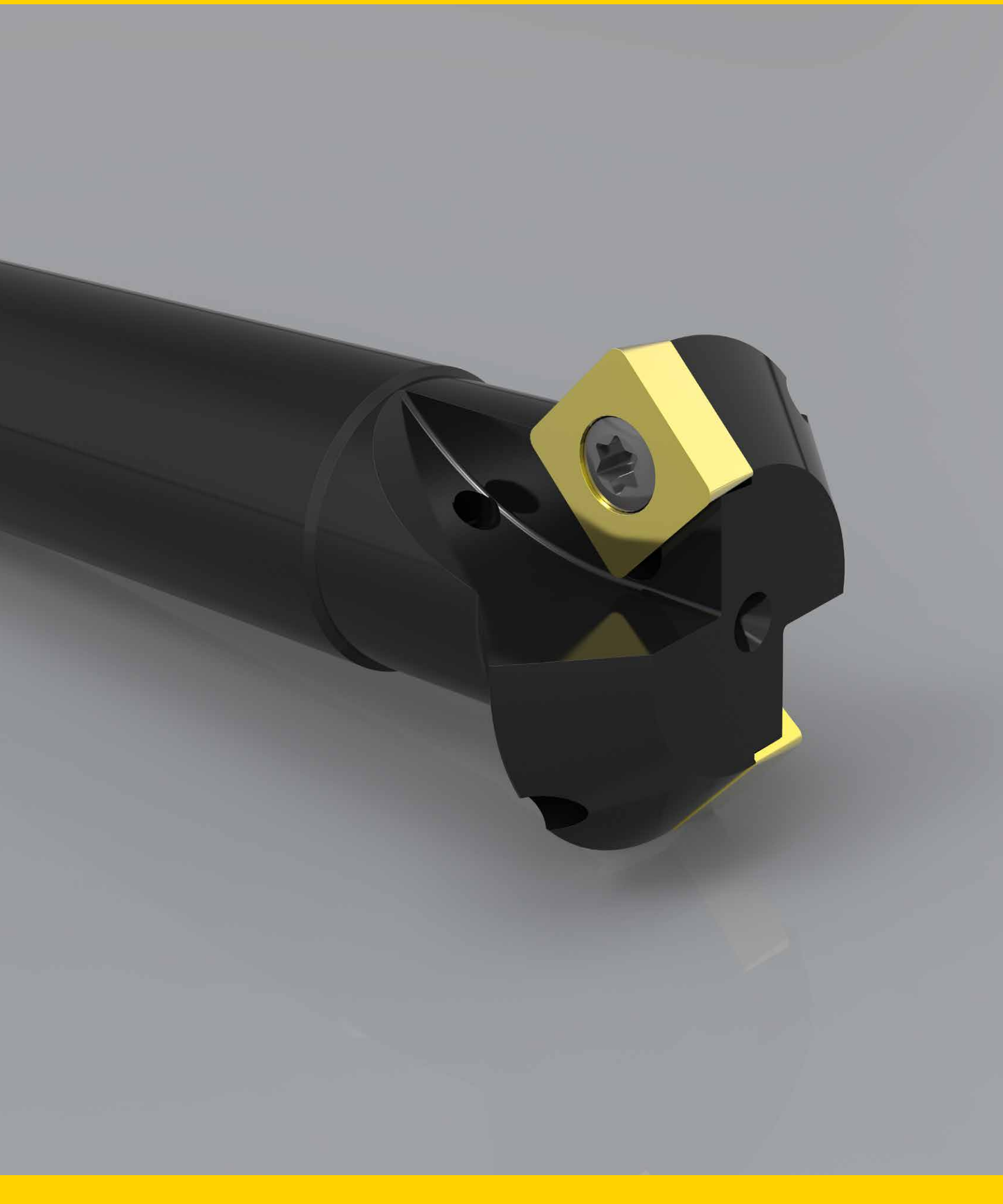
13 Reach Length

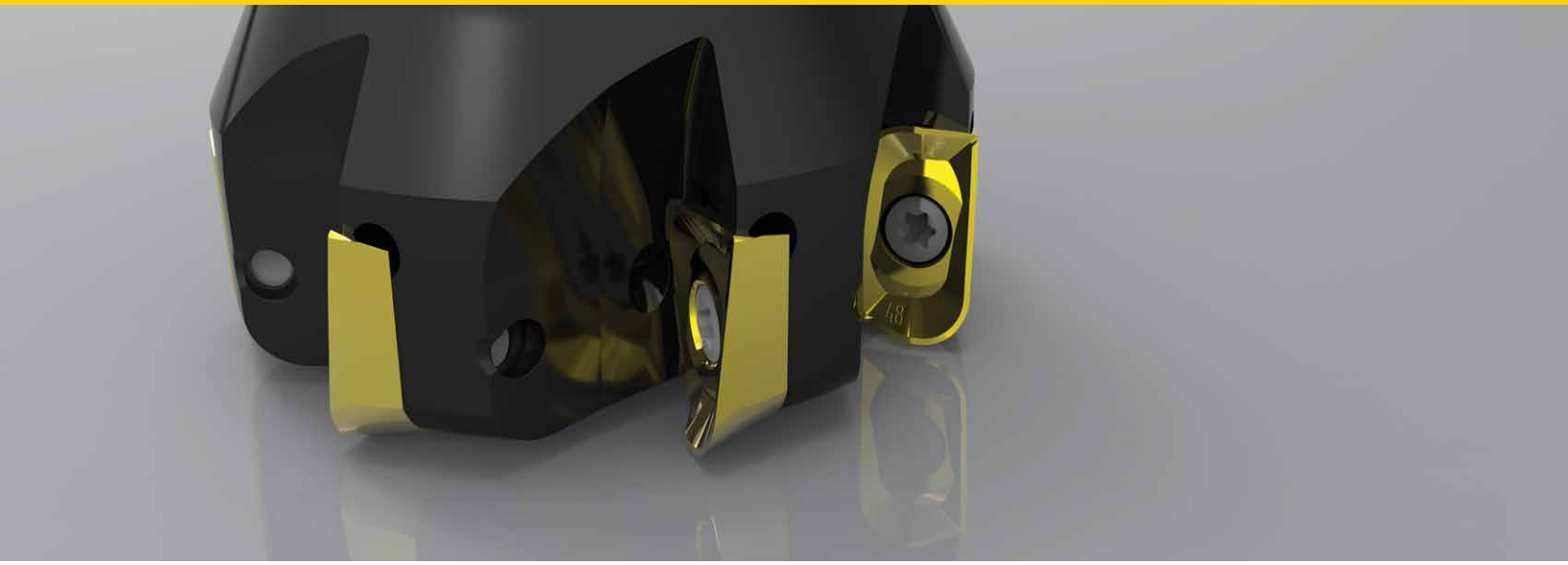


14 Max. Insert Radius

In Metric







STELLRAM



90 DEGREE CUTTERS

Kennametal offers a number of 90 degree cutters for shoulder milling, face milling and slotting.

7690VA cutters are available in a wide range of depth of cut variations. Inserts are available in 9mm, 12mm and 16mm sizes. An extensive range of geometries and grades are available for all applications.

Applications:

The 7690VA series are ideal for roughing, semi-finishing and finishing of Steel, Alloyed Steel, Stainless Steel, Cast Iron, High Temperature Alloys and Aluminum Alloys.

The **7690VAP** series are ideal for roughing, semi-finishing and finishing of Stainless Steel, High Temperature Alloys plus Low Carbon Steels. This cutter is designed to utilize one geometry of insert only - APET1604...ER-48

Note: When an approx. 90° shoulder is required then the following geometries need to be used.

7690VA09: Geometry -42
7690VA12: Geometry -46
7690VA16: Geometry -42, -46 and the flat insert APFW...
7690VAP16: Geometry -48

See the 90° deviations charts on pages A61-A64.

7690VA

7690VA09:
Maximum a_p = 0.335"
Diameter Range = 0.375" to 2.500"

7690VA12:
Maximum a_p = 0.433"
Diameter Range = 0.750" to 3.000"

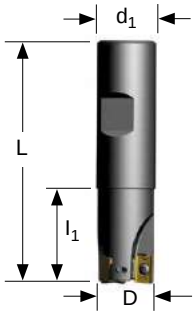
7690VA16:
Maximum a_p = 0.600"
Diameter Range = 0.750" to 5.000"
Note: Larger diameter Shell Mill Fixation cutters with interchangeable cartridges are available. Please see page A111.

7690VAP16:
Maximum a_p = 0.622"
Diameter Range = 1.500" to 4.000"

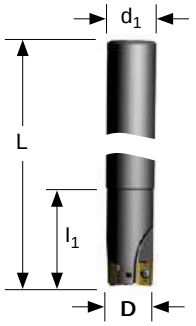


STELLRAM

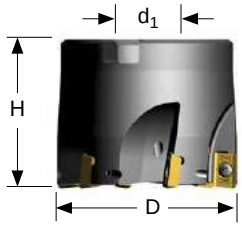




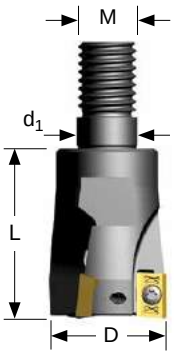
Weldon Shank



Cylindrical Shank



Shell Mill Fixation



Modular Head



Depth of Cut (a_p)

Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D	L/H	l_1	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7690VA09 Weldon Shank												
014869	**C7690VA09WA.375R**	0.375	2.750	0.800	0.625	0.335	1	*015267*	F2505TP	*018488*	T7	7.08
014870	**C7690VA09WA.500R**	0.500	2.900	1.000	0.625	0.335	1	*015267*	F2505TP	*018488*	T7	7.08
014871	**C7690VA09WA.625R**	0.625	3.100	1.190	0.625	0.335	2	*015267*	F2505TP	*018488*	T7	7.08
014872	**C7690VA09WA.750R**	0.750	3.400	1.370	0.750	0.335	3	*015267*	F2505TP	*018488*	T7	7.08
014873	**C7690VA09WA1.00R**	1.000	3.900	1.600	1.000	0.335	4	*015268*	F2506TP	*018488*	T7	7.08
014874	**C7690VA09WA1.25R**	1.250	3.900	1.600	1.000	0.335	5	*015268*	F2506TP	*018488*	T7	7.08
7690VA09 Cylindrical Shank - Medium and Fine Pitch												
031110	**C7690VA09CA.625Z2R1.2**	0.625	5.910	1.180	0.625	0.335	2	*015267*	F2505TP	*018488*	T7	7.08
031111	**C7690VA09CA.75Z2R1.6**	0.750	7.090	1.570	0.750	0.335	2	*015267*	F2505TP	*018488*	T7	7.08
031112	**C7690VA09CA.75Z3R1.6**	0.750	7.090	1.570	0.750	0.335	3	*015267*	F2505TP	*018488*	T7	7.08
031113	**C7690VA09CA1.00Z3R2.0**	1.000	7.870	1.960	1.000	0.335	3	*015268*	F2506TP	*018488*	T7	7.08
7690VA09 Shell Mill Fixation												
014866	**C7690VA09-A1.50R**	1.500	1.260	-	0.500	0.335	6	*015268*	F2506TP	*018488*	T7	7.08
014867	**C7690VA09-A2.00R**	2.000	1.570	-	0.750	0.335	7	*015268*	F2506TP	*018488*	T7	7.08
014868	**C7690VA09-A2.50R**	2.500	1.570	-	0.750	0.335	8	*015268*	F2506TP	*018488*	T7	7.08

Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D	L/H	M	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7690VA09 Modular Head - Medium and Fine Pitch												
031119	**A7690VA09SA.625Z2R1**	0.625	1.000	M8	0.335	0.335	2	*015267*	F2505TP	*018488*	T7	7.08
031120	**A7690VA09SA.75Z3R1.4**	0.750	1.377	M10	0.413	0.335	3	*015267*	F2505TP	*018488*	T7	7.08
031121	**A7690VA09SA1.00Z3R1.4**	1.000	1.377	M12	0.492	0.335	3	*015268*	F2506TP	*018488*	T7	7.08
031122	**A7690VA09SA1.00Z4R1.4**	1.000	1.377	M12	0.492	0.335	4	*015268*	F2506TP	*018488*	T7	7.08
031123	**A7690VA09SA1.25Z5R1.4**	1.250	1.377	M16	0.669	0.335	5	*015268*	F2506TP	*018488*	T7	7.08

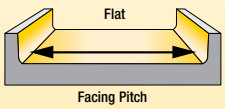
Note: For cylindrical shank extensions in high density alloy with through coolant refer to page A78.

Note: To use radius larger than 0.047" the cutter body needs to be modified for additional clearance by the end user.

7690VA09 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
014869	**C7690VA09WA.375R**	0.375	9.80	0.329	0.671	0.040	85,000
014870	**C7690VA09WA.500R**	0.500	8.00	0.579	0.921	0.040	78,000
014871	**C7690VA09WA.625R**	0.625	5.10	0.829	1.171	0.040	63,500
014872	**C7690VA09WA.750R**	0.750	3.60	1.079	1.421	0.040	55,000
014873	**C7690VA09WA1.00R**	1.000	2.40	1.579	1.921	0.040	45,000
014874	**C7690VA09WA1.25R**	1.250	1.70	2.079	2.421	0.040	39,000
031110	**C7690VA09CA.625Z2R1.2**	0.625	5.10	0.829	1.171	0.040	63,500
031111	**C7690VA09CA.75Z2R1.6**	0.750	3.60	1.079	1.421	0.040	55,000
031112	**C7690VA09CA.75Z3R1.6**	0.750	3.60	1.079	1.421	0.040	55,000
031113	**C7690VA09CA1.00Z3R2.0**	1.000	2.40	1.579	1.921	0.040	45,000
014866	**C7690VA09-A1.50R**	1.500	1.40	2.579	2.921	0.040	35,000
014867	**C7690VA09-A2.00R**	2.000	1.00	3.579	3.921	0.040	29,500
014868	**C7690VA09-A2.50R**	2.500	0.80	4.579	4.921	0.040	26,000
031119	**A7690VA09SA.625Z2R1**	0.625	5.10	0.829	1.171	0.040	63,500
031120	**A7690VA09SA.75Z3R1.4**	0.750	3.60	1.079	1.421	0.040	55,000
031121	**A7690VA09SA1.00Z3R1.4**	1.000	2.40	1.579	1.921	0.040	45,000
031122	**A7690VA09SA1.00Z4R1.4**	1.000	2.40	1.579	1.921	0.040	45,000
031123	**A7690VA09SA1.25Z5R1.4**	1.250	1.70	2.079	2.421	0.040	39,000





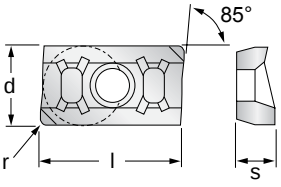
Note: If using a insert with radius, then the facing pitch for all 7690VA series cutters is equal to the cutting diameter (D) minus 2 x chosen radius.

STELLRAM


ADET09-42


ADKT09-441


ADKT09-43





Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.335	a_p min. - max. 0.040 - 0.160	a_e min. - max. 0.004 - 0.040					
031076	ADET090308SR-42	X500	♦	■	-	0.250	0.362	0.125	0.031	0.004
031075	ADET090308SR-42	SP6519	■	♦	♦	0.250	0.362	0.125	0.031	0.004
024913	ADET090310SR-42	X500	♦	■	-	0.250	0.362	0.125	0.040	0.004
031094	ADET090310SR-42	SP6519	■	♦	♦	0.250	0.362	0.125	0.040	0.004
031095	ADET090312SR-42	X500	♦	■	-	0.250	0.362	0.125	0.047	0.004
031096	ADET090312SR-42	SP6519	■	♦	♦	0.250	0.362	0.125	0.047	0.004
030942	ADET090316SR-42	X500	♦	■	-	0.250	0.362	0.125	0.063	0.004
030980	ADET090316SR-42	SP6519	■	♦	♦	0.250	0.362	0.125	0.063	0.004
031097	ADET090320SR-42	X500	♦	■	-	0.250	0.362	0.125	0.079	0.004
031098	ADET090320SR-42	SP6519	■	♦	♦	0.250	0.362	0.125	0.079	0.004
031099	ADET090324SR-42	X500	♦	■	-	0.250	0.362	0.125	0.094	0.004
031100	ADET090324SR-42	SP6519	■	♦	♦	0.250	0.362	0.125	0.094	0.004
031101	ADET090330SR-42	X500	♦	■	-	0.250	0.362	0.125	0.118	0.004
031102	ADET090330SR-42	SP6519	■	♦	♦	0.250	0.362	0.125	0.118	0.004
031103	ADET090332SR-42	X500	♦	■	-	0.250	0.362	0.125	0.125	0.004
031104	ADET090332SR-42	SP6519	■	♦	♦	0.250	0.362	0.125	0.125	0.004
031092	ADET0903PDSR-42	X500	♦	■	-	0.250	0.362	0.125	Facet	0.004
031093	ADET0903PDSR-42	SP6519	■	♦	♦	0.250	0.362	0.125	Facet	0.004
024916	ADET0903PDFR-441	GH1	♦	♦	♦	0.250	0.362	0.125	Facet	0.001
015150	ADKT0903PDER-43	X500	●	●	-	0.250	0.362	0.125	Facet	0.003
031463	ADKT0903PDER-43	SP6519	♦	♦	-	0.250	0.362	0.125	Facet	0.003
017286	ADKT0903PDER-43	MP91M	■	■	-	0.250	0.362	0.125	Facet	0.003

Machining Choice: ♦ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

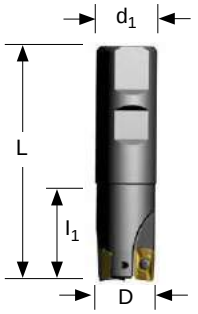
7690VA09 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
SR-42	X500	Facing	-	-	0.002 - 0.006	0.002 - 0.005	-	-	-	-	-	0.002 - 0.005	0.002 - 0.005	0.002 - 0.005	0.002 - 0.006	-	-
SR-42	SP6519	Facing	0.002 - 0.006	0.002 - 0.005	0.002 - 0.006	0.002 - 0.004	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	-	-
FR-441	GH1	Facing	-	-	-	-	-	-	-	0.001 - 0.006	0.001 - 0.005	-	-	-	-	-	-
ER-43	X500	Facing	0.002 - 0.006	0.002 - 0.005	-	0.002 - 0.004	-	-	-	-	-	-	-	-	-	-	-
ER-43	SP6519	Facing	0.002 - 0.005	0.002 - 0.004	0.002 - 0.004	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	-	-	-	-	-	-	-	-
ER-43	MP91M	Facing	0.002 - 0.006	-	-	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	-	-	-	-	-	-	-	-

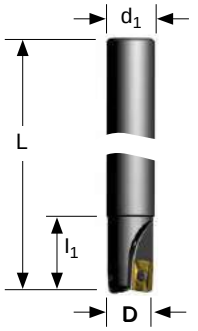
Note: HTA = High Temperature Alloys. Speed recommendations can be found on page A60.

STELLRAM

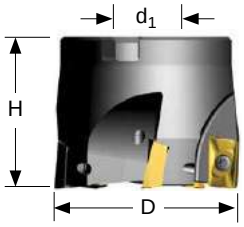




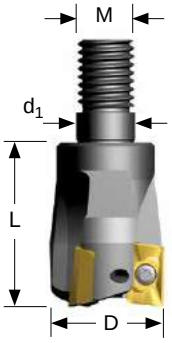
Weldon Shank



Cylindrical Shank



Shell Mill Fixation



Modular Head



Depth of Cut (a_p)

Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D	L/H	l_1	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7690VA12 Weldon Shank - Medium and Fine Pitch												
027935	**C7690VA12WA.750Z02R1.37**	0.750	3.400	1.377	0.750	0.433	2	*027860*	F3007T	*022157*	T8	12.40
027936	**C7690VA12WA1.00Z02R1.60**	1.000	3.900	1.600	1.000	0.433	2	*027860*	F3007T	*022157*	T8	12.40
027939	**C7690VA12WA1.00Z03R1.60**	1.000	3.900	1.600	1.000	0.433	3	*027860*	F3007T	*022157*	T8	12.40
027937	**C7690VA12WA1.25Z03R1.60**	1.250	3.900	1.600	1.250	0.433	3	*027860*	F3007T	*022157*	T8	12.40
027940	**C7690VA12WA1.25Z04R1.60**	1.250	3.900	1.600	1.250	0.433	4	*027860*	F3007T	*022157*	T8	12.40
027938	**C7690VA12WA1.50Z04R2.03**	1.500	4.330	2.030	1.250	0.433	4	*027860*	F3007T	*022157*	T8	12.40
027941	**C7690VA12WA1.50Z05R2.03**	1.500	4.330	2.030	1.250	0.433	5	*027860*	F3007T	*022157*	T8	12.40
7690VA12 Cylindrical Shank - Medium and Fine Pitch												
031457	**C7690VA12CA.75Z2R1.6**	0.750	7.090	1.570	0.750	0.433	2	*027860*	F3007T	*022157*	T8	12.40
031458	**C7690VA12CA1.00Z2R2.0**	1.000	8.000	1.970	1.000	0.433	2	*027860*	F3007T	*022157*	T8	12.40
031459	**C7690VA12CA1.00Z3R2.0**	1.000	8.000	1.970	1.000	0.433	3	*027860*	F3007T	*022157*	T8	12.40
031460	**C7690VA12CA1.25Z3R2.7**	1.250	9.850	2.760	1.250	0.433	3	*027860*	F3007T	*022157*	T8	12.40
031461	**C7690VA12CA1.25Z4R2.7**	1.250	9.850	2.760	1.250	0.433	4	*027860*	F3007T	*022157*	T8	12.40
7690VA12 Shell Mill Fixation - Medium and Fine Pitch												
027945	**C7690VA12-A1.50Z04R**	1.500	1.260	-	0.500	0.433	4	*027860*	F3007T	*022157*	T8	12.40
027949	**C7690VA12-A1.50Z05R**	1.500	1.260	-	0.500	0.433	5	*027860*	F3007T	*022157*	T8	12.40
027946	**C7690VA12-A2.00Z5R**	2.000	1.570	-	0.750	0.433	5	*027860*	F3007T	*022157*	T8	12.40
027950	**C7690VA12-A2.00Z06R**	2.000	1.570	-	0.750	0.433	6	*027860*	F3007T	*022157*	T8	12.40
027947	**C7690VA12-A2.50Z06R**	2.500	1.570	-	0.750	0.433	6	*027860*	F3007T	*022157*	T8	12.40
027951	**C7690VA12-A2.50Z08R**	2.500	1.570	-	0.750	0.433	8	*027860*	F3007T	*022157*	T8	12.40
027948	**C7690VA12-A3.00Z07R**	3.000	1.960	-	1.000	0.433	7	*027860*	F3007T	*022157*	T8	12.40
027952	**C7690VA12-A3.00Z09R**	3.000	1.960	-	1.000	0.433	9	*027860*	F3007T	*022157*	T8	12.40

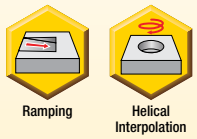
Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D	L/H	M	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7690VA12 Modular Head - Medium and Fine Pitch												
030996	**A7690VA12SA.75Z2R1.4**	0.750	1.377	M10	0.413	0.433	2	*027860*	F3007T	*022157*	T8	12.40
031200	**A7690VA12SA1.00Z2R1.4**	1.000	1.377	M12	0.492	0.433	2	*027860*	F3007T	*022157*	T8	12.40
031201	**A7690VA12SA1.00Z3R1.4**	1.000	1.377	M12	0.492	0.433	3	*027860*	F3007T	*022157*	T8	12.40
031202	**A7690VA12SA1.25Z3R1.7**	1.250	1.693	M16	0.669	0.433	3	*027860*	F3007T	*022157*	T8	12.40
031181	**A7690VA12SA1.25Z4R1.7**	1.250	1.693	M16	0.669	0.433	4	*027860*	F3007T	*022157*	T8	12.40

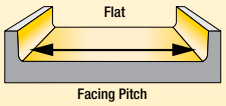
Note: For cylindrical shank extensions in high density alloy with through coolant refer to page A78.

Note: To use radius larger than 0.063" the cutter body needs to be modified for additional clearance by the end user.

7690VA12 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		ap max Helical / Linear	Max RPM
027935	**C7690VA12WA.750Z02R1.37**	0.750	6.05	0.949	1.421	0.059	45,000
027936	**C7690VA12WA1.00Z02R1.60**	1.000	3.54	1.449	1.921	0.059	35,500
027939	**C7690VA12WA1.00Z03R1.60**	1.000	3.54	1.449	1.921	0.059	35,500
027937	**C7690VA12WA1.25Z03R1.60**	1.250	2.27	1.949	2.421	0.059	30,000
027940	**C7690VA12WA1.25Z04R1.60**	1.250	2.27	1.949	2.421	0.059	30,000
027938	**C7690VA12WA1.50Z04R2.03**	1.500	1.72	2.449	2.921	0.059	27,000
027941	**C7690VA12WA1.50Z05R2.03**	1.500	1.72	2.449	2.921	0.059	27,000
031457	**C7690VA12CA.75Z2R1.6**	0.750	6.05	0.949	1.421	0.059	45,000
031458	**C7690VA12CA1.00Z2R2.0**	1.000	3.54	1.449	1.921	0.059	35,500
031459	**C7690VA12CA1.00Z3R2.0**	1.000	3.54	1.449	1.921	0.059	35,500
031460	**C7690VA12CA1.25Z3R2.7**	1.250	2.27	1.949	2.421	0.059	30,000
031461	**C7690VA12CA1.25Z4R2.7**	1.250	2.27	1.949	2.421	0.059	30,000
027945	**C7690VA12-A1.50Z04R**	1.500	1.72	2.449	2.921	0.059	27,000
027949	**C7690VA12-A1.50Z05R**	1.500	1.72	2.449	2.921	0.059	27,000
027946	**C7690VA12-A2.00Z5R**	2.000	1.21	3.449	3.921	0.059	22,500
027950	**C7690VA12-A2.00Z06R**	2.000	1.21	3.449	3.921	0.059	22,500
027947	**C7690VA12-A2.50Z06R**	2.500	0.91	4.449	4.921	0.059	20,000
027951	**C7690VA12-A2.50Z08R**	2.500	0.91	4.449	4.921	0.059	20,000
027948	**C7690VA12-A3.00Z07R**	3.000	0.91	4.449	4.921	0.059	20,000
027952	**C7690VA12-A3.00Z09R**	3.000	0.72	5.449	5.921	0.059	18,000
030996	**A7690VA12SA.75Z2R1.4**	0.750	6.05	0.949	1.421	0.059	45,000
031200	**A7690VA12SA1.00Z2R1.4**	1.000	3.54	1.449	1.921	0.059	35,500
031201	**A7690VA12SA1.00Z3R1.4**	1.000	3.54	1.449	1.921	0.059	35,500
031202	**A7690VA12SA1.25Z3R1.7**	1.250	2.27	1.949	2.421	0.059	30,000
031181	**A7690VA12SA1.25Z4R1.7**	1.250	2.27	1.949	2.421	0.059	30,000



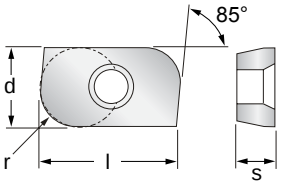


Note: If using a insert with radius, then the facing pitch for all 7690VA series cutters is equal to the cutting diameter (D) minus 2 x chosen radius.


ADET12-48


ADGT12-721


ADHT12-46





Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
			Depth of Cut (inch)							
EDP	Item Description	Grade	a_p max. 0.433	a_p min. - max. 0.060 - 0.200	a_e min. - max. 0.004 - 0.060	d (IC)	l	s	r	h_m min
030856	ADET12T308ER-48	X500	■□◆	■□◆	-	0.309	0.500	0.156	0.031	0.002
030857	ADET12T308ER-48	SP6519	●●○■	●●○■	●■□◆	0.309	0.500	0.156	0.031	0.002
030808	ADET12T312ER-48	X500	■□◆	■□◆	-	0.309	0.500	0.156	0.047	0.002
030800	ADET12T312ER-48	SP6519	●●○■	●●○■	●■□◆	0.309	0.500	0.156	0.047	0.002
030809	ADET12T316ER-48	X500	■□◆	■□◆	-	0.309	0.500	0.156	0.063	0.002
030771	ADET12T316ER-48	SP6519	●●○■	●●○■	●■□◆	0.309	0.500	0.156	0.063	0.002
030908	ADET12T320ER-48	X500	■□◆	■□◆	-	0.309	0.500	0.156	0.079	0.002
030909	ADET12T320ER-48	SP6519	●●○■	●●○■	●■□◆	0.309	0.500	0.156	0.079	0.002
030858	ADET12T324ER-48	X500	■□◆	■□◆	-	0.309	0.500	0.156	0.094	0.002
030859	ADET12T324ER-48	SP6519	●●○■	●●○■	●■□◆	0.309	0.500	0.156	0.094	0.002
030910	ADET12T330ER-48	X500	■□◆	■□◆	-	0.309	0.500	0.156	0.118	0.002
030911	ADET12T330ER-48	SP6519	●●○■	●●○■	●■□◆	0.309	0.500	0.156	0.118	0.002
030810	ADET12T332ER-48	X500	■□◆	■□◆	-	0.309	0.500	0.156	0.125	0.002
030772	ADET12T332ER-48	SP6519	●●○■	●●○■	●■□◆	0.309	0.500	0.156	0.125	0.002
030912	ADET12T340ER-48	X500	■□◆	■□◆	-	0.309	0.500	0.156	0.157	0.002
030913	ADET12T340ER-48	SP6519	●●○■	●●○■	●■□◆	0.309	0.500	0.156	0.157	0.002
030807	ADET12T3PDER-48	X500	■□◆	■□◆	-	0.309	0.500	0.156	Facet	0.002
030770	ADET12T3PDER-48	SP6519	●●○■	●●○■	●■□◆	0.309	0.500	0.156	Facet	0.002
029098	ADGT12T3PDFR-721	GH1	◆	◆	◆	0.309	0.500	0.156	Facet	0.002
029329	ADHT12T308ER-46	X500	■◆■	■◆■	-	0.309	0.500	0.156	0.031	0.002
030406	ADHT12T308ER-46	X700	●○	■◆■	◆◆■	0.309	0.500	0.156	0.031	0.002
031526	ADHT12T308ER-46	SP6519	◆□	■◆□	◆◆■□◆	0.309	0.500	0.156	0.031	0.002
029331	ADHT12T316ER-46	X500	■◆■	■◆■	-	0.309	0.500	0.156	0.063	0.002
030407	ADHT12T316ER-46	X700	●○	■◆■	◆◆■	0.309	0.500	0.156	0.063	0.002
031527	ADHT12T316ER-46	SP6519	◆□	■◆□	◆◆■□◆	0.309	0.500	0.156	0.063	0.002
029337	ADHT12T320ER-46	X500	■◆■	■◆■	-	0.309	0.500	0.156	0.079	0.002
030408	ADHT12T320ER-46	X700	●○	■◆■	◆◆■	0.309	0.500	0.156	0.079	0.002
031530	ADHT12T320ER-46	SP6519	◆□	■◆□	◆◆■□◆	0.309	0.500	0.156	0.079	0.002

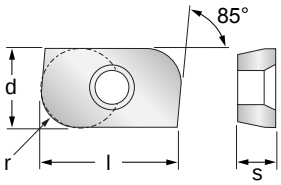
Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

Note: Feed recommendations can be found on page A53. Speed recommendations can be found on page A60.

STELLRAM


ADHT12-46


ADKT12-45



Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.433	a_p min. - max. 0.060 - 0.200	a_e min. - max. 0.004 - 0.060					
029333	ADHT12T324ER-46	X500	■◆■	■◆●	-	0.309	0.500	0.156	0.094	0.002
031528	ADHT12T324ER-46	SP6519	◆□	■◆□	◆◆■□◆	0.309	0.500	0.156	0.094	0.002
029339	ADHT12T330ER-46	X500	■◆■	■◆●	-	0.309	0.500	0.156	0.118	0.002
031531	ADHT12T330ER-46	SP6519	◆□	■◆□	◆◆■□◆	0.309	0.500	0.156	0.118	0.002
029036	ADHT12T332ER-46	X500	■◆■	■◆●	-	0.309	0.500	0.156	0.125	0.002
030409	ADHT12T332ER-46	X700	●●	■◆■	◆◆■	0.309	0.500	0.156	0.125	0.002
031515	ADHT12T332ER-46	SP6519	◆□	■◆□	◆◆■□◆	0.309	0.500	0.156	0.125	0.002
029335	ADHT12T340ER-46	X500	■◆■	■◆●	-	0.309	0.500	0.156	0.157	0.002
031529	ADHT12T340ER-46	SP6519	◆□	■◆□	◆◆■□◆	0.309	0.500	0.156	0.157	0.002
029327	ADHT12T3PDER-46	X500	■◆■	■◆●	-	0.309	0.500	0.156	Facet	0.002
031525	ADHT12T3PDER-46	SP6519	◆□	■◆□	◆◆■□◆	0.309	0.500	0.156	Facet	0.002
027913	ADKT12T3PDER-45	X500	●●●	●●●	-	0.309	0.500	0.156	Facet	0.003
031514	ADKT12T3PDER-45	SP6519	◆◆■	◆◆■	■■	0.309	0.500	0.156	Facet	0.003
027915	ADKT12T3PDER-45	MP91M	■●●	■■●	●	0.309	0.500	0.156	Facet	0.003
027916	ADKT12T3PDER-45	SC3025	◆	◆	■	0.309	0.500	0.156	Facet	0.003



Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

Note: ADKT12T3PDER-45 X500 should only be used in steel applications for difficult conditions.

7690VA12 Feeds f_z (inch/tooth)

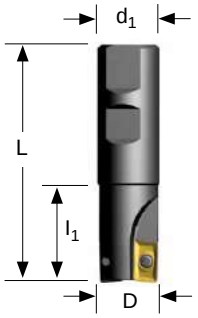
Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
ER-48	X500	Facing	-	-	0.002 - 0.007	0.002 - 0.006	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.006	-	-
ER-48	SP6519	Facing	0.002 - 0.008	-	0.002 - 0.006	0.002 - 0.005	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.005	-	-
FR-721	GH1	Facing	-	-	-	-	-	-	-	0.002 - 0.008	0.002 - 0.007	-	-	-	-	-	-
ER-46	X500	Facing	-	-	0.002 - 0.007	0.002 - 0.006	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.006	-	-
ER-46	X700	Facing	-	-	0.002 - 0.006	0.002 - 0.005	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.005	-	-
ER-46	SP6519	Facing	0.002 - 0.008	0.002 - 0.008	0.002 -0.006	0.002 - 0.005	0.003 - 0.006	0.003 - 0.006	0.003 - 0.006	-	-	-	-	-	-	-	-
ER-45	X500	Facing	0.003 - 0.009	0.003 - 0.009	0.002 - 0.007	-	-	-	-	-	-	-	-	-	-	-	-
ER-45	SP6519	Facing	0.003 - 0.009	0.003 - 0.009	-	-	0.003 - 0.006	0.003 - 0.006	0.003 - 0.006	-	-	-	-	-	-	-	-
ER-45	MP91M	Facing	0.003 - 0.009	0.003 - 0.009	-	-	0.003 - 0.008	0.003 - 0.008	0.003 - 0.008	-	-	-	-	-	-	-	-
ER-45	SC3025	Facing	-	-	-	-	0.003 - 0.006	0.003 - 0.006	0.003 - 0.006	-	-	-	-	-	-	-	-

Note: HTA = High Temperature Alloys

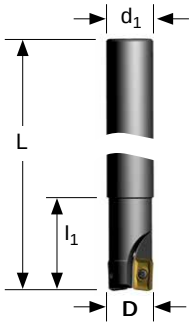
Note: Speed recommendations can be found on page A60.

STELLRAM

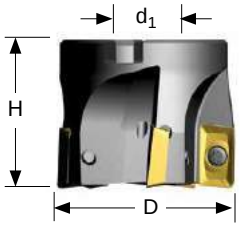




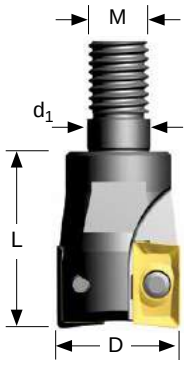
Weldon Shank



Cylindrical Shank



Shell Mill Fixation



Modular Head



Depth of Cut (a_p)

Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D	L/H	l_1	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7690VA16 Weldon Shank												
022330	**C7690VA16WA.750R**	0.750	3.940	1.910	0.750	0.600	1	*015260*	D4008T	*015240*	T15	27.40
015409	**C7690VA16WA1.00R**	1.000	3.770	1.570	1.000	0.600	2	*015260*	D4008T	*015240*	T15	27.40
014881	**C7690VA16WA1.25R**	1.250	3.930	1.600	1.250	0.600	3	*015262*	D4010T	*015240*	T15	27.40
014875	**C7690VA16WA1.50R**	1.500	4.330	2.030	1.250	0.600	4	*015262*	D4010T	*015240*	T15	27.40
7690VA16 Cylindrical Shank - Medium and Fine Pitch												
031171	**C7690VA16CA1.00Z2R2.0**	1.000	7.874	1.968	1.000	0.600	2	*015260*	D4008T	*015240*	T15	27.40
031172	**C7690VA16CA1.25Z2R2.7**	1.250	9.842	2.756	1.250	0.600	2	*015262*	D4010T	*015240*	T15	27.40
031173	**C7690VA16CA1.25Z3R2.7**	1.250	9.842	2.756	1.250	0.600	3	*015262*	D4010T	*015240*	T15	27.40
7690VA16 Shell Mill Fixation												
014876	**C7690VA16-A2.00R**	2.000	1.570	-	0.750	0.600	5	*015262*	D4010T	*015240*	T15	27.40
014877	**C7690VA16-A2.50R**	2.500	1.570	-	0.750	0.600	5	*015262*	D4010T	*015240*	T15	27.40
014878	**C7690VA16-A3.00R**	3.000	1.960	-	1.000	0.600	6	*015262*	D4010T	*015240*	T15	27.40
014879	**C7690VA16-A4.00R**	4.000	1.960	-	1.250	0.600	7	*015262*	D4010T	*015240*	T15	27.40
014880	**C7690VA16-A5.00R**	5.000	2.480	-	1.500	0.600	8	*015262*	D4010T	*015240*	T15	27.40

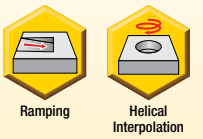
Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D	L/H	M	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7690VA16 Modular Head - Medium and Fine Pitch												
031177	**A7690VA16SA1.00Z2R1.4**	1.000	1.377	M12	0.492	0.600	2	*015260*	D4008T	*015240*	T15	27.40
031178	**A7690VA16SA1.25Z2R1.7**	1.250	1.693	M16	0.669	0.600	2	*015262*	D4010T	*015240*	T15	27.40
031179	**A7690VA16SA1.25Z3R1.7**	1.250	1.693	M16	0.669	0.600	3	*015262*	D4010T	*015240*	T15	27.40

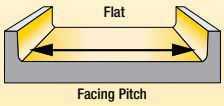
Note: For cylindrical shank extensions in high density alloy with through coolant refer to page A78.

Note: To use radius larger than 0.079" the cutter body needs to be modified for additional clearance by the end user.

7690VA16 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
022330	**C7690VA16WA.750R**	0.750	4.50	0.829	1.421	0.078	49,000
015409	**C7690VA16WA1.00R**	1.000	2.30	1.329	1.921	0.078	37,500
014881	**C7690VA16WA1.25R**	1.250	1.50	1.829	2.421	0.078	32,000
014875	**C7690VA16WA1.50R**	1.500	1.00	2.329	2.921	0.078	28,000
031171	**C7690VA16CA1.00Z2R2.0**	1.000	2.30	1.329	1.921	0.078	37,500
031172	**C7690VA16CA1.25Z2R2.7**	1.250	1.50	1.829	2.421	0.078	32,000
031173	**C7690VA16CA1.25Z3R2.7**	1.250	1.50	1.829	2.421	0.078	32,000
014876	**C7690VA16-A2.00R**	2.000	0.70	3.329	3.921	0.078	23,500
014877	**C7690VA16-A2.50R**	2.500	0.50	4.329	4.921	0.078	20,000
014878	**C7690VA16-A3.00R**	3.000	0.30	5.329	5.921	0.078	18,500
014879	**C7690VA16-A4.00R**	4.000	0.20	7.329	7.921	0.078	15,500
014880	**C7690VA16-A5.00R**	5.000	0.10	9.329	9.921	0.078	13,500
031177	**A7690VA16SA1.00Z2R1.4**	1.000	2.40	1.329	1.921	0.078	37,500
031178	**A7690VA16SA1.25Z2R1.7**	1.250	1.50	1.829	2.421	0.078	32,000
031179	**A7690VA16SA1.25Z3R1.7**	1.250	1.50	1.829	2.421	0.078	32,000





Note: If using a insert with radius, then the facing pitch for all 7690VA series cutters is equal to the cutting diameter (D) minus 2 x chosen radius.


APET16-42


APHT16-42


APEX16-701


APFW16-TR


APHT16-ER


APHT16-FR

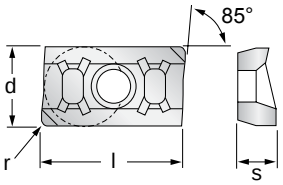
Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.600	a_p min. - max. 0.060 - 0.200	a_e min. - max. 0.004 - 0.060					
033179	**APET160402TR-42**	**SP6519**	●●●○	●●●○	■■	0.375	0.656	0.187	0.008	0.004
033180	**APET160408TR-42**	**SP6519**	●●●○	●●●○	■■	0.375	0.656	0.187	0.031	0.004
033181	**APET160410TR-42**	**SP6519**	●●●○	●●●○	■■	0.375	0.656	0.187	0.039	0.004
033182	**APET160415TR-42**	**SP6519**	●●●○	●●●○	■■	0.375	0.656	0.187	0.059	0.004
033183	**APET160420TR-42**	**SP6519**	●●●○	●●●○	■■	0.375	0.656	0.187	0.079	0.004
033184	**APET160425TR-42**	**SP6519**	●●●○	●●●○	■■	0.375	0.656	0.187	0.098	0.004
033185	**APET160430TR-42**	**SP6519**	●●●○	●●●○	■■	0.375	0.656	0.187	0.118	0.004
033186	**APET160440TR-42**	**SP6519**	●●●○	●●●○	■■	0.375	0.656	0.187	0.157	0.004
033187	**APET160460TR-42**	**SP6519**	●●●○	●●●○	■■	0.375	0.656	0.187	0.236	0.004
015155	**APHT1604PDTR-42**	**X500**	●○	-	-	0.375	0.656	0.187	Facet	0.004
031466	**APHT1604PDTR-42**	**SP6519**	●●●○	■■●○	■■	0.375	0.656	0.187	Facet	0.004
017293	**APHT1604PDTR-42**	**MP91M**	-	■●	■■	0.375	0.656	0.187	Facet	0.004
033188	**APEX1604PDER-701**	**SP6519**	-	-	●	0.375	0.656	0.187	Facet	0.001
033189	**APEX1604PDFR-701**	**SP4019**	●	●	●	0.375	0.656	0.187	Facet	0.001
014066	**APEX1604PDFR-701**	**GH1**	◆	◆	◆	0.375	0.656	0.187	Facet	0.001
033190	**APFW1604PDTR**	**X400**	●	◆	●	0.375	0.656	0.187	Facet	0.004
033191	**APFW1604PDTR**	**SP4019**	●	■	◆	0.375	0.656	0.187	Facet	0.004
027883	**APFW1604PDTR**	**SC3025**	■	◆	◆	0.375	0.656	0.187	Facet	0.004
017628	**APFW1604PDTR**	**GH1**	-	●	●	0.375	0.656	0.187	Facet	0.004
033192	**APHT1604PDER**	**SP4019**	-	-	●	0.375	0.375	0.187	Facet	0.002
015154	**APHT1604PDFR**	**GH1**	■	■	■	0.375	0.656	0.187	Facet	0.001

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

Note: APHT1604PDTR-42 X500 should be used for Stainless Steel with heavy scale.
Note: APFW1604PDTR X400 should be used for Alloyed Steel with heavy scale.
Note: APFW1604PDTR SP4019 should be used for High Temperature Alloys with heavy scale.

Note: Feed recommendations can be found on page A57. Speed recommendations can be found on page A60.

STELLRAM






APHT16-46

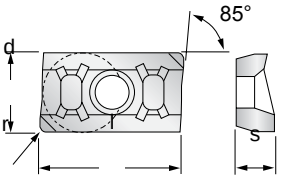

APET16-48


APKT16-43


APKT16-45


APKT16-3M


APKT16-2C





Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
			Depth of Cut (inch)							
EDP	Item Description	Grade	a_p max. 0.600	a_p min. - max. 0.060 - 0.200	a_e min. - max. 0.004 - 0.060	d (IC)	l	s	r	h_m min
027869	APHT160408ER-46	X500	♦■	♦■	○	0.375	0.656	0.187	0.031	0.002
031495	APHT160408ER-46	SP6519	♦□	♦□	♦♦♦♦	0.375	0.656	0.187	0.031	0.002
027870	APHT160416ER-46	X500	♦■	♦■	○	0.375	0.656	0.187	0.063	0.002
031496	APHT160416ER-46	SP6519	♦□	♦□	♦♦♦♦	0.375	0.656	0.187	0.063	0.002
027871	APHT160424ER-46	X500	♦■	♦■	○	0.375	0.656	0.187	0.094	0.002
031497	APHT160424ER-46	SP6519	♦□	♦□	♦♦♦♦	0.375	0.656	0.187	0.094	0.002
027872	APHT160432ER-46	X500	♦■	♦■	○	0.375	0.656	0.187	0.125	0.002
031397	APHT160432ER-46	SP6519	♦□	♦□	♦♦♦♦	0.375	0.656	0.187	0.125	0.002
027873	APHT160440ER-46	X500	♦■	♦■	○	0.375	0.656	0.187	0.157	0.002
031542	APHT160440ER-46	SP6519	♦□	♦□	♦♦♦♦	0.375	0.656	0.187	0.157	0.002
027874	APHT160450ER-46	X500	♦■	♦■	○	0.375	0.656	0.187	0.197	0.002
031498	APHT160450ER-46	SP6519	♦□	♦□	♦♦♦♦	0.375	0.656	0.187	0.197	0.002
027875	APHT160464ER-46	X500	♦■	♦■	○	0.375	0.656	0.187	0.252	0.002
031541	APHT160464ER-46	SP6519	♦□	♦□	♦♦♦♦	0.375	0.656	0.187	0.252	0.002
030811	APET1604PDER-48	X500	♦	♦	■	0.375	0.656	0.187	Facet	0.002
030773	APET1604PDER-48	SP6519	●	●	●●■□♦	0.375	0.656	0.187	Facet	0.002
030860	APET160408ER-48	X500	♦	♦	■	0.375	0.656	0.187	Facet	0.002
030861	APET160408ER-48	SP6519	●	●	●●■□♦	0.375	0.656	0.187	Facet	0.002
015156	APKT1604PDER-43	X500	●	-	-	0.375	0.656	0.187	Facet	0.003
031468	APKT1604PDER-43	SP6519	♦♦	-	-	0.375	0.656	0.187	Facet	0.003
017294	APKT1604PDER-43	MP91M	■■●	-	-	0.375	0.656	0.187	Facet	0.003
027887	APKT1604PDER-43	SC3025	♦	-	-	0.375	0.656	0.187	Facet	0.003
023115	APKT1604PDER-45	X500	-	■	-	0.375	0.656	0.187	Facet	0.003
031469	APKT1604PDER-45	SP6519	-	♦♦	-	0.375	0.656	0.187	Facet	0.003
023114	APKT1604PDER-45	MP91M	-	●	-	0.375	0.656	0.187	Facet	0.003
011649	APKT1604PDER-3M	MP91M	●●●●	●●●●	-	0.375	0.656	0.187	Facet	0.004
011488	APKT160408E-2C	MP91M	-	●●	-	0.375	0.656	0.187	0.031	0.004

Machining Choice: ♦ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

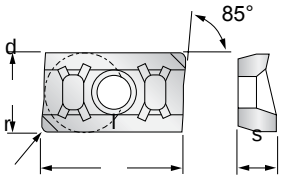
Note: APKT1604PDER-43 X500 should be used for Steel with heavy scale.

Note: Feed recommendations can be found on page A57. Speed recommendations can be found on page A60.

STELLRAM



APMT16-2C





Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.600	a_p min. - max. 0.060 - 0.200	a_e min. - max. 0.004 - 0.060					
017228	APMT160412E-2C	MP91M	-	◆●	-	0.375	0.656	0.187	0.047	0.004
013944	APMT160416E-2C	MP91M	-	◆●	-	0.375	0.656	0.187	0.063	0.004
013945	APMT160424E-2C	MP91M	-	◆●	-	0.375	0.656	0.187	0.094	0.004
013946	APMT160432E-2C	MP91M	-	◆●	-	0.375	0.656	0.187	0.125	0.004
017229	APMT160440E-2C	MP91M	-	◆●	-	0.375	0.656	0.187	0.157	0.004
017230	APMT160448E-2C	MP91M	-	◆●	-	0.375	0.656	0.187	0.189	0.004
013947	APMT160464E-2C	MP91M	-	◆●	-	0.375	0.656	0.187	0.252	0.004

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

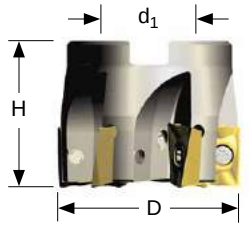
7690VA16 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
TR-42	X500	Facing	-	-	0.004 - 0.009	0.004 - 0.008	-	-	-	-	-	-	-	-	-	-	-
TR-42	SP6519	Facing	0.004 - 0.011	0.004 - 0.009	0.004 - 0.009	0.004 - 0.008	-	-	-	-	-	-	-	-	-	-	-
TR-42	MP91M	Facing	-	-	-	-	0.003 - 0.010	0.003 - 0.008	0.003 - 0.008	-	-	-	-	-	-	0.002 - 0.003	0.002 - 0.004
FR-701	SP6519	Facing	-	-	-	-	-	-	-	-	-	0.001 - 0.002	0.001 - 0.002	0.001 - 0.002	0.001 - 0.002	-	-
FR-701	SP4019	Facing	-	-	-	-	-	-	-	0.001 - 0.008	0.001 - 0.007	-	-	-	-	-	-
FR-701	GH1	Facing	-	-	-	-	-	-	-	0.001 - 0.008	0.001 - 0.007	-	-	-	-	-	-
TR	X400	Facing	-	0.004 - 0.009	-	-	-	-	-	-	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004
TR	SP4019	Facing	-	-	-	-	-	-	-	-	-	0.003 - 0.004	0.003 - 0.004	0.003 - 0.004	0.003 - 0.005	0.002 - 0.004	0.002 - 0.004
TR	SC3025	Facing	-	-	-	-	0.004 - 0.009	0.004 - 0.009	0.004 - 0.009	-	-	-	-	-	-	-	-
TR	GH1	Facing	-	-	-	-	0.004 - 0.009	0.004 - 0.009	0.004 - 0.009	-	-	-	-	-	-	-	-
ER	SP4019	Facing	-	-	0.002 - 0.008	-	-	-	-	-	-	-	-	-	-	-	-
FR	GH1	Facing	-	-	-	-	-	-	-	0.001 - 0.008	0.001 - 0.007	-	-	-	-	-	-
ER-46	X500	Facing	-	-	0.002 - 0.010	0.002 - 0.008	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.006	-	-
ER-46	SP6519	Facing	0.002 - 0.010	0.002- 0.008	0.002 - 0.009	0.002 - 0.007	-	-	-	-	-	-	-	-	-	-	-
ER-48	X500	Facing	-	-	-	-	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.006	-	-
ER-48	SP6519	Facing	0.002 - 0.008	0.002 - 0.007	0.002 - 0.006	0.002 - 0.005	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.005	-	-
ER-43	X500	Facing	0.003 - 0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ER-43	SP6519	Facing	0.002 - 0.009	0.002 - 0.008	-	-	-	-	-	-	-	-	-	-	-	-	-
ER-43	MP91M	Facing	0.002 - 0.009	0.002 - 0.008	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	-	-	-	-	-	-	-	-
ER-43	SC3025	Facing	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	-	-	-	-	-	-	-	-
ER-45	X500	Facing	-	0.003 - 0.009	-	-	-	-	-	-	-	-	-	-	-	-	-
ER-45	SP6519	Facing	0.002 - 0.009	0.002 - 0.008	-	-	-	-	-	-	-	-	-	-	-	-	-
ER-45	MP91M	Facing	0.003 - 0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ER-3M	MP91M	Facing	0.002 - 0.009	0.002 - 0.009	0.002 - 0.008	-	0.002 - 0.009	0.002 - 0.009	0.002 - 0.009	-	-	-	-	-	-	-	-
E-2C	MP91M	Facing	0.002 - 0.009	-	-	-	0.002 - 0.009	0.002 - 0.009	0.002 - 0.009	-	-	-	-	-	-	-	-

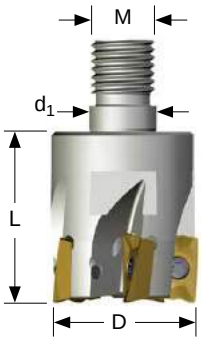
Note: HTA = High Temperature Alloys

Speed recommendations can be found on page A60.

STELLRAM



Shell Mill Fixation



Modular Head

Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D	L/H	l_1	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7690VAP16 Shell Mill Fixation												
034567	**C7690VAP16-A1.50Z05R**	1.500	1.570	-	0.500	0.622	5	*015262*	D4010T	*015240*	T15	27.40
034568	**C7690VAP16-A2.00Z06R**	2.000	1.570	-	0.750	0.622	6	*015262*	D4010T	*015240*	T15	27.40
034569	**C7690VAP16-A2.50Z07R**	2.500	1.570	-	1.000	0.622	7	*015262*	D4010T	*015240*	T15	27.40
034570	**C7690VAP16-A3.00Z08R**	3.000	1.970	-	1.000	0.622	8	*015262*	D4010T	*015240*	T15	27.40
034571	**C7690VAP16-A4.00Z10R**	4.000	1.970	-	1.250	0.622	10	*015262*	D4010T	*015240*	T15	27.40

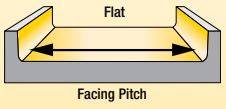
Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D	L/H	M	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7690VAP16 Modular Head - Medium and Fine Pitch												
034572	**A7690VAP16-SA1.5Z5R1.7**	1.500	1.693	M16	0.669	0.622	5	*015262*	D4010T	*015240*	T15	27.40

Note: For cylindrical shank extensions in high density alloy with through coolant refer to page A78.

Note: To use radius larger than 0.079" the cutter body needs to be modified for additional clearance by the end user.
The 7690VAP series are ideal for roughing, semi-finishing and finishing of Stainless Steel, High Temperature Alloys and some Low Carbon Steels. **This cutter is designed to utilize one geometry of insert only - APET1604...ER-48**

7690VAP16 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
034567	**C7690VAP16-A1.50Z05R**	1.500	-	-	-	-	28,000
034568	**C7690VAP16-A2.00Z06R**	2.000	-	-	-	-	23,500
034569	**C7690VAP16-A2.50Z07R**	2.500	-	-	-	-	20,000
034570	**C7690VAP16-A3.00Z09R**	3.000	-	-	-	-	18,500
034571	**C7690VAP16-A4.00Z10R**	4.000	-	-	-	-	15,500
034572	**A7690VAP16SA1.50Z05R**	1.500	-	-	-	-	28,000



Note: If using a insert with radius, then the facing pitch for all 7690VA series cutters is equal to the cutting diameter (D) minus 2 x chosen radius.

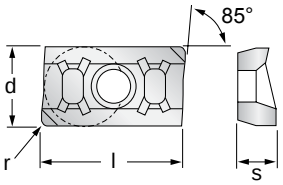


Depth of Cut (a_p)

STELLRAM



APET16-48



Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.622	a_p min. - max. 0.060 - 0.200	a_p min. - max. 0.004 - 0.060					
030811	APET1604PDER-48	X500	♦	■	■	0.375	0.656	0.187	Facet	0.002
030733	APET1604PDER-48	SP6519	♦	♦	♦	0.375	0.656	0.187	Facet	0.002
030860	APET160408ER-48	X500	♦	■	■	0.375	0.656	0.187	0.031	0.002
030861	APET160408ER-48	SP6519	♦	♦	♦	0.375	0.656	0.187	0.031	0.002
030812	APET160412ER-48	X500	♦	■	■	0.375	0.656	0.187	0.047	0.002
030799	APET160412ER-48	SP6519	♦	♦	♦	0.375	0.656	0.187	0.047	0.002
030813	APET160416ER-48	X500	♦	■	■	0.375	0.656	0.187	0.063	0.002
030774	APET160416ER-48	SP6519	♦	♦	♦	0.375	0.656	0.187	0.063	0.002
030914	APET160420ER-48	X500	♦	■	■	0.375	0.656	0.187	0.079	0.002
030915	APET160420ER-48	SP6519	♦	♦	♦	0.375	0.656	0.187	0.079	0.002
030916	APET160424ER-48	X500	♦	■	■	0.375	0.656	0.187	0.094	0.002
030917	APET160424ER-48	SP6519	♦	♦	♦	0.375	0.656	0.187	0.094	0.002
030918	APET160430ER-48	X500	♦	■	■	0.375	0.656	0.187	0.118	0.002
030919	APET160430ER-48	SP6519	♦	♦	♦	0.375	0.656	0.187	0.118	0.002
030814	APET160432ER-48	X500	♦	■	■	0.375	0.656	0.187	0.125	0.002
030775	APET160432ER-48	SP6519	♦	♦	♦	0.375	0.656	0.187	0.125	0.002
030907	APET160440ER-48	X500	♦	■	■	0.375	0.656	0.187	0.157	0.002
030906	APET160440ER-48	SP6519	♦	♦	♦	0.375	0.656	0.187	0.157	0.002
030920	APET160450ER-48	X500	♦	■	■	0.375	0.656	0.187	0.197	0.002
030921	APET160450ER-48	SP6519	♦	♦	♦	0.375	0.656	0.187	0.197	0.002
030922	APET160460ER-48	X500	♦	■	■	0.375	0.656	0.187	0.236	0.002
030923	APET160460ER-48	SP6519	♦	♦	♦	0.375	0.656	0.187	0.236	0.002
030924	APET160464ER-48	X500	♦	■	■	0.375	0.656	0.187	0.252	0.002
030925	APET160464ER-48	SP6519	♦	♦	♦	0.375	0.656	0.187	0.252	0.002

Machining Choice: ♦ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.



The 7690VAP series are ideal for roughing, semi-finishing and finishing of Stainless Steel, High Temperature Alloys plus Low Carbon Steels. This cutter is designed to utilize one geometery of insert only - APET1604...ER-48

Note: Speed recommendations can be found on page A60.

7690VAP16 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
ER-48	X500	Facing	0.002 - 0.010	-	0.002 - 0.010	0.002 - 0.008	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.007	-	-
ER-48	SP6519	Facing	0.002 - 0.008	-	0.002 - 0.008	0.002 - 0.007	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.006	-	-

Note: HTA = High Temperature Alloys

KENNAMETAL

STELLRAM

Speed v_c (SFM)

7690VA & 7690VAP Series

Wear Resistance: – ⟵ +

Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

ISO	Materials	Rm and Hardness	PVD X Grade		CVD X Grade		PVD X Grade		PVD Standard		PVD Standard		CVD Standard		CVD Standard		Uncoated Micrograin
			X400		X500		X700		SP6519		SP4019		MP91M		SC3025		GH1
P	Unalloyed Steel	<600 N/mm² <180 HBN			425 - 885	⦿ ●		⦿ ●	425 - 970			●	460 - 1130				
		<950 N/mm² <280 HBN			375 - 785				375 - 855				395 - 1000				
	Alloyed Steel	700-950 N/mm² 200-280 HBN	310 - 655	⦿ ●	330 - 690	⦿ ●		⦿ ●	330 - 755			●	345 - 885				
		950-1200 N/mm² 280-355 HBN	230 - 490		245 - 525				245 - 575				260 - 675				
		1200-1400 N/mm² 355-415 HBN	150 - 310	●	165 - 330	●		●	165 - 360			●	165 - 425				
M	Stainless Steel	Austenitic + Ferritic 300 series			375 - 820	⦿ ●	375 - 855	⦿ ●	375 - 885	⦿ ●	395 - 920	⦿ ●	410 - 935				
		Martensitic 400 series			330 - 720		345 - 755		345 - 770		360 - 820		370 - 830				
	PH Stainless	Refractory P.H.		●	165 - 360	●	165 - 375	●	165 - 395								
K	Cast Iron	Grey GG-Ft							460 - 970				475 - 1200		445 - 950		445 - 950
		Spheroidal-Ductile GGG-FGS						⦿ ●	360 - 785			●	375 - 935	●	395 - 805	⦿ ●	395 - 805
		Malleable GTS - MN/MP							330 - 720				345 - 855		375 - 655		375 - 655
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN								●	1310 - 9500					●	1310-10005
		Aluminum + Silicon > 16% Si 92 HBN									970 - 7615						970 - 8005
S	High Temperature Alloys	Iron Based			75 - 160		75 - 170		75 - 180		80 - 210						
		Cobalt Based		●	70 - 145	●	70 - 150	●	70 - 160	●	75 - 170						
		Nickel Based			80 - 170		80 - 175		80 - 180		85 - 190						
		Titanium Based			115 - 240		120 - 250		120 - 260		120 - 275						
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN	150 - 310								165 - 330		165 - 345				
		Chilled Cast Iron >1400 N/mm² > 400 HBN	115 - 260	●						●	130 - 295	●	130 - 310				

Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of dia.

Formula: Program Feed Rate (f_z)

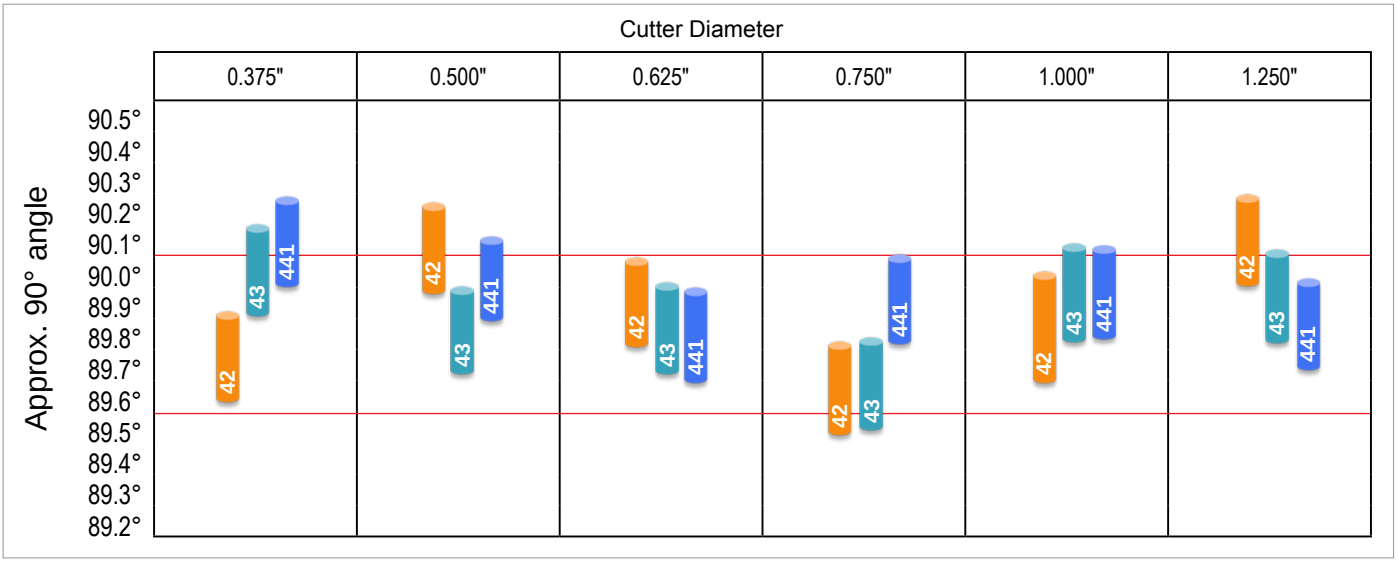
$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

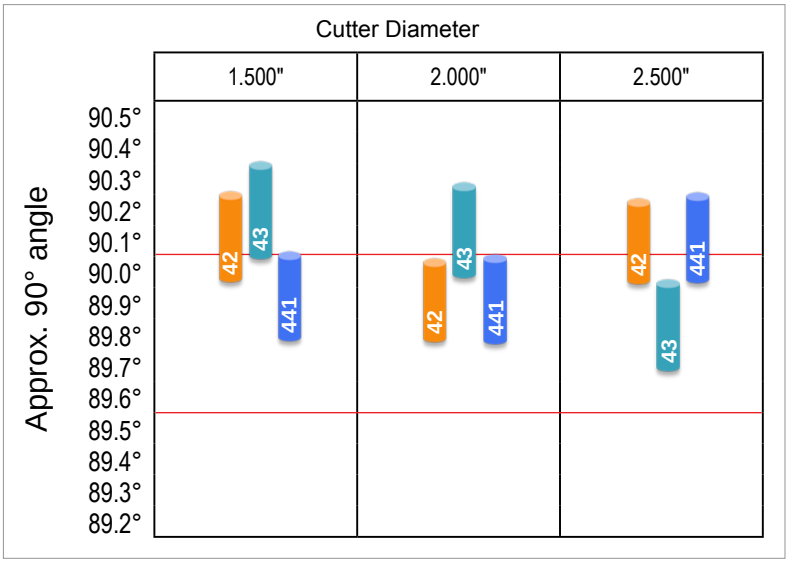
Formula: Average Chip Thickness (h_m)

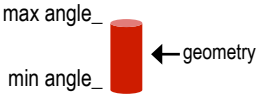
$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

7690VA09 90° Angle Deviation

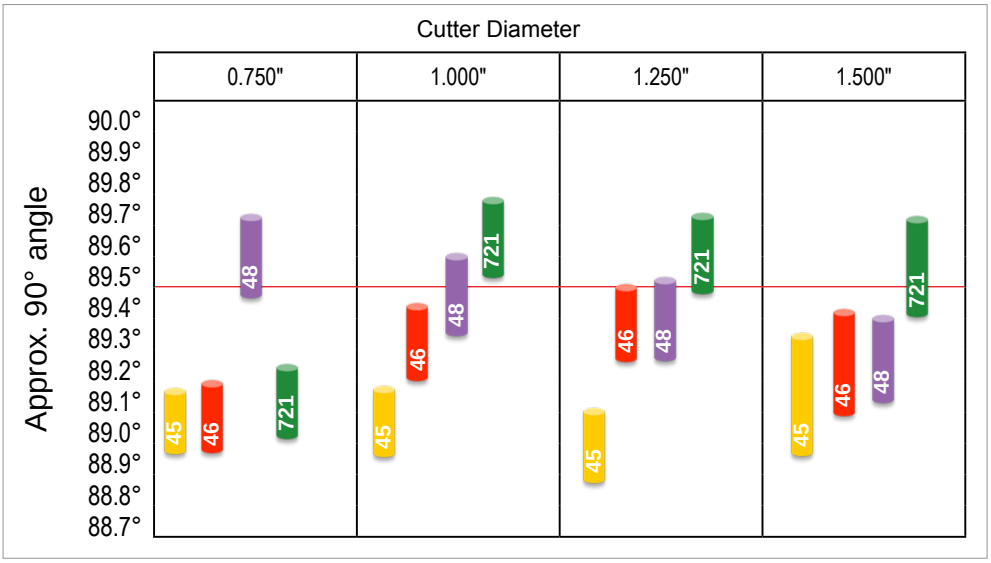


7690VA09 90° Angle Deviation

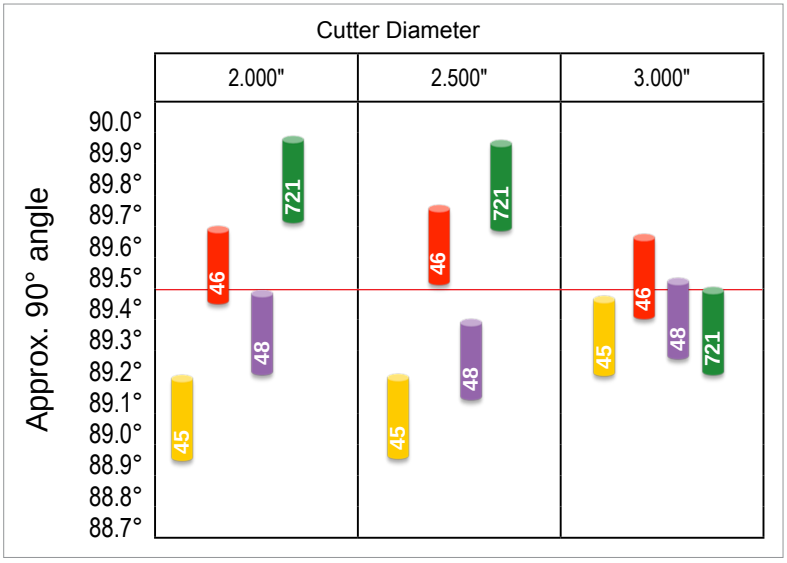


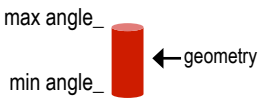


7690VA12 90° Angle Deviation

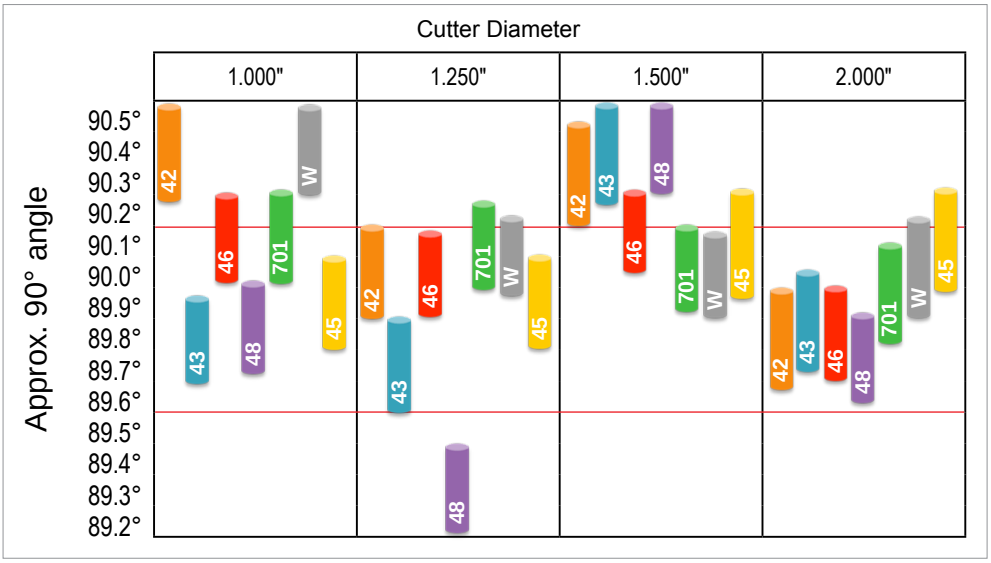


7690VA12 90° Angle Deviation

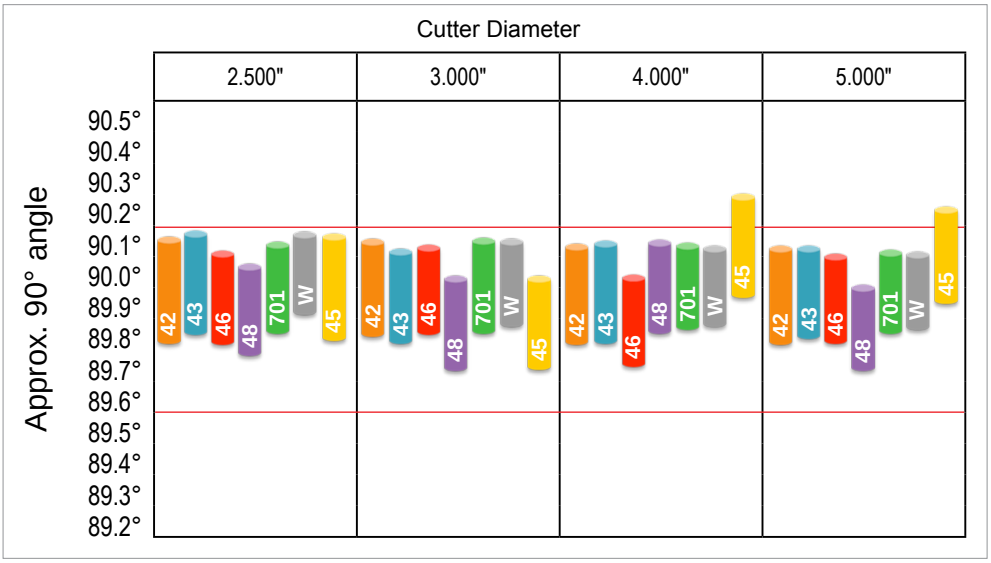


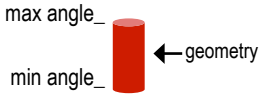


7690VA16 90° Angle Deviation

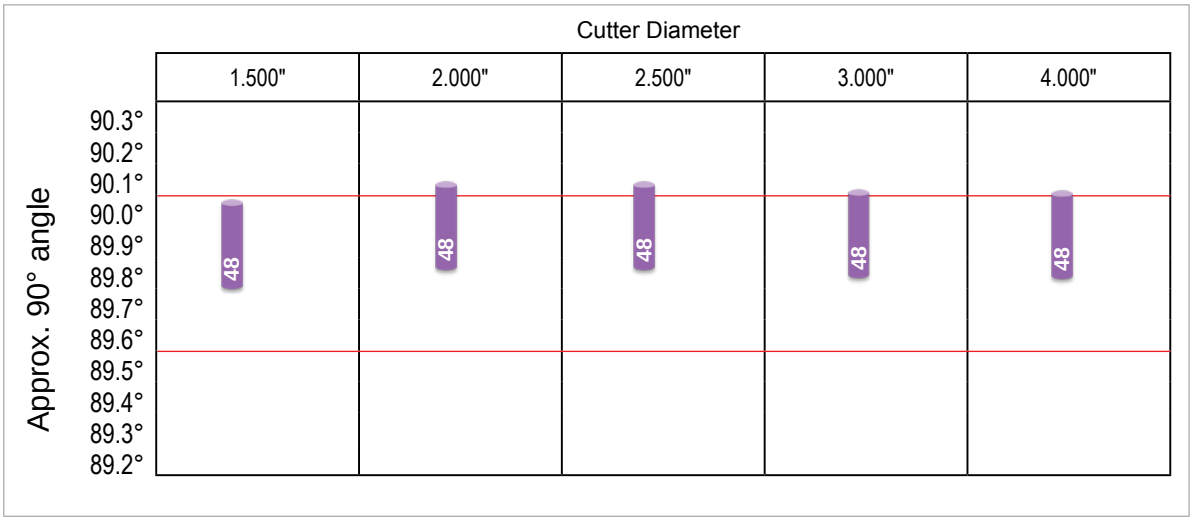


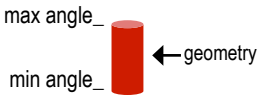
7690VA16 90° Angle Deviation





7690VAP16 90° Angle Deviation







STELLRAM



HIGH FEED CUTTERS

7792VX high feed milling cutters are capable of high metal removal in facing, plunging and slotting applications. The patented insert design offers better performance than round insert cutters.

The 7792VX high feed cutters are the best solution when specifically focusing on reducing cycle times or removing the maximum volume of material in the shortest time.

Our high feed cutter has the capacity to achieve 5 times higher feed rate than other existing cutters in the market. This is due to its unique design and insert positioning. 7792VX cutters also has a tremendous advantage, when used in a long (extended) toolholder. These cutters absorb vibration and greatly reduces the instability and deflection of the tool.

7792VX cutters are designed for a wide range of applications. Facing, pocketing, ramping, helical interpolation and plunging. They are capable of machining all materials such as Steel, Stainless Steel, Cast Iron and High Temperature Alloys. Also suitable for machining Aluminum Alloys.

7792VX

7792VXP06:
Maximum a_p = 0.035”
Diameter Range = 0.625” to 1.250”

7792VXD09:
Maximum a_p = 0.059”
Diameter Range = 1.000” to 2.000”

7792VXD12:
Maximum a_p = 0.098”
Diameter Range = 1.250” to 6.300”

Note: Larger diameter Shell Mill Fixation cutters with interchangeable cartridges are available. Please see page A118.

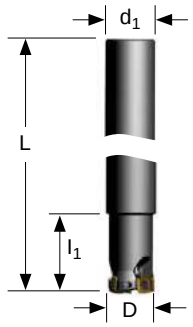
7792VXE16:
Maximum a_p = 0.138”
Diameter Range = 2.500” to 6.000”

Note: Larger diameter Shell Mill Fixation cutters with interchangeable cartridges are available. Please see page A120.



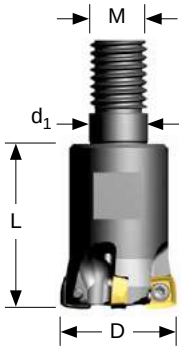
STELLRAM





Cylindrical Shank

Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D	L/H	l_1	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7792VXP06 Cylindrical Shank												
031643	**C7792VXP06CA.62Z2R5.5**	0.625	7.420	0.980	0.625	0.035	2	*031449*	FP2506T	*031452*	TP7	8.90
031620	**C7792VXP06CA.75Z3R6.1**	0.750	8.090	1.260	0.750	0.035	3	*031449*	FP2506T	*031452*	TP7	8.90
031621	**C7792VXP06CA1.0Z4R6.1**	1.000	8.340	1.575	1.000	0.035	4	*031450*	FP2507T	*031452*	TP7	8.90
031622	**C7792VXP06CA1.25Z5R8**	1.250	9.760	1.575	1.250	0.035	5	*031450*	FP2507T	*031452*	TP7	8.90



Modular Head

Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D	L/H	M	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7792VXP06 Modular Head - Medium and Fine Pitch												
031623	**A7792VXP06SA.625Z2R1**	0.625	1.000	M8	0.335	0.035	2	*031449*	FP2506T	*031452*	TP7	8.90
031624	**A7792VXP06SA.75Z2R1.4**	0.750	1.377	M10	0.413	0.035	2	*031449*	FP2506T	*031452*	TP7	8.90
031625	**A7792VXP06SA.75Z3R1.4**	0.750	1.377	M10	0.413	0.035	3	*031449*	FP2506T	*031452*	TP7	8.90
031626	**A7792VXP06SA1.0Z3R1.4**	1.000	1.377	M12	0.492	0.035	3	*031450*	FP2507T	*031452*	TP7	8.90
031627	**A7792VXP06SA1.0Z4R1.4**	1.000	1.377	M12	0.492	0.035	4	*031450*	FP2507T	*031452*	TP7	8.90
031628	**A7792VXP06SA1.25Z5R2**	1.250	1.693	M16	0.669	0.035	5	*031450*	FP2507T	*031452*	TP7	8.90

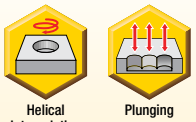
Note: For cylindrical shank extensions in high density alloy with through coolant refer to page A78.

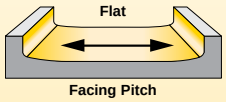


Depth of Cut (a_p)

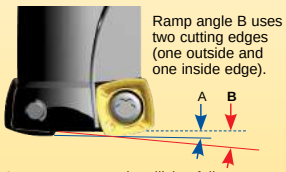
7792VXP06 Technical Information (inch)

Product		Dimensions							
EDP	**Item Description**	Facing Pitch	Ramping Angle A °	Ramping Angle B °	Helical Hole min. - max.		a_p max Helical / Linear	a_e max Plunging	Max RPM
031643	**C7792VXP06CA.62Z2R5.5**	0.255	6.09	8.20	0.850	1.170	0.023	0.118	65,000
031620	**C7792VXP06CA.75Z3R6.1**	0.380	3.86	6.74	1.100	1.420	0.023	0.118	57,000
031621	**C7792VXP06CA1.0Z4R6.1**	0.630	2.11	4.34	1.600	1.920	0.023	0.118	49,000
031622	**C7792VXP06CA1.25Z5R8**	0.880	1.43	2.69	2.100	2.420	0.023	0.118	41,500
031623	**A7792VXP06SA.625Z2R1**	0.255	6.09	8.20	0.850	1.170	0.023	0.118	65,000
031624	**A7792VXP06SA.75Z2R1.4**	0.380	3.86	6.74	1.100	1.420	0.023	0.118	57,000
031625	**A7792VXP06SA.75Z3R1.4**	0.380	3.86	6.74	1.100	1.420	0.023	0.118	57,000
031626	**A7792VXP06SA1.0Z3R1.4**	0.630	2.11	4.34	1.600	1.920	0.023	0.118	49,000
031627	**A7792VXP06SA1.0Z4R1.4**	0.630	2.11	4.34	1.600	1.920	0.023	0.118	49,000
031628	**A7792VXP06SA1.25Z5R2**	0.880	1.43	2.69	2.100	2.420	0.023	0.118	41,500





Ramp angle A uses one outside cutting edge only.



Ramp angle B uses two cutting edges (one outside and one inside edge).

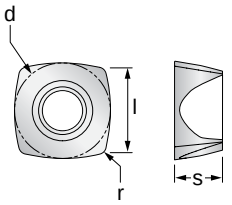
A = max ramp angle utilizing full face contact

B = max ramp angle utilizing full contact + internal corner radius

STELLRAM

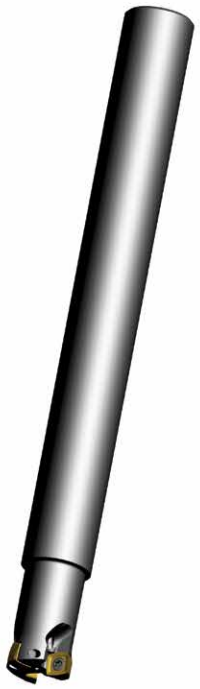


XPLT06-D41



Product			Application & Material			Dimensions (inch)				
			Facing	Slotting	Plunging					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.035	a_p max. 0.035	a_e max. 0.118					
030403	XPLT060308ER-D41	X400	♦♦♦	♦♦♦	♦♦♦	0.276	0.276	0.125	0.031	0.002
030402	XPLT060308ER-D41	X500	■♦♦	■♦♦	■♦♦	0.276	0.276	0.125	0.031	0.002
031538	XPLT060308ER-D41	SP6519	●●♦■■♦■	●●♦■■♦■	●●♦■■♦■	0.276	0.276	0.125	0.031	0.002
033066	XPLT060308ER-D41	SC6525	■■♦	■■♦	■■♦	0.276	0.276	0.125	0.031	0.002

Machining Choice: ♦ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.



7792VXP06 Feeds f_z (inch/tooth)

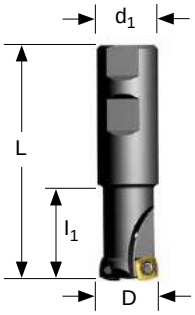
Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
ER-D41	X400	Facing	0.008 - 0.043	0.008 - 0.035	-	-	-	-	-	-	-	-	-	-	-	0.008 - 0.024	0.008 - 0.024
ER-D41	X400	Slotting	0.008 - 0.035	0.008 - 0.031	-	-	-	-	-	-	-	-	-	-	-	0.008 - 0.020	0.008 - 0.020
ER-D41	X400	Plunging	0.002 - 0.012	0.002 - 0.008	-	-	-	-	-	-	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003
ER-D41	X500	Facing	-	-	0.006 - 0.039	0.006 - 0.035	-	-	-	-	-	0.006 - 0.020	0.006 - 0.020	0.006 - 0.020	0.006 - 0.024	-	-
ER-D41	X500	Slotting	-	-	0.006 - 0.031	0.006 - 0.030	-	-	-	-	-	0.004 - 0.016	0.004 - 0.016	0.004 - 0.016	0.004 - 0.018	-	-
ER-D41	X500	Plunging	-	-	0.002 - 0.008	0.002 - 0.006	-	-	-	-	-	0.002 - 0.002	0.002 - 0.002	0.002 - 0.002	0.002 - 0.002	-	-
ER-D41	SP6519	Facing	0.008 - 0.039	0.008 - 0.031	0.006 - 0.035	0.006 - 0.031	0.008 - 0.047	0.008 - 0.039	0.008 - 0.035	0.008 - 0.028	-	0.006 - 0.020	0.006 - 0.020	0.006 - 0.020	0.006 - 0.024	-	-
ER-D41	SP6519	Slotting	0.008 - 0.031	0.008 - 0.030	0.006 - 0.031	0.006 - 0.028	0.008 - 0.039	0.008 - 0.035	0.008 - 0.031	0.008 - 0.028	-	0.004 - 0.016	0.004 - 0.016	0.004 - 0.016	0.004 - 0.018	-	-
ER-D41	SP6519	Plunging	0.002 - 0.010	0.002 - 0.007	0.002 - 0.008	0.002 - 0.006	0.002 - 0.010	0.002 - 0.008	0.002 - 0.007	0.002 - 0.010	-	0.002 - 0.002	0.002 - 0.002	0.002 - 0.002	0.002 - 0.002	-	-
ER-D41	SC6525	Facing	0.006 - 0.039	0.006 - 0.031	-	-	0.008 - 0.047	0.008 - 0.039	-	-	-	-	-	-	-	-	-
ER-D41	SC6525	Slotting	0.006 - 0.030	0.006 - 0.027	-	-	0.008 - 0.039	0.008 - 0.035	-	-	-	-	-	-	-	-	-
ER-D41	SC6525	Plunging	0.002 - 0.008	0.002 - 0.006	-	-	0.002 - 0.010	0.002 - 0.008	-	-	-	-	-	-	-	-	-

Note: HTA = High Temperature Alloys

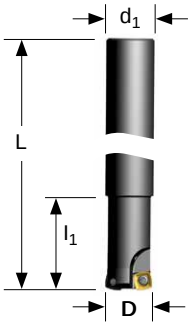
Note: Speed recommendations can be found on page A74.

STELLRAM

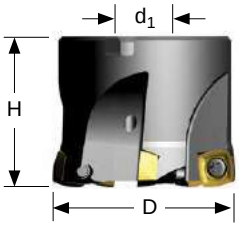




Weldon Shank



Cylindrical Shank



Shell Mill Fixation



Modular Head



Depth of Cut (a_p)

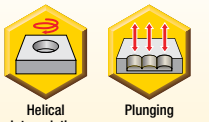
Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D	L/H	l_1	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7792VXD09 Weldon Shank												
029474	**C7792VXD09WA1.00Z2R**	1.000	3.855	1.574	1.000	0.059	2	*015269*	F3508T	*015240*	T15	18.60
029475	**C7792VXD09WA1.25Z3R**	1.250	3.855	1.574	1.250	0.059	3	*015064*	F3510T	*015240*	T15	18.60
7792VXD09 Cylindrical Shank												
031193	**C7792VXD09CA1.00Z2R2**	1.000	7.874	1.968	1.000	0.059	2	*015269*	F3508T	*015240*	T15	18.60
031194	**C7792VXD09CA1.25Z3R3**	1.250	9.842	2.755	1.250	0.059	3	*015064*	F3510T	*015240*	T15	18.60
7792VXD09 Shell Mill Fixation - Coarse, Medium and Fine Pitch												
029476	**C7792VXD09-A1.50Z3R**	1.500	1.260	-	0.500	0.059	3	*015064*	F3510T	*015240*	T15	18.60
029477	**C7792VXD09-A1.50Z4R**	1.500	1.260	-	0.500	0.059	4	*015064*	F3510T	*015240*	T15	18.60
030431	**C7792VXD09-A1.50Z5R**	1.500	1.260	-	0.500	0.059	5	*015064*	F3510T	*015240*	T15	18.60
030432	**C7792VXD09-A2.00Z5R**	2.000	1.574	-	0.750	0.059	5	*015064*	F3510T	*015240*	T15	18.60
030433	**C7792VXD09-A2.00Z6R**	2.000	1.574	-	0.750	0.059	6	*015064*	F3510T	*015240*	T15	18.60

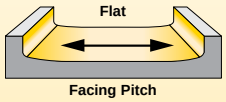
Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D	L/H	M	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7792VXD09 Modular Head												
030616	**A7792VXD09SA1.0Z2R1.4**	1.000	1.377	M12	0.492	0.059	2	*015269*	F3508T	*015240*	T15	18.60
030617	**A7792VXD09SA1.25Z3R2**	1.250	1.692	M16	0.669	0.059	3	*015064*	F3510T	*015240*	T15	18.60

Note: For cylindrical shank extensions in high density alloy with through coolant refer to page A78.

7792VXD09 Technical Information (inch)

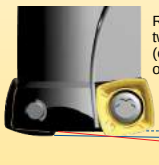
Product		Dimensions							
EDP	**Item Description**	Facing Pitch	Ramping Angle A °	Ramping Angle B °	Helical Hole min. - max.		a_p max Helical / Linear	a_e max Plunging	Max RPM
029474	**C7792VXD09WA1.00Z2R**	0.478	2.70	8.00	1.370	1.920	0.020	0.236	48,000
029475	**C7792VXD09WA1.25Z3R**	0.728	1.50	4.50	1.870	2.420	0.020	0.236	40,500
031193	**C7792VXD09CA1.00Z2R2**	0.478	2.70	8.00	1.370	1.920	0.020	0.236	48,000
031194	**C7792VXD09CA1.25Z3R3**	0.728	1.50	4.50	1.870	2.420	0.020	0.236	40,500
029476	**C7792VXD09-A1.50Z3R**	0.980	1.10	2.70	2.370	2.920	0.020	0.236	36,000
029477	**C7792VXD09-A1.50Z4R**	0.980	1.10	2.70	2.370	2.920	0.020	0.236	36,000
030431	**C7792VXD09-A1.50Z5R**	0.980	1.10	2.70	2.370	2.920	0.020	0.236	36,000
030432	**C7792VXD09-A2.00Z5R**	1.478	0.70	1.80	3.370	3.920	0.020	0.236	30,000
030433	**C7792VXD09-A2.00Z6R**	1.478	0.70	1.80	3.370	3.920	0.020	0.236	30,000
030616	**A7792VXD09SA1.0Z2R1.4**	0.480	2.70	8.10	1.370	1.920	0.020	0.236	48,000
030617	**A7792VXD09SA1.25Z3R2**	0.728	1.50	4.50	1.870	2.420	0.020	0.236	40,500





Facing Pitch

Ramp angle A uses one outside cutting edge only.



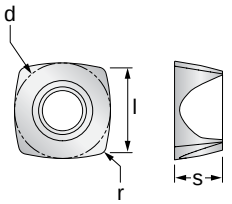
Ramp angle B uses two cutting edges (one outside and one inside edge).

A = max ramp angle utilizing full face contact

B = max ramp angle utilizing full contact + internal corner radius

STELLRAM


XDLW09-D XDLT09-D41 XDLT09-D721 XDLT09-D411



Product			Application & Material			Dimensions (inch)				
			Facing	Slotting	Plunging					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.059	a_p max. 0.059	a_e max. 0.236					
029487	XDLW090408SR-D	X400	♦♦♦	♦♦♦	♦♦♦	0.375	0.375	0.187	0.031	0.004
029485	XDLW090408SR-D	X500	●●●	●●●	●●●	0.375	0.375	0.187	0.031	0.004
029486	XDLW090408SR-D	SC3025	♦	♦	♦	0.375	0.375	0.187	0.031	0.004
029685	XDLT090408ER-D41	X500	■♦♦	■♦♦	■♦♦	0.375	0.375	0.187	0.031	0.002
031535	XDLT090408ER-D41	SP6519	●●♦■●■	●●♦■●■	●●♦■●■	0.375	0.375	0.187	0.031	0.002
033067	XDLT090408ER-D41	SC6525	■■■	■■■	■■■	0.375	0.375	0.187	0.031	0.002
029637	XDLT090408ER-D721	GH2	♦	♦	♦	0.375	0.375	0.187	0.031	0.001
030853	XDLT090412ER-D411	X500	■♦♦	■♦♦	■♦♦	0.375	0.375	0.187	0.047	0.002
030854	XDLT090412ER-D411	SP6519	●●♦■●■	●●♦■●■	●●♦■●■	0.375	0.375	0.187	0.047	0.002



Machining Choice: ♦ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

XDLW090408SR-D X500 should be used for Alloy Steel and Stainless Steel with heavy scale.

XDLT090412ER-D411 is a more positive geometry than the -D-41 with a larger radius which increases performance during smaller radial engagements or where chipping may occur when using the -D-41 geometry. XDLT090412ER-D411 uses less power than the -D-41 geometry.

7792VXD09 Feeds f_z (inch/tooth)

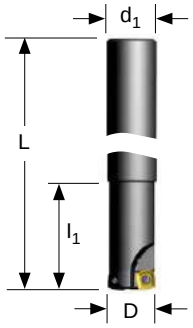
Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
SR-D	X400	Facing	0.012 - 0.079	0.012 - 0.079	-	-	-	-	-	-	-	-	-	-	-	0.012 - 0.032	0.012 - 0.039
SR-D	X400	Slotting	0.012 - 0.059	0.012 - 0.059	-	-	-	-	-	-	-	-	-	-	-	0.012 - 0.024	0.012 - 0.032
SR-D	X400	Plunging	0.004 - 0.010	0.004 - 0.008	-	-	-	-	-	-	-	-	-	-	-	0.004 - 0.005	0.004 - 0.005
SR-D	X500	Facing	-	0.012 - 0.079	0.012 - 0.097	0.012 - 0.090	-	-	-	-	-	-	-	-	-	-	-
SR-D	X500	Slotting	-	0.012 - 0.059	0.012 - 0.035	0.012 - 0.032	-	-	-	-	-	-	-	-	-	-	-
SR-D	X500	Plunging	-	0.004 - 0.008	0.004 - 0.008	0.004 - 0.006	-	-	-	-	-	-	-	-	-	-	-
SR-D	SC3025	Facing	-	-	-	-	0.012 - 0.079	0.012 - 0.071	0.012 - 0.059	-	-	-	-	-	-	-	-
SR-D	SC3025	Slotting	-	-	-	-	0.012 - 0.067	0.012 - 0.059	0.012 - 0.051	-	-	-	-	-	-	-	-
SR-D	SC3025	Plunging	-	-	-	-	0.004 - 0.010	0.004 - 0.009	0.004 - 0.008	-	-	-	-	-	-	-	-
ER-D41	X500	Facing	-	0.012 - 0.059	0.008 - 0.039	0.008 - 0.030	-	-	-	-	-	0.008 - 0.024	0.008 - 0.024	0.008 - 0.024	0.008 - 0.032	-	-
ER-D41	X500	Slotting	-	0.012 - 0.043	0.008 - 0.032	0.006 - 0.025	-	-	-	-	-	0.004 - 0.020	0.004 - 0.020	0.004 - 0.020	0.004 - 0.028	-	-
ER-D41	X500	Plunging	-	0.004 - 0.007	0.004 - 0.006	0.003 - 0.005	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	-	-
ER-D41	SP6519	Facing	0.012 - 0.059	0.012 - 0.051	0.008 - 0.039	0.008 - 0.024	0.012 - 0.059	0.012 - 0.051	-	-	-	0.008 - 0.024	0.008 - 0.024	0.008 - 0.024	0.008 - 0.032	-	-
ER-D41	SP6519	Slotting	0.012 - 0.051	0.012 - 0.039	0.008 - 0.032	0.006 - 0.020	0.012 - 0.051	0.012 - 0.039	-	-	-	0.004 - 0.020	0.004 - 0.020	0.004 - 0.020	0.004 - 0.028	-	-
ER-D41	SP6519	Plunging	0.004 - 0.008	0.004 - 0.006	0.004 - 0.006	0.002 - 0.003	0.004 - 0.008	0.004 - 0.006	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	-	-
ER-D41	SC6525	Facing	0.008 - 0.047	0.008 - 0.039	-	-	0.012 - 0.059	0.012 - 0.051	-	-	-	-	-	-	-	-	-
ER-D41	SC6525	Slotting	0.008 - 0.040	0.008 - 0.032	-	-	0.012 - 0.051	0.012 - 0.039	-	-	-	-	-	-	-	-	-
ER-D41	SC6525	Plunging	0.004 - 0.008	0.004 - 0.006	-	-	0.004 - 0.008	0.004 - 0.006	-	-	-	-	-	-	-	-	-
ER-D721	GH2	Facing	-	-	-	-	-	-	-	0.012 - 0.039	0.012 - 0.039	-	-	-	-	-	-
ER-D721	GH2	Slotting	-	-	-	-	-	-	-	0.012 - 0.039	0.012 - 0.039	-	-	-	-	-	-
ER-D721	GH2	Plunging	-	-	-	-	-	-	-	0.004 - 0.012	0.004 - 0.012	-	-	-	-	-	-
ER-D411	X500	Facing	-	-	0.008 - 0.039	0.008 - 0.032	-	-	-	-	-	0.008 - 0.024	0.008 - 0.024	0.008 - 0.024	0.008 - 0.032	-	-
ER-D411	X500	Slotting	-	-	0.008 - 0.032	0.006 - 0.028	-	-	-	-	-	0.004 - 0.020	0.004 - 0.020	0.004 - 0.020	0.004 - 0.028	-	-
ER-D411	X500	Plunging	-	-	0.004 - 0.006	0.003 - 0.005	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	-	-
ER-D411	SP6519	Facing	0.012 - 0.059	0.012 - 0.051	0.008 - 0.006	0.008 - 0.024	0.012 - 0.059	0.012 - 0.051	-	-	-	0.008 - 0.024	0.008 - 0.024	0.008 - 0.024	0.008 - 0.032	-	-
ER-D411	SP6519	Slotting	0.012 - 0.051	0.012 - 0.039	0.008 - 0.032	0.006 - 0.020	0.012 - 0.051	0.012 - 0.039	-	-	-	0.004 - 0.020	0.004 - 0.020	0.004 - 0.020	0.004 - 0.028	-	-
ER-D411	SP6519	Plunging	0.004 - 0.008	0.004 - 0.006	0.004 - 0.006	0.002 - 0.003	0.004 - 0.008	0.004 - 0.006	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	-	-

Note: HTA = High Temperature Alloys

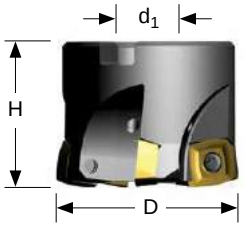
Note: Speed recommendations can be found on page A74.

STELLRAM

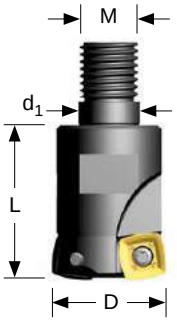




Cylindrical Shank



Shell Mill Fixation



Modular Head



Depth of Cut (a_p)

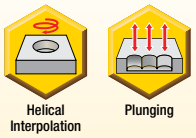
Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D	L/H	l_1	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7792VXD12 Cylindrical Shank												
031196	**C7792VXD12CA1.25Z2R3**	1.250	9.842	2.755	1.250	0.098	2	*015262*	D4010T	*015240*	T15	27.40
033070	**C7792VXD12CA1.2/1.5Z3R3**	1.500	9.842	2.755	1.250	0.098	3	*015262*	D4010T	*015240*	T15	27.40
7792VXD12 Shell Mill Fixation - Coarse, Medium and Fine Pitch												
029480	**C7792VXD12-A2.00Z3R**	2.000	1.574	-	0.750	0.098	3	*015263*	D4012T	*015240*	T15	27.40
029481	**C7792VXD12-A2.00Z4R**	2.000	1.574	-	0.750	0.098	4	*015263*	D4012T	*015240*	T15	27.40
030485	**C7792VXD12-A2.00Z5R**	2.000	1.574	-	0.750	0.098	5	*015262*	D4010T	*015240*	T15	27.40
029482	**C7792VXD12-A2.50Z4R**	2.500	1.574	-	1.000	0.098	4	*015263*	D4012T	*015240*	T15	27.40
029483	**C7792VXD12-A2.50Z5R**	2.500	1.574	-	1.000	0.098	5	*015263*	D4012T	*015240*	T15	27.40
029484	**C7792VXD12-A3.00Z5R**	3.000	1.970	-	1.000	0.098	5	*015263*	D4012T	*015240*	T15	27.40
030486	**C7792VXD12-A3.00Z8R**	3.000	1.970	-	1.000	0.098	8	*015263*	D4012T	*015240*	T15	27.40
030437	**C7792VXD12-A4.00Z6R**	4.000	1.970	-	1.250	0.098	6	*015263*	D4012T	*015240*	T15	27.40
030438	**C7792VXD12-A4.00Z9R**	4.000	1.970	-	1.250	0.098	9	*015263*	D4012T	*015240*	T15	27.40
030439	**C7792VXD12-A5.00Z8R**	5.000	2.480	-	1.500	0.098	8	*015263*	D4012T	*015240*	T15	27.40
030440	**C7792VXD12-A5.00Z11R**	5.000	2.480	-	1.500	0.098	11	*015263*	D4012T	*015240*	T15	27.40
030441	**C7792VXD12-6.00Z8R**	6.000	2.480	-	1.500	0.098	8	*015263*	D4012T	*015240*	T15	27.40
030442	**C7792VXD12-6.00Z12R**	6.000	2.480	-	1.500	0.098	12	*015263*	D4012T	*015240*	T15	27.40
033071	**C7792VXD12-6.30Z8R**	6.300	2.480	-	1.500	0.098	8	*015263*	D4012T	*015240*	T15	27.40

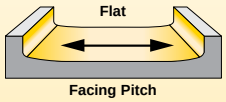
Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D	L/H	M	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7792VXD12 Modular Head												
031086	**A7792VXD12SA1.25Z2R2**	1.250	1.693	M16	0.669	0.098	2	*015262*	D4010T	*015240*	T15	27.40
030727	**A7792VXD12SA1.5Z3R1.7**	1.500	1.750	M16	0.669	0.098	3	*015262*	D4010T	*015240*	T15	27.40

Note: For cylindrical shank extensions in high density alloy with through coolant refer to page A78.

7792VXD12 Technical Information (inch)

Product		Dimensions							
EDP	**Item Description**	Facing Pitch	Ramping Angle A °	Ramping Angle B °	Helical Hole min. - max.		a_p max Helical / Linear	a_e max Plunging	Max RPM
031196	**C7792VXD12CA1.25Z2R3**	0.526	1.80	2.60	1.630	2.420	0.070	0.354	31,500
033070	**C7792VXD12CA1.2/1.5Z3R3**	0.770	0.95	1.60	2.130	2.920	0.070	0.354	27,500
029480	**C7792VXD12-A2.00Z3R**	1.276	0.90	1.40	3.130	3.920	0.070	0.354	22,500
029481	**C7792VXD12-A2.00Z4R**	1.276	0.90	1.40	3.130	3.920	0.070	0.354	22,500
030485	**C7792VXD12-A2.00Z5R**	1.276	0.90	1.40	3.370	3.920	0.070	0.354	22,500
029482	**C7792VXD12-A2.50Z4R**	1.776	0.60	0.90	4.130	4.920	0.070	0.354	22,500
029483	**C7792VXD12-A2.50Z5R**	1.776	0.60	0.90	4.130	4.920	0.070	0.354	22,500
029484	**C7792VXD12-A3.00Z5R**	2.276	0.45	0.90	5.130	5.920	0.070	0.354	17,500
030486	**C7792VXD12-A3.00Z8R**	2.276	0.45	0.90	5.130	5.920	0.070	0.354	17,500
030437	**C7792VXD12-A4.00Z6R**	3.270	0.31	1.42	7.130	7.920	0.070	0.354	14,500
030438	**C7792VXD12-A4.00Z9R**	3.270	0.31	1.42	7.130	7.920	0.070	0.354	14,500
030439	**C7792VXD12-A5.00Z8R**	4.270	0.24	1.04	9.130	9.920	0.070	0.354	13,000
030440	**C7792VXD12-A5.00Z11R**	4.270	0.24	1.04	9.130	9.920	0.070	0.354	13,000
030441	**C7792VXD12-6.00Z8R**	5.270	0.19	0.82	11.130	11.920	0.070	0.354	11,500
030442	**C7792VXD12-6.00Z12R**	5.270	0.19	0.82	11.130	11.920	0.070	0.354	11,500
033071	**C7792VXD12-6.30Z8R**	5.570	0.18	0.38	11.130	11.920	0.070	0.354	11,000
031086	**A7792VXD12SA1.25Z2R2**	0.520	2.60	2.60	1.630	2.420	0.070	0.354	31,500
030727	**A7792VXD12SA1.5Z3R1.7**	0.770	0.95	1.60	2.130	2.920	0.070	0.354	27,500





Facing Pitch

Ramp angle A uses one outside cutting edge only.



Ramp angle B uses two cutting edges (one outside and one inside edge).

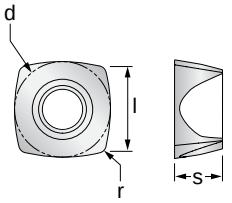
A = max ramp angle utilizing full face contact

B = max ramp angle utilizing full contact + internal corner radius

STELLRAM



XDLW12-D XDLT12-D41 XDLT12-D721 XDLT12-D411



Product			Application & Material			Dimensions (inch)				
			Facing	Slotting	Plunging					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.098	a_p max. 0.079	a_e max. 0.354					
029490	XDLW120508SR-D	X400	◆◆◆	◆◆◆	◆◆◆	0.472	0.472	0.219	0.031	0.004
029488	XDLW120508SR-D	X500	●●●	●●●	●●●	0.472	0.472	0.219	0.031	0.004
029489	XDLW120508SR-D	SC3025	◆	◆	◆	0.472	0.472	0.219	0.031	0.004
029682	XDLT120508ER-D41	X500	■◆◆	■◆◆	■◆◆	0.472	0.472	0.219	0.031	0.002
031534	XDLT120508ER-D41	SP6519	●●◆■●■	●●◆■●■	●●◆■●■	0.472	0.472	0.219	0.031	0.002
033068	XDLT120508ER-D41	SC6525	■■■	■■■	■■■	0.472	0.472	0.219	0.031	0.002
029638	XDLT120508ER-D721	GH2	◆	◆	◆	0.472	0.472	0.219	0.031	0.001
030783	XDLT120512ER-D411	X500	■◆◆	■◆◆	■◆◆	0.472	0.472	0.219	0.047	0.002
030792	XDLT120512ER-D411	SP6519	●●◆■●■	●●◆■●■	●●◆■●■	0.472	0.472	0.219	0.047	0.002



Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

XDLW120508SR-D X500 should be used for Alloy Steel and Stainless Steel with heavy scale.

XDLT120512ER-D411 is a more positive geometry than the -D-41 with a larger radius which increases performance during smaller radial engagements or where chipping may occur when using the -D-41 geometry. XDLT120512ER-D411 uses less power than the -D-41 geometry.

7792VXD12 Feeds f_z (inch/tooth)

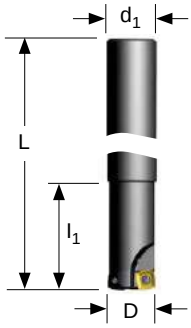
Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
SR-D	X400	Facing	0.012 - 0.106	0.012 - 0.098	-	-	-	-	-	-	-	-	-	-	-	0.012 - 0.047	0.012 - 0.059
SR-D	X400	Slotting	0.012 - 0.079	0.012 - 0.079	-	-	-	-	-	-	-	-	-	-	-	0.012 - 0.031	0.012 - 0.039
SR-D	X400	Plunging	0.004 - 0.012	0.004 - 0.010	-	-	-	-	-	-	-	-	-	-	-	0.004 - 0.005	0.004 - 0.006
SR-D	X500	Facing	-	0.012 - 0.098	0.012 - 0.067	0.012 - 0.047	-	-	-	-	-	-	-	-	-	-	-
SR-D	X500	Slotting	-	0.012 - 0.079	0.012 - 0.059	0.012 - 0.039	-	-	-	-	-	-	-	-	-	-	-
SR-D	X500	Plunging	-	0.004 - 0.010	0.004 - 0.010	0.004 - 0.007	-	-	-	-	-	-	-	-	-	-	-
SR-D	SC3025	Facing	-	-	-	-	0.012 - 0.118	0.012 - 0.110	0.012 - 0.098	-	-	-	-	-	-	-	-
SR-D	SC3025	Slotting	-	-	-	-	0.012 - 0.098	0.012 - 0.091	0.012 - 0.083	-	-	-	-	-	-	-	-
SR-D	SC3025	Plunging	-	-	-	-	0.004 - 0.012	0.004 - 0.011	0.004 - 0.010	-	-	-	-	-	-	-	-
ER-D41	X500	Facing	-	-	0.008 - 0.055	0.008 - 0.030	-	-	-	-	-	0.008 - 0.033	0.008 - 0.033	0.008 - 0.033	0.008 - 0.040	-	-
ER-D41	X500	Slotting	-	-	0.008 - 0.043	0.008 - 0.026	-	-	-	-	-	0.004 - 0.028	0.004 - 0.028	0.004 - 0.028	0.004 - 0.031	-	-
ER-D41	X500	Plunging	-	-	0.004 - 0.008	0.003 - 0.006	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	-	-
ER-D41	SP6519	Facing	0.012 - 0.098	0.012 - 0.091	0.008 - 0.047	0.008 - 0.030	0.012 - 0.098	0.012 - 0.091	-	-	-	0.008 - 0.033	0.008 - 0.033	0.008 - 0.033	0.008 - 0.040	-	-
ER-D41	SP6519	Slotting	0.012 - 0.079	0.012 - 0.071	0.008 - 0.039	0.006 - 0.024	0.012 - 0.079	0.012 - 0.071	-	-	-	0.004 - 0.028	0.004 - 0.028	0.004 - 0.028	0.004 - 0.031	-	-
ER-D41	SP6519	Plunging	0.004 - 0.009	0.004 - 0.007	0.004 - 0.007	0.002 - 0.004	0.004 - 0.009	0.004 - 0.007	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	-	-
ER-D41	SC6525	Facing	0.008 - 0.079	0.008 - 0.065	-	-	0.012 - 0.098	0.012 - 0.090	-	-	-	-	-	-	-	-	-
ER-D41	SC6525	Slotting	0.008 - 0.070	0.008 - 0.062	-	-	0.012 - 0.079	0.012 - 0.071	-	-	-	-	-	-	-	-	-
ER-D41	SC6525	Plunging	0.004 - 0.009	0.004 - 0.008	-	-	0.004 - 0.009	0.004 - 0.007	-	-	-	-	-	-	-	-	-
ER-D721	GH2	Facing	-	-	-	-	-	-	-	0.012 - 0.059	0.012 - 0.059	-	-	-	-	-	-
ER-D721	GH2	Slotting	-	-	-	-	-	-	-	0.012 - 0.059	0.012 - 0.059	-	-	-	-	-	-
ER-D721	GH2	Plunging	-	-	-	-	-	-	-	0.004 - 0.016	0.004 - 0.016	-	-	-	-	-	-
ER-D411	X500	Facing	-	-	0.008 - 0.055	0.008 - 0.035	-	-	-	-	-	0.008 - 0.033	0.008 - 0.033	0.008 - 0.033	0.008 - 0.039	-	-
ER-D411	X500	Slotting	-	-	0.008 - 0.043	0.008 - 0.031	-	-	-	-	-	0.004 - 0.028	0.004 - 0.028	0.004 - 0.028	0.004 - 0.031	-	-
ER-D411	X500	Plunging	-	-	0.004 - 0.008	0.003 - 0.006	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	-	-
ER-D411	SP6519	Facing	0.012 - 0.098	0.012 - 0.091	0.008 - 0.047	0.008 - 0.030	0.012 - 0.098	0.012 - 0.091	-	-	-	0.008 - 0.033	0.008 - 0.033	0.008 - 0.033	0.008 - 0.039	-	-
ER-D411	SP6519	Slotting	0.012 - 0.079	0.012 - 0.071	0.008 - 0.039	0.006 - 0.024	0.012 - 0.079	0.012 - 0.071	-	-	-	0.004 - 0.028	0.004 - 0.028	0.004 - 0.028	0.004 - 0.031	-	-
ER-D411	SP6519	Plunging	0.004 - 0.009	0.004 - 0.007	0.004 - 0.007	0.002 - 0.004	0.004 - 0.009	0.004 - 0.007	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	-	-

Note: HTA = High Temperature Alloys

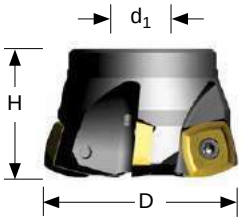
Note: Speed recommendations can be found on page A74.

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Cylindrical Shank

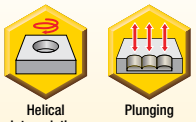


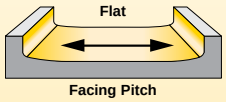
Shell Mill Fixation

Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D	L/H	l_1	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7792VXE16 Cylindrical Shank												
034853	**C7792VXE16CA1.5Z2R4**	1.500	6.772	4.000	1.500	0.138	2	*031225*	DP5013T	*030819*	TP20	53,9
034854	**C7792VXE16CA2.0Z3R4**	2.000	6.772	4.000	1.500	0.138	3	*031225*	DP5013T	*030819*	TP20	53,9
7792VXE16 Shell Mill Fixation												
031282	**C7792VXE16-A2.5Z05R**	2.500	1.574	-	1.000	0.138	5	*031225*	DP5013T	*030819*	TP20	53,9
031283	**C7792VXE16-A3.0Z6R**	3.000	1.970	-	1.000	0.138	6	*031225*	DP5013T	*030819*	TP20	53,9
031284	**C7792VXE16-A4.0Z8R**	4.000	1.970	-	1.250	0.138	8	*031225*	DP5013T	*030819*	TP20	53,9
031285	**C7792VXE16-A5.0Z10R**	5.000	2.480	-	1.500	0.138	10	*031225*	DP5013T	*030819*	TP20	53,9
031286	**C7792VXE16-6.0Z12**	6.000	2.480	-	1.500	0.138	12	*031225*	DP5013T	*030819*	TP20	53,9

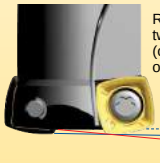
7792VXE16 Technical Information (inch)

Product		Dimensions							
EDP	**Item Description**	Facing Pitch	Ramping Angle A °	Ramping Angle B °	Helical Hole min. - max.		a_p max Helical / Linear	a_e max Plunging	Max RPM
034853	**C7792VXE16CA1.5Z2R4**	0.556	2.55	3.35	1.820	2.920	0.098	0.512	34500
034854	**C7792VXE16CA2.0Z3R4**	1.050	1.36	2.85	2.820	3.920	0.098	0.512	27000
031282	**C7792VXE16-A2.5Z05R**	1.460	0.86	1.00	3.820	4.920	0.098	0.512	22,000
031283	**C7792VXE16-A3.0Z6R**	1.960	0.58	0.65	4.820	5.920	0.098	0.512	19,500
031284	**C7792VXE16-A4.0Z8R**	2.960	0.42	0.51	6.820	7.920	0.098	0.512	16,500
031285	**C7792VXE16-A5.0Z10R**	3.960	0.32	0.37	8.820	9.920	0.098	0.512	14,500
031286	**C7792VXE16-6.0Z12**	4.960	0.23	0.27	10.820	11.920	0.098	0.512	13,000





Ramp angle A uses one outside cutting edge only.



Ramp angle B uses two cutting edges (one outside and one inside edge).

A = max ramp angle utilizing full face contact

B = max ramp angle utilizing full contact + internal corner radius



Depth of Cut (a_p)

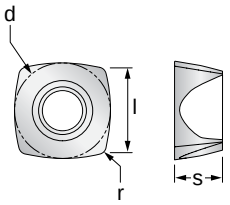
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XELW16-D



XELT16-D41



Product			Application & Material			Dimensions (inch)				
			Facing	Slotting	Plunging					
			Depth of Cut (inch)							
EDP	Item Description	Grade	a_p max. 0.138	a_p max. 0.118	a_e max. 0.512	d (IC)	l	s	r	h_m min
031291	**XELW160512SR-D**	**X400**	♦♦♦	♦♦♦	♦♦♦	0.661	0.661	0.219	0.047	0.005
031292	**XELW160512SR-D**	**SC3025**	♦	♦	♦	0.661	0.661	0.219	0.047	0.005
031293	**XELT160512ER-D41**	**X500**	♦♦♦	♦♦♦	♦♦♦	0.661	0.661	0.219	0.047	0.005
031294	**XELT160512ER-D41**	**SP6519**	●●♦□●■	●●♦□●■	●●♦□●■	0.661	0.661	0.219	0.047	0.005
033069	**XELT160512ER-D41**	**SC6525**	■■■	■■■	■■■	0.661	0.661	0.219	0.047	0.005

Machining Choice: ♦ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.



7792VXE16 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
SR-D	X400	Facing	0.012 - 0.079	0.012 - 0.071	-	-	-	-	-	-	-	-	-	-	-	0.012 - 0.031	0.012 - 0.039
SR-D	X400	Slotting	0.012 - 0.067	0.012 - 0.059	-	-	-	-	-	-	-	-	-	-	-	0.012 - 0.020	0.012 - 0.024
SR-D	X400	Plunging	0.004 - 0.010	0.004 - 0.008	-	-	-	-	-	-	-	-	-	-	-	0.004 - 0.004	0.004 - 0.005
SR-D	SC3025	Facing	-	-	-	-	0.012 - 0.080	0.012 - 0.071	0.012 - 0.059	-	-	-	-	-	-	-	-
SR-D	SC3025	Slotting	-	-	-	-	0.012 - 0.060	0.012 - 0.051	0.012 - 0.047	-	-	-	-	-	-	-	-
SR-D	SC3025	Plunging	-	-	-	-	0.004 - 0.008	0.004 - 0.007	0.004 - 0.006	-	-	-	-	-	-	-	-
ER-D41	X500	Facing	-	-	0.008 - 0.040	0.008 - 0.025	-	-	-	-	-	0.008 - 0.024	0.008 - 0.024	0.008 - 0.024	0.008 - 0.032	-	-
ER-D41	X500	Slotting	-	-	0.008 - 0.032	0.008 - 0.020	-	-	-	-	-	0.004 - 0.016	0.004 - 0.016	0.004 - 0.016	0.004 - 0.020	-	-
ER-D41	X500	Plunging	-	-	0.005 - 0.006	0.003 - 0.005	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	-	-
ER-D41	SP6519	Facing	0.012 - 0.059	0.012 - 0.047	0.008 - 0.040	0.008 - 0.020	0.012 - 0.070	0.012 - 0.055	-	-	-	0.008 - 0.024	0.008 - 0.024	0.008 - 0.024	0.008 - 0.032	-	-
ER-D41	SP6519	Slotting	0.012 - 0.047	0.012 - 0.043	0.008 - 0.032	0.008 - 0.018	0.012 - 0.050	0.012 - 0.045	-	-	-	0.004 - 0.016	0.004 - 0.016	0.004 - 0.016	0.004 - 0.020	-	-
ER-D41	SP6519	Plunging	0.004 - 0.009	0.004 - 0.008	0.005 - 0.006	0.003 - 0.005	0.004 - 0.008	0.004 - 0.006	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	-	-
ER-D41	SC6525	Facing	0.012 - 0.047	0.012 - 0.038	-	-	0.012 - 0.070	0.012 - 0.055	-	-	-	-	-	-	-	-	-
ER-D41	SC6525	Slotting	0.012 - 0.045	0.012 - 0.035	-	-	0.012 - 0.050	0.012 - 0.045	-	-	-	-	-	-	-	-	-
ER-D41	SC6525	Plunging	0.004 - 0.009	0.004 - 0.008	-	-	0.004 - 0.008	0.004 - 0.006	-	-	-	-	-	-	-	-	-

Note: HTA = High Temperature Alloys

Note: Speed recommendations can be found on page A74.

Speed v_c (SFM)

7792VX Series

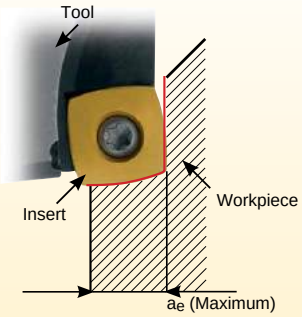
Wear Resistance: – ⟵ +

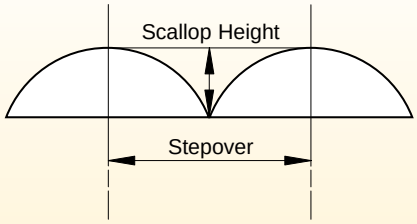
Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

ISO	Materials	Rm and Hardness	PVD X Grade X400	CVD X Grade X500	PVD Standard SP6519	Uncoated Micrograin GH2	CVD Standard SC6525	CVD Standard SC3025
P	Unalloyed Steel	<600 N/mm² <180 HBN	395 - 855		425 - 970		460 - 1190	
		<950 N/mm² <280 HBN	345 - 755		375 - 855		395 - 1050	
	Alloyed Steel	700-950 N/mm² 200-280 HBN	310 - 655	330 - 690	330 - 755		345 - 930	
		950-1200 N/mm² 280-355 HBN	230 - 490	245 - 525	245 - 575		260 - 705	
		1200-1400 N/mm² 355-415 HBN	150 - 310	165 - 330	165 - 360		165 - 445	
M	Stainless Steel	Austenitic + Ferritic 300 series		375 - 820	375 - 885			
		Martensitic 400 series		330 - 720	345 - 770			
	PH Stainless	Refractory P.H.		165 - 360	165 - 395			
K	Cast Iron	Grey GG-Ft		395 - 920	460 - 970		475 - 1280	445 - 950
		Spheroidal-Ductile GGG-FGS		345 - 675	360 - 785		375 - 1000	395 - 805
		Malleable GTS - MN/MP		310 - 560	330 - 720			375 - 655
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN			1000 - 7000	1310 - 9005		
		Aluminum + Silicon > 16% Si 92 HBN			800 - 5800	970 - 7005		
S	High Temperature Alloys	Iron Based		75 - 160	75 - 180			
		Cobalt Based		70 - 145	70 - 160			
		Nickel Based		80 - 170	80 - 180			
		Titanium Based		115 - 240	120 - 260			
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN	150 - 310					
		Chilled Cast Iron >1400 N/mm² > 400 HBN	115 - 260					

Plunging





The cutting edge should not be in contact with the material face after machining to maintain the cutting edge quality.

The scallop height is calculated in relation to the step over.



The maximum radial engagement is directly in relation to insert cutting edge length.

For insert type: **XP…06 the a_e, max is 0.118 in.**

For insert type: **XD…09 the a_e, max is 0.236 in.**

For insert type: **XD…12 the a_e, max is 0.354 in.**

For insert type: **XE…16 the a_e, max is 0.512 in.**

Plunging Information (inch) - tool definition-scallop height and step over

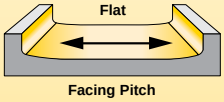
	Tool definition (inch)																						
	7792VXP06				7792VXD09				7792VXD12									7792VXE16					
Diameter	0.625	0.750	1.000	1.250	1.000	1.250	1.500	2.000	1.250	1.500	2.000	2.500	3.000	4.000	5.000	6.000	6.300	2.500	3.000	4.000	5.000	6.000	
Insert size	0.236	0.236	0.236	0.236	0.354	0.354	0.354	0.354	0.472	0.472	0.472	0.472	0.472	0.472	0.472	0.472	0.472	0.630	0.630	0.630	0.630	0.630	
a_e max	0.118	0.118	0.118	0.118	0.236	0.236	0.236	0.236	0.354	0.354	0.354	0.354	0.354	0.354	0.354	0.354	0.354	0.512	0.512	0.512	0.512	0.512	
Scallop height	Step over (inch)																						
0.010	0.156	0.175	0.196	0.222	0.196	0.222	0.248	0.278	0.222	0.242	0.283	0.312	0.352	0.393	0.440	0.486	0.498	0.312	0.352	0.393	0.440	0.498	
0.020	0.219	0.246	0.276	0.313	0.276	0.313	0.350	0.392	0.313	0.341	0.400	0.440	0.496	0.556	0.621	0.686	0.703	0.440	0.496	0.556	0.621	0.703	
0.030	0.266	0.299	0.336	0.381	0.336	0.381	0.427	0.479	0.381	0.417	0.488	0.538	0.607	0.680	0.760	0.840	0.861	0.538	0.607	0.680	0.760	0.861	
0.039	0.305	0.343	0.386	0.439	0.386	0.439	0.492	0.551	0.439	0.480	0.562	0.620	0.700	0.783	0.877	0.969	0.993	0.620	0.700	0.783	0.877	0.993	
0.079	0.417	0.472	0.534	0.610	0.534	0.610	0.687	0.772	0.610	0.669	0.787	0.870	0.983	1.102	1.235	1.366	1.400	0.870	0.983	1.102	1.235	1.400	
0.118	0.492	0.562	0.640	0.734	0.640	0.734	0.830	0.935	0.734	0.808	0.955	1.056	1.197	1.343	1.506	1.667	1.709	1.056	1.197	1.343	1.506	1.709	
0.157					0.722	0.833	0.945	1.068	0.833	0.920	1.091	1.209	1.373	1.543	1.732	1.918	1.967	1.209	1.373	1.543	1.732	1.967	
0.197					0.787	0.915	1.042	1.181	0.915	1.012	1.207	1.341	1.525	1.716	1.929	2.138	2.192	1.341	1.525	1.716	1.929	2.192	
0.236					0.841	0.983	1.125	1.279	0.983	1.093	1.308	1.456	1.659	1.870	2.104	2.334	2.394	1.456	1.659	1.870	2.104	2.393	
0.276									1.042	1.162	1.398	1.559	1.780	2.009	2.263	2.512	2.577	1.559	1.780	2.009	2.263	2.577	
0.315									1.091	1.222	1.477	1.652	1.890	2.136	2.409	2.676	2.746	1.652	1.890	2.136	2.409	2.746	
0.354									1.133	1.274	1.549	1.736	1.991	2.254	2.544	2.889	2.903	1.736	1.991	2.254	2.544	2.903	
0.394																		1.813	2.083	2.362	2.670	3.050	
0.433																		1.883	2.169	2.464	2.788	3.188	
0.472																		1.948	2.249	2.559	2.900	3.319	
0.512																		2.007	2.324	2.648	2.648	3.005	

Max. flat surface (inch)

Insert size	Cutter dia.	Pitch
06	0.625	0.255
	0.750	0.380
	1.000	0.630
	1.250	0.880
09	1.000	0.480
	1.250	0.730
	1.500	0.980
	2.000	1.480
12	1.250	0.526
	1.500	0.770
	2.000	1.270
	2.500	1.770
	3.000	2.270
	4.000	3.270
	5.000	4.270
	6.000	5.270
	6.300	5.570
16	2.500	1.460
	3.000	1.960
	4.000	2.960
	5.000	3.960
	6.000	4.960



Helical Interpolation



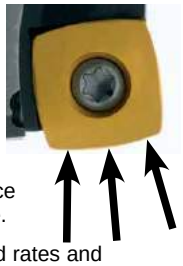
Helical interpolation capacity for 7792VX (inch)

Insert Size	Cutter dia.	Hole min.	Hole max.
06	0.625	0.850	1.170
	0.750	1.100	1.420
	1.000	1.600	1.920
	1.250	2.100	2.420
09	1.000	1.370	1.920
	1.250	1.870	2.420
	1.500	2.370	2.920
	2.000	3.370	3.920
12	1.250	1.630	2.420
	1.500	2.130	2.920
	2.000	3.130	3.920
	2.500	4.130	4.920
	3.000	5.130	5.920
	4.000	7.130	7.920
	5.000	9.130	9.920
	6.000	11.130	11.920
	6.300	11.730	12.520
16	2.500	3.820	4.920
	3.000	4.820	5.920
	4.000	6.820	7.920
	5.000	8.820	9.920
	6.000	10.820	11.920

The advantages of facemilling and producing cavities with Stellram's high feed face mill are numerous.

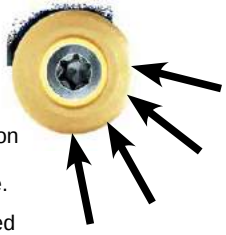
The unique design of the insert, approach angle and the cutter body ensure the cutting forces are predominantly directed in the axial direction. The example shown with a round insert tool shows complex forces which result in high levels of vibration and damage to the cutting edge.

7792VX



- Cutting forces predominantly axial.
- Relationship between cutting edge and work piece is at its most stable.
- Results in high feed rates and consistent tool life.

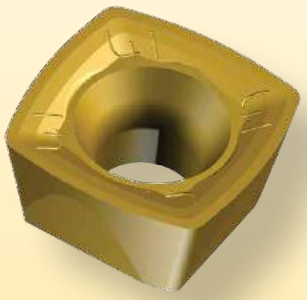
Round Insert Tools



- Tangential forces act around the radius.
- Leads to vibration and damage of the cutting edge.
- Leads to reduced feed and lower productivity.

The 7792VX machines with a constant volume of chip throughout all aspects of producing cavities and produces a side wall that is close to profile.

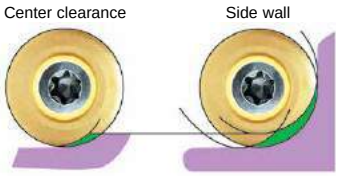
Round insert tools have increasing chip volume through the process.



7792VX



- Constant cutting section (chip volume) irrespective of position in cavity.
- Producing a close to profile side wall.
- Near-square side walls possible.



Round insert

- Greater surface contact.
- Increased chip section for side wall machining.
- Vibration in corners.
- Undulating side wall cusps.

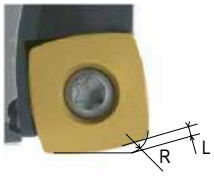
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CNC Program - Corner Radius Definition

The use of common CAD / CAM systems requires a round insert dimension to be known for cavity machining. This is available with 7792VX cutters as shown to the right and in the reference table.

For finish pass applications:

Wiper Facet for finishing use max. feed 0.031 inch/ Revolution (IPR)



Programming Data (inch)			
Insert size (mm)	Radius	R	L
06	0.031	0.054	0.016
09	0.031	0.079	0.028
	0.047	0.089	0.026
12	0.031	0.098	0.040
	0.047	0.107	0.038
16	0.047	0.164	0.057

Calculation of the average chip thickness in relation with the D.O.C. (Axial)

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_p}}$$

h_m = Average chip thickness
a_p = Depth of cut
f_z = Feed per tooth
d = Insert diameter (1.772")

Theoretical Diameter for all high feed insert sizes = 1.772"

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_p}{d}}$$

Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of Dia.

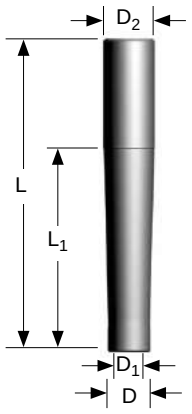
Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$



Shank Extension

Product		Dimensions (inch)					
EDP	Item Description	L	L_1	D_2	D	D_1	M
030641	**M-13-M8-CA.625-3.543**	3.543	1.600	0.625	0.512	0.335	M8
030642	**M-13-M8-CA.625-4.331**	4.331	2.500	0.625	0.512	0.335	M8
030643	**M-13-M8-CA.625-5.118**	5.118	3.000	0.625	0.512	0.335	M8
030644	**M-13-M8-CA.625-6.693**	6.693	4.750	0.625	0.512	0.335	M8
030645	**M-18-M10-CA.750-4.331**	4.331	2.500	0.750	0.709	0.413	M10
030646	**M-18-M10-CA.750-5.118**	5.118	3.000	0.750	0.709	0.413	M10
030647	**M-18-M10-CA.750-6.693**	6.693	4.750	0.750	0.709	0.413	M10
030648	**M-21-M12-CA1-5.157**	5.157	3.000	1.000	0.827	0.492	M12
030649	**M-21-M12-CA1-6.142**	6.142	4.000	1.000	0.827	0.492	M12
030650	**M-21-M12-CA1-7.126**	7.126	5.000	1.000	0.827	0.492	M12
030651	**M-21-M12-CA1-8.110**	8.110	6.000	1.000	0.827	0.492	M12
030652	**M-21-M12-CA1-9.094**	9.094	7.000	1.000	0.827	0.492	M12
030653	**M-29-M16-CA1.25-6.3**	6.300	4.000	1.250	1.411	0.669	M16
030654	**M-29-M16-CA1.25-8.27**	8.268	6.000	1.250	1.411	0.669	M16
030655	**M-29-M16-CA1.25-10.2**	10.236	8.000	1.250	1.411	0.669	M16
030656	**M-29-M16-CA1.25-12.2**	12.205	10.000	1.250	1.411	0.669	M16

Note: Order example with cylindrical shank: M-13-M8-CA.625-3.543



Cylindrical shank extensions can be used with all modular heads found in several product family series within this catalog.

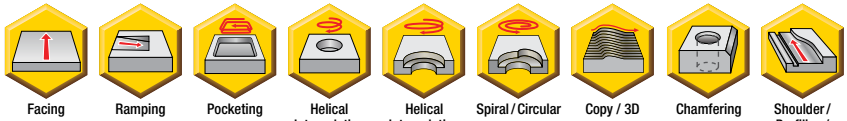
These extensions have the industry standard of metric threads.

Technical Advice

M	Modular adapter
13	Diameter in front of the modular shank (D) 0.512" (13mm)
M8	Metric Thread (M)
CA.625	Cylindrical shank diameter 0.625" with through coolant
3.543	Total length of the body in Inches



STELLRAM



42° LEAD ANGLE - FACE MILLS

7745VOD cutters are designed for machining most materials. Octagonal inserts offer up to eight economical cutting edges.

These cutters are ideal for roughing, semi-finishing and finishing of Steel, Alloyed Steel, Stainless Steel, High Temperature Alloys, Cast Iron and Aluminum Alloys.

7745VOD cutters are also very robust when machining with tool holder extensions.

They are one of the first choice tools for machining component surfaces with scale as well as for machining of irregular stock.

Available in two insert sizes: OD..04 and OD..06. Both sizes are available in cutters with medium and fine tooth pitch, giving maximum efficiency and performance in order to reduce cycle times.

7745VOD

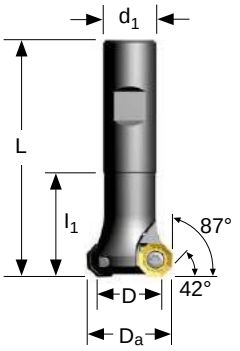
7745VOD04:
Maximum a_p = 0.140”
(a_p1 max = 0.300”)
Diameter Range = 1.000” to 6.000”

Note: Larger diameter Shell Mill Fixation cutters with interchangeable cartridges are available. Please see page A126.

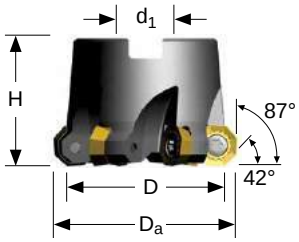
7745VOD06:
Maximum a_p = 0.173”
(a_p1 = 0.400”)
Diameter Range = 2.000” to 6.000”

Note: Larger diameter Shell Mill Fixation cutters with interchangeable cartridges are available. Please see page A130.





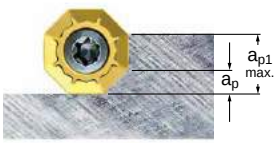
Weldon Shank



Shell Mill Fixation

Product		Dimensions (inch)								Spares				
EDP	**Item Description**	D	D_a*	L/H	l_1	d_1	a_p	a_p 1 max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7745VOD04 Weldon Shank														
014897	**C7745VOD04WA1.00R**	1.000	1.310	3.540	1.570	0.750	0.140	0.300	2	*015270*	F4011T	*015241*	T20	27.40
014898	**C7745VOD04WA1.25R**	1.250	1.560	3.770	1.570	1.000	0.140	0.300	3	*015270*	F4011T	*015241*	T20	27.40
014899	**C7745VOD04WA1.50R**	1.500	1.810	4.330	2.000	1.250	0.140	0.300	4	*015270*	F4011T	*015241*	T20	27.40
7745VOD04 Shell Mill Fixation - Medium and Fine Pitch														
015421	**C7745VOD04-A1.50R**	1.500	1.810	1.370	-	0.500	0.140	0.300	4	*015270*	F4011T	*015241*	T20	27.40
014893	**C7745VOD04-A2.00R**	2.000	2.310	1.570	-	0.750	0.140	0.300	4	*015270*	F4011T	*015241*	T20	27.40
026571	**C7745VOD04-A2.00Z6R**	2.000	2.310	1.570	-	0.750	0.140	0.300	6	*015270*	F4011T	*015241*	T20	27.40
014894	**C7745VOD04-A2.50R**	2.500	2.810	1.570	-	0.750	0.140	0.300	5	*015270*	F4011T	*015241*	T20	27.40
026572	**C7745VOD04-A2.50Z7R**	2.500	2.810	1.570	-	0.750	0.140	0.300	7	*015270*	F4011T	*015241*	T20	27.40
014895	**C7745VOD04-A3.00R**	3.000	3.310	1.970	-	1.000	0.140	0.300	6	*015270*	F4011T	*015241*	T20	27.40
026573	**C7745VOD04-A3.00Z9R**	3.000	3.310	1.970	-	1.000	0.140	0.300	9	*015270*	F4011T	*015241*	T20	27.40
014896	**C7745VOD04-A4.00R**	4.000	4.310	1.970	-	1.250	0.140	0.300	7	*015270*	F4011T	*015241*	T20	27.40
026574	**C7745VOD04-A4.00Z11R**	4.000	4.310	1.970	-	1.250	0.140	0.300	11	*015270*	F4011T	*015241*	T20	27.40
026578	**C7745VOD04-A5.00R**	5.000	5.310	2.480	-	1.500	0.140	0.300	8	*015270*	F4011T	*015241*	T20	27.40
026575	**C7745VOD04-A5.00Z12R**	5.000	5.310	2.480	-	1.500	0.140	0.300	12	*015270*	F4011T	*015241*	T20	27.40
026576	**C7745VOD04-6.00R**	6.000	6.310	2.480	-	1.500	0.140	0.300	10	*015270*	F4011T	*015241*	T20	27.40
026577	**C7745VOD04-6.00Z15R**	6.000	6.310	2.480	-	1.500	0.140	0.300	15	*015270*	F4011T	*015241*	T20	27.40

D_a* = Outside Diameter

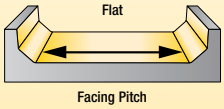


Depth of Cut (a_p)

7745VOD04 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
014897	**C7745VOD04WA1.00R**	1.000	17.00	1.843	2.552	0.080	38,200
014898	**C7745VOD04WA1.25R**	1.250	12.10	2.343	3.052	0.080	35,300
014899	**C7745VOD04WA1.50R**	1.500	8.50	2.843	3.552	0.080	30,000
015421	**C7745VOD04-A1.50R**	1.500	8.50	2.843	3.552	0.080	30,000
014893	**C7745VOD04-A2.00R**	2.000	6.10	3.843	4.552	0.080	25,500
026571	**C7745VOD04-A2.00Z6R**	2.000	6.10	3.843	4.552	0.080	25,500
014894	**C7745VOD04-A2.50R**	2.500	4.30	4.843	5.552	0.080	22,500
026572	**C7745VOD04-A2.50Z7R**	2.500	4.30	4.843	5.552	0.080	22,500
014895	**C7745VOD04-A3.00R**	3.000	3.00	5.843	6.552	0.080	20,500
026573	**C7745VOD04-A3.00Z9R**	3.000	3.00	5.843	6.552	0.080	20,500
014896	**C7745VOD04-A4.00R**	4.000	2.40	7.843	8.552	0.080	17,500
026574	**C7745VOD04-A4.00Z11R**	4.000	2.40	7.843	8.552	0.080	17,500
026578	**C7745VOD04-A5.00R**	5.000	2.00	9.843	10.552	0.080	15,600
026575	**C7745VOD04-A5.00Z12R**	5.000	2.00	9.843	10.552	0.080	15,600
026576	**C7745VOD04-6.00R**	6.000	1.40	11.843	12.552	0.080	14,200
026577	**C7745VOD04-6.00Z15R**	6.000	1.40	11.843	12.552	0.080	14,200





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ODET04-441

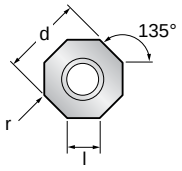

ODET04-44


ODMT04-41


ODMT04-412


ODEW04-RA


ODMW04-SN



Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.140	a_p min. - max. 0.040 - 0.080	a_p min. - max. 0.008 - 0.040					
024911	**ODET0404APFN-441**	**GH1**	♦	♦	♦	0.500	0.157	0.187	Facet	0.001
022198	**ODET0404APEN-44**	**X500**	-	-	●■■■	0.500	0.157	0.187	Facet	0.002
031470	**ODET0404APEN-44**	**SP6519**	-	-	■♦♦♦●♦	0.500	0.157	0.187	Facet	0.002
022199	**ODET0404APEN-44**	**MP91M**	-	-	♦■■	0.500	0.157	0.187	Facet	0.002
022061	**ODMT0404APEN-41**	**X500**	-	●●	-	0.500	0.157	0.187	Facet	0.002
031472	**ODMT0404APEN-41**	**SP6519**	-	♦♦●	-	0.500	0.157	0.187	Facet	0.002
017775	**ODMT0404APEN-41**	**MP91M**	-	■■■	-	0.500	0.157	0.187	Facet	0.002
030768	**ODMT040408EN-412**	**X500**	-	●■■	-	0.500	0.157	0.187	0.031	0.002
030769	**ODMT040408EN-412**	**X700**	-	♦♦●	-	0.500	0.157	0.187	0.031	0.002
031540	**ODMT040408EN-412**	**SP6519**	-	■○♦	-	0.500	0.157	0.187	0.031	0.002
015143	**ODMT040408EN-41**	**X500**	■♦♦	-	-	0.500	0.157	0.187	0.031	0.002
030330	**ODMT040408EN-41**	**X700**	●○●	♦♦●	-	0.500	0.157	0.187	0.031	0.002
031471	**ODMT040408EN-41**	**SP6519**	●♦■■	-	-	0.500	0.157	0.187	0.031	0.002
017303	**ODMT040408EN-41**	**MP91M**	●	-	-	0.500	0.157	0.187	0.031	0.002
027884	**ODEW0404APTR-RA**	**SC3025**	-	♦	♦	0.500	0.157	0.187	Wiper Facet	0.008
017672	**ODMW040408SN**	**X500**	■●●	-	-	0.500	0.157	0.187	0.031	0.011
031462	**ODMW040408SN**	**SP6519**	■♦	-	-	0.500	0.157	0.187	0.031	0.011
017304	**ODMW040408SN**	**MP91M**	♦●■	-	-	0.500	0.157	0.187	0.031	0.011
029096	**ODMW040408SN**	**SC3025**	♦	-	-	0.500	0.157	0.187	0.031	0.011

Machining Choice: ♦ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.



ODMW040408SN X500 should be generally used for heavy duty applications as well as Stainless Steel and High Temperature Alloys with heavy scale.

ODMT040408EN-41 X700 should be used for Stainless Steel and High Temperature Alloys when a stronger cutting edge is required.

Note: Feed recommendations can be found on page A83. Speed recommendations can be found on page A87.

7745VOD04 Feeds f_z (inch/tooth)

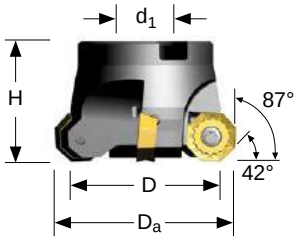
Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
FN-441	GH1	Facing	-	-	-	-	-	-	-	0.001 - 0.012	0.001 - 0.010	-	-	-	-	-	-
EN-44	X500	Facing	0.002 - 0.012	0.002 - 0.011	0.002 - 0.010	0.002 - 0.008	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-44	SP6519	Facing	0.002 - 0.012	0.002 - 0.011	0.002 - 0.010	0.002 - 0.008	0.002 - 0.010	0.002 - 0.010	0.002 - 0.010	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-44	MP91M	Facing	0.002 - 0.012	0.002 - 0.011	-	-	0.002 - 0.010	0.002 - 0.010	0.002 - 0.010	-	-	-	-	-	-	-	-
APEN-41	X500	Facing	0.002 - 0.014	0.002 - 0.013	-	-	-	-	-	-	-	-	-	-	-	-	-
APEN-41	SP6519	Facing	0.002 - 0.014	0.002 - 0.013	-	-	0.002 - 0.010	0.002 - 0.010	0.002 - 0.010	-	-	-	-	-	-	-	-
APEN-41	MP91M	Facing	0.002 - 0.014	0.002 - 0.013	-	-	0.002 - 0.010	0.002 - 0.010	0.002 - 0.010	-	-	-	-	-	-	-	-
EN-412	X500	Facing	-	-	0.002 - 0.014	0.002 - 0.012	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-412	X700	Facing	-	-	0.002 - 0.014	0.002 - 0.012	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-412	SP6519	Facing	-	-	0.002 - 0.014	0.002 - 0.012	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-41	X500	Facing	-	-	0.002 - 0.014	0.002 - 0.012	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.012	-	-
EN-41	X700	Facing	-	-	0.002 - 0.014	0.002 - 0.012	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.012	-	-
EN-41	SP6519	Facing	0.002 - 0.014	-	0.002 - 0.014	0.002 - 0.012	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.012	-	-
EN-41	MP91M	Facing	-	-	-	-	0.002 - 0.014	0.002 - 0.014	0.002 - 0.014	-	-	-	-	-	-	-	-
TR-RA	SC3025	Facing	-	-	-	-	0.008 - 0.014	0.008 - 0.014	0.008 - 0.014	-	-	-	-	-	-	-	-
SN	X500	Facing	-	0.013 - 0.020	0.012 - 0.016	-	-	-	-	-	-	0.008 - 0.012	0.008 - 0.012	0.008 - 0.012	0.008 - 0.013	-	-
SN	SP6519	Facing	0.013 - 0.022	0.013 - 0.020	-	-	-	-	-	-	-	-	-	-	-	-	-
SN	MP91M	Facing	0.013 - 0.022	0.013 - 0.020	-	-	0.013 - 0.020	0.013 - 0.020	0.013 - 0.020	-	-	-	-	-	-	-	-
SN	SC3025	Facing	-	-	-	-	0.013 - 0.020	0.013 - 0.020	0.013 - 0.020	-	-	-	-	-	-	-	-

Note: HTA = High Temperature Alloys

Speed recommendations can be found on page A87.

STELLRAM





Shell Mill Fixation

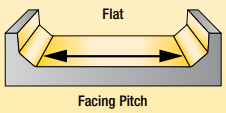
Product		Dimensions (inch)								Spares				
EDP	**Item Description**	D	Da*	L/H	l_1	d_1	a_p	a_p 1 max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7745VOD06 Shell Mill Fixation - Medium and Fine Pitch														
026561	**C7745VOD06-A2.00R**	2.000	2.390	1.570	-	0.750	0.173	0.400	4	*015270*	F4011T	*015241*	T20	27.40
026562	**C7745VOD06-A2.50R**	2.500	2.890	1.570	-	0.750	0.173	0.400	5	*015270*	F4011T	*015241*	T20	27.40
026563	**C7745VOD06-A3.00R**	3.000	3.390	1.970	-	1.000	0.173	0.400	6	*015270*	F4011T	*015241*	T20	27.40
027879	**C7745VOD06-A3.00Z07R**	3.000	3.390	1.970	-	1.000	0.173	0.400	7	*015270*	F4011T	*015241*	T20	27.40
026564	**C7745VOD06-A4.00R**	4.000	4.390	1.970	-	1.250	0.173	0.400	7	*015270*	F4011T	*015241*	T20	27.40
027880	**C7745VOD06-A4.00Z9R**	4.000	4.390	1.970	-	1.250	0.173	0.400	9	*015270*	F4011T	*015241*	T20	27.40
026565	**C7745VOD06-A5.00R**	5.000	5.390	2.480	-	1.500	0.173	0.400	8	*015270*	F4011T	*015241*	T20	27.40
027881	**C7745VOD06-A5.00Z11R**	5.000	5.390	2.480	-	1.500	0.173	0.400	11	*015270*	F4011T	*015241*	T20	27.40
026566	**C7745VOD06-6.00R**	6.000	6.390	2.480	-	1.500	0.173	0.400	10	*015270*	F4011T	*015241*	T20	27.40
027882	**C7745VOD06-6.00Z13R**	6.000	6.390	2.480	-	1.500	0.173	0.400	13	*015270*	F4011T	*015241*	T20	27.40

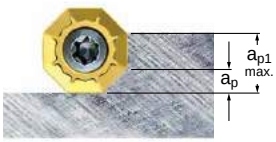
D_a* = Outside Diameter

7745VOD06 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
026561	**C7745VOD06-A2.00R**	2.000	6.00	3.764	4.692	0.100	17,600
026562	**C7745VOD06-A2.50R**	2.500	4.60	4.764	5.692	0.100	15,500
026563	**C7745VOD06-A3.00R**	3.000	3.30	5.764	6.692	0.100	14,000
027879	**C7745VOD06-A3.00Z07R**	3.000	3.30	5.764	6.692	0.100	14,000
026564	**C7745VOD06-A4.00R**	4.000	2.60	7.764	8.692	0.100	12,100
027880	**C7745VOD06-A4.00Z9R**	4.000	2.60	7.764	8.692	0.100	12,100
026565	**C7745VOD06-A5.00R**	5.000	2.00	9.764	10.692	0.100	10,600
027881	**C7745VOD06-A5.00Z11R**	5.000	2.00	9.764	10.692	0.100	10,600
026566	**C7745VOD06-6.00R**	6.000	1.50	11.764	12.692	0.100	9,600
027882	**C7745VOD06-6.00Z13R**	6.000	1.50	11.764	12.692	0.100	9,600







Depth of Cut (a_p)

STELLRAM


ODET06-441

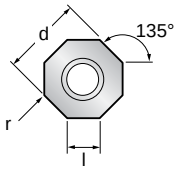

ODET06-44

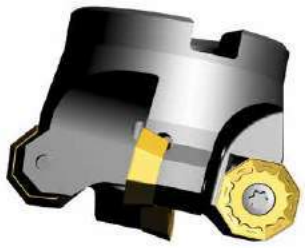

ODMT06-41


ODEW06-RA


ODMW06-TN


ODMW06-SN





Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.173	a_p min. - max. 0.040 - 0.080	a_p min. - max. 0.008 - 0.040					
026588	ODET0605APFN-441	GH1	◆	◆	◆	0.630	0.236	0.219	Facet	0.001
026592	ODET0605APEN-44	X500	-	-	●●●○○	0.630	0.236	0.219	Facet	0.002
031501	ODET0605APEN-44	SP6519	-	-	■◆■■●■	0.630	0.236	0.219	Facet	0.002
034513	ODET0605APEN-44	SP4019	-	-	◆◆◆	0.630	0.236	0.219	Facet	0.002
026591	ODET0605APEN-44	MP91M	-	-	◆■■	0.630	0.236	0.219	Facet	0.002
026590	ODMT0605APEN-41	X500	●■◆	●●●○●	-	0.630	0.236	0.219	Facet	0.002
031502	ODMT0605APEN-41	SP6519	■○●	■◆■■●■	-	0.630	0.236	0.219	Facet	0.002
034514	ODMT0605APEN-41	SP4019	◆◆■	◆◆◆	-	0.630	0.236	0.219	Facet	0.002
026589	ODMT0605APEN-41	MP91M	-	◆■■	-	0.630	0.236	0.219	Facet	0.002
027885	ODEW0605APTR-RA	SC3025	-	◆	◆	0.630	0.236	0.219	Wiper Facet	0.008
026596	ODMW060512TN	X500	●●●○●	-	-	0.630	0.236	0.219	0.047	0.007
031503	ODMW060512TN	SP6519	■◆	-	-	0.630	0.236	0.219	0.047	0.007
034515	ODMW060512TN	SP4019	●○●	-	◆	0.630	0.236	0.219	0.047	0.007
026595	ODMW060512TN	MP91M	◆■●	-	-	0.630	0.236	0.219	0.047	0.007
025838	ODMW060512SN	X500	●●	-	-	0.630	0.236	0.219	0.047	0.011
031483	ODMW060512SN	SP6519	■◆	-	-	0.630	0.236	0.219	0.047	0.011
025836	ODMW060512SN	MP91M	◆■■	-	-	0.630	0.236	0.219	0.047	0.011
029097	ODMW060512SN	SC3025	◆	-	-	0.630	0.236	0.219	0.047	0.011

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

ODMW060512SN should be generally used for heavy duty applications.
ODMW060512TN X500 and SP4019 should be used in Stainless Steel and High Temperature Alloys with heavy scale.
ODMW060512TN should also be used when the machine tool has less power available.

Note: Feed recommendations can be found on page A86. Speed recommendations can be found on page A87.

7745VOD06 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
FN-441	GH1	Facing	-	-	-	-	-	-	-	0.001 - 0.012	0.001 - 0.010	-	-	-	-	-	-
EN-44	X500	Facing	0.002 - 0.014	0.002 - 0.012	0.002 - 0.011	0.002 - 0.008	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-44	SP6519	Facing	0.002 - 0.014	0.002 - 0.012	0.002 - 0.011	0.002 - 0.008	0.002 - 0.012	0.002 - 0.012	0.002 - 0.012	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-44	SP4019	Facing	-	-	0.002 - 0.011	0.002 - 0.008	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-44	MP91M	Facing	0.002 - 0.014	0.002 - 0.011	-	-	0.002 - 0.012	0.002 - 0.012	0.002 - 0.012	-	-	-	-	-	-	-	-
EN-41	X500	Facing	0.002 - 0.015	0.002 - 0.014	0.002 - 0.014	0.002 - 0.012	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.012	-	-
EN-41	SP6519	Facing	0.002 - 0.015	0.002 - 0.014	0.002 - 0.014	0.002 - 0.012	0.002 - 0.015	0.002 - 0.015	0.002 - 0.014	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.012	-	-
EN-41	SP4019	Facing	-	-	0.002 - 0.014	0.002 - 0.012	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.012	-	-
EN-41	MP91M	Facing	0.002 - 0.015	0.002 - 0.014	-	-	0.002 - 0.015	0.002 - 0.015	0.002 - 0.014	-	-	-	-	-	-	-	-
TR-RA	SC3025	Facing	-	-	-	-	0.008 - 0.016	0.008 - 0.016	0.008 - 0.016	-	-	-	-	-	-	-	-
TN	X500	Facing	0.009 - 0.022	0.009 - 0.020	0.009 - 0.016	0.009 - 0.013	-	-	-	-	-	0.007 - 0.010	0.007 - 0.010	0.007 - 0.010	0.008 - 0.012	-	-
TN	SP6519	Facing	0.009 - 0.022	0.009 - 0.020	-	-	-	-	-	-	-	-	-	-	-	-	-
TN	SP4019	Facing	-	-	0.009 - 0.016	0.009 - 0.013	-	-	-	-	-	0.007 - 0.010	0.007 - 0.010	0.007 - 0.010	0.008 - 0.012	0.002 - 0.004	0.002 - 0.005
TN	MP91M	Facing	0.009 - 0.022	0.009 - 0.020	-	-	0.007 - 0.020	0.007 - 0.020	0.007 - 0.020	-	-	-	-	-	-	-	-
SN	X500	Facing	0.013 - 0.024	0.013 - 0.022	-	-	-	-	-	-	-	-	-	-	-	-	-
SN	SP6519	Facing	0.013 - 0.024	0.013 - 0.022	-	-	-	-	-	-	-	-	-	-	-	-	-
SN	MP91M	Facing	0.013 - 0.022	0.013 - 0.022	-	-	0.013 - 0.022	0.013 - 0.022	0.013 - 0.022	-	-	-	-	-	-	-	-
SN	SC3025	Facing	-	-	-	-	0.013 - 0.022	0.013 - 0.022	0.013 - 0.022	-	-	-	-	-	-	-	-

Note: HTA = High Temperature Alloys

Speed recommendations can be found on page A87.

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Speed v_c (SFM)

7745VOD Series

Wear Resistance: – ⟵ +

Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

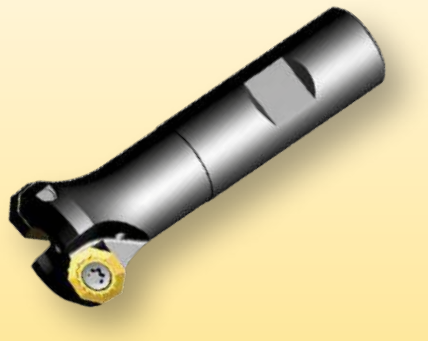
ISO	Materials	Rm and Hardness	CVD X Grade X500	PVD X Grade X700	PVD Standard SP6519	PVD Standard SP4019	CVD Standard MP91M	CVD Standard SC3025	Uncoated Micrograin GH1
P	Unalloyed Steel	<600 N/mm² <180 HBN	425 - 885		425 - 970		460 - 1130		
		<950 N/mm² <280 HBN	375 - 785		375 - 855		395 - 1000		
	Alloyed Steel	700-950 N/mm² 200-280 HBN	330 - 690		330 - 755		345 - 885		
		950-1200 N/mm² 280-355 HBN	245 - 525		245 - 575		260 - 675		
		1200-1400 N/mm² 355-415 HBN	165 - 330		165 - 360		165 - 425		
M	Stainless Steel	Austenitic + Ferritic 300 series	375 - 820	375 - 855	375 - 885	395 - 920			
		Martensitic 400 series	330 - 720	345 - 755	345 - 770	360 - 820			
	PH Stainless	Refractory P.H.	165 - 360	165 - 375	165 - 395	165 - 425			
K	Cast Iron	Grey GG-Ft			460 - 970		475 - 1200	445 - 950	
		Spheroidal-Ductile GGG-FGS			360 - 785		375 - 935	395 - 805	
		Malleable GTS - MN/MP			330 - 720		345 - 855	375 - 655	
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN							1310 - 10005
		Aluminum + Silicon > 16% Si 92 HBN							970 - 8005
S	High Temperature Alloys	Iron Based	75 - 160	75 - 170	75 - 180	80 - 210			
		Cobalt Based	70 - 145	70 - 150	70 - 160	75 - 170			
		Nickel Based	80 - 170	80 - 175	80 - 180	85 - 190			
		Titanium Based	115 - 240	120 - 250	120 - 260	120 - 275			
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN				165 - 330	165 - 345		
		Chilled Cast Iron >1400 N/mm² > 400 HBN				130 - 295	130 - 310		

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775VOD Technical Information

Feed rate compensation: For 42° cutting, divide the h_m value by the sine of the approach angle (the sine of 42° = 0.669)

i.e.: $\frac{h_m}{0.669}$ or $\frac{0.004"}{0.669}$ = 0.006 in. programmed feed rate



Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of Dia.

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

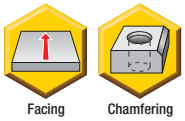
h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$



STELLRAM



45° LEAD ANGLE – FACE MILLS

7745VS cutters are designed for machining Tool Steel and Cast Iron. They feature exceptionally thick inserts and are ideal for tough cutting conditions. The upper edge of the insert does not rest against a pocket allowing for recessing operations.

Ideal for roughing, semi-finishing and finishing. These cutters are a very good choice for machining surfaces with heavy scale and are also ideal for machining surfaces with irregular stock.

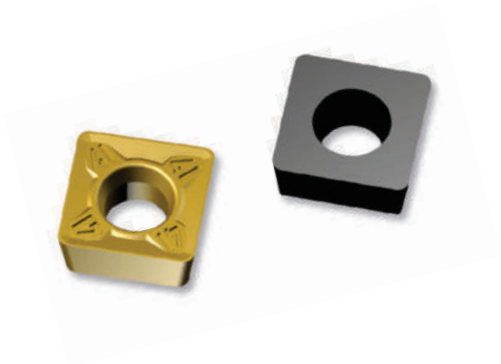
This family is available in insert size SC...09.

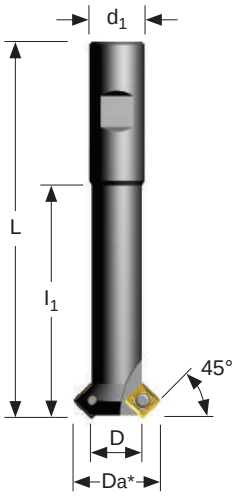
The cutter series with 0.375” (9.0mm)insert size and 0.156” thickness are able to cover irregular surfaces up to 0.200” a_p. Due to 0° axial and a radial negative rake angle this cutter has an excellent chip evacuation particularly when using the full depth of cut capacity.

This cutter series is ideal for facing small areas and chamfering any style component.

7745VS

7745VS09:
Maximum a_p = 0.200”
Diameter Range = 0.625” to 1.000”

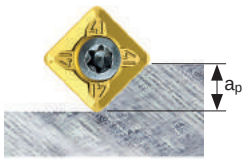




Weldon Shank

Product		Dimensions (inch)							Spares				
EDP	**Item Description**	D	D_a*	L/H	l_1	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7745VS09 Weldon Shank													
015422	**C7745VS09WA.625R3.30**	0.625	1.074	5.300	3.300	0.625	0.200	2	*015262*	D4010T	*015240*	T15	27.40
015423	**C7745VS09WA.750R3.30**	0.750	1.199	5.300	3.300	0.750	0.200	2	*015262*	D4010T	*015240*	T15	27.40
015424	**C7745VS09WA1.00R3.70**	1.000	1.449	6.000	3.780	1.000	0.200	3	*015262*	D4010T	*015240*	T15	27.40

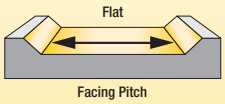
D_a* = Outside Diameter



Depth of Cut (a_p)

7745VS09 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
015422	**C7745VS09WA.625R3.30**	0.625	-	-	-	-	57,000
015423	**C7745VS09WA.750R3.30**	0.750	-	-	-	-	51,800
015424	**C7745VS09WA1.00R3.70**	1.000	-	-	-	-	44,800

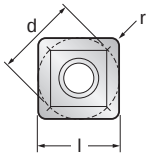


STELLRAM


SCMT09-E


SCMT09-41


SCMT09-T



Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
			Depth of Cut (inch)							
EDP	Item Description	Grade	a_p max. 0.200	a_p min. - max. 0.040 - 0.100	a_p min. - max. 0.004 - 0.040	d (IC)	l	s	r	h_m min
018186	**SCMT09T308E**	**GH1**	-	●	-	0.375	0.375	0.156	0.031	0.001
015147	**SCMT09T308EN-41**	**X500**	-	●●■◆	-	0.375	0.375	0.156	0.031	0.002
031474	**SCMT09T308EN-41**	**SP6519**	-	◆◆◆□◆	-	0.375	0.375	0.156	0.031	0.002
017315	**SCMT09T308EN-41**	**MP91M**	-	■■■●	-	0.375	0.375	0.156	0.031	0.002
034550	**SCMT09T308T**	**X400**	◆◆	◆	-	0.375	0.375	0.156	0.031	0.006
031568	**SCMT09T308T**	**SP6519**	■■◆□◆	-	-	0.375	0.375	0.156	0.031	0.006
034551	**SCMT09T308T**	**SP4019**	■◆■	■	-	0.375	0.375	0.156	0.031	0.006

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

Note: Feed recommendations can be found on page A92. Speed recommendations can be found on page A93.



7745VS09 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
E	GH1	Facing / Chamfering	-	-	-	-	0.002 - 0.004	0.002 - 0.004	-	-	-	-	-	-	-	-	-
EN-41	X500	Facing / Chamfering	0.005 - 0.012	0.005 - 0.010	0.005 - 0.010	0.005 - 0.009	-	-	-	-	-	-	-	-	-	-	-
EN-41	SP6519	Facing / Chamfering	0.005 - 0.012	0.005 - 0.010	0.005 - 0.010	0.005 - 0.009	0.005 - 0.012	0.005 - 0.012	0.005 - 0.010	-	-	-	-	-	-	-	-
EN-41	MP91M	Facing / Chamfering	0.005 - 0.012	0.005 - 0.009	-	-	0.005 - 0.012	0.005 - 0.012	0.005 - 0.010	-	-	-	-	-	-	0.002 - 0.003	0.002 - 0.004
T	X400	Facing / Chamfering	0.005 - 0.013	0.005 - 0.012	-	-	-	-	-	-	-	-	-	-	-	0.002 - 0.003	0.002 - 0.004
T	SP6519	Facing / Chamfering	0.005 - 0.012	0.005 - 0.007	0.005 - 0.011	0.005 - 0.010	0.005 - 0.013	0.005 - 0.013	0.005 - 0.012	-	-	-	-	-	-	-	-
T	SP4019	Facing / Chamfering	-	-	0.005 - 0.011	0.005 - 0.010	0.005 - 0.013	0.005 - 0.013	0.005 - 0.012	-	-	-	-	-	-	0.002 - 0.003	0.002 - 0.004

Note: HTA = High Temperature Alloys

Note: Speed recommendations can be found on page A92.

Speed v_c (SFM)

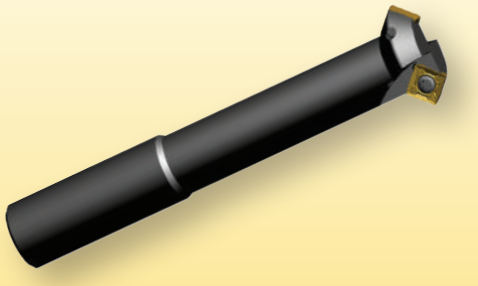
7745VS Series			Wear Resistance: – ⟵ +																			
			Speed min. - max.																			
Coolant Recommendation: Recommended ● Possible ⦿					PVD X Grade			CVD X Grade			PVD Standard			PVD Standard			CVD Standard			Uncoated Micrograin	
ISO	Materials	Rm and Hardness			X400			X500			SP6519			SP4019			MP91M			GH1	
P	Unalloyed Steel	<600 N/mm² <180 HBN	⦿	●	395 - 855	⦿	●	425 - 885	⦿	●	425 - 970					●	460 - 1130					
		<950 N/mm² <280 HBN			345 - 755			375 - 785			375 - 855						395 - 1000					
	Alloyed Steel	700-950 N/mm² 200-280 HBN	⦿	●	310 - 655	⦿	●	330 - 690	⦿	●	330 - 755					●	345 - 885					
		950-1200 N/mm² 280-355 HBN			230 - 490			245 - 525			245 - 575						260 - 675					
		1200-1400 N/mm² 355-415 HBN		●	150 - 310		●	165 - 330		●	165 - 360					●	165 - 425					
M	Stainless Steel	Austenitic + Ferritic 300 series				⦿	●	375 - 820	⦿	●	375 - 885	⦿	●	395 - 920								
		Martensitic 400 series						330 - 720			345 - 770			360 - 820								
	PH Stainless	Refractory P.H.				●		165 - 360	●		165 - 395	●		165 - 425								
K	Cast Iron	Grey GG-Ft						395 - 920			460 - 970			475 - 1085			475 - 1200			445 - 950	
		Spheroidal-Ductile GGG-FGS				⦿	●	345 - 675	⦿	●	360 - 785		●	375 - 835		●	375 - 935	⦿	●	395 - 805	
		Malleable GTS - MN/MP						310 - 560			330 - 720			345 - 770			345 - 855			375 - 655	
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN																				
		Aluminum + Silicon > 16% Si 92 HBN																				
S	High Temperature Alloys	Iron Based																				
		Cobalt Based																				
		Nickel Based																				
		Titanium Based																				
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN		●	150 - 310								●	165 - 330		●	165 - 345					
		Chilled Cast Iron >1400 N/mm² > 400 HBN			115 - 260									130 - 295			130 - 310					

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7745VS Technical Information

Feedrate compensation: For 45° cutting, divide the h_m value by the sine of the approach angle (the sine of 45° = 0.707)

i.e.: $\frac{h_m}{0.707}$ or $\frac{0.004"}{0.707}$ = 0.006 in. programmed feed rate



Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of Dia.

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$



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45° LEAD ANGLE - FACE MILLS

7745VSE cutters are designed for Stainless Steels and High Temperature Alloys. Square inserts with a 15 degree clearance are used for reducing edge build-up.

7745VSE series are especially designed for roughing, semi-finishing and finishing of Stainless Steel and High Temperature Alloys. Also suitable for machining Aluminum.

This cutter series has an excellent smooth cutting action and requires low power. They are also, perfect for unstable conditions.

Available in two different insert sizes: SD..09 and SD..12.

7745VSE

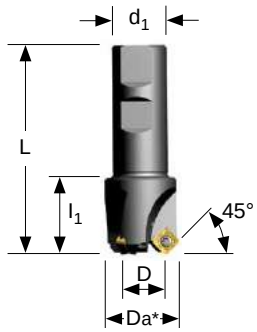
7745VSE09:
Maximum a_p = 0.200”
Diameter Range = 0.625” to 3.000”
Available in medium pitch only.

7745VSE12:
Maximum a_p = 0.275”
Diameter Range = 2.000” to 5.000”
Available in medium pitch except for the 5.000” cutter diameter which is also available in fine pitch.

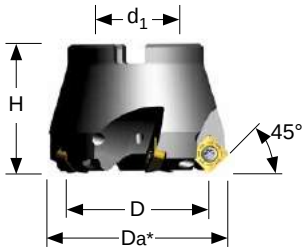
Note: Larger diameter Shell Mill Fixation cutters with interchangeable cartridges are available. Please see page A142.



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Weldon Shank



Shell Mill Fixation

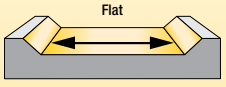
Product		Dimensions (inch)								Spares				
EDP	**Item Description**	D	D_a*	L/H	l_1	d_1	a_p max	Max. plunging depth	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7745VSE09 Weldon Shank														
014909	**C7745VSE09WA.625Z2R**	0.625	1.075	3.000	1.000	0.625	0.200	0.160	2	*015269*	F3508T	*015240*	T15	18.60
014910	**C7745VSE09WA.750Z2R**	0.750	1.200	3.500	1.250	0.750	0.200	0.160	2	*015269*	F3508T	*015240*	T15	18.60
014911	**C7745VSE09WA1.00Z3R**	1.000	1.450	3.750	1.370	1.000	0.200	0.160	3	*015269*	F3508T	*015240*	T15	18.60
014912	**C7745VSE09WA1.25Z3R**	1.250	1.700	4.000	1.370	1.250	0.200	0.160	3	*015269*	F3508T	*015240*	T15	18.60
7745VSE09 Shell Mill Fixation														
014900	**C7745VSE09-A1.25Z4R**	1.250	1.700	1.180	-	0.500	0.200	0.160	4	*015064*	F3510T	*015240*	T15	18.60
014901	**C7745VSE09-A1.50Z05R**	1.500	1.950	1.570	-	0.750	0.200	0.160	5	*015064*	F3510T	*015240*	T15	18.60
014903	**C7745VSE09-A2.00Z6R**	2.000	2.450	1.570	-	0.750	0.200	0.160	6	*015064*	F3510T	*015240*	T15	18.60
014905	**C7745VSE09-A2.50Z7R**	2.500	2.950	1.570	-	0.750	0.200	0.160	7	*015064*	F3510T	*015240*	T15	18.60
014906	**C7745VSE09-A3.00Z6R**	3.000	3.450	1.970	-	1.000	0.200	0.160	6	*015064*	F3510T	*015240*	T15	18.60

D_a* = Outside Diameter

7745VSE09 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
014909	**C7745VSE09WA.625Z2R**	0.625	24.90	-	-	0.118	49,000
014910	**C7745VSE09WA.750Z2R**	0.750	19.10	-	-	0.118	46,900
014911	**C7745VSE09WA1.00Z3R**	1.000	12.50	-	-	0.118	40,800
014912	**C7745VSE09WA1.25Z3R**	1.250	9.00	-	-	0.118	36,500
014900	**C7745VSE09-A1.25Z4R**	1.250	9.00	-	-	0.118	36,500
014901	**C7745VSE09-A1.50Z05R**	1.500	7.20	-	-	0.118	33,500
014903	**C7745VSE09-A2.00Z6R**	2.000	5.00	-	-	0.118	29,000
014905	**C7745VSE09-A2.50Z7R**	2.500	3.90	-	-	0.118	26,000
014906	**C7745VSE09-A3.00Z6R**	3.000	3.20	-	-	0.118	23,600


Ramping





Depth of Cut (a_p)

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SDEX09-701

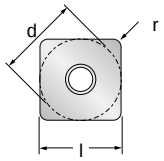

SDCT09


SDHT09-421


SDHT09-422


SDKT09-45


SDHW09



Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.200	a_p min. - max. 0.040 - 0.100	a_p min. - max. 0.008 - 0.040					
Insert selection with facet										
015148	**SDEX09T3AEFN-701**	**GH1**	♦	♦	♦	0.375	0.375	0.156	Facet	0.001
034519	**SDEX09T3AEFN-701**	**SP4019**	●	●	■□●♦	0.375	0.375	0.156	Facet	0.001
017242	**SDCT09T3AEFN**	**GH1**	■	■	■	0.375	0.375	0.156	Facet	0.001
031246	**SDCT09T3AEEN**	**SP4019**	-	-	♦♦●■●	0.375	0.375	0.156	Facet	0.002
015186	**SDHT09T3AEEN-421**	**X500**	-	○♦	●●	0.375	0.375	0.156	Facet	0.001
031476	**SDHT09T3AEEN-421**	**SP6519**	-	●■	♦♦●○■●	0.375	0.375	0.156	Facet	0.001
017320	**SDHT09T3AEEN-421**	**MP91M**	-	-	■■♦■	0.375	0.375	0.156	Facet	0.001
030766	**SDHT09T3AEEN-422**	**X500**	-	■♦●	-	0.375	0.375	0.156	Facet	0.002
030890	**SDHT09T3AEEN-422**	**SP6519**	-	■♦□♦●	-	0.375	0.375	0.156	Facet	0.002
026602	**SDKT09T3AEEN-45**	**X500**	■♦♦	-	-	0.375	0.375	0.156	Facet	0.002
031481	**SDKT09T3AEEN-45**	**SP6519**	●●♦□■	●■●	-	0.375	0.375	0.156	Facet	0.002
026600	**SDKT09T3AEEN-45**	**MP91M**	●	♦●■	-	0.375	0.375	0.156	Facet	0.002
015231	**SDHW09T3AETN**	**X500**	●○●	-	-	0.375	0.375	0.156	Facet	0.004
031575	**SDHW09T3AETN**	**SP6519**	■♦●○■	-	-	0.375	0.375	0.156	Facet	0.004
017323	**SDHW09T3AETN**	**MP91M**	♦■●	-	■	0.375	0.375	0.156	Facet	0.004

Machining Choice: ♦ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

SDHW09T3AETN should be used in Stainless Steel and High Temperature Alloys with heavy scale and generally when the conditions are unstable.

Note: Feed recommendations can be found on page A99. Speed recommendations can be found on page A104.



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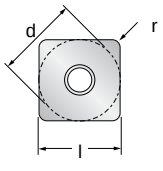

SDET09


SDHT09-422


SDHT09-423


SDMT09-41


SDMW09



Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.200	a_p min. - max. 0.040 - 0.100	a_p min. - max. 0.008 - 0.040					
Insert selection with corner radius										
017725	**SDET09T308FN**	**GH1**	♦	♦	♦	0.375	0.375	0.156	0.031	0.001
034520	**SDET09T308EN**	**SP6519**	-	-	♦♦♦♦♦♦	0.375	0.375	0.156	0.031	0.001
031261	**SDHT09T308EN-422**	**X500**	■♦♦	■♦♦	■■■■■	0.375	0.375	0.156	0.031	0.002
033075	**SDHT09T308EN-422**	**SP6519**	♦■■	♦■■	-	0.375	0.375	0.156	0.031	0.002
031260	**SDHT09T308EN-423**	**X500**	■♦♦	■♦♦	-	0.375	0.375	0.156	0.031	0.002
033074	**SDHT09T308EN-423**	**SP6519**	♦■■	♦■■	-	0.375	0.375	0.156	0.031	0.002
014410	**SDMT09T308EN-41**	**X500**	●■●	●●●●●●	-	0.375	0.375	0.156	0.031	0.002
031479	**SDMT09T308EN-41**	**SP6519**	♦	■♦■	-	0.375	0.375	0.156	0.031	0.002
017325	**SDMT09T308EN-41**	**MP91M**	●●	♦■♦	-	0.375	0.375	0.156	0.031	0.002
015232	**SDMW09T308TN**	**X500**	●●	-	-	0.375	0.375	0.156	0.031	0.006
031482	**SDMW09T308TN**	**SP6519**	■■■	-	-	0.375	0.375	0.156	0.031	0.006
017327	**SDMW09T308TN**	**MP91M**	♦●♦	-	♦	0.375	0.375	0.156	0.031	0.006

Machining Choice: ♦ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.



SDHT09T308EN-423 should be used for unstable conditions.

SDMW09T308TN should be used in Stainless Steel and High Temperature Alloys with heavy scale and generally when the conditions are unstable. Inserts with radius are only for semi roughing applications where a finished surface is not required.

Note: Feed recommendations can be found on pageA99. Speed recommendations can be found on page A104.

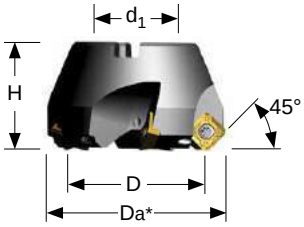
7745VSE09 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
Insert selection with facet																	
FN-701	GH1	Facing	-	-	-	-	-	-	-	0.002 - 0.012	0.002 - 0.012	-	-	-	-	-	-
FN-701	SP4019	Facing	-	-	0.002 - 0.008	0.002 - 0.006	-	-	-	0.002 - 0.012	0.002 - 0.012	0.002 - 0.005	0.002 - 0.005	0.002 - 0.005	0.002 - 0.006	-	-
FN	GH1	Facing	-	-	-	-	-	-	-	0.002 - 0.012	0.002 - 0.012	-	-	-	-	-	-
EN	SP4019	Facing	-	-	0.002 - 0.008	0.002 - 0.006	0.002 - 0.008	0.002 - 0.008	0.002 - 0.007	-	-	0.002 - 0.005	0.002 - 0.005	0.002 - 0.005	0.002 - 0.006	0.002 - 0.003	-
EN-421	X500	Facing	0.002 - 0.008	0.002 - 0.007	-	0.002 - 0.006	-	-	-	-	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	0.002 - 0.007	-	-
EN-421	SP6519	Facing	0.002 - 0.008	0.002 - 0.007	0.002 - 0.008	0.002 - 0.006	0.002 - 0.008	0.002 - 0.008	0.002 - 0.007	-	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	0.002 - 0.007	-	-
EN-421	MP91M	Facing	0.002 - 0.008	0.002 - 0.007	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.007	-	-	-	-	-	-	0.002 - 0.003	-
EN-422	X500	Facing	-	-	0.002 - 0.008	0.002 - 0.008	-	-	-	-	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	0.002 - 0.007	-	-
EN-422	SP6519	Facing	0.002 - 0.008	0.002 - 0.007	0.002 - 0.007	0.002 - 0.006	0.002 - 0.008	0.002 - 0.008	0.002 - 0.007	-	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	0.002 - 0.007	-	-
EN-45	X500	Facing	-	-	0.003 - 0.009	0.003 - 0.008	-	-	-	-	-	0.003 - 0.007	0.003 - 0.007	0.003 - 0.007	0.003 - 0.008	-	-
EN-45	SP6519	Facing	0.003 - 0.012	0.003 - 0.010	0.003 - 0.009	0.003 - 0.008	0.003 - 0.010	0.003 - 0.010	0.003 - 0.010	-	-	0.003 - 0.007	0.003 - 0.007	0.003 - 0.007	0.003 - 0.008	-	-
EN-45	MP91M	Facing	0.003 - 0.010	0.003 - 0.008	-	-	0.003 - 0.010	0.003 - 0.010	0.003 - 0.010	-	-	-	-	-	-	-	-
TN	X500	Facing	-	-	0.006 - 0.010	0.006 - 0.009	-	-	-	-	-	0.006 - 0.007	0.006 - 0.007	0.006 - 0.007	0.006 - 0.008	-	-
TN	SP6519	Facing	0.006 - 0.013	0.006 - 0.011	0.006 - 0.010	0.006 - 0.009	0.003 - 0.010	0.003 - 0.010	0.003 - 0.010	-	-	-	-	-	-	-	-
TN	MP91M	Facing	0.006 - 0.013	0.006 - 0.011	-	-	0.006 - 0.011	0.006 - 0.011	0.006 - 0.011	-	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003
Insert selection with corner radius																	
FN	GH1	Facing	-	-	-	-	-	-	-	0.002 - 0.012	0.002 - 0.012	-	-	-	-	-	-
EN	SP6519	Facing	0.002 - 0.008	0.002 - 0.007	0.002 - 0.008	0.002 - 0.006	0.002 - 0.010	0.002 - 0.010	0.002 - 0.008	-	-	0.002 - 0.005	0.002 - 0.005	0.002 - 0.005	0.002 - 0.006	-	-
EN-422	X500	Facing	0.002 - 0.012	0.002 - 0.010	0.002 - 0.008	0.002 - 0.006	-	-	-	-	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	-	-
EN-422	SP6519	Facing	-	-	0.002 - 0.008	0.002 - 0.006	-	-	-	-	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	-	-
EN-423	X500	Facing	-	-	0.002 - 0.008	0.002 - 0.006	-	-	-	-	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	-	-
EN-423	SP6519	Facing	-	-	0.002 - 0.008	0.002 - 0.006	-	-	-	-	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	-	-
EN-41	X500	Facing	0.002 - 0.012	0.002 - 0.010	0.002 - 0.009	0.002 - 0.008	0.002 - 0.010	0.002 - 0.010	0.002 - 0.010	-	-	0.002 - 0.007	0.002 - 0.007	0.002 - 0.007	0.002 - 0.008	-	-
EN-41	SP6519	Facing	0.002 - 0.012	0.002 - 0.010	-	-	0.002 - 0.010	0.002 - 0.010	0.002 - 0.010	-	-	-	-	-	-	-	-
EN-41	MP91M	Facing	0.002 - 0.012	0.002 - 0.010	-	-	0.002 - 0.010	0.002 - 0.010	0.002 - 0.010	-	-	-	-	-	-	-	-
TN	X500	Facing	-	-	-	0.006 - 0.009	-	-	-	-	-	0.006 - 0.007	0.006 - 0.007	0.006 - 0.007	0.006 - 0.008	-	-
TN	SP6519	Facing	0.006 - 0.013	0.006 - 0.011	-	-	0.006 - 0.011	0.006 - 0.011	0.006 - 0.011	-	-	-	-	-	-	-	-
TN	MP91M	Facing	0.006 - 0.013	0.006 - 0.011	-	-	0.006 - 0.011	0.006 - 0.011	0.006 - 0.011	-	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004

Note: HTA = High Temperature Alloys

SDMW09T308TN should be used in Stainless Steel and High Temperature Alloys with heavy scale and generally when the conditions are unstable. Inserts with radius are only for semi roughing applications where a finished surface is not required.

Speed recommendations can be found on page A104.



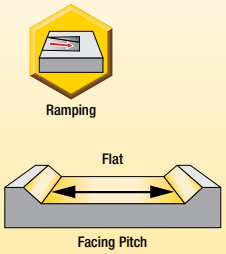
Shell Mill Fixation

Product		Dimensions (inch)								Spares				
EDP	**Item Description**	D	D_a*	L/H	l_1	d_1	a_p max	Max. plunging depth	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7745VSE12 Shell Mill Fixation - 5.000" Diameter Cutter is Medium and Fine Pitch														
014915	**C7745VSE12-A2.00Z4R**	2.000	2.606	1.570	-	0.750	0.275	0.230	4	*015270*	F4011T	*015241*	T20	27.40
014916	**C7745VSE12-A2.50Z5R**	2.500	3.106	1.970	-	0.750	0.275	0.230	5	*015270*	F4011T	*015241*	T20	27.40
014917	**C7745VSE12-A3.00Z6R**	3.000	3.606	1.970	-	1.000	0.275	0.230	6	*015270*	F4011T	*015241*	T20	27.40
014918	**C7745VSE12-A4.00Z7R**	4.000	4.606	1.970	-	1.250	0.275	0.230	7	*015270*	F4011T	*015241*	T20	27.40
014914	**C7745VSE12-A5.00Z8R**	5.000	5.606	2.480	-	1.500	0.275	0.230	8	*015270*	F4011T	*015241*	T20	27.40
031642	**C7745VSE12-A5.00Z12R**	5.000	5.606	2.480	-	1.500	0.275	0.230	12	*015270*	F4011T	*015241*	T20	27.40

D_a* = Outside Diameter

7745VSE12 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
014915	**C7745VSE12-A2.00Z4R**	2.000	7.50	-	-	0.157	29,000
014916	**C7745VSE12-A2.50Z5R**	2.500	5.75	-	-	0.157	26,000
014917	**C7745VSE12-A3.00Z6R**	3.000	4.65	-	-	0.157	23,600
014918	**C7745VSE12-A4.00Z7R**	4.000	3.40	-	-	0.157	20,500
014914	**C7745VSE12-A5.00Z8R**	5.000	2.65	-	-	0.157	18,300
031642	**C7745VSE12-A5.00Z12R**	5.000	2.65	-	-	0.157	18,300





Depth of Cut (a_p)

STELLRAM


SDEX12-701


SDCT12

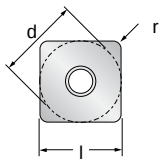

SDHT12-421


SDKT12-45


SDHT12-42


SDCW12


SDHW12





Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.275	a_p min. - max. 0.040 - 0.120	a_p min. - max. 0.008 - 0.040					
Insert selection with facet										
034522	**SDEX1204AEFN-701**	**SP4019**	-	-	♦●♦	0.500	0.500	0.187	Facet	0.001
015149	**SDEX1204AEFN-701**	**GH1**	♦	♦	♦	0.500	0.500	0.187	Facet	0.001
017243	**SDCT1204AEFN**	**GH1**	■	■	■	0.500	0.500	0.187	Facet	0.001
015187	**SDHT1204AEEN-421**	**X500**	-	-	●●	0.500	0.500	0.187	Facet	0.002
031477	**SDHT1204AEEN-421**	**SP6519**	-	-	●■■■■	0.500	0.500	0.187	Facet	0.002
017321	**SDHT1204AEEN-421**	**MP91M**	-	-	■●♦	0.500	0.500	0.187	Facet	0.002
029457	**SDKT1204AEEN-45**	**X500**	-	●●	-	0.500	0.500	0.187	Facet	0.002
031532	**SDKT1204AEEN-45**	**SP6519**	-	●●	-	0.500	0.500	0.187	Facet	0.002
029456	**SDKT1204AEEN-45**	**MP91M**	-	●	-	0.500	0.500	0.187	Facet	0.002
017729	**SDHT1204AETN-42**	**X500**	■♦♦	■♦♦	-	0.500	0.500	0.187	Facet	0.006
031478	**SDHT1204AETN-42**	**SP6519**	●●♦■■	■♦♦■■■	-	0.500	0.500	0.187	Facet	0.006
017322	**SDHT1204AETN-42**	**MP91M**	●	♦■♦	●●	0.500	0.500	0.187	Facet	0.006
034517	**SDCW1204AETN**	**X400**	♦♦	-	♦	0.500	0.500	0.187	Facet	0.006
034516	**SDCW1204AETN**	**SP4019**	●■	-	■	0.500	0.500	0.187	Facet	0.004
031404	**SDCW1204AETN**	**SA9808**	-	-	♦♦	0.500	0.500	0.187	Facet	0.007
017730	**SDHW1204AETN**	**X500**	●●	-	-	0.500	0.500	0.187	Facet	0.006
017324	**SDHW1204AETN**	**MP91M**	■■♦	-	-	0.500	0.500	0.187	Facet	0.006

Machining Choice: ♦ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

SDHW1204AETN X500 should be used in Stainless Steel and High Temperature Alloys with heavy scale and generally when the conditions are unstable.

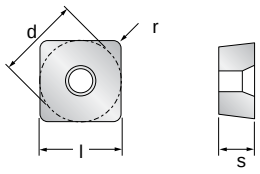
Note: Feed recommendations can be found on page A103. Speed recommendations can be found on page A104.


SDHT12-422


SDHT12-423


SDHT12-41


SDMW12



Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.275	a_p min. - max. 0.040 - 0.120	a_p min. - max. 0.008 - 0.040					
Insert selection with corner radius										
030717	**SDHT120412EN-422**	**X500**	■◆◆	■◆◆	-	0.500	0.500	0.187	0.047	0.002
030728	**SDHT120412EN-422**	**SP6519**	◆□■	◆□■	-	0.500	0.500	0.187	0.047	0.002
031218	**SDHT120412EN-423**	**X500**	■◆◆	■◆◆	-	0.500	0.500	0.187	0.047	0.002
031321	**SDHT120412EN-423**	**SP6519**	◆□■	◆□■	-	0.500	0.500	0.187	0.047	0.002
014411	**SDMT120412EN-41**	**X500**	●●●	●●□●■	-	0.500	0.500	0.187	0.047	0.002
031480	**SDMT120412EN-41**	**SP6519**	■◆●	■◆■	-	0.500	0.500	0.187	0.047	0.002
017326	**SDMT120412EN-41**	**MP91M**	●●■	◆■◆	-	0.500	0.500	0.187	0.047	0.002
015233	**SDMW120412TN**	**X500**	●●	-	-	0.500	0.500	0.187	0.047	0.006
034518	**SDMW120412TN**	**SP6519**	◆■◆	-	-	0.500	0.500	0.187	0.047	0.006



Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

SDHT120412EN-423 should be used for unstable conditions.

SDMW120412TN X500 should be used in Stainless Steel and High Temperature Alloys with heavy scale and generally when the conditions are unstable. Inserts with radius are only for semi roughing applications where a finished surface is not required.

Note: Feed recommendations can be found on page A103. Speed recommendations can be found on page A104.

7745VSE12 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
Insert selection with facet																	
FN-701	SP4019	Facing	-	-	0.002 - 0.010	0.002 - 0.008	-	-	-	0.002 - 0.010	0.002 - 0.010	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	-	-
FN-701	GH1	Facing	-	-	-	-	-	-	-	0.002 - 0.012	0.002 - 0.012	-	-	-	-	-	-
FN	GH1	Facing	-	-	-	-	-	-	-	0.002 - 0.012	0.002 - 0.012	-	-	-	-	-	-
EN-421	X500	Facing	-	-	0.002 - 0.009	0.002 - 0.008	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.009	-	-
EN-421	SP6519	Facing	0.002 - 0.012	0.002 - 0.010	0.002 - 0.009	0.002 - 0.008	0.002 - 0.011	0.002 - 0.011	0.002 - 0.011	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.009	-	-
EN-421	MP91M	Facing	0.002 - 0.012	0.002 - 0.010	-	-	0.002 - 0.011	0.002 - 0.011	0.002 - 0.011	-	-	-	-	-	-	-	-
EN-45	X500	Facing	-	-	0.003 - 0.010	0.003 - 0.009	-	-	-	-	-	0.003 - 0.007	0.003 - 0.007	0.003 - 0.007	0.003 - 0.008	-	-
EN-45	SP6519	Facing	0.003 - 0.014	0.003 - 0.012	-	-	-	-	-	-	-	-	-	-	-	-	-
EN-45	MP91M	Facing	-	-	-	-	0.003 - 0.012	0.003 - 0.012	0.003 - 0.012	-	-	-	-	-	-	-	-
TN-42	X500	Facing	-	-	0.006 - 0.011	0.006 - 0.010	-	-	-	-	-	0.006 - 0.009	0.006 - 0.009	0.006 - 0.009	0.006 - 0.010	-	-
TN-42	SP6519	Facing	0.006 - 0.014	0.006 - 0.012	0.006 - 0.011	0.006 - 0.010	0.006 - 0.012	0.006 - 0.012	0.006 - 0.012	-	-	0.006 - 0.009	0.006 - 0.009	0.006 - 0.009	0.006 - 0.010	-	-
TN-42	MP91M	Facing	0.006 - 0.014	0.006 - 0.012	-	-	0.007 - 0.012	0.007 - 0.012	0.007 - 0.012	-	-	-	-	-	-	0.003 - 0.005	0.003 - 0.005
TN	X400	Facing	0.006 - 0.015	0.006 - 0.013	-	-	-	-	-	-	-	-	-	-	-	0.003 - 0.005	0.003 - 0.005
TN	X500	Facing	-	-	-	0.006 - 0.011	-	-	-	-	-	0.006 - 0.008	0.006 - 0.008	0.006 - 0.008	0.006 - 0.010	-	-
TN	SP4019	Facing	-	-	0.006 - 0.012	0.006 - 0.011	0.006 - 0.012	0.006 - 0.012	0.006 - 0.012	-	-	-	-	-	-	0.003 - 0.005	0.003 - 0.005
TN	MP91M	Facing	0.006 - 0.015	0.006 - 0.013	-	-	0.006 - 0.012	0.006 - 0.012	0.006 - 0.012	-	-	-	-	-	-	-	-
TN	SA9808	Facing	0.007 - 0.010	0.007 - 0.009	-	-	-	-	-	-	-	-	-	-	-	-	-
Insert selection with corner radius																	
EN-422	X500	Facing	-	-	0.002 - 0.010	0.002 - 0.009	-	-	-	-	-	0.002 - 0.007	0.002 - 0.007	0.002 - 0.007	0.002 - 0.008	-	-
EN-422	SP6519	Facing	-	-	0.002 - 0.010	0.002 - 0.009	-	-	-	-	-	0.002 - 0.007	0.002 - 0.007	0.002 - 0.007	0.002 - 0.008	-	-
EN-423	X500	Facing	-	-	0.002 - 0.010	0.002 - 0.009	-	-	-	-	-	0.002 - 0.007	0.002 - 0.007	0.002 - 0.007	0.002 - 0.008	-	-
EN-423	SP6519	Facing	-	-	0.002 - 0.010	0.002 - 0.009	-	-	-	-	-	0.002 - 0.007	0.002 - 0.007	0.002 - 0.007	0.002 - 0.008	-	-
EN-41	X500	Facing	0.002 - 0.014	0.002 - 0.012	0.002 - 0.010	0.002 - 0.009	0.002 - 0.012	0.002 - 0.012	0.002 - 0.012	-	-	0.002 - 0.007	0.002 - 0.007	0.002 - 0.007	0.002 - 0.008	-	-
EN-41	SP6519	Facing	0.002 - 0.014	0.002 - 0.012	-	-	0.002 - 0.012	0.002 - 0.012	0.002 - 0.012	-	-	-	-	-	-	-	-
EN-41	MP91M	Facing	0.002 - 0.014	0.002 - 0.012	-	-	0.002 - 0.012	0.002 - 0.012	0.002 - 0.012	-	-	-	-	-	-	-	-
TN	X500	Facing	-	-	-	0.006 - 0.011	-	-	-	-	-	0.006 - 0.007	0.006 - 0.007	0.006 - 0.007	0.006 - 0.008	-	-
TN	SP6519	Facing	0.006 - 0.015	0.006 - 0.013	-	-	0.006 - 0.012	0.006 - 0.012	0.006 - 0.012	-	-	-	-	-	-	-	-

Note: HTA = High Temperature Alloys

Speed recommendations can be found on page A104.

Speed v_c (SFM)

7745VSE Series

Wear Resistance: – ⟵ +

Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

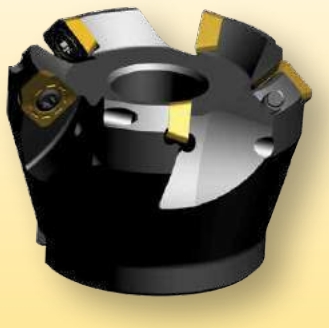
ISO	Materials	Rm and Hardness	PVD X Grade		CVD X Grade		PVD Standard		PVD Standard		CVD Standard		Uncoated Micrograin		Uncoated Cermet
			X400		X500		SP6519		SP4019		MP91M		GH1		SA9808
P	Unalloyed Steel	<600 N/mm² <180 HBN	395 - 855	⦿ ●	425 - 885	⦿ ●	425 - 970	⦿ ●			460 - 1130	●			870 -1245
		<950 N/mm² <280 HBN	345 - 755		375 - 785		375 - 855				395 - 1000				770 - 1100
	Alloyed Steel	700-950 N/mm² 200-280 HBN	310 - 655	⦿ ●	330 - 690	⦿ ●	330 - 755	⦿ ●			345 - 885	●			675 - 970
		950-1200 N/mm² 280-355 HBN	230 - 490		245 - 525		245 - 575				260 - 675				510 - 740
		1200-1400 N/mm² 355-415 HBN	150 - 310	●	165 - 330	●	165 - 360	●		●	165 - 425	●			330 - 475
M	Stainless Steel	Austenitic + Ferritic 300 series		⦿ ●	375 - 820	⦿ ●	375 - 885	⦿ ●	395 - 920	⦿ ●					
		Martensitic 400 series			330 - 720		345 - 770		360 - 820						
	PH Stainless	Refractory P.H.		●	165 - 360	●	165 - 395	●	165 - 425						
K	Cast Iron	Grey GG-Ft			395 - 920		460 - 970		475 - 1085		475 - 1200				
		Spheroidal-Ductile GGG-FGS		⦿ ●	345 - 675	⦿ ●	360 - 785	●	375 - 835	●	375 - 935				
		Malleable GTS - MN/MP			310 - 560		330 - 720		345 - 770		345 - 855				
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN						●	1310 - 9500			●	1310 - 10005		
		Aluminum + Silicon > 16% Si 92 HBN							970 - 7615				970 - 8005		
S	High Temperature Alloys	Iron Based		●	75 - 160	●	75 - 180	●	80 - 210						
		Cobalt Based			70 - 145		70 - 160		75 - 170						
		Nickel Based			80 - 170		80 - 180		85 - 190						
		Titanium Based			115 - 240		120 - 260		120 - 275						
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN	150 - 310	●				●	165 - 330	●	165 - 345				
		Chilled Cast Iron >1400 N/mm² > 400 HBN	115 - 260						130 - 295		130 - 310				

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7745VSE Technical Information

Feed rate compensation: For 45° cutting, divide the h_m value by the sine of the approach angle (the sine of 45° = 0.707)

i.e.: $\frac{h_m}{0.707}$ or $\frac{0.004"}{0.707}$ = 0.006 in. programmed feed rate



Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of Dia.

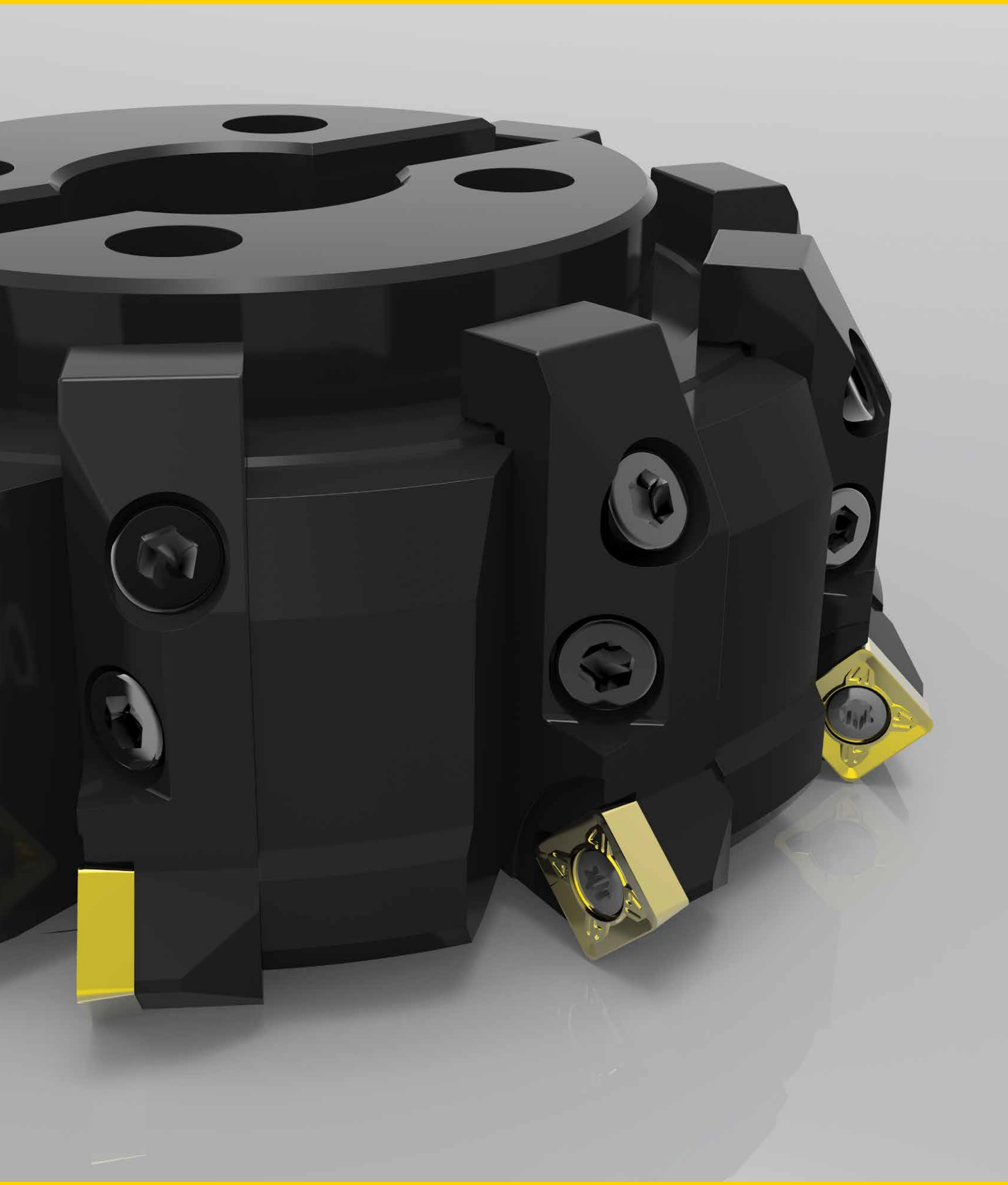
Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$





STELLRAM



VERSATILE CARTRIDGE MILLING CUTTERS

The **8000V-8010V** cutter series provides the opportunity to assemble the bodies with different cartridges for a wide range of applications.

This clamping design allows the adjusting screws to work in opposition to each other, to allow setting of each insert within 2 to 5 µm.

All Stellram cartridge face mills feature a unique design that maintains the accuracy of the cartridge location even after a collision.







8000V Cutter

8000V CUTTERS WITH UNEQUAL PITCH

The cutters in the 8000V series (Ø 3.940" – 15.750") with interchangeable cartridges have a medium pitch and an unequal division of teeth. This design has been developed through extensive studies of their vibration phenomena. They are especially recommended for surfacing cast structures and all other parts with drilled holes or thin walled sections, as well as for square shoulder face milling. For a given table feed, the medium pitch allows a lower feed rate per tooth which avoids the risks of damage to sides or recesses of the machined parts.

These are quick-change cartridges thanks to a heel, which comes up against a setting track. The runout achieved is in the order of 0.002 in. If a greater degree of precision is required, they can easily be adjusted individually with a runout of 2 to 5 µm. In case of accidental distresses, the heel disengages automatically from the track and the tool body remains intact.



8010V Cutter

8010V CUTTERS WITH EQUAL PITCH

For machining High Temperature Alloys, we have modified our milling cutters with cartridges. Available in Ø 3.940" - 7.870", the bodies of the 8010V milling cutters have the same characteristics as the 8000V body but the distribution of the teeth is regular. The number of teeth is equal to that of the 8000V series.

The 8010V is best used for rough milling, semi-finishing and finishing of Titanium and High Temperature Alloys.

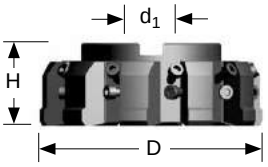
Precautions

At speeds above 240 (SFM), the differential pitch becomes essential to reduce the possibility of vibration.

The capability of the 8000V-8010V series is dependent on the different assembly options.

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Cutter Body

Product		Dimensions (inch)				Cartridge Spares		
EDP	**Item Description**	D *	H	d1	No. of Teeth	*EDP*	Cartridge Screw	Weight incl. Cartridges lbs.
8000V Bodies with Unequal Pitch								
014301	**A8000V100RBODY**	3.940	2.680	1.250	6	*022646*	7065	5.04
014302	**A8000V125RBODY**	4.920	2.480	1.500	8	*022646*	7065	6.69
014303	**A8000V160RBODY**	6.300	2.480	1.500	10	*022646*	7065	11.90
014304	**A8000V200RBODY**	7.870	2.480	2.500	12	*022646*	7065	19.30
014305	**A8000V250RBODY**	9.840	2.480	2.500	16	*022646*	7065	34.06
014306	**A8000V315RBODY****	12.400	3.150	2.500	20	*022646*	7065	65.67
014307	**A8000V400RBODY****	15.750	3.150	2.500	24	*022646*	7065	117.08
8010V Bodies with Equal Pitch								
015401	**A8010V100RBODY****	3.940	2.680	1.250	6	*022646*	7065	5.040
015402	**A8010V125RBODY****	4.920	2.480	1.500	8	*022646*	7065	6.690
015403	**A8010V160RBODY****	6.300	2.480	1.500	10	*022646*	7065	11.90
015404	**A8010V200RBODY****	7.870	2.480	2.500	12	*022646*	7065	19.30

** Denotes non stock items.

Note: Mounting instructions refer to page 170.
Note: D* is nominal diameter for most cutter assemblies except for 90 degree A-Style, (16mm) 0.630" & (20mm) 0.787" Button and (12mm) 0.472" & (16mm) 0.630" High Feed assemblies.
For these mentioned assemblies the cutter diameter will change, please see assembly pages for diameter detail.



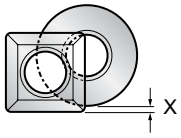
81 FS 00 Cartridge

Product		Spares							
EDP	**Item Description**	"X" Adjustment Range (inch)	*Insert Screw EDP*		*EDP*		*Adjustment Screw EDP*		Insert Style
Finishing Cartridge & Spares									
014953	**81FS00R-12**	0.0012-0.0020	*015266*	D5013T	*105241*	T20	*016858*	72.602	SPHX12....

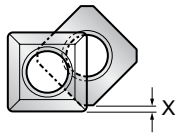
These cartridges, have a fine adjusting set screw and are set according to the dimension (axial shift) "X".
X = 0.0012 - 0.0020 in.
(X = 0.0008 in. with a pressed insert with a nose radius)

The following series assemblies with a wiper insert are possible:

Cutter	Inserts
8000VR00...	RP..16 + Wiper
8000VOD45...	OD..04 + Wiper
8000VOD45...	OD..06 + Wiper
8000VS45...	SC..12 + Wiper
8000VSE45...	SD..12 + Wiper



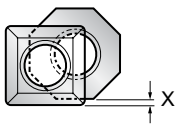
8000VR 00



8000VS / VSE 45

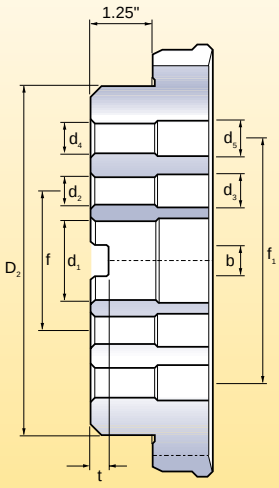
The following series assemblies with a wiper inserts are not possible:

Cutter	Inserts
8000VXD92...	Wiper not possible
8000VXE92...	Wiper not possible
8000VA90...	Wiper not possible



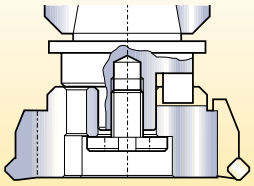
8000VOD 45

Also, all 8010V cutter series are not possible to assemble with a wiper insert.



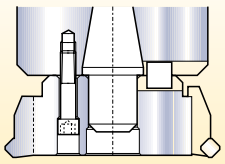
80_0V Cutters Mounting & Attachment Dimensions (inch)

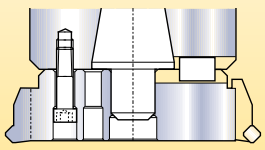
Ø Cutter D	Fixation Bore / Pilot	d_1	D_2	f	f_1	d_2	d_3	d_4	d_5	b	t
3.94	1.250	1.250	2.080	-	-	-	-	-	-	0.500	0.310
4.92	1.500	1.500	3.030	-	-	-	-	-	-	0.630	0.390
6.30	1.500	1.500	3.930	2.620	-	0.550	0.780	-	-	0.630	0.390
7.87	2.500	2.500	5.350	4.000	-	0.700	1.020	-	-	1.000	0.560
9.84	2.500	2.500	7.080	4.000	-	0.700	1.020	-	-	1.000	0.560
12.40	2.500	2.500	9.440	4.000	7.000	0.700	1.020	0.860	1.250	1.000	0.560
15.75	2.500	2.500	12.590	4.000	7.000	0.700	1.020	0.860	1.250	1.000	0.560



Locate Directly to Milling Arbor

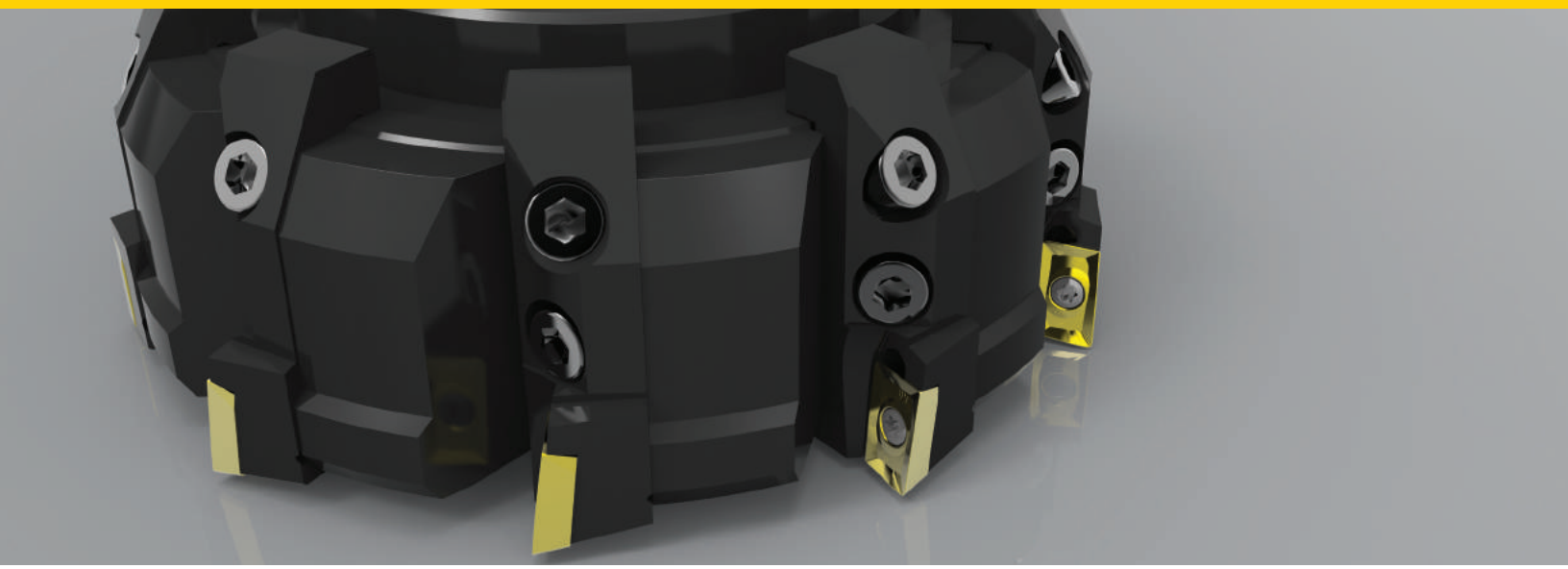
For cutter Ø 3.940, 4.920 & 6.300 in.





Locate Directly to Spindle Nose 7/24 with Centering Arbor

Spindle 7/24 No. 40 for cutter Ø 6.300 in.
Spindle 7/24 No. 50 for cutter Ø 7.870 to 15.750 in.
Spindle 7/24 No. 60 for cutter Ø 12.400 to 15.750 in.



STELLRAM



90° CARTRIDGE SHOULDER MILLING ASSEMBLIES

Applications:
80_0VA90 cutter series are assembled with cartridges for AP..16 milling inserts for face and shoulder milling applications.

This cutter series is available in two different verions, both with medium pitch.

The cutter series **8000VA90** has an **unequal** medium pitch for reducing vibration and is suitable for roughing, semi-finishing and finishing of Steel, Steel Alloys, Stainless Steel, Cast Iron and Aluminum Alloys.

8**010VA90** cutter series has an **equal** pitch and is especially recommended for roughing, semi-finishing and finishing of High Temperature Alloys such as Iron Based Alloys, Cobalt Based Alloys, Nickel Based Alloys and Titaniums.

Note: The 80_0VA90 series when mounted with cartridge 80VA90R-16 using AP..1604.. A-Style inserts cannot utilize the wiper cartridge for finishing when a fine finished surface is required.

Note: When using inserts with a radius larger than 0.080" the cartridges need to be modified for additional clearance by the end user.

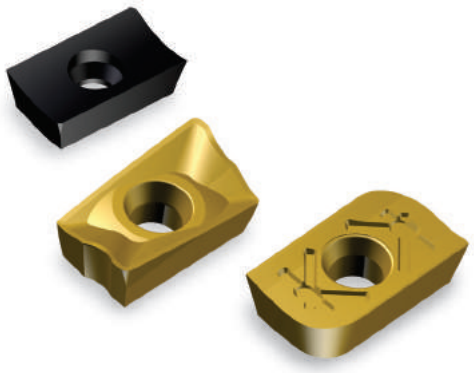
80_0VA90-_R-16

8000VA90-_R-16:
Maximum a_p = 0.600"
Effective Cutting Diameter
Range = 4.170" to 15.984"

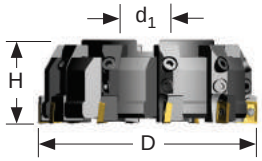
* Denotes non stock items diameter 12.638" and 15.984"

8010VA90-_R-16:
Maximum a_p = 0.600"
Effective Cutting Diameter
Range = 4.170"* to 8.110"*

* Denotes non stock items.



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Cutter Body & Cartridges

Product		Dimensions (inch)					Spares				
EDP	**Item Description**	D Effective Cutting Diameter	H	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
8000VA90-_R-16 Bodies with Unequal Medium Pitch & Cartridges											
015282	**A8000VA90-100R-16**	4.170	2.680	1.250	0.600	6	*015262*	D4010T	*015240*	T15	27.40
015283	**A8000VA90-125R-16**	5.160	2.480	1.500	0.600	8					
015284	**A8000VA90-160R-16**	6.535	2.480	1.500	0.600	10					
015285	**A8000VA90-200R-16**	8.110	2.480	2.500	0.600	12					
015286	**A8000VA90-250R-16**	10.079	2.480	2.500	0.600	16					
015287	**A8000VA90-315R-16***	12.638	3.150	2.500	0.600	20					
015288	**A8000VA90-400R-16***	15.984	3.150	2.500	0.600	24					
8010VA90_R-16 Bodies with Equal Medium Pitch & Cartridges											
016776	**A8010VA90-100R-16***	4.170	2.680	1.250	0.600	6	*015262*	D4010T	*015240*	T15	27.40
016777	**A8010VA90-125R-16***	5.160	2.480	1.500	0.600	8					
016778	**A8010VA90-160R-16***	6.535	2.480	1.500	0.600	10					
016779	**A8010VA90-200R-16***	8.110	2.480	2.500	0.600	12					

* Denotes non stock items.



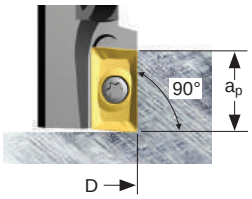
80VA90R-16

Product		Spares								
EDP	**Item Description**	*EDP*		*EDP*		Screw Tightening in. lbs.	*Cartridge Screw EDP*		*Adjustment Screw EDP*	
Cartridge & Spares										
015390	**80VA90R-16**	*015262*	D4010T	*015240*	T15	27.40	*022646*	7065	-	-

Note: AP..1604.. A-Syle cutter assemblies cannot utilize the wiper cartridges.

Note: When using inserts with a radius larger than 0.080" the cartridges need to be modified for additional clearance by the end user.

Note: Mounting instructions refer to page A162.

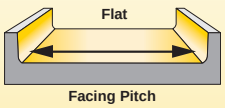


Depth of Cut (a_p)

80_VA90-_R-16 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
015282	**A8000VA90-100R-16**	4.170	-	-	-	-	10,800
015283	**A8000VA90-125R-16**	5.160	-	-	-	-	9,200
015284	**A8000VA90-160R-16**	6.535	-	-	-	-	7,800
015285	**A8000VA90-200R-16**	8.110	-	-	-	-	6,200
015286	**A8000VA90-250R-16**	10.079	-	-	-	-	5,900
015287	**A8000VA90-315R-16***	12.638	-	-	-	-	5,200
015288	**A8000VA90-400R-16***	15.984	-	-	-	-	4,500
016776	**A8010VA90-100R-16***	4.170	-	-	-	-	10,800
016777	**A8010VA90-125R-16***	5.160	-	-	-	-	9,200
016778	**A8010VA90-160R-16***	6.535	-	-	-	-	7,800
016779	**A8010VA90-200R-16***	8.110	-	-	-	-	6,200

* Denotes non stock items.



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APET16-42

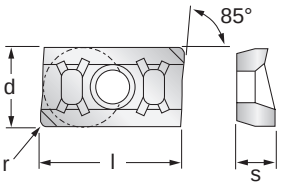

APHT16-42


APEX16-701


APFW16-TR


APHT16-ER


APHT16-FR





Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.600	a_p min. - max. 0.060 - 0.200	a_p min. - max. 0.004 - 0.060					
033179	**APET160402TR-42**	**SP6519**	●●●○	■■●○	■■	0.375	0.656	0.187	0.008	0.004
033180	**APET160408TR-42**	**SP6519**	●●●○	■■●○	■■	0.375	0.656	0.187	0.031	0.004
033181	**APET160410TR-42**	**SP6519**	●●●○	■■●○	■■	0.375	0.656	0.187	0.039	0.004
033182	**APET160415TR-42**	**SP6519**	●●●○	■■●○	■■	0.375	0.656	0.187	0.059	0.004
033183	**APET160420TR-42**	**SP6519**	●●●○	■■●○	■■	0.375	0.656	0.187	0.079	0.004
033184	**APET160425TR-42**	**SP6519**	●●●○	■■●○	■■	0.375	0.656	0.187	0.098	0.004
033185	**APET160430TR-42**	**SP6519**	●●●○	■■●○	■■	0.375	0.656	0.187	0.118	0.004
033186	**APET160440TR-42**	**SP6519**	●●●○	■■●○	■■	0.375	0.656	0.187	0.157	0.004
033187	**APET160460TR-42**	**SP6519**	●●●○	■■●○	■■	0.375	0.656	0.187	0.236	0.004
015155	**APHT1604PDTR-42**	**X500**	●○	-	-	0.375	0.656	0.187	Facet	0.004
031466	**APHT1604PDTR-42**	**SP6519**	●●●○	■■●○	■■	0.375	0.656	0.187	Facet	0.004
017293	**APHT1604PDTR-42**	**MP91M**	-	■●	■■	0.375	0.656	0.187	Facet	0.004
033188	**APEX1604PDER-701**	**SP6519**	-	-	●	0.375	0.656	0.187	Facet	0.001
033189	**APEX1604PDFR-701**	**SP4019**	●	●	●	0.375	0.656	0.187	Facet	0.001
014066	**APEX1604PDFR-701**	**GH1**	◆	◆	◆	0.375	0.656	0.187	Facet	0.001
033190	**APFW1604PDTR**	**X400**	●	◆	●	0.375	0.656	0.187	Facet	0.004
033191	**APFW1604PDTR**	**SP4019**	●	■	◆	0.375	0.656	0.187	Facet	0.004
027883	**APFW1604PDTR**	**SC3025**	■	◆	◆	0.375	0.656	0.187	Facet	0.004
017628	**APFW1604PDTR**	**GH1**	-	●	●	0.375	0.656	0.187	Facet	0.004
033192	**APHT1604PDER**	**SP4019**	-	-	●	0.375	0.656	0.187	Facet	0.002
015154	**APHT1604PDFR**	**GH1**	■	■	■	0.375	0.656	0.187	Facet	0.001

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

Note: APHT1604PDTR-42 X500 should be used for Stainless Steel with heavy scale.
Note: APFW1604PDTR X400 should be used for Alloyed Steel with heavy scale.
Note: APFW1604PDTR SP4019 should be used for High Temperature Alloys with heavy scale.

Note: Feed recommendations can be found on page A115. Speed recommendations can be found on page A116.


APHT16-46

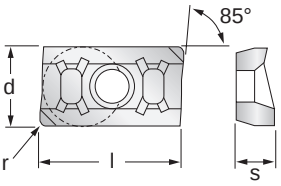

APET16-48


APKT16-43


APKT16-45


APKT16-3M


APKT16-2C





Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
			Depth of Cut (inch)							
EDP	Item Description	Grade	ap max. 0.600	ap min. - max. 0.060 - 0.200	ap min. - max. 0.004 - 0.060	d (IC)	l	s	r	hm min
027869	APHT160408ER-46	X500	◆■	◆■	●	0.375	0.656	0.187	0.031	0.002
031495	APHT160408ER-46	SP6519	◆□	◆□	◆◆◆◆	0.375	0.656	0.187	0.031	0.002
027870	APHT160416ER-46	X500	◆■	◆■	●	0.375	0.656	0.187	0.063	0.002
031496	APHT160416ER-46	SP6519	◆□	◆□	◆◆◆◆	0.375	0.656	0.187	0.063	0.002
027871	APHT160424ER-46	X500	◆■	◆■	●	0.375	0.656	0.187	0.094	0.002
031497	APHT160424ER-46	SP6519	◆□	◆□	◆◆◆◆	0.375	0.656	0.187	0.094	0.002
027872	APHT160432ER-46	X500	◆■	◆■	●	0.375	0.656	0.187	0.125	0.002
031397	APHT160432ER-46	SP6519	◆□	◆□	◆◆◆◆	0.375	0.656	0.187	0.125	0.002
027873	APHT160440ER-46	X500	◆■	◆■	●	0.375	0.656	0.187	0.157	0.002
031542	APHT160440ER-46	SP6519	◆□	◆□	◆◆◆◆	0.375	0.656	0.187	0.157	0.002
027874	APHT160450ER-46	X500	◆■	◆■	●	0.375	0.656	0.187	0.197	0.002
031498	APHT160450ER-46	SP6519	◆□	◆□	◆◆◆◆	0.375	0.656	0.187	0.197	0.002
027875	APHT160464ER-46	X500	◆■	◆■	●	0.375	0.656	0.187	0.252	0.002
031541	APHT160464ER-46	SP6519	◆□	◆□	◆◆◆◆	0.375	0.656	0.187	0.252	0.002
030811	APET1604PDER-48	X500	◆	◆	■	0.375	0.656	0.187	Facet	0.002
030773	APET1604PDER-48	SP6519	●	●	●●■□◆	0.375	0.656	0.187	Facet	0.002
030860	APET160408ER-48	X500	◆	◆	■	0.375	0.656	0.187	Facet	0.002
030861	APET160408ER-48	SP6519	●	●	●●■□◆	0.375	0.656	0.187	Facet	0.002
015156	APKT1604PDER-43	X500	●	-	-	0.375	0.656	0.187	Facet	0.003
031468	APKT1604PDER-43	SP6519	◆◆	-	-	0.375	0.656	0.187	Facet	0.003
017294	APKT1604PDER-43	MP91M	■■●	-	-	0.375	0.656	0.187	Facet	0.003
027887	APKT1604PDER-43	SC3025	◆	-	-	0.375	0.656	0.187	Facet	0.003
023115	APKT1604PDER-45	X500	-	●	-	0.375	0.656	0.187	Facet	0.003
031469	APKT1604PDER-45	SP6519	-	◆◆	-	0.375	0.656	0.187	Facet	0.003
023114	APKT1604PDER-45	MP91M	-	●	-	0.375	0.656	0.187	Facet	0.003
011649	APKT1604PDER-3M	MP91M	●●●●	●●●●	-	0.375	0.656	0.187	Facet	0.004
011488	APKT160408E-2C	MP91M	-	●●	-	0.375	0.656	0.187	0.031	0.004

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

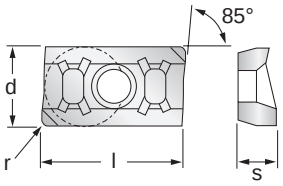
Note: APKT1604PDER-43 X500 should be used for Steel with heavy scale.

Note: Feed recommendations can be found on page A115. Speed recommendations can be found on page A116.



APMT16-2C

STELLRAM



Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.600	a_p min. - max. 0.060 - 0.200	a_p min. - max. 0.004 - 0.060					
017228	APMT160412E-2C	MP91M	-	●●	-	0.375	0.656	0.187	0.047	0.004
013944	APMT160416E-2C	MP91M	-	●●	-	0.375	0.656	0.187	0.063	0.004
013945	APMT160424E-2C	MP91M	-	●●	-	0.375	0.656	0.187	0.094	0.004
013946	APMT160432E-2C	MP91M	-	●●	-	0.375	0.656	0.187	0.125	0.004
017229	APMT160440E-2C	MP91M	-	●●	-	0.375	0.656	0.187	0.157	0.004
017230	APMT160448E-2C	MP91M	-	●●	-	0.375	0.656	0.187	0.189	0.004
013947	APMT160464E-2C	MP91M	-	●●	-	0.375	0.656	0.187	0.252	0.004



Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

80_0VA90-_R-16 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
TR-42	X500	Facing	-	-	0.004 - 0.009	0.004 - 0.008	-	-	-	-	-	-	-	-	-	-	-
TR-42	SP6519	Facing	0.004 - 0.011	0.004 - 0.009	0.004 - 0.009	0.004 - 0.008	-	-	-	-	-	-	-	-	-	-	-
TR-42	MP91M	Facing	-	-	-	-	0.003 - 0.010	0.003 - 0.008	0.003 - 0.008	-	-	-	-	-	-	0.002 - 0.003	0.002 - 0.004
ER-701	SP6519	Facing	-	-	-	-	-	-	-	-	-	0.001 - 0.002	0.001 - 0.002	0.001 - 0.002	0.001 - 0.002	-	-
FR-701	SP4019	Facing	-	-	-	-	-	-	-	0.001 - 0.008	0.001 - 0.007	-	-	-	-	-	-
FR-701	GH1	Facing	-	-	-	-	-	-	-	0.001 - 0.008	0.001 - 0.007	-	-	-	-	-	-
TR	X400	Facing	-	0.004 - 0.009	-	-	-	-	-	-	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004
TR	SP4019	Facing	-	-	-	-	-	-	-	-	-	0.003 - 0.004	0.003 - 0.004	0.003 - 0.004	0.003 - 0.005	0.002 - 0.004	0.002 - 0.004
TR	SC3025	Facing	-	-	-	-	0.004 - 0.009	0.004 - 0.009	0.004 - 0.009	-	-	-	-	-	-	-	-
TR	GH1	Facing	-	-	-	-	0.004 - 0.009	0.004 - 0.009	0.004 - 0.009	-	-	-	-	-	-	-	-
ER	SP4019	Facing	-	-	0.002 - 0.007	-	-	-	-	-	-	-	-	-	-	-	-
FR	GH1	Facing	-	-	-	-	-	-	-	0.001 - 0.008	0.001 - 0.007	-	-	-	-	-	-
ER-46	X500	Facing	-	-	0.002 - 0.010	0.002 - 0.008	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.006	-	-
ER-46	SP6519	Facing	0.002 - 0.010	0.002- 0.008	0.002 - 0.009	0.002 - 0.007	-	-	-	-	-	-	-	-	-	-	-
ER-48	X500	Facing	-	-	-	-	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.006	-	-
ER-48	SP6519	Facing	0.002 - 0.008	0.002 - 0.007	0.002 - 0.006	0.002 - 0.005	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.005	0.002 - 0.005	-	-
ER-43	X500	Facing	0.003 - 0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ER-43	SP6519	Facing	0.002 - 0.009	0.002 - 0.008	-	-	-	-	-	-	-	-	-	-	-	-	-
ER-43	MP91M	Facing	0.002 - 0.009	0.002 - 0.008	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	-	-	-	-	-	-	-	-
ER-43	SC3025	Facing	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	-	-	-	-	-	-	-	-
ER-45	X500	Facing	-	0.003 - 0.009	-	-	-	-	-	-	-	-	-	-	-	-	-
ER-45	SP6519	Facing	0.002 - 0.009	0.002 - 0.008	-	-	-	-	-	-	-	-	-	-	-	-	-
ER-45	MP91M	Facing	0.003 - 0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ER-3M	MP91M	Facing	0.002 - 0.009	0.002 - 0.009	0.002 - 0.008	-	0.002 - 0.009	0.002 - 0.009	0.002 - 0.009	-	-	-	-	-	-	-	-
E-2C	MP91M	Facing	0.002 - 0.009	-	-	-	0.002 - 0.009	0.002 - 0.009	0.002 - 0.009	-	-	-	-	-	-	-	-

Note: HTA = High Temperature Alloys

Speed recommendations can be found on page A116.

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Speed v_c (SFM)

80_0VA90-_R-16 Series

Wear Resistance: – ⟵ +

Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

ISO	Materials	Rm and Hardness	PVD X Grade	CVD X Grade	PVD Standard	PVD Standard	CVD Standard	CVD Standard	Uncoated Micrograin
			X400	X500	SP6519	SP4019	MP91M	SC3025	GH1
P	Unalloyed Steel	<600 N/mm² <180 HBN		⦿ ● 425 - 885	⦿ ● 425 - 970		● 460 - 1130		
		<950 N/mm² <280 HBN		375 - 785	375 - 855		395 - 1000		
	Alloyed Steel	700-950 N/mm² 200-280 HBN	⦿ ● 310 - 655	⦿ ● 330 - 690	⦿ ● 330 - 755		● 345 - 885		
		950-1200 N/mm² 280-355 HBN	230 - 490	245 - 525	245 - 575		260 - 675		
		1200-1400 N/mm² 355-415 HBN	● 150 - 310	● 165 - 330	● 165 - 360		● 165 - 425		
M	Stainless Steel	Austenitic + Ferritic 300 series		⦿ ● 375 - 820	⦿ ● 375 - 885	⦿ ● 395 - 920	⦿ ● 395 - 920		
		Martensitic 400 series		330 - 720	345 - 770	360 - 820	360 - 820		
	PH Stainless	Refractory P.H.		● 165 - 360	● 165 - 395				
K	Cast Iron	Grey GG-Ft					475 - 1200	490 - 1295	445 - 950
		Spheroidal-Ductile GGG-FGS				●	375 - 935	● 395 - 1100	⦿ ● 395 - 805
		Malleable GTS - MN/MP					345 - 855	345 - 900	375 - 655
N	Aluminium & Alloys	Aluminum & Alloys < 16% Si 116 HBN			●	1310 - 9500			● 1310 - 10005
		Aluminium + Silicon > 16% Si 92 HBN				970 - 7615			970 - 8005
S	High Temperature Alloys	Iron Based		● 75 - 160	● 75 - 180	● 80 - 210			
		Cobalt Based		70 - 145	70 - 160	75 - 170			
		Nickel Based		80 - 170	80 - 180	85 - 190			
		Titanium Based		115 - 240	120 - 260	120 - 275			
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN	● 150 - 310			● 165 - 330	● 165 - 345		
		Chilled Cast Iron >1400 N/mm² > 400 HBN	115 - 260			130 - 295	130 - 310		

Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of dia.

Formula: Program Feed Rate (f_z)

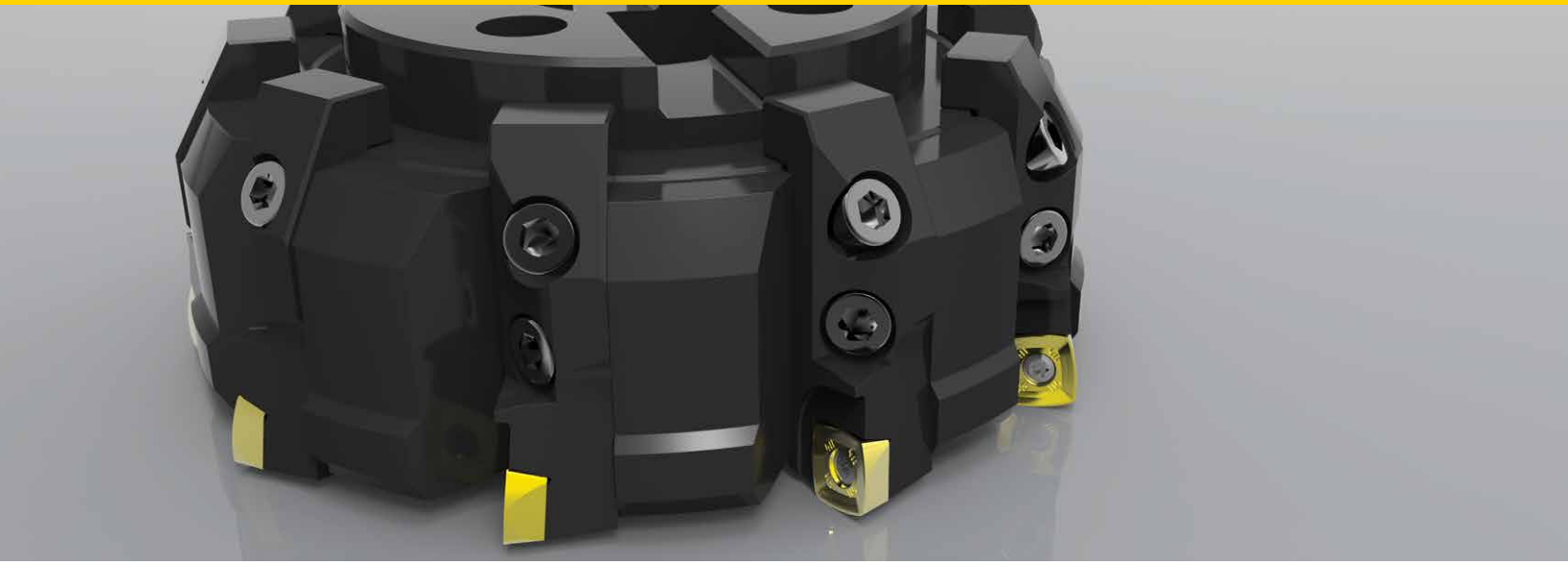
$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

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CARTRIDGE HIGH FEED MILLING ASSEMBLIES

80_0VX_92 high feed milling cutters are capable of high metal removal in facing applications. The patented insert design offers better performance than round insert cutters.

The 80_0VX_92 high feed cutters are the best solution when specifically focusing on reducing cycle time or removing a maximum volume of material in the shortest time.

Our high feed cutter has the capacity to achieve 5 times higher feed rate than other existing cutters in the market. This is due to its unique design and insert positioning. 80_0VX_92 cutters also have a tremendous advantage, when used in a long (extended) toolholder.

These cutters absorb vibration and generally reduces the instability and deflection of the tool.

Applications:

The 80_0VX_92 cutters are assembled with cartridges for XD... or XE... high feed milling inserts and are ideal for a wide range of applications. Facing, slotting pocketing, ramping and helical interpolation. Available with medium pitch.

The cutter series **8000VX_92**.. has an unequal medium pitch for reducing vibration and is suitable for roughing and semi-finishing of Steel, Steel Alloys, Stainless Steel, Cast Iron and Aluminum Alloys.

The cutters series **8010VX_92** has an equal medium pitch and is especially recommended for roughing and semi-finishing of High Temperature Alloys, such as Iron Based Alloys, Cobalt Based Alloys, Nickel Based Alloys and Titanium.

NOTE: The 80_0VX_92 series when mounted with high feed cartridges 80VX92R-12 or 80VX92R-16 using XD... or XE... inserts cannot utilize the wiper cartridge for finishing when a fine finished surface is required.

80_0VX_92-_R-12 & -16

8000VXD92-_R-12:
Maximum a_p = 0.098"
Effective Cutting Diameter
Range = 3.463" to 9.368"

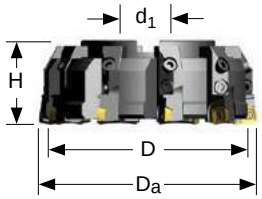
8010VXD92-_R-12:
Maximum a_p = 0.098"
Effective Cutting Diameter
Range = 3.463" to 7.400"

8000VXE92-_R-16:
Maximum a_p = 0.138"
Effective Cutting Diameter
Range = 3.234" to 9.140"

8010VXE92-_R-16:
Maximum a_p = 0.138"
Effective Cutting Diameter
Range = 3.234" to 7.171"

**Denotes non stock items



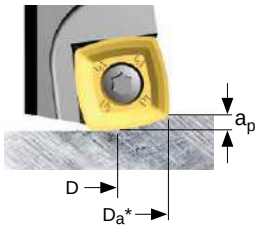




Cutter Body & Cartridges



80VX92R-12



Depth of Cut (a_p)

Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D Effective Cutting Diameter	D_a*	H	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
8000VXD92-_ R-12 Bodies with Unequal Medium Pitch & Cartridges												
033170	**A8000VXD92-100R-12**	3.463	4.173	2.680	1.250	0.098	6	*015263*	D4012T	*015240*	T15	27.40
033171	**A8000VXD92-125R-12**	4.447	5.157	2.480	1.500	0.098	8					
033172	**A8000VXD92-160R-12**	5.825	6.535	2.480	1.500	0.098	10					
033173	**A8000VXD92-200R-12**	7.400	8.110	2.480	2.500	0.098	12					
033174	**A8000VXD92-250R-12**	9.368	10.079	2.480	2.500	0.098	16					
8010VXD92-_ R-12 Bodies with Equal Medium Pitch & Cartridges												
033175	**A8010VXD92-100R-12****	3.463	4.173	2.680	1.250	0.098	6	*015263*	D4012T	*015240*	T15	27.40
033176	**A8010VXD92-125R-12****	4.447	5.157	2.480	1.500	0.098	8					
033177	**A8010VXD92-160R-12****	5.825	6.535	2.480	1.500	0.098	10					
033178	**A8010VXD92-200R-12****	7.400	8.110	2.480	2.500	0.098	12					

** Denotes non stock items.

D_a* = Outside Diameter

Product		Spares								
EDP	**Item Description**	*EDP*		*EDP*		Screw Tightening in. lbs.	*Cartridge Screw EDP*		*Adjustment Screw EDP*	
Cartridge & Spares										
030378	**80VX92R-12**	*015263*	D4012T	*015240*	T15	27.40	*022646*	7065	-	-

Note: Mounting instructions refer to page A162.

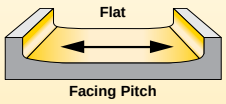
Note: XD..1205.., X-Style cutter assemblies cannot utilize the finishing wiper cartridges.

80_0VXD92-_R-12 Technical Information (inch)

Product		Dimensions						
EDP	**Item Description**	Facing Pitch	Ramping Angle A °	Ramping Angle B °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM cartridge full (RD..20)
033170	**A8000VXD92-100R-12**	3.463	0.31	0.47	7.559	8.268	0.071	10,800
033171	**A8000VXD92-125R-12**	4.447	0.24	0.36	9.528	10.236	0.071	9,200
033172	**A8000VXD92-160R-12**	5.825	0.18	0.28	12.283	12.992	0.071	7,800
033173	**A8000VXD92-200R-12**	7.400	0.14	0.21	15.433	16.142	0.071	6,800
033174	**A8000VXD92-250R-12**	9.368	0.11	0.17	19.370	20.079	0.071	5,900
033175	**A8010VXD92-100R-12****	3.463	0.31	0.47	8.268	8.268	0.071	10,800
033176	**A8010VXD92-125R-12****	4.447	0.24	0.36	10.236	10.236	0.071	9,200
033177	**A8010VXD92-160R-12****	5.825	0.18	0.28	12.992	12.992	0.071	7,800
033178	**A8010VXD92-200R-12****	7.400	0.14	0.21	16.142	16.142	0.071	6,800

** Denotes non stock items.





Ramp angle A uses one outside cutting edge only.



Ramp angle B uses two cutting edges (one outside and one inside edge).

A = max ramp angle utilizing full face contact

B = max ramp angle utilizing full contact + internal corner radius

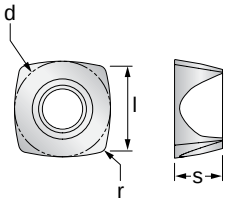
STELLRAM


XDLW12-D


XDLT12-D41


XDLT12-D721


XDLT12-D411



Product			Application & Material			Dimensions (inch)				
			Facing	Slotting	Plunging					
			Depth of Cut (inch)							
EDP	Item Description	Grade	a_p max. 0.098	a_p max. 0.079	a_e max. 0.354	d (IC)	l	s	r	h_m min
029490	XDLW120508SR-D	X400	♦●●	♦●●	♦●●	0.472	0.472	0.219	0.031	0.004
029488	XDLW120508SR-D	X500	●●●	●●●	●●●	0.472	0.472	0.219	0.031	0.004
029489	XDLW120508SR-D	SC3025	♦	♦	♦	0.472	0.472	0.219	0.031	0.004
029682	XDLT120508ER-D41	X500	■♦■	■♦■	■♦■	0.472	0.472	0.219	0.031	0.002
031534	XDLT120508ER-D41	SP6519	●●♦■●■	●●♦■●■	●●♦■●■	0.472	0.472	0.219	0.031	0.002
033068	XDLT120508ER-D41	SC6525	■■■	■■■	■■■	0.472	0.472	0.219	0.031	0.002
029638	XDLT120508ER-D721	GH2	♦	♦	♦	0.472	0.472	0.219	0.031	0.002
030783	XDLT120512ER-D411	X500	■♦■	■♦■	■♦■	0.472	0.472	0.219	0.047	0.002
030792	XDLT120512ER-D411	SP6519	●●♦■●■	●●♦■●■	●●♦■●■	0.472	0.472	0.219	0.047	0.002

Machining Choice: ♦ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.



XDLT120512ER-D411 is a more positive geometry than the D-41 with a larger radius which increases performance during smaller radial engagements or where chipping may occur when using the D-41 geometry.

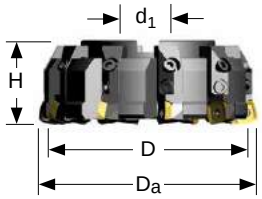
XDLT120512ER-D411 uses less power than D-41.

80_0VXD92-_R-12 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
SR-D	X400	Facing	0.012 - 0.106	0.012 - 0.098	-	-	-	-	-	-	-	-	-	-	-	0.012 - 0.047	0.012 - 0.059
SR-D	X400	Slotting	0.012 - 0.079	0.012 - 0.079	-	-	-	-	-	-	-	-	-	-	-	0.012 - 0.031	0.012 - 0.039
SR-D	X500	Facing	-	0.012 - 0.098	0.012 - 0.067	0.012 - 0.047	-	-	-	-	-	-	-	-	-	-	-
SR-D	X500	Slotting	-	0.012 - 0.079	0.012 - 0.059	0.012 - 0.039	-	-	-	-	-	-	-	-	-	-	-
SR-D	SC3025	Facing	-	-	-	-	0.012 - 0.118	0.012 - 0.110	0.012 - 0.098	-	-	-	-	-	-	-	-
SR-D	SC3025	Slotting	-	-	-	-	0.012 - 0.098	0.012 - 0.091	0.012 - 0.083	-	-	-	-	-	-	-	-
ER-D41	X500	Facing	-	-	0.008 - 0.055	0.008 - 0.035	-	-	-	-	-	0.008 - 0.033	0.008 - 0.033	0.008 - 0.033	0.008 - 0.039	-	-
ER-D41	X500	Slotting	-	-	0.008 - 0.043	0.008 - 0.031	-	-	-	-	-	0.004 - 0.028	0.004 - 0.028	0.004 - 0.028	0.004 - 0.031	-	-
ER-D41	SP6519	Facing	0.012 - 0.098	0.012 - 0.091	0.008 - 0.047	0.008 - 0.030	0.012 - 0.098	0.012 - 0.091	-	-	-	0.008 - 0.033	0.008 - 0.033	0.008 - 0.033	0.008 - 0.039	-	-
ER-D41	SP6519	Slotting	0.012 - 0.079	0.012 - 0.071	0.008 - 0.039	0.006 - 0.024	0.012 - 0.079	0.012 - 0.071	-	-	-	0.004 - 0.028	0.004 - 0.028	0.004 - 0.028	0.004 - 0.031	-	-
ER-D41	SC6525	Facing	0.008 - 0.079	0.008 - 0.065	-	-	0.012 - 0.098	0.012 - 0.090	-	-	-	-	-	-	-	-	-
ER-D41	SC6525	Slotting	0.008 - 0.069	0.008 - 0.061	-	-	0.012 - 0.078	0.012 - 0.070	-	-	-	-	-	-	-	-	-
ER-D721	GH2	Facing	-	-	-	-	-	-	-	0.012 - 0.059	0.012 - 0.059	-	-	-	-	-	-
ER-D721	GH2	Slotting	-	-	-	-	-	-	-	0.012 - 0.059	0.012 - 0.059	-	-	-	-	-	-
ER-D411	X500	Facing	-	0.012 - 0.098	0.008 - 0.055	0.008 - 0.035	-	-	-	-	-	0.008 - 0.033	0.008 - 0.033	0.008 - 0.033	0.008 - 0.039	-	-
ER-D411	X500	Slotting	-	0.012 - 0.079	0.008 - 0.043	0.008 - 0.031	-	-	-	-	-	0.004 - 0.028	0.004 - 0.028	0.004 - 0.028	0.004 - 0.031	-	-
ER-D411	SP6519	Facing	0.012 - 0.098	0.012 - 0.091	0.008 - 0.047	0.008 - 0.030	0.012 - 0.098	0.012 - 0.091	-	-	-	0.008 - 0.033	0.008 - 0.033	0.008 - 0.033	0.008 - 0.039	-	-
ER-D411	SP6519	Slotting	0.012 - 0.079	0.012 - 0.071	0.008 - 0.039	0.006 - 0.024	0.012 - 0.079	0.012 - 0.071	-	-	-	0.004 - 0.028	0.004 - 0.028	0.004 - 0.028	0.004 - 0.031	-	-

Note: HTA = High Temperature Alloys

Speed recommendations can be found on page A122.

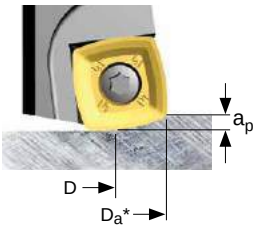




Cutter Body & Cartridges



80VX92R-16



Depth of Cut (a_p)

Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D Effective Cutting Diameter	D_a*	H	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
8000VXE92-_ R-16 Bodies with Unequal Medium Pitch & Cartridges												
033198	**A8000VX92-100R-16**	3.234	4.173	2.680	1.250	0.138	6	*031225*	DP5013T	*030819*	TP20	54
033199	**A8000VX92-125R-16**	4.219	5.157	2.480	1.500	0.138	8					
033200	**A8000VX92-160R-16**	5.596	6.535	2.480	1.500	0.138	10					
033201	**A8000VX92-200R-16**	7.171	8.110	2.480	2.500	0.138	12					
033202	**A8000VX92-250R-16**	9.140	10.079	2.480	2.500	0.138	16					
8010VXE92-_ R-16 Bodies with Equal Medium Pitch & Cartridges												
033203	**A8010VX92-100R-16****	3.234	4.173	2.680	1.250	0.138	6	*031225*	DP5013T	*030819*	TP20	54
033204	**A8010VX92-125R-16****	4.219	5.157	2.480	1.500	0.138	8					
033205	**A8010VX92-160R-16****	5.596	6.535	2.480	1.500	0.138	10					
033206	**A8010VX92-200R-16****	7.171	8.110	2.480	2.500	0.138	12					

** Denotes non stock items.

D_a* = Outside Diameter

Product		Spares								
EDP	**Item Description**	*EDP*		*EDP*		Screw Tightening in. lbs.	*Cartridge Screw EDP*		*Adjustment Screw EDP*	
Cartridge & Spares										
031308	**80VX92R-16**	*031225*	DP5013T	*030819*	TP20	54	*022646*	7065	-	-

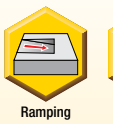
Note: Mounting instructions refer to page A162.

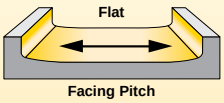
Note: XE..1605.., X-Style cutter assemblies cannot utilize the finishing wiper cartridges.

80_0VXE92-_R-16 Technical Information (inch)

Product		Dimensions						
EDP	**Item Description**	Facing Pitch	Ramping Angle A °	Ramping Angle B °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
033198	**A8000VXE92-100R-16**	3.234	0.39	0.47	7.323	8.268	0.098	10,800
033199	**A8000VXE92-125R-16**	4.219	0.29	0.36	9.291	10.236	0.098	9,200
033200	**A8000VXE92-160R-16**	5.596	0.22	0.27	12.047	12.992	0.098	7,800
033201	**A8000VXE92-200R-16**	7.171	0.17	0.20	15.197	16.142	0.098	6,800
033202	**A8000VXE92-250R-16**	9.140	0.13	0.16	19.134	20.079	0.098	5,900
033203	**A8010VXE92-100R-16****	3.234	0.39	0.47	7.323	8.268	0.098	10,800
033204	**A8010VXE92-125R-16****	4.219	0.29	0.36	9.291	10.236	0.098	9,200
033205	**A8010VXE92-160R-16****	5.596	0.22	0.27	12.047	12.992	0.098	7,800
033206	**A8010VXE92-200R-16****	7.171	0.17	0.20	15.197	16.142	0.098	6,800

* Denotes non stock items.





Ramp angle A uses one outside cutting edge only.



Ramp angle B uses two cutting edges (one outside and one inside edge).

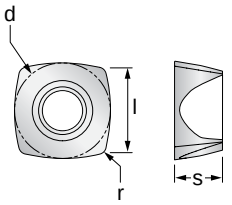
A = max ramp angle utilizing full face contact

B = max ramp angle utilizing full contact + internal corner radius

STELLRAM


XELW16-D


XELT16-D41



Product			Application & Material			Dimensions (inch)				
			Facing	Slotting	Plunging					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.138	a_p max. 0.118	a_e max. -					
031291	**XELW160512SR-D**	**X400**	◆◆◆	◆◆◆	-	0.661	0.661	0.219	0.047	0.005
031292	**XELW160512SR-D**	**SC3025**	◆	◆	-	0.661	0.661	0.219	0.047	0.005
031293	**XELT160512ER-D41**	**X500**	●■◆◆	●■◆◆	-	0.661	0.661	0.219	0.047	0.005
031294	**XELT160512ER-D41**	**SP6519**	●●◆□■■	●●◆□■■	-	0.661	0.661	0.219	0.047	0.005
033069	**XELT160512ER-D41**	**SC6525**	■■●	■■●	-	0.661	0.661	0.219	0.047	0.005

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.



80_0VXE92-_R-16 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
SR-D	X400	Facing	0.012 - 0.079	0.012 - 0.071	-	-	-	-	-	-	-	-	-	-	-	0.012 - 0.031	0.012 - 0.039
SR-D	X400	Slotting	0.012 - 0.067	0.012 - 0.059	-	-	-	-	-	-	-	-	-	-	-	0.012 - 0.020	0.012 - 0.024
SR-D	SC3025	Facing	-	-	-	-	0.012 - 0.079	0.012 - 0.071	0.012 - 0.059	-	-	-	-	-	-	-	-
SR-D	SC3025	Slotting	-	-	-	-	0.012 - 0.059	0.012 - 0.051	0.012 - 0.047	-	-	-	-	-	-	-	-
ER-D41	X500	Facing	-	0.012 - 0.055	0.008 - 0.039	0.008 - 0.024	-	-	-	-	-	0.008 - 0.024	0.008 - 0.024	0.008 - 0.024	0.008 - 0.031	-	-
ER-D41	X500	Slotting	-	0.012 - 0.039	0.008 - 0.031	0.008 - 0.020	-	-	-	-	-	0.004 - 0.016	0.004 - 0.016	0.004 - 0.016	0.004 - 0.020	-	-
ER-D41	SP6519	Facing	0.012 - 0.059	0.012 - 0.047	0.008 - 0.039	0.008 - 0.020	0.012 - 0.059	0.012 - 0.047	-	-	-	0.008 - 0.024	0.008 - 0.024	0.008 - 0.024	0.008 - 0.031	-	-
ER-D41	SP6519	Slotting	0.012 - 0.047	0.012 - 0.043	0.008 - 0.031	0.008 - 0.018	0.012 - 0.047	0.012 - 0.043	-	-	-	0.004 - 0.016	0.004 - 0.016	0.004 - 0.016	0.004 - 0.020	-	-
ER-D41	SC6525	Facing	0.008 - 0.047	0.008 - 0.039	-	-	0.012 - 0.059	0.012 - 0.047	-	-	-	-	-	-	-	-	-
ER-D41	SC6525	Slotting	0.008 - 0.045	0.008 - 0.035	-	-	0.012 - 0.047	0.012 - 0.043	-	-	-	-	-	-	-	-	-

Note: HTA = High Temperature Alloys

Speed recommendations can be found on page A122.

Speed v_c (SFM)

80_0VX_92 Series

Wear Resistance: − ⟵ +

Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

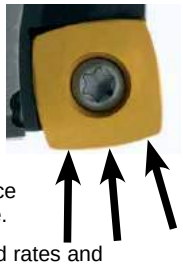
ISO	Materials	Rm and Hardness			PVD X Grade			CVD X Grade			PVD Standard			Uncoated Micrograin			CVD Standard			CVD Standard
			💧	🚫	X400	💧	🚫	X500	💧	🚫	SP6519	💧	🚫	GH2	💧	🚫	SC6525	💧	🚫	SC3025
P	Unalloyed Steel	<600 N/mm² <180 HBN	⦿	●	395 - 855				⦿	●	425 - 970				⦿	●	460 - 1190			
		<950 N/mm² <280 HBN			345 - 755						375 - 855						395 - 1050			
	Alloyed Steel	700-950 N/mm² 200-280 HBN	⦿	●	310 - 655	⦿	●	330 - 690	⦿	●	330 - 755				⦿	●	345 - 930			
		950-1200 N/mm² 280-355 HBN			230 - 490			245 - 525			245 - 575						260 - 705			
		1200-1400 N/mm² 355-415 HBN		●	150 - 310		●	165 - 330		●	165 - 360					●	165 - 445			
M	Stainless Steel	Austenitic + Ferritic 300 series				⦿	●	375 - 820	⦿	●	375 - 885									
		Martensitic 400 series						330 - 720			345 - 770									
	PH Stainless	Refractory P.H.				●		165 - 360	●		165 - 395									
K	Cast Iron	Grey GG-Ft									460 - 970						475 - 1280			490 - 1295
		Spheroidal-Ductile GGG-FGS							⦿	●	360 - 785					●	375 - 1000		●	395 - 1100
		Malleable GTS - MN/MP									330 - 720									345 - 900
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN										●		1310 - 9005						
		Aluminum + Silicon > 16% Si 92 HBN												970 - 7005						
S	High Temperature Alloys	Iron Based				●		75 - 160	●		75 - 180									
		Cobalt Based						70 - 145			70 - 160									
		Nickel Based						80 - 170			80 - 180									
		Titanium Based						115 - 240			120 - 260									
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN		●	150 - 310															
		Chilled Cast Iron >1400 N/mm² > 400 HBN			115 - 260															

STELLRAM

The advantages of facemilling and producing cavities with Stellram's high feed face milling are numerous.

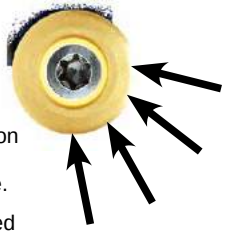
The unique design of the insert, approach angle and the cutter body ensure the cutting forces are predominantly directed in the axial direction. The example shown with a round insert tool shows complex forces which result in high levels of vibration and damage to the cutting edge.

80_0VX_92



- Cutting forces predominantly axial.
- Relationship between cutting edge and work piece is at its most stable.
- Results in high feed rates and consistent tool life.

Round Insert Tools



- Tangential forces act around the radius.
- Leads to vibration and damage of the cutting edge.
- Leads to reduced feed and lower productivity.

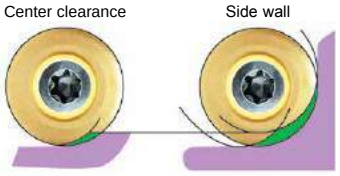
The 80_0VX_92 (12mm & 16mm) high feed face mill machines with a constant volume of chip throughout all aspects of producing cavities and produces a side wall that is close to profile.

Round insert tools have increasing chip volume through the process.

80_0VX_92



- Constant cutting section (chip volume) irrespective of position in cavity.
- Producing a close to profile side wall.
- Near-square side walls possible.

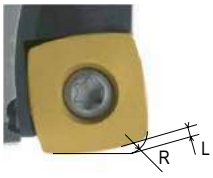


Round insert

- Greater surface contact.
- Increased chip section for side wall machining.
- Vibration in corners.
- Undulating side wall cusps.

CNC Program - Corner Radius Definition 80_0VX_92

The use of common CAD / CAM systems requires a round insert dimension to be known for cavity machining. This is available with 80_0VX92 cutters as shown to the right and in the reference table.



Programming Data (inch)			
Insert size (mm)	Radius	R	L
12	0.031	0.098	0.040
	0.047	0.107	0.038
16	0.047	0.164	0.057

For finish pass applications:

Wiper Facet for finishing use max. feed 0.031 inch/ revolution (IPR)

STELLRAM

Calculation of the average chip thickness in relation with the D.O.C. (Axial)

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_p}}$$

h_m = Average chip thickness
a_p = Depth of cut
f_z = Feed per tooth
d = Insert diameter (1.772")

Theoretical Diameter for all high feed insert sizes = 1.772"

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_p}{d}}$$

Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of Dia.

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

Formula: Average Chip Thickness (h_m)

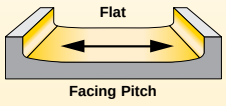
$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

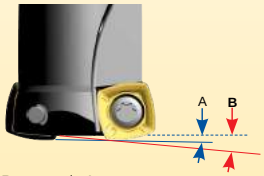
Facing Pitch, Ramp Angle, Helical Interpolation and Max RPM Capacity for 80_0VX92 Series (inch)

Product				Dimensions						
Insert Size	Item Description	D Effective Cutting Diameter	D_a*	Facing Pitch	Ramping Angle A °	Ramping Angle B °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
12mm	**A8000VXD92-100R-12**	3.463	4.173	3.463	0.31	0.47	7.559	8.268	0.071	10,800
	A8000VXD92-125R-12	4.447	5.157	4.447	0.24	0.36	9.528	10.236	0.071	9,200
	A8000VXD92-160R-12	5.825	6.535	5.825	0.18	0.28	12.283	12.992	0.071	7,800
	A8000VXD92-200R-12	7.400	8.110	7.400	0.14	0.21	15.433	16.142	0.071	6,800
	A8000VXD92-250R-12	9.368	10.079	9.368	0.11	0.17	19.370	20.079	0.071	5,900
16mm	**A8000VX92-100R-16**	3.234	4.173	3.234	0.39	0.47	7.323	8.268	0.098	10,800
	A8000VX92-125R-16	4.219	5.157	4.219	0.29	0.36	9.291	10.236	0.098	9,200
	A8000VX92-160R-16	5.596	6.535	5.596	0.22	0.27	12.047	12.992	0.098	7,800
	A8000VX92-200R-16	7.171	8.110	7.171	0.17	0.20	15.197	16.142	0.098	6,800
	A8000VX92-250R-16	9.140	10.079	9.140	0.13	0.16	19.134	20.079	0.098	5,900

D_a* = Outside Diameter







Ramp angle A uses one outside cutting edge only.

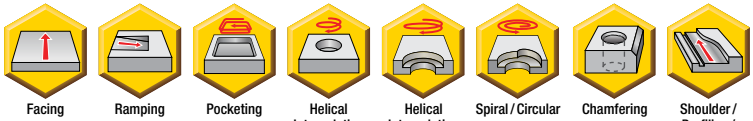
Ramp angle B uses two cutting edges (one outside and one inside edge).

A = max ramp angle utilizing full face contact

B = max ramp angle utilizing full contact + internal corner radius



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42° CARTRIDGE FACE MILLING ASSEMBLIES

The **80_0VOD45** cutters are designed to machine all materials. Octagonal inserts offer up to eight economical cutting edges.

80_0VOD45 cutters are assembled with cartridges for OD..0404.. or OD..0605.. milling inserts for face milling applications.

The cutters series **8000VOD45** has an unequal medium pitch for reducing vibration and is for roughing, semi-finishing and finishing of Steel, Steel Alloys, Stainless Steel, Cast Iron and Aluminum Alloys.

The **8010VOD45** series has an equal medium pitch and is especially recommended for roughing, semi-finishing and finishing of High Temperature Alloys such as Iron Based Alloys, Cobalt Based Alloys, Nickel Based Alloys and Titanium.

The **8000VOD45** series can be assembled with a particular wiper cartridge for finishing when a fine finished surface is required. The corresponding pocket on the body for the finishing cartridge is marked with a “F”.

Note: The 8010 series are not possible to assemble with a wiper cartridge

80_0VOD45-_R-04 & -06

80_0VOD45-_R-04:
Maximum a_p = 0.140”
(a_p1 max = 0.300”)
Effective Cutting Diameter
Range = 3.937” to 15.748”

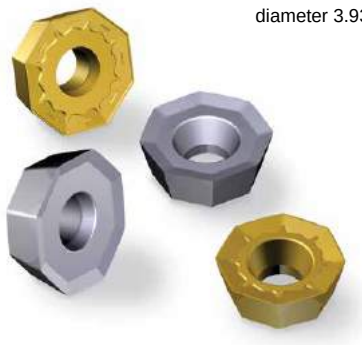
** Denotes non stock items 8000VOD45 diameter 12.402” and 15.748”

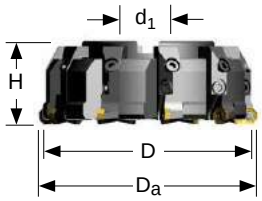
** Denotes non stock items 8010VOD45 diameter 3.937” to 7.874”

80_0VOD45-_R-06:
Maximum a_p = 0.173”
(a_p1 = 0.400”)
Effective Cutting Diameter
Range = 3.937” to 15.748”

** Denotes non stock items 8000VOD45 diameter 12.402” and 15.748”

** Denotes non stock items 8010VOD45 diameter 3.937” to 7.874”







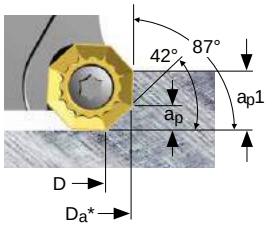
Cutter Body & Cartridges



80VOD45R-04



81FS00R-12



Depth of Cut (ap)

Product		Dimensions (inch)							Spares				
EDP	**Item Description**	D Effective Cutting Diameter	D_a*	H	d_1	ap max	ap1 max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
8000VOD45-_ R-04 Bodies with Equal Medium Pitch & Cartridges													
015296	**A8000VOD45-100R-04**	3.937	4.252	2.680	1.250	0.140	0.300	6	*015270*	F4011T	*015241*	T20	27.40
015297	**A8000VOD45-125R-04**	4.921	5.236	2.480	1.500	0.140	0.300	8					
015298	**A8000VOD45-160R-04**	6.299	6.614	2.480	1.500	0.140	0.300	10					
015299	**A8000VOD45-200R-04**	7.874	8.189	2.480	2.500	0.140	0.300	12					
015300	**A8000VOD45-250R-04**	9.843	10.157	2.480	2.500	0.140	0.300	16					
015301	**A8000VOD45-315R-04****	12.402	12.717	3.150	2.500	0.140	0.300	20					
015302	**A8000VOD45-400R-04****	15.748	16.063	3.150	2.500	0.140	0.300	24					
8010VOD45_ R-04 Bodies with Equal Medium Pitch & Cartridges													
016780	**A8010VOD45-100R-04****	3.937	4.252	2.680	1.250	0.140	0.300	6	*015270*	F4011T	*015241*	T20	27.40
016781	**A8010VOD45-125R-04****	4.921	5.236	2.480	1.500	0.140	0.300	8					
016782	**A8010VOD45-160R-04****	6.299	6.614	2.480	1.500	0.140	0.300	10					
016783	**A8010VOD45-200R-04****	7.874	8.189	2.480	2.500	0.140	0.300	12					

** Denotes non stock items.

D_a* = Outside Diameter

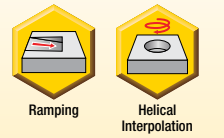
Product		Spares								
EDP	**Item Description**	*EDP*		*EDP*		Screw Tightening in. lbs.	*Cartridge Screw EDP*		*Adjustment Screw EDP*	
Cartridge & Spares										
014313	**80VOD45R-04**	*015270*	F4011T	*015241*	T20	27.40	*022646*	7065	-	-
81FS00 Finshing Cartridge & Spares										
014953	**81FS00R-12**	*015266*	D5013T	*015241*	T20	67.30	*022646*	7065	*016858*	72.602

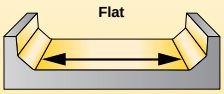
Note: Mounting instructions refer to page A162.

80_0VOD45-_R-04 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
015296	**A8000VOD45-100R-04**	3.937	0.17	7.717	8.520	0.080	10,800
015297	**A8000VOD45-125R-04**	4.921	0.14	9.685	10.480	0.080	10,000
015298	**A8000VOD45-160R-04**	6.299	0.11	12.441	13.240	0.080	8,000
015299	**A8000VOD45-200R-04**	7.874	0.09	15.583	16.380	0.080	6,800
015300	**A8000VOD45-250R-04**	9.843	0.07	19.523	20.320	0.080	5,900
015301	**A8000VOD45-315R-04****	12.402	-	-	-	-	5,200
015302	**A8000VOD45-400R-04****	15.748	-	-	-	-	4,500
016780	**A8010VOD45-100R-04****	3.937	0.17	7.723	8.520	0.080	10,800
016781	**A8010VOD45-125R-04****	4.921	0.14	9.683	10.480	0.080	10,000
016782	**A8010VOD45-160R-04****	6.299	0.11	12.364	13.240	0.080	8,000
016783	**A8010VOD45-200R-04****	7.874	0.09	15.504	16.380	0.080	6,800

** Denotes non stock items.






ODET04-441


ODET04-44


ODMT04-41


ODMT04-412


ODEW04-RA


ODMW04-SN


SPHX12-EN (wiper)

Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.140	a_p min. - max. 0.040 - 0.080	a_p min. - max. 0.008 - 0.040					
024911	ODET0404APFN-441	GH1	◆	◆	◆	0.500	0.157	0.187	Facet	0.001
022198	ODET0404APEN-44	X500	-	-	●■	0.500	0.157	0.187	Facet	0.002
031470	ODET0404APEN-44	SP6519	-	-	■◆◆●◆	0.500	0.157	0.187	Facet	0.002
022199	ODET0404APEN-44	MP91M	-	-	◆■	0.500	0.157	0.187	Facet	0.002
022061	ODMT0404APEN-41	X500	-	●●	-	0.500	0.157	0.187	Facet	0.003
031472	ODMT0404APEN-41	SP6519	-	◆◆●	-	0.500	0.157	0.187	Facet	0.003
017775	ODMT0404APEN-41	MP91M	-	■■	-	0.500	0.157	0.187	Facet	0.003
030768	ODMT040408EN-412	X500	-	●■	-	0.500	0.157	0.187	0.031	0.003
030769	ODMT040408EN-412	X700	-	◆◆●	-	0.500	0.157	0.187	0.031	0.003
031540	ODMT040408EN-412	SP6519	-	■●◆	-	0.500	0.157	0.187	0.031	0.003
015143	ODMT040408EN-41	X500	■◆◆	-	-	0.500	0.157	0.187	0.031	0.003
030330	ODMT040408EN-41	X700	●●●	◆◆●	-	0.500	0.157	0.187	0.031	0.003
031471	ODMT040408EN-41	SP6519	●◆■	-	-	0.500	0.157	0.187	0.031	0.003
017303	ODMT040408EN-41	MP91M	●	-	-	0.500	0.157	0.187	0.031	0.003
027884	ODEW0404APTR-RA	SC3025	-	◆	◆	0.500	0.157	0.187	Wiper Facet	0.007
017672	ODMW040408SN	X500	■●●●	-	-	0.500	0.157	0.187	0.031	0.011
031462	ODMW040408SN	SP6519	■◆	-	-	0.500	0.157	0.187	0.031	0.011
017304	ODMW040408SN	MP91M	◆●■	-	-	0.500	0.157	0.187	0.031	0.011
029096	ODMW040408SN	SC3025	◆	-	-	0.500	0.157	0.187	0.031	0.011

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

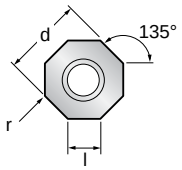
Note: Feed recommendations can be found on page A128. Speed recommendations can be found on page A129.

Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. -	a_p min. - max. -	a_p min. - max. 0.008 - 0.040					
Wiper Inserts										
017237	SPHX12M512EN	GH1	-	-	■■◆◆	0.494	0.494	0.197	Wiper Facet	0.0008
031455	SPHX12M512EN	SA9608	-	-	◆◆◆■◆	0.494	0.494	0.197	Wiper Facet	0.0008

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

Note: Mounting instruction for wiper inserts refer to page A161.

STELLRAM





INSERT APPLICATION NOTES:

ODMW040408SN X500 should be used on Stainless Steel and High Temperature Alloys with heavy scale.

ODMW040408SN inserts should generally be used for heavy duty applications only.

ODMT040408EN-41 and ODMT040408EN-412 in Grade X700 is recommended for medium roughing of Stainless Steel and High Temperature Alloys when a stronger cutting edge is required.

80_0VOD45-_R-04 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
FN-441	GH1	Facing	-	-	-	-	-	-	-	0,001 - 0,012	0,001 - 0,010	-	-	-	-	-	-
EN-44	X500	Facing	0.002 - 0.012	0.002 - 0.011	0.002 - 0.010	0.002 - 0.008	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-44	SP6519	Facing	0.002 - 0.012	0.002 - 0.011	0.002 - 0.010	0.002 - 0.008	0.002 - 0.010	0.002 - 0.010	0.002 - 0.010	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-44	MP91M	Facing	0.002 - 0.012	0.002 - 0.011	-	-	0.002 - 0.010	0.002 - 0.010	0.002 - 0.010	-	-	-	-	-	-	-	-
APEN-41	X500	Facing	0.002 - 0.014	0.002 - 0.009	-	-	-	-	-	-	-	-	-	-	-	-	-
APEN-41	SP6519	Facing	0.002 - 0.014	0.002 - 0.009	-	-	0.002 - 0.010	0.002 - 0.010	0.002 - 0.010	-	-	-	-	-	-	-	-
APEN-41	MP91M	Facing	0.002 - 0.014	0.002 - 0.009	-	-	-	-	-	-	-	-	-	-	-	-	-
EN-412	X500	Facing	-	-	0.002 - 0.014	0.002 - 0.012	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-412	X700	Facing	-	-	0.002 - 0.014	0.002 - 0.012	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-412	SP6519	Facing	-	-	0.002 - 0.014	0.002 - 0.012	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-41	X500	Facing	-	-	0.002 - 0.014	0.002 - 0.012	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.012	-	-
EN-41	X700	Facing	-	-	0.002 - 0.014	0.002 - 0.012	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.012	-	-
EN-41	SP6519	Facing	.002 - 0.014	-	0.002 - 0.014	0.002 - 0.012	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.012	-	-
EN-41	MP91M	Facing	-	-	-	-	0.002 - 0.014	0.002 - 0.014	0.002 - 0.014	-	-	-	-	-	-	-	-
TR-RA	SC3025	Facing	-	-	-	-	0.008 - 0.014	0.008 - 0.014	0.008 - 0.014	-	-	-	-	-	-	-	-
SN	X500	Facing	-	0.013 - 0.020	0.012 - 0.016	0.012 - 0.016	-	-	-	-	-	0.008 - 0.012	0.008 - 0.012	0.008 - 0.012	0.008 - 0.013	-	-
SN	SP6519	Facing	0.013 - 0.022	0.013 - 0.020	-	-	-	-	-	-	-	-	-	-	-	-	-
SN	MP91M	Facing	0.013 - 0.022	0.013 - 0.020	-	-	0.013 - 0.020	0.013 - 0.020	0.013 - 0.020	-	-	-	-	-	-	-	-
SN	SC3025	Facing	-	-	-	-	0.013 - 0.020	0.013 - 0.020	0.013 - 0.020	-	-	-	-	-	-	-	-
Wiper Inserts Feed /revolution (fn in inch)																	
SPHX	GH1	Facing	0.039 - 0.157	0.039 - 0.118	0.031 - 0.098	0.031 - 0.079	0.039 - 0.098	0.031 - 0.087	0.031 - 0.079	-	-	-	-	-	-	-	-
SPHX	SA9608	Facing	0.039 - 0.157	0.039 - 0.118	0.031 - 0.098	0.031 - 0.079	0.039 - 0.098	0.031 - 0.087	0.031 - 0.079	-	-	0.020 - 0.059	0.020 - 0.059	0.020 - 0.059	0.020 - 0.071	-	-

Note: HTA = High Temperature Alloys

Speed recommendations can be found on page A129.

Speed v_c (SFM)

80_0VOD45-_R-04 Series

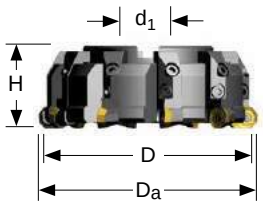
Wear Resistance: – ⟵ +

Speed min. - max..

Coolant Recommendation
Recommended ● Possible ⦿

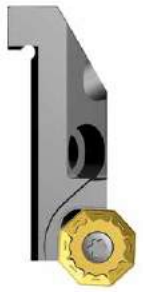
ISO	Materials	Rm and Hardness	Coolant		CVD X Grade	Coolant		PVD X Grade	Coolant		PVD Standard	Coolant		CVD Standard	Coolant		CVD Standard	Coolant		Uncoated Micrograin	Coolant		Uncoated Cermet
					X500			X700			SP6519			MP91M			SC3025			GH1*			SA9608
P	Unalloyed Steel	<600 N/mm² <180 HBN	⦿	●	425 - 885				⦿	●	425 - 970		●	460 - 1130					●	785 - 1130		●	870 -1245
		<950 N/mm² <280 HBN			375 - 785						375 - 855			395 - 1000						705 - 1000			770 - 1100
	Alloyed Steel	700-950 N/mm² 200-280 HBN	⦿	●	330 - 690				⦿	●	330 - 755		●	345 - 885					●	625 - 885		●	675 - 970
		950-1200 N/mm² 280-355 HBN			245 - 525						245 - 575			260 - 675						460 - 670			510 - 740
		1200-1400 N/mm² 355-415 HBN		●	165 - 330					●	165 - 360		●	165 - 425					●	295 - 425		●	330 - 475
M	Stainless Steel	Austenitic + Ferritic 300 series	⦿	●	375 - 820	⦿	●	375 - 855	⦿	●	375 - 885							⦿	●	705 - 1000	⦿	●	770 - 1100
		Martensitic 400 series			330 - 720			345 - 755			345 - 770									640 - 900			705 -1000
	PH Stainless	Refractory P.H.	●		165 - 360	●		165 - 375	●		165 - 395							●		295 - 590	●		310 - 660
K	Cast Iron	Grey GG-Ft									460 - 970			475 - 1200			490 - 1295			445 - 950			920 - 1310
		Spheroidal-Ductile GGG-FGS							⦿	●	360 - 785		●	375 - 935		●	395 - 1100	⦿	●	395 - 805		●	720 -1035
		Malleable GTS - MN/MP									330 - 720			345 - 855			345 - 900			375 - 655			655 -935
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN																		1310 - 10005			
		Aluminum + Silicon > 16% Si 92 HBN																●		970 - 8005			
S	High Temperature Alloys	Iron Based	●		75 - 160	●		75 - 170	●		75 - 180										●		165 - 250
		Cobalt Based			70 - 145			70 - 150			70 - 160												160 - 230
		Nickel Based			80 - 170			80 - 175			80 - 180												170 - 250
		Titanium Based			115 - 240			120 - 250			120 - 260												195 - 300
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN																					
		Chilled Cast Iron >1400 N/mm² > 400 HBN																					

* Note: ODET04..-441 in Grade GH1 can only be used for Aluminum.
* Note: Wiper Insert SPHX12M512EN GH1 can be used for Steel, Steel Alloys, Stainless Steel, Cast Iron and High Temperature Alloys.





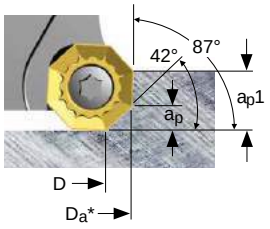
Cutter Body & Cartridges



80VOD45R-06



81FS00R-12



Depth of Cut (ap)

Product		Dimensions (inch)							Spares				
EDP	**Item Description**	D Effective Cutting Diameter	D_a*	H	d_1	ap max	ap1 max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
8000VOD45-_ R-06 Bodies with Unequal Medium Pitch & Cartridges													
026655	**A8000VOD45-100R-06**	3.937	4.331	2.680	1.250	0.173	0.400	6	*015270*	F4011T	*015241*	T20	27.40
026656	**A8000VOD45-125R-06**	4.921	5.315	2.480	1.500	0.173	0.400	8					
026657	**A8000VOD45-160R-06**	6.299	6.693	2.480	1.500	0.173	0.400	10					
026658	**A8000VOD45-200R-06**	7.874	8.268	2.480	2.500	0.173	0.400	12					
026659	**A8000VOD45-250R-06**	9.843	10.236	2.480	2.500	0.173	0.400	16					
026660	**A8000VOD45-315R-06****	12.402	12.795	3.150	2.500	0.173	0.400	20					
026661	**A8000VOD45-400R-06****	15.748	16.142	3.150	2.500	0.173	0.400	24					
8010VOD45-_ R-06 Bodies with Equal Medium Pitch & Cartridges													
026662	**A8010VOD45-100R-06****	3.937	4.331	2.680	1.250	0.173	0.400	6	*015270*	F4011T	*015241*	T20	27.40
026663	**A8010VOD45-125R-06****	4.921	5.315	2.480	1.500	0.173	0.400	8					
026664	**A8010VOD45-160R-06****	6.299	6.693	2.480	1.500	0.173	0.400	10					
026665	**A8010VOD45-200R-06****	7.874	8.268	2.480	2.500	0.173	0.400	12					

** Denotes non stock items.

D_a* = Outside Diameter

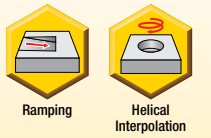
Product		Spares								
EDP	**Item Description**	*EDP*		*EDP*		Screw Tightening in. lbs.	*Cartridge Screw EDP*		*Adjustment Screw EDP*	
Cartridge & Spares										
026587	**80VOD45R-06**	*015270*	F4011T	*015241*	T20	27.40	*022646*	7065	-	-
Finshing Cartridge & Spares										
014953	**81FS00R-12**	*015266*	D5013T	*015241*	T20	67.30	*022646*	7065	*016858*	72.602

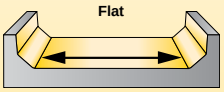
Note: Mounting instructions refer to page A162.

80_0VOD45-_R-06 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
026655	**A8000VOD45-100R-06**	3.937	0.22	7.644	8.572	0.102	10,800
026656	**A8000VOD45-125R-06**	4.921	0.18	9.604	10.532	0.102	10,000
026657	**A8000VOD45-160R-06**	6.299	0.14	12.364	13.292	0.102	8,000
026658	**A8000VOD45-200R-06**	7.874	0.11	15.504	16.432	0.102	6,800
026659	**A8000VOD45-250R-06**	9.843	0.09	19.444	20.372	0.102	5,900
026660	**A8000VOD45-315R-06****	12.402	-	-	-	-	5,200
026661	**A8000VOD45-400R-06****	15.748	-	-	-	-	4,500
026662	**A8010VOD45-100R-06****	3.937	0.22	7.638	8.583	0.102	10,800
026663	**A8010VOD45-125R-06****	4.921	0.18	9.606	10.551	0.102	10,000
026664	**A8010VOD45-160R-06****	6.299	0.14	12.362	13.307	0.102	8,000
026665	**A8010VOD45-200R-06****	7.874	0.11	15.512	16.457	0.102	6,800

** Denotes non stock items.





STELLRAM


ODET06-441


ODET06-44

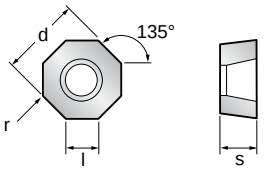

ODMT06-41


ODEW06-RA


ODMW06-TN


ODMW06-SN


SPHX12-EN (wiper)





Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.173	a_p min. - max. 0.040 - 0.080	a_p min. - max. 0.008 - 0.040					
026588	ODET0605APFN-441	GH1	◆	◆	◆	0.630	0.236	0.219	Facet	0.001
026592	ODET0605APEN-44	X500	-	-	● ● ● ○ ●	0.630	0.236	0.219	Facet	0.002
031501	ODET0605APEN-44	SP6519	-	-	■ ◆ □ □ ● ■	0.630	0.236	0.219	Facet	0.002
034513	ODET0605APEN-44	SP4019	-	-	◆ ◆ ◆	0.630	0.236	0.219	Facet	0.002
026591	ODET0605APEN-44	MP91M	-	-	◆ ■ ■	0.630	0.236	0.219	Facet	0.002
026590	ODMT0605APEN-41	X500	● □ ◆	● ● ● ○ ●	-	0.630	0.236	0.219	Facet	0.003
031502	ODMT0605APEN-41	SP6519	■ ○ ●	■ ◆ □ □ ● ■	-	0.630	0.236	0.219	Facet	0.003
034514	ODMT0605APEN-41	SP4019	◆ ◆ ■	◆ ◆ ◆	-	0.630	0.236	0.219	Facet	0.003
026589	ODMT0605APEN-41	MP91M	-	◆ ■ ■	-	0.630	0.236	0.219	Facet	0.003
027885	ODEW0605APTR-RA	SC3025	-	◆	◆	0.630	0.236	0.219	Facet	0.007
026596	ODMW060512TN	X500	● ● ● ○ ●	-	-	0.630	0.236	0.219	0.047	0.006
031503	ODMW060512TN	SP6519	■ ◆	-	-	0.630	0.236	0.219	0.047	0.006
034515	ODMW060512TN	SP4019	● ○ ●	-	◆	0.630	0.236	0.219	0.047	0.006
026595	ODMW060512TN	MP91M	◆ ■ ●	-	-	0.630	0.236	0.219	0.047	0.006
025838	ODMW060512SN	X500	● ●	-	-	0.630	0.236	0.219	0.047	0.011
031483	ODMW060512SN	SP6519	■ ◆	-	-	0.630	0.236	0.219	0.047	0.011
025836	ODMW060512SN	MP91M	◆ ■ ■	-	-	0.630	0.236	0.219	0.047	0.011
029097	ODMW060512SN	SC3025	◆	-	-	0.630	0.236	0.219	0.047	0.011

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page 9.

Note: Feed recommendations can be found on page A132. Speed recommendations can be found on page A133.

INSERT APPLICATION NOTES:

ODMW060512TN X500 or SP4019 should be used in Stainless Steel and High Temperature Alloys with heavy scale.

ODMW060512TN should be used when the machine tool has low power available.

ODMW060512SN Gemoetry should be used for heavy duty applications.

Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. -	a_p min. - max. -	a_p min. - max. 0.008 - 0.040					
Wiper Inserts										
017237	SPHX12M512EN	GH1	-	-	■ ■ ◆ ◆	0.494	0.494	0.197	Wiper Facet	0.0008
031455	SPHX12M512EN	SA9608	-	-	◆ ◆ ◆ □ ■ ◆	0.494	0.494	0.197	Wiper Facet	0.0008

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page 9.

Note: Mounting instruction for wiper inserts refer to page A161.

80_0VOD45-_R-06 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
FN-441	GH1	Facing	-	-	-	-	-	-	-	0,001- 0,012	0,001- 0,010	-	-	-	-	-	-
EN-44	X500	Facing	0.002 - 0.014	0.002 - 0.012	0.002 - 0.011	0.002 - 0.008	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-44	SP6519	Facing	0.002 - 0.014	0.002 - 0.012	0.002 - 0.011	0.002 - 0.008	0.002 - 0.012	0.002 - 0.012	0.002 - 0.012	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-44	SP4019	Facing	-	-	0.002 - 0.011	0.002 - 0.008	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-44	MP91M	Facing	0.002 - 0.014	0.002 - 0.011	-	-	0.002 - 0.012	0.002 - 0.012	0.002 - 0.012	-	-	-	-	-	-	-	-
EN-41	X500	Facing	0.002 - 0.015	0.002 - 0.014	0.002 - 0.014	0.002 - 0.012	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.012	-	-
EN-41	SP6519	Facing	0.002 - 0.015	0.002 - 0.014	0.002 - 0.014	0.002 - 0.012	0.002 - 0.016	0.002 - 0.016	0.002 - 0.016	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.012	-	-
EN-41	SP4019	Facing	-	-	0.002 - 0.014	0.002 - 0.012	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.012	-	-
EN-41	MP91M	Facing	0.002 - 0.015	0.002 - 0.014	-	-	0.002 - 0.016	0.002 - 0.016	0.002 - 0.016	-	-	-	-	-	-	-	-
TR-RA	SC3025	Facing	-	-	-	-	0.008 - 0.016	0.008 - 0.016	0.008 - 0.016	-	-	-	-	-	-	-	-
TN	X500	Facing	0.009 - 0.022	0.009 - 0.020	0.009 - 0.016	0.009 - 0.013	-	-	-	-	-	0.007 - 0.010	0.007 - 0.010	0.007 - 0.010	0.008 - 0.012	-	-
TN	SP6519	Facing	0.009 - 0.022	0.009 - 0.020	-	-	-	-	-	-	-	-	-	-	-	-	-
TN	SP4019	Facing	-	-	0.009 - 0.016	0.009 - 0.013	-	-	-	-	-	0.007 - 0.010	0.007 - 0.010	0.007 - 0.010	0.008 - 0.012	0.002 - 0.004	0.002 - 0.005
TN	MP91M	Facing	0.009 - 0.022	0.009 - 0.020	-	-	0.009 - 0.020	0.009 - 0.020	0.009 - 0.020	-	-	-	-	-	-	-	-
SN	X500	Facing	0.009 - 0.024	0.009 - 0.022	-	-	-	-	-	-	-	-	-	-	-	-	-
SN	SP6519	Facing	0.009 - 0.024	0.009 - 0.022	-	-	-	-	-	-	-	-	-	-	-	-	-
SN	MP91M	Facing	0.009 - 0.022	0.009 - 0.022	-	-	0.013 - 0.022	0.013 - 0.022	0.013 - 0.022	-	-	-	-	-	-	-	-
SN	SC3025	Facing	-	-	-	-	0.013 - 0.022	0.013 - 0.022	0.013 - 0.022	-	-	-	-	-	-	-	-
Wiper Inserts Feed /revolution (fn in inch)																	
SPHX	GH1	Facing	0.039 - 0.157	0.039 - 0.118	0.031 - 0.098	0.031 - 0.079	0.039 - 0.098	0.031 - 0.087	0.031 - 0.079	-	-	-	-	-	-	-	-
SPHX	SA9608	Facing	0.039 - 0.157	0.039 - 0.118	0.031 - 0.098	0.031 - 0.079	0.039 - 0.098	0.031 - 0.087	0.031 - 0.079	-	-	0.020 - 0.059	0.020 - 0.059	0.020 - 0.059	0.020 - 0.071	-	-

Note: HTA = High Temperature Alloys

Speed recommendations can be found on page A133.

Speed v_c (SFM)

80_0VOD45-_R-06 Series

Wear Resistance: – ⟵ +

Speed min. - max..

Coolant Recommendation
Recommended ● Possible ⦿

ISO	Materials	Rm and Hardness	CVD X Grade		PVD Standard		PVD Standard		CVD Standard		CVD Standard		Uncoated Micrograin		Uncoated Cermet
			X500		SP6519		SP4019		MP91M		SC3025		GH1*		SA9608
P	Unalloyed Steel	<600 N/mm² <180 HBN	425 - 885	⦿ ●	425 - 970	⦿ ●			460 - 1130	●			785 - 1130	●	870 -1245
		<950 N/mm² <280 HBN	375 - 785		375 - 855				395 - 1000				705 - 1000		770 - 1100
	Alloyed Steel	700-950 N/mm² 200-280 HBN	330 - 690	⦿ ●	330 - 755	⦿ ●			345 - 885	●			625 - 885	●	675 - 970
		950-1200 N/mm² 280-355 HBN	245 - 525		245 - 575				260 - 675				460 - 670		510 - 740
		1200-1400 N/mm² 355-415 HBN	165 - 330	●	165 - 360	●			165 - 425	●			295 - 425	●	330 - 475
M	Stainless Steel	Austenitic + Ferritic 300 series	375 - 820	⦿ ●	375 - 885	⦿ ●	395 - 920	⦿ ●					705 - 1000	⦿ ●	770 - 1100
		Martensitic 400 series	330 - 720		345 - 770		360 - 820						640 - 900		705 -1000
	PH Stainless	Refractory P.H.	165 - 360	●	165 - 395	●	165 - 425						295 - 590	●	330 - 660
K	Cast Iron	Grey GG-Ft			460 - 970				475 - 1200		490 - 1295		445 - 950		920 - 1310
		Spheroidal-Ductile GGG-FGS		⦿ ●	360 - 785			●	375 - 935	●	395 - 1100	⦿ ●	395 - 805	●	720 -1035
		Malleable GTS - MN/MP			330 - 720				345 - 855		345 - 900		375 - 655		655 -935
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN										●	1310 - 10005		
		Aluminum + Silicon > 16% Si 92 HBN											970 - 8005		
S	High Temperature Alloys	Iron Based	75 - 160	●	75 - 180	●	80 - 210							●	165 - 250
		Cobalt Based	70 - 145		70 - 160		75 - 170								160 - 230
		Nickel Based	80 - 170		80 - 180		85 - 190								170 - 250
		Titanium Based	115 - 240		120 - 260		120 - 275								195 - 300
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN					165 - 330	●							
		Chilled Cast Iron >1400 N/mm² > 400 HBN					130 - 295								

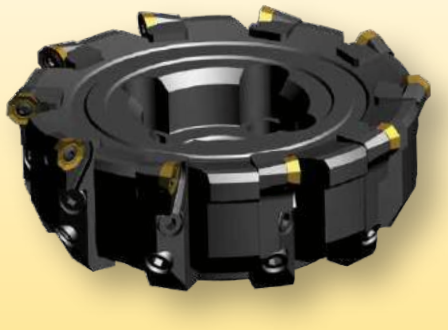
* Note: ODET04..-441 in Grade GH1 can only be used for Aluminum.
* Note: SPHX12M512EN GH1 can be used for Steel, Steel Alloys, Stainless Steel, Cast Iron and High Temperature Alloys.

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80_0VOD45 Technical Information

Feed rate compensation: For 42° cutting, divide the h_m value by the sine of the approach angle (the sine of 42° = 0.669)

i.e.: $\frac{h_m}{0.669}$ or $\frac{0.004"}{0.669}$ = 0.0059 in. programmed feed rate



Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of Dia.

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$



STELLRAM

Facing

45° CARTRIDGE FACE MILLING ASSEMBLIES

The robust cutter series **8000VS45-_R-12** is combined with SC..12M5.. square insert (0.472" / 12mm).

8000VS45-_R-12 cutters are assembled with 45° cartridges for face milling applications.

This type of cutter utilizes 0.197" (5mm) thick and 7° degrees clearance inserts. Due to this feature, these cutters are capable of running higher feed rates compared to other cutters with 45° degrees lead angle.

8000VS45-_R-12 is ideal for applications when machining surfaces with rough scale or irregular stock. These cutters feature a negative rake angle which provides excellent chip evacuation.

The cutter series 8000VS45-_R-12 has an unequal medium pitch for reducing vibration and are suitable for roughing, semi-finishing and finishing of Steel, Steel Alloys, Cast Iron and Stainless Steel.

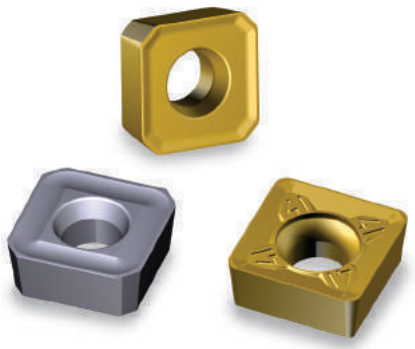
8000VS45.. series can be assembled with a particular wiper cartridge for finishing when a fine finished surface is required. The corresponding pocket on the body for the finishing cartridge is marked with a “F”.

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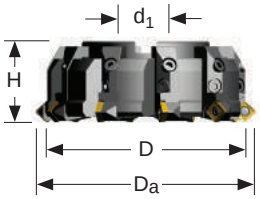
8000VS45-_R-12

8000VS45-_R-12:
Maximum a_p = 0.275"
Effective Cutting Diameter
Range = 3.937" to 15.748"

** Denotes non stock items diameter 12.402" and 15.748"



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Cutter Body & Cartridges

Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D Effective Cutting Diameter	D_a*	H	d_1	$a1_p$ max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
8000VS45-_ R-12 Bodies with Unequal Medium Pitch & Cartridge												
015317	**A8000VS45-100R-12**	3.937	4.528	2.680	1.250	0.275	6	*015266*	D5013T	*015241*	T20	67.30
015318	**A8000VS45-125R-12**	4.921	5.512	2.480	1.500	0.275	8					
015319	**A8000VS45-160R-12**	6.299	6.890	2.480	1.500	0.275	10					
015320	**A8000VS45-200R-12**	7.874	8.465	2.480	2.500	0.275	12					
015321	**A8000VS45-250R-12**	9.843	10.433	2.480	2.500	0.275	16					
015322	**A8000VS45-315R-12****	12.402	12.992	3.150	2.500	0.275	20					
015323	**A8000VS45-400R-12****	15.748	16.339	3.150	2.500	0.275	24					

** Denotes non stock items.

D_a* = Outside Diameter

Note: 8000VS45 series are only available in 8000V.



80VS45R-12

Product		Spares								
EDP	**Item Description**	*EDP*		*EDP*		Screw Tightening in. lbs.	*Mounting Screw EDP*		Adjustment Screw *EDP*	
Cartridge & Spares										
014946	**80VS45R-12**	*015266*	D5013T	*015241*	T20	53.10	*022646*	7065	-	-
Finshing Cartridge & Spares										
014953	**81FS00R-12**	*015266*	D5013T	*015241*	T20	53.10	*022646*	7065	016858	72.602

Note: Mounting instructions refer to page A162.

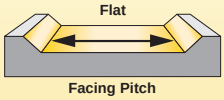


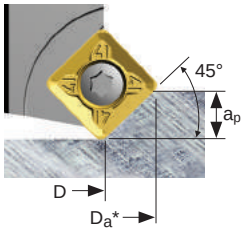
81FS00R-12

8000VS45-_R-12 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
015317	**A8000VS45-100R-12**	3.937	-	-	-	-	10,800
015318	**A8000VS45-125R-12**	4.921	-	-	-	-	9,200
015319	**A8000VS45-160R-12**	6.299	-	-	-	-	7,800
015320	**A8000VS45-200R-12**	7.874	-	-	-	-	6,800
015321	**A8000VS45-250R-12**	9.843	-	-	-	-	5,900
015322	**A8000VS45-315R-12***	12.402	-	-	-	-	5,200
015323	**A8000VS45-400R-12***	15.748	-	-	-		4,500

* Denotes non stock items.





Depth of Cut (a_p)

STELLRAM


SCCT12TR-ER


SCCT12-N

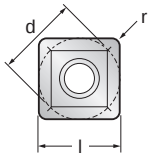

SCHT12-TN


SCKT12-41


SCMT12-41


SCMT12-T


SPHX12-EN





Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min (edge prep.)
			a_p max. 0.275	a_p min. - max. 0.040 - 0.140	a_p min. - max. 0.008 - 0.040					
Insert selection with facet										
034591	**SCCT12M5ACTR**	**X400**	♦♦	●●	♦	0.500	0.500	0.197	Facet	0.006
034552	**SCCT12M5ACTR**	**SP4019**	■♦	♦♦■	♦♦■	0.500	0.500	0.197	Facet	0.006
017695	**SCCT12M5ACTR**	**GH1**	-	-	■	0.500	0.500	0.197	Facet	0.006
017312	**SCCT12M5ACER**	**MP91M**	-	■●●	♦♦♦	0.500	0.500	0.197	Facet	0.001
017698	**SCHT12M5ACTN**	**X500**	♦■	●●	●●	0.500	0.500	0.197	Facet	0.006
031504	**SCHT12M5ACTN**	**SP6519**	■■●	♦♦♦■	■■■■	0.500	0.500	0.197	Facet	0.006
017313	**SCHT12M5ACTN**	**MP91M**	■	♦	●●●●	0.500	0.500	0.197	Facet	0.006
015144	**SCKT12M5ACSN-41**	**X500**	●	-	-	0.500	0.500	0.197	Facet	0.005
031556	**SCKT12M5ACSN-41**	**SP6519**	●●●	-	-	0.500	0.500	0.197	Facet	0.005
017314	**SCKT12M5ACSN-41**	**MP91M**	♦	-	-	0.500	0.500	0.197	Facet	0.005
Insert selection with corner radius										
015226	**SCMT12M512EN-41**	**X500**	-	■♦●	-	0.500	0.500	0.197	0.047	0.003
031475	**SCMT12M512EN-41**	**SP6519**	-	♦♦♦■■	-	0.500	0.500	0.197	0.047	0.003
017317	**SCMT12M512EN-41**	**MP91M**	-	■■♦	-	0.500	0.500	0.197	0.047	0.003
034554	**SCMT12M512T**	**X400**	♦♦	-	-	0.500	0.500	0.197	0.047	0.006
024129	**SCMT12M512T**	**X500**	●♦	-	-	0.500	0.500	0.197	0.047	0.006
034555	**SCMT12M512T**	**SP6519**	■■♦●●	-	-	0.500	0.500	0.197	0.047	0.006
034553	**SCMT12M512T**	**SP4019**	■■■	-	-	0.500	0.500	0.197	0.047	0.006
017316	**SCMT12M512T**	**MP91M**	●●♦	-	-	0.500	0.500	0.197	0.047	0.006

Machining Choice: ♦ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

Note: Feed recommendations can be found on page A138. Speed recommendations can be found on page A139.

INSERT APPLICATION NOTES:
All inserts with a radius should only be used for semi roughing applications, where a finished surface is not required.

Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min (edge prep.)
			a_p max. -	a_p min. - max. -	a_p min. - max. 0.008 - 0.040					
Wiper Inserts										
017237	**SPHX12M512EN**	**GH1**	-	-	■■♦♦	0.494	0.494	0.197	Wiper Facet	0.0008
031455	**SPHX12M512N**	**SA9608**	-	-	♦♦♦■■	0.494	0.494	0.197	Wiper Facet	0.0008

Machining Choice: ♦ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

Note: Mounting instruction for wiper inserts refer to page A161.

8000VS-_R-12 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
Insert selection with facet																	
TR	X400	Facing	0.006 - 0.020	0.005 - 0.018	-	-	-	-	-	-	-	-	-	-	-	0.002 - 0.004	0.003 - 0.004
TR	SP4019	Facing	-	-	0.005 - 0.013	0.005 - 0.009	0.006 - 0.014	0.006 - 0.014	0.006 - 0.014	-	-	-	-	-	-	0.002 - 0.004	0.003 - 0.004
TR	GH1	Facing	-	-	-	-	0.006 - 0.012	0.006 - 0.012	0.006 - 0.010	-	-	-	-	-	-	-	-
ER	MP91M	Facing	0.002 - 0.010	0.002 - 0.009	-	-	0.002 - 0.010	0.002 - 0.010	0.002 - 0.009	-	-	-	-	-	-	-	-
TN	X500	Facing	-	-	0.006 - 0.013	0.006 - 0.009	-	-	-	-	-	-	-	-	-	-	-
TN	SP6519	Facing	0.006 - 0.018	0.006 - 0.016	0.006 - 0.013	0.006 - 0.009	0.006 - 0.014	0.006 - 0.014	0.006 - 0.014	-	-	-	-	-	-	-	-
TN	MP91M	Facing	0.006 - 0.016	0.006 - 0.014	-	-	0.005 - 0.016	0.005 - 0.016	0.005 - 0.016	-	-	-	-	-	-	0.002 - 0.004	0.003 - 0.004
SN-41	X500	Facing	-	-	-	0.005 - 0.009	-	-	-	-	-	-	-	-	-	-	-
SN-41	SP6519	Facing	0.005 - 0.016	0.005 - 0.015	0.005 - 0.013	-	-	-	-	-	-	-	-	-	-	-	-
SN-41	MP91M	Facing	-	-	-	-	0.005 - 0.016	0.005 - 0.016	0.005 - 0.016	-	-	-	-	-	-	-	-
Insert selection with corner radius																	
EN-41	X500	Facing	-	-	0.002 - 0.012	0.002 - 0.008	0.002 - 0.012	0.002 - 0.010	-	-	-	-	-	-	-	-	-
EN-41	SP6519	Facing	0.002 - 0.012	0.002 - 0.011	0.002 - 0.012	0.002 - 0.008	0.002 - 0.012	0.002 - 0.010	0.002 - 0.010	-	-	-	-	-	-	-	-
EN-41	MP91M	Facing	0.002 - 0.012	0.002 - 0.011	-	-	0.002 - 0.012	0.005 - 0.010	0.002 - 0.010	-	-	-	-	-	-	-	-
T	X400	Facing	0.006 - 0.015	0.006 - 0.014	-	-	-	-	-	-	-	-	-	-	-	-	-
T	X500	Facing	-	-	0.006 - 0.012	0.006 - 0.008	-	-	-	-	-	-	-	-	-	-	-
T	SP6519	Facing	0.006 - 0.014	0.006 - 0.013	0.006 - 0.012	0.006 - 0.008	0.005 - 0.014	0.005 - 0.014	0.005 - 0.014	-	-	-	-	-	-	-	-
T	SP4019	Facing	-	-	0.005 - 0.012	0.005 - 0.008	0.005 - 0.014	0.005 - 0.014	0.005 - 0.014	-	-	-	-	-	-	-	-
T	MP91M	Facing	0.005 - 0.015	0.005 - 0.013	-	-	0.005 - 0.014	0.005 - 0.014	0.005 - 0.014	-	-	-	-	-	-	-	-
Wiper Inserts Feed /revolution (inch / rev.)																	
SPHX	GH1	Facing	0.039 - 0.157	0.039 - 0.118	0.031 - 0.098	0.031 - 0.079	0.039 - 0.098	0.031 - 0.087	0.031 - 0.079	-	-	-	-	-	-	-	-
SPHX	SA9608	Facing	0.039 - 0.157	0.039 - 0.118	0.031 - 0.098	0.031 - 0.079	0.039 - 0.098	0.031 - 0.087	0.031 - 0.079	-	-	-	-	-	-	-	-

Note: HTA = High Temperature Alloys

Speed recommendations can be found on page A139.

Speed v_c (SFM)

8000VS45-_R-12 Series

Wear Resistance: – ⟵ +

Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

ISO	Materials	Rm and Hardness	PVD X Grade		CVD X Grade		PVD Standard		PVD Standard		CVD Standard		Uncoated Micrograin		Uncoated Cermet
			X400		X500		SP6519		SP4019		MP91M		GH1*		SA9608
P	Unalloyed Steel	<600 N/mm² <180 HBN	395 - 855	⦿ ●			425 - 970	⦿ ●			460 - 1130	●	785 - 1130	●	870 -1245
		<950 N/mm² <280 HBN	345 - 755				375 - 855				395 - 1000		705 - 1000		770 - 1100
	Alloyed Steel	700-950 N/mm² 200-280 HBN	310 - 655	⦿ ●			330 - 755	⦿ ●			345 - 885	●	625 - 885	●	675 - 970
		950-1200 N/mm² 280-355 HBN	230 - 490				245 - 575				260 - 675		460 - 675		510 - 740
		1200-1400 N/mm² 355-415 HBN	150 - 310	●			165 - 360	●			165 - 425	●	295 - 425	●	330 - 475
M	Stainless Steel	Austenitic + Ferritic 300 series			375 - 820	⦿ ●	375 - 885	⦿ ●	395 - 920	⦿ ●			705 - 1000	⦿ ●	770 - 1100
		Martensitic 400 series			330 - 720		345 - 770		360 - 820				640 - 900		705 -1000
	PH Stainless	Refractory P.H.		●	165 - 360	●	165 - 395	●	165 - 425			●	295 - 590	●	330 - 660
K	Cast Iron	Grey GG-Ft			395 - 920		460 - 970		475 - 1085		475 - 1200		445 - 950		920 - 1310
		Spheroidal-Ductile GGG-FGS		⦿ ●	345 - 675	⦿ ●	360 - 785	●	375 - 835	●	375 - 935	⦿ ●	395 - 805	●	720 -1035
		Malleable GTS - MN/MP			310 - 560		330 - 720		345 - 770		345 - 855		375 - 655		655 -935
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN										●	1310 - 10005		
		Aluminium + Silicon > 16% Si 92 HBN											970 - 8005		
S	High Temperature Alloys	Iron Based													
		Cobalt Based													
		Nickel Based													
		Titanium Based													
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN	150 - 310	●				●	165 - 330	●	165 - 345	●			
		Chilled Cast Iron >1400 N/mm² > 400 HBN	115 - 260						130 - 295		130 - 310				

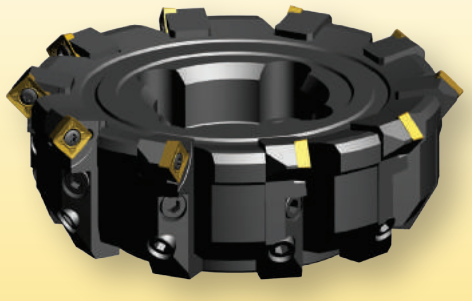
Note: SCCT12M5ACTR in grade GH1 should only be used for machining Cast Iron.
Note: Wiper Insert SPHX12M512EN GH1 can be used for Steel, Steel Alloys, Stainless Steel and Cast Iron.

STELLRAM

8000VS45-_R-12 Technical Information

Feed rate compensation: For 45° cutting, divide the h_m value by the sine of the approach angle (the sine of 45° = 0.707)

i.e.: $\frac{h_m}{0.707}$ or $\frac{0.004"}{0.707}$ = 0.0056 in. programmed feed rate



Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of Dia.

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$



STELLRAM



45° CARTRIDGE FACE MILLING ASSEMBLIES

The **80_0VSE45** cutter series is primarily designed to machine Stainless Steel and High Temperature Alloys. Also Steel, Steel Alloys, Cast Iron and Aluminum can be machined. Especially, if thin wall components need to be machined. Due to its very positive design requires this cutter series lower power.

The square inserts design with 15° degrees clearance and very positive chip geometry is ideal for reducing build-up edge on tough materials.

Applications:

The 80_0VSE45 cutters are assembled with cartridges for SD..1204.. milling inserts. These cutters are ideal for face milling applications. Available with medium pitch.

The **8000VSE45** cutter series has an **unequal** medium pitch for reducing vibration and are mainly for roughing, semi-finishing and finishing of Steel, Steel Alloys, Stainless Steel, Cast Iron and Aluminum.

The **8010VSE45** cutters series has an **equal** medium pitch and is especially recommended for roughing, semi-finishing and finishing of High Temperature Alloys such as Iron Based Alloys, Cobalt Based Alloys, Nickel Based Alloys and Titanium.

Also, the 8000VSE45 cutter series can be mounted with a particular wiper cartridge for finishing when a fine finished surface is required. The corresponding pocket on the body for the finishing cartridge is marked with a “F”.

Note: The 8010 series are not possible to assemble with a wiper cartridge

80_0VSE-45-_R-12

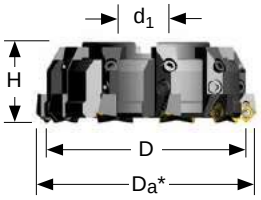
8000VSE45-_R-12:
Maximum a_p = 0.275"
Effective Cutting Diameter
Range = 3.937" to 15.748"

** Denotes non stock items
diameter 12.402" and 15.748"

8010VSE45-_R-12:
Maximum a_p = 0.275”
Effective Cutting Diameter
Range = 3.937" to 15.748"

** Denotes non stock items
diameter 3.937" and 7.874"







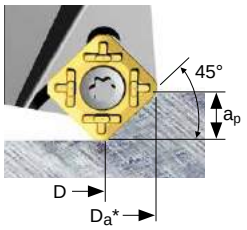
Cutter Body & Cartridges



80VSE45R-12



81FS00R-12



Depth of Cut (a_p)

Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D Effective Cutting Diameter	D_a*	H	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
8000VSE45-_ R-12 Bodies with Unequal Medium Pitch & Cartridges												
015331	**A8000VSE45-100R-12**	3.937	4.528	2.680	1.250	0.275	6	*015270*	F4011T	*015241*	T20	27.40
015332	**A8000VSE45-125R-12**	4.921	5.512	2.480	1.500	0.275	8					
015333	**A8000VSE45-160R-12**	6.299	6.890	2.480	1.500	0.275	10					
015334	**A8000VSE45-200R-12**	7.874	8.465	2.480	2.500	0.275	12					
015335	**A8000VSE45-250R-12**	9.843	10.434	2.480	2.500	0.275	16					
015336	**A8000VSE45-315R-12****	12.402	12.993	3.150	2.500	0.275	20					
015337	**A8000VSE45-400R-12****	15.748	16.339	3.150	2.500	0.275	24					
8010VSE45-_ R-12 Bodies with Equal Medium Pitch & Cartridges												
016797	**A8010VSE45-100R-12****	3.937	4.528	2.680	1.250	0.275	6	*015270*	F4011T	*015241*	T20	27.40
016798	**A8010VSE45-125R-12****	4.921	5.512	2.480	1.500	0.275	8					
016799	**A8010VSE45-160R-12****	6.299	6.890	2.480	1.500	0.275	10					
016800	**A8010VSE45-200R-12****	7.874	8.465	2.480	2.500	0.275	12					

** Denotes non stock items.

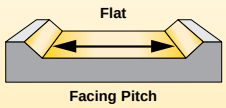
D_a* = Outside Diameter

Product		Spares									
EDP	**Item Description**	*EDP*		*EDP*		Screw Tightening in. lbs.	*Cartridge Screw EDP*		*Adjustment Screw EDP*	
Cartridge & Spares										
014948	**80VSE45R-12**	*015270*	F4011T	*015241*	T20	27.4	*022646*	7065	-	-
Finshing Cartridge & Spares										
014953	**81FS00R-12**	*015266*	D5013T	*015241*	T20	53.1	*022646*	7065	*016858*	72.602

Note: Mounting instructions refer to page A162.

80_0VSE45-_R-12 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
015331	**A8000VSE45-100R-12**	3.937	-	-	-	-	10,800
015332	**A8000VSE45-125R-12**	4.921	-	-	-	-	9,200
015333	**A8000VSE45-160R-12**	6.299	-	-	-	-	7,800
015334	**A8000VSE45-200R-12**	7.874	-	-	-	-	6,800
015335	**A8000VSE45-250R12**	9.843	-	-	-	-	5,900
015336	**A8000VSE45-315R-12****	12.402	-	-	-	-	5,200
015337	**A8000VSE45-400R-12****	15.748	-	-	-	-	4,500
016797	**A8010VSE45-100R-12****	3.937	-	-	-	-	10,800
016798	**A8010VSE45-125R-12****	4.921	-	-	-	-	9,200
016799	**A8010VSE45-160R-12****	6.299	-	-	-	-	7,800
016800	**A8010VSE45-200R-12****	7.874	-	-	-	-	6,800



** Denotes non stock items.


SDEX12-701


SDCT12-FN

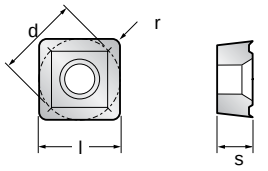

SDHT12-421


SDKT12-45


SDHT12-42


SDCW12-TN


SDHW12-TN





Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
			Depth of Cut (inch)							
EDP	Item Description	Grade	ap max. 0.275	ap min. - max. 0.008 - 0.120	ap min. - max. 0.008 - 0.040	d (IC)	l	s	r	h_m min (edge prep.)
Insert selection with facet										
034522	SDEX1204AEFN-701	SP4019	--	-	◆●◆	0.500	0.500	0.187	Facet	0.001
015149	SDEX1204AEFN-701	GH1	◆	◆	◆	0.500	0.500	0.187	Facet	0.001
017243	SDCT1204AEFN	GH1	■	■	■	0.500	0.500	0.187	Facet	0.001
015187	SDHT1204AEEN-421	X500	-	-	●●	0.500	0.500	0.187	Facet	0.002
031477	SDHT1204AEEN-421	SP6519	-	-	●■■■■	0.500	0.500	0.187	Facet	0.002
017321	SDHT1204AEEN-421	MP91M	-	-	■●◆	0.500	0.500	0.187	Facet	0.002
029457	SDKT1204AEEN-45	X500	-	●●	-	0.500	0.500	0.187	Facet	0.002
031532	SDKT1204AEEN-45	SP6519	-	●●	-	0.500	0.500	0.187	Facet	0.002
029456	SDKT1204AEEN-45	MP91M	-	●	-	0.500	0.500	0.187	Facet	0.002
017729	SDHT1204AETN-42	X500	■◆◆	■◆◆	-	0.500	0.500	0.187	Facet	0.006
031478	SDHT1204AETN-42	SP6519	●●◆■■	■◆◆■■■	-	0.500	0.500	0.187	Facet	0.006
017322	SDHT1204AETN-42	MP91M	●	◆■◆	●●	0.500	0.500	0.187	Facet	0.006
034517	SDCW1204AETN	X400	◆◆	-	◆	0.500	0.500	0.187	Facet	0.006
034516	SDCW1204AETN	SP4019	●■	-	■	0.500	0.500	0.187	Facet	0.004
031404	SDCW1204AETN	SA9808	-	-	◆◆	0.500	0.500	0.187	Facet	0.006
017730	SDHW1204AETN	X500	●●	-	-	0.500	0.500	0.187	Facet	0.006
017324	SDHW1204AETN	MP91M	■■◆	-	-	0.500	0.500	0.187	Facet	0.006

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

INSERT APPLICATION NOTES:

SDHW1204AETN X500 should be used for machining Stainless Steel and High Temperature Alloys with heavy scale and generally when the conditions are unstable.

Note: Feed recommendations can be found on page A146. Speed recommendations can be found on page A147.

STELLRAM

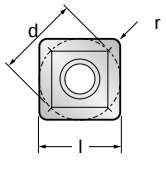

SDHT12-422


SDHT12-423


SDMT12-41


SDMW12-TN


SPHX12-EN (wiper)





Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min (edge prep.)
			a_p max. 0.275	a_p min. - max. 0.008 - 0.120	a_p min. - max. 0.008 - 0.040					
Insert selection with corner radius										
030717	**SDHT120412EN-422**	**X500**	◆■■	◆■■	-	0.500	0.500	0.187	0.047	0.002
030728	**SDHT120412EN-422**	**SP6519**	◆■■	◆■■	-	0.500	0.500	0.187	0.047	0.002
031218	**SDHT120412EN-423**	**X500**	◆■■	◆■■	-	0.500	0.500	0.187	0.047	0.003
031321	**SDHT120412EN-423**	**SP6519**	◆■■	◆■■	-	0.500	0.500	0.187	0.047	0.003
014411	**SDMT120412EN-41**	**X500**	●●●	●●●■■	-	0.500	0.500	0.187	0.047	0.002
031480	**SDMT120412EN-41**	**SP6519**	■◆●	■◆■	-	0.500	0.500	0.187	0.047	0.002
017326	**SDMT120412EN-41**	**MP91M**	●●■	◆■◆	-	0.500	0.500	0.187	0.047	0.002
015233	**SDMW120412TN**	**X500**	●●	-	-	0.500	0.500	0.187	0.047	0.006
034518	**SDMW120412TN**	**SP6519**	◆■◆	-	-	0.500	0.500	0.187	0.047	0.006

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min (edge prep.)
			a_p max. -	a_p min. - max. -	a_p min. - max. 0.008 - 0.040					
Wiper Inserts										
017237	**SPHX12M512EN**	**GH1**	-	-	■■■◆	0.494	0.494	0.197	Wiper Facet	0.0008
031455	**SPHX12M512N**	**SA9608**	-	-	◆◆■◆	0.494	0.494	0.197	Wiper Facet	0.0008

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

INSERT APPLICATION NOTES:

SDMW120412TN X500 should be used for machining Stainless Steel and High Temperature Alloys with heavy scale and generally when the conditions are unstable.

SDHT120412EN-423 X500 and SP6519 are recommended for Stainless Steel and High Temperature Alloys when machining conditions are unstable.

Radius inserts are only for semi-roughing applications where a finished surface is not required.

Note: Mounting instruction for wiper inserts refer to page A161Note: Feed recommendations can be found on page A146. Speed recommendations can be found on pageA147.

80_0VSE45-_R-12 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
Insert selection with facet																	
FN-701	SP4019	Facing	-	-	0.002 - 0.010	0.002 - 0.008	-	-	-	0.002 - 0.010	0.002 - 0.010	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	-	-
FN-701	GH1	Facing	-	-	-	-	-	-	-	0.002 -0.012	0.002 - 0.012	-	-	-	-	-	-
FN	GH1	Facing	-	-	-	-	-	-	-	0.002 - 0.012	0.002 - 0.012	-	-	-	-	-	-
EN-421	X500	Facing	-	-	0.002 - 0.009	0.002 - 0.008	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-421	SP6519	Facing	0.002 - 0.012	0.002 - 0.010	0.002 - 0.009	0.002 - 0.008	0.002 - 0.011	0.002 - 0.011	0.002 - 0.011	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.010	-	-
EN-421	MP91M	Facing	0.002 - 0.012	0.002 - 0.010	-	-	0.002 - 0.011	0.002 - 0.011	0.002 - 0.011	-	-	-	-	-	-	-	-
EN-45	X500	Facing	-	-	0.003 - 0.010	0.003 - 0.009	-	-	-	-	-	0.003 - 0.007	0.003 - 0.007	0.003 - 0.007	0.003 - 0.008	-	-
EN-45	SP6519	Facing	0.003 - 0.014	0.003 - 0.012	-	-	-	-	-	-	-	-	-	-	-	-	-
EN-45	MP91M	Facing	-	-	-	-	0.003 - 0.012	0.003 - 0.012	0.003 - 0.012	-	-	-	-	-	-	-	-
TN-42	X500	Facing	-	-	0.006 - 0.011	0.006 - 0.010	-	-	-	-	-	0.006 - 0.007	0.006 - 0.007	0.006 - 0.007	0.006 - 0.008	-	-
TN-42	SP6519	Facing	0.006 - 0.014	0.006 - 0.012	0.006 - 0.011	0.006 - 0.010	0.006 - 0.012	0.006 - 0.012	0.006 - 0.012	-	-	0.006 - 0.007	0.006 - 0.007	0.006 - 0.007	0.006 - 0.008	-	-
TN-42	MP91M	Facing	0.006 - 0.014	0.006 - 0.012	-	-	0.007 - 0.012	0.007 - 0.012	0.007 - 0.012	-	-	-	-	-	-	0.003 - 0.005	0.003 - 0.005
TN	X400	Facing	0.006 - 0.015	0.006 - 0.013	-	-	-	-	-	-	-	-	-	-	-	0.003 - 0.005	0.003 - 0.005
TN	X500	Facing	-	-	-	0.006 - 0.011	-	-	-	-	-	0.006 - 0.007	0.006 - 0.007	0.006 - 0.007	0.006 - 0.008	-	-
TN	SP4019	Facing	-	-	0.006 - 0.012	0.006 - 0.011	0.006 - 0.012	0.006 - 0.012	0.006 - 0.012	-	-	-	-	-	-	0.003 - 0.005	0.003 - 0.005
TN	MP91M	Facing	0.006 - 0.015	0.006 - 0.013	-	-	0.006 - 0.012	0.006 - 0.012	0.006 - 0.012	-	-	-	-	-	-	-	-
TN	SA9808	Facing	0.007 - 0.010	0.007 - 0.009	-	-	-	-	-	-	-	-	-	-	-	-	-
Insert selection with corner radius																	
EN-422	X500	Facing	-	-	0.002 - 0.010	0.002 - 0.009	-	-	-	-	-	0.002 - 0.007	0.002 - 0.007	0.002 - 0.007	0.002 - 0.008	-	-
EN-422	SP6519	Facing	-	-	0.002 - 0.010	0.002 - 0.009	-	-	-	-	-	0.002 - 0.007	0.002 - 0.007	0.002 - 0.007	0.002 - 0.008	-	-
EN-423	X500	Facing	-	-	0.002 - 0.010	0.002 - 0.009	-	-	-	-	-	0.002 - 0.007	0.002 - 0.007	0.002 - 0.007	0.002 - 0.008	-	-
EN-423	SP6519	Facing	-	-	0.002 - 0.010	0.002 - 0.009	-	-	-	-	-	0.002 - 0.007	0.002 - 0.007	0.002 - 0.007	0.002 - 0.008	-	-
EN-41	X500	Facing	0.002 - 0.014	0.002 - 0.012	0.002 - 0.010	0.002 - 0.009	0.002 - 0.012	0.002 - 0.012	0.002 - 0.012	-	-	0.002 - 0.007	0.002 - 0.007	0.002 - 0.007	0.002 - 0.008	-	-
EN-41	SP6519	Facing	0.002 - 0.014	0.002 - 0.012	-	-	0.002 - 0.012	0.002 - 0.012	0.002 - 0.012	-	-	-	-	-	-	-	-
EN-41	MP91M	Facing	0.002 - 0.014	0.002 - 0.012	-	-	0.002 - 0.012	0.002 - 0.012	0.002 - 0.012	-	-	-	-	-	-	-	-
TN	X500	Facing	-	-	-	0.006 - 0.011	-	-	-	-	-	0.006 - 0.007	0.006 - 0.007	0.006 - 0.007	0.006 - 0.008	-	-
TN	SP6519	Facing	0.006 - 0.015	0.006 - 0.013	-	-	0.006 - 0.012	0.006 - 0.012	0.006 - 0.012	-	-	-	-	-	-	-	-
Wiper Inserts Feed /revolution ipr (inch/rev.)																	
SPHX	GH1	Facing	0.039 - 0.157	0.039 - 0.118	0.031 - 0.098	0.031 - 0.079	0.039 - 0.098	0.031 - 0.087	0.031 - 0.079	-	-	-	-	-	-	-	-
SPHX	SA9608	Facing	0.039 - 0.157	0.039 - 0.118	0.031 - 0.098	0.031 - 0.079	0.039 - 0.098	0.031 - 0.087	0.031 - 0.079	-	-	0.020 - 0.059	0.020 - 0.059	0.020 - 0.059	0.020 - 0.071	-	-

Note: HTA = High Temperature Alloys

Speed recommendations can be found on page A147.

STELLRAM

Speed v_c (SFM)

80_0VSE45-_R-12 Series

Wear Resistance: – ⟵ +

Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

ISO	Materials	Rm and Hardness	PVD X Grade		CVD X Grade		PVD Standard		PVD Standard		CVD Standard		Uncoated Micrograin		Uncoated Cermet		Uncoated Cermet
			X400		X500		SP6519		SP4019		MP91M		GH1*		SA9808		SA9608
P	Unalloyed Steel	<600 N/mm² <180 HBN	395 - 855	⦿ ●	425 - 885	⦿ ●	425 - 970	⦿ ●			460-1130	●	785-1130	●	785-1130	●	870 -1245
		<950 N/mm² <280 HBN	345 - 755		375 - 785		375 - 855				395- 1000		705-1000		705-1000		770-1100
	Alloyed Steel	700-950 N/mm² 200-280 HBN	310 - 655	⦿ ●	330 - 690	⦿ ●	330 - 755	⦿ ●			345 - 885	●	625 - 885	●	625 - 885	●	675 - 970
		950-1200 N/mm² 280-355 HBN	230 - 490		245 - 525		245 - 575				260 - 675		460 - 675		460 - 675		510 - 740
		1200-1400 N/mm² 355-415 HBN	150 - 310	●	165 - 330	●	165 - 360	●		●	165 - 425	●	295 - 425	●	295 - 425	●	330 - 475
M	Stainless Steel	Austenitic + Ferritic 300 series			375 - 820	⦿ ●	375 - 885	⦿ ●	395 - 920			⦿ ●	705-1000			⦿ ●	770-1100
		Martensitic 400 series			330 - 720		345 - 770		360 - 820				640 - 900				705 -1000
	PH Stainless	Refractory P.H.			165 - 360	●	165 - 395	●	165 - 425			●	295 - 590			●	330 - 660
K	Cast Iron	Grey GG-Ft			395 - 920		460 - 970		475-1085		475-1200		445 - 950				920-1310
		Spheroidal-Ductile GGG-FGS		⦿ ●	345 - 675	⦿ ●	360 - 785	●	375 - 835	●	375 - 935	⦿ ●	395 - 805			●	720 -1035
		Malleable GTS - MN/MP			310 - 560		330 - 720		345 - 770		345 - 855		375 - 655				655 -935
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN							1310 - 9500				1310 - 10005				
		Aluminum + Silicon > 16% Si 92 HBN						●	970-7615			●	970-8005				
S	High Temperature Alloys	Iron Based			75 - 160		75 - 180		80 - 210								165 - 250
		Cobalt Based		●	70 - 145	●	70 - 160	●	75 - 170							●	160 - 230
		Nickel Based			80 - 170		80 - 180		85 - 190								170 - 250
		Titanium Based			115 - 240		120 - 260		120 - 275								195 - 300
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN	150 - 310						165 - 330		165 - 345						
		Chilled Cast Iron >1400 N/mm² > 400 HBN	115 - 260	●				●	130 - 295	●	130 - 310						

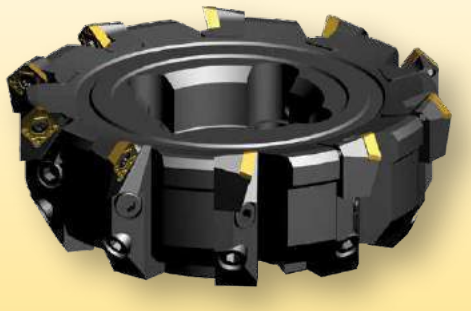
* Note: SDXE1204AEFN-701 and SDCT1204AEFN GH1 can only be used for Aluminum.
* Note: SPHX12M512EN GH1 can be used for Steel, Steel Alloys, Stainless Steel, and Cast Iron.

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80_0VSE45 Technical Information

Feed rate compensation: For 45° cutting, divide the h_m value by the sine of the approach angle (the sine of 45° = 0.707)

i.e.: $\frac{h_m}{0.707}$ or $\frac{0.004"}{0.707}$ = 0.0056 in. programmed feed rate



Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of Dia.

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

$\mathbf{h_m}$ = Average chip thickness
$\mathbf{a_e}$ = Radial engagement
$\mathbf{f_z}$ = Feed per tooth
$\mathbf{d}$ = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$



STELLRAM



CARTRIDGE ROUND INSERT MILLING ASSEMBLIES

The **80_0VR00-_R-16** cutter series with 0.250" thick round button inserts is suitable to machine very efficiently irregular surfaces and rough scale. This cutter can also be used for heavy duty applications up to 0.315" depth of cut.

Applications:

80_0VR00-_R-16 cutters are assembled with cartridges for RP..1606.. milling inserts for face milling applications. Available with medium pitch.

The cutter series **8000VR00-_R-16** has an unequal medium pitch for reducing vibration and is for roughing of Steel, Steel Alloys, Stainless Steel and Cast Iron.

The cutter series **8010VR00-_R-16** has an equal medium pitch and is especially recommended for roughing of High Temperature Alloys such as, Iron Based Alloys, Cobalt Based Alloys, Nickel Based Alloys and Titanium.

Also, the 8000VR00-_R-16 series can be mounted with a particular wiper cartridge for finishing, when a fine finished surface is required. The corresponding pocket at the body for the finishing cartridge is marked with an “F” .

Note: The 8010 series are not possible to assemble with a wiper cartridge

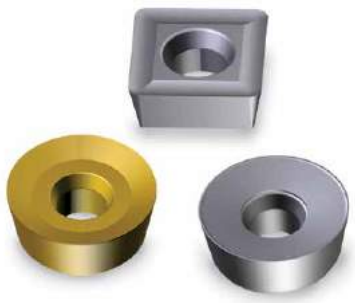
80_0VR00-_R-16

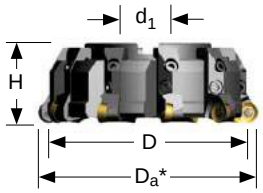
8000VR00-_R-16:
Maximum a_p = 0.315"
Effective Cutting Diameter
Range = 3.937" to 15.748"

**Denotes non stock items
diameter 12.402" and 15.748"

8010VR00-_R-16:
Maximum a_p = 0.315"
Effective Cutting Diameter
Range = 3.937" to 7.874"

**Denotes non stock items
diameter 3.937" to 7.874"







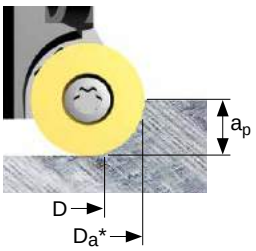
Cutter Body & Cartridges



80VRP00R-12



81FS00R-12



Depth of Cut (a_p)

Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D Effective Cutting Diameter	D_a*	H	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
8000VR00-_ R-16 Bodies with Unequal Medium Pitch & Cartridges												
015303	**A8000VR00-100R-16**	3.937	4.570	2.680	1.250	0.315	6	*015266*	D5013T	015241	T20	53.10
015304	**A8000VR00-125R-16**	4.921	5.550	2.480	1.500	0.315	8					
015305	**A8000VR00-160R-16**	6.299	6.930	2.480	1.500	0.315	10					
015306	**A8000VR00-200R-16**	7.874	8.500	2.480	2.500	0.315	12					
015307	**A8000VR00-250R-16**	9.843	10.470	2.480	2.500	0.315	16					
015308	**A8000VR00-315R-16****	12.402	13.030	3.150	2.500	0.315	20					
015309	**A8000VR00-400R-16****	15.748	16.380	3.150	2.500	0.315	24					
8010VR00-_ R-16 Bodies with Equal Medium Pitch & Cartridges												
016785	**A8010VR00-100R-16****	3.937	4.570	2.680	1.250	0.315	6	*015266*	D5013T	015241	T20	53.10
016786	**A8010VR00-125R-16****	4.921	5.550	2.480	1.500	0.315	8					
016787	**A8010VR00-160R-16****	6.299	6.930	2.480	1.500	0.315	10					
016788	**A8010VR00-200R-16****	7.874	8.500	2.480	2.500	0.315	12					

** Denotes non stock items.

D_a* = Outside Diameter

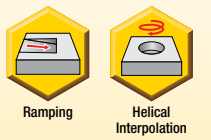
Product		Spares								
EDP	**Item Description**	*EDP*		*EDP*		Screw Tightening in. lbs.	*Cartridge Screw EDP*		*Adjustment Screw EDP*	
Cartridge & Spares										
014316	**80VRP00R-16**	*015266*	D5013T	*015241*	T20	53.10	022646	7065	-	-
Finishing Cartridge & Spares										
014953	**81FS00R-12**	*015266*	D5013T	*015241*	T20	53.10	022646	7065	016858	72.602

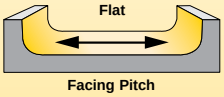
Note: Mounting instructions refer to page A162.

80_VR00-_R-16 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
015303	**A8000VR00-100R-16**	3.937	0.32	7.959	9.061	0.160	10,800
015304	**A8000VR00-125R-16**	4.921	0.26	9.919	11.021	0.160	10,000
015305	**A8000VR00-160R-16**	6.299	0.21	12.679	13.781	0.160	8,000
015306	**A8000VR00-200R-16**	7.874	0.17	15.819	16.921	0.160	6,800
015307	**A8000VR00-250R-16**	9.843	0.14	19.759	20.861	0.160	5,900
015308	**A8000VR00-315R-16****	12.402	-	-	-	-	5,200
015309	**A8000VR00-400R-16****	15.748	-	-	-	-	4,500
016785	**A8010VR00-100R-16****	3.937	0.32	7.959	9.061	0.160	10,800
016786	**A8010VR00-125R-16****	4.921	0.26	9.919	11.021	0.160	10,000
016787	**A8010VR00-160R-16****	6.299	0.21	12.679	13.781	0.160	8,000
016788	**A8010VR00-200R-16****	7.874	0.17	15.819	16.921	0.160	6,800

** Denotes non stock items.





Facing Pitch

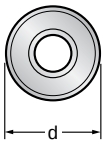

RPMT16-41


RPHT16-S


RPHT16-T


SPHX12-EN

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Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.315	a_p min. - max. 0.040 - 0.120	a_p min. - max. 0.008 - 0.040					
015223	RPMT1606M0E-41	X500	● ●	● ● ■	-	0.630	-	0.250	0.315	0.002
017311	RPMT1606M0E-41	MP91M	●	■	-	0.630	-	0.250	0.315	0.002
030390	RPHT1606M0S	X400	◆ ◆	◆ ◆ ◆	-	0.630	-	0.250	0.315	0.006
017692	RPHT1606M0T	X500	● ● ■ ◆ ●	● ● ■ ◆ ● ◆	-	0.630	-	0.250	0.315	0.004
034566	RPHT1606M0T	SP6519	■ ■ ◆ ◆ □	■ ■ ◆ ◆ □ ■	-	0.630	-	0.250	0.315	0.004

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

RPHT1606MOS and RPHT1606MOT should be used for heavy duty applications.

Speed recommendations can be found on page A152.

Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. -	a_p min. - max. -	a_p min. - max. 0.008 - 0.040					
Wiper Inserts										
017237	SPHX12M512EN	GH1	-	-	■ ■ ◆ ◆	0.494	0.494	0.197	Wiper	0.0008
031455	SPHX12M512EN	SA9608	-	-	◆ ◆ ◆ □ ■ ◆	0.494	0.494	0.197	Wiper	0.0008

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

Note: Mounting instruction for wiper inserts refer to page A161.

80_0VR00-_R-16 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
E-41	X500	Facing	-	-	0.002 - 0.010	0.002 - 0.006	-	-	-	-	-	0.002 - 0.005	0.002 - 0.005	0.002 - 0.005	0.002 - 0.006	-	-
E-41	MP91M	Facing	-	-	-	-	0.004 - 0.014	0.004 - 0.014	0.004 - 0.012	-	-	-	-	-	-	-	-
S	X400	Facing	0.006 - 0.020	0.006 - 0.018	-	-	-	-	-	-	-	-	-	-	-	0.004 - 0.006	0.004 - 0.006
T	X500	Facing	0.006 - 0.018	0.004 - 0.016	0.004 - 0.016	0.004 - 0.014	0.004 - 0.016	0.004 - 0.016	0.004 - 0.014	-	-	0.004 - 0.011	0.004 - 0.011	0.004 - 0.011	0.004 - 0.012	-	-
T	SP6519	Facing	0.006 - 0.018	0.004 - 0.016	0.004 - 0.016	0.004 - 0.014	0.004 - 0.016	0.004 - 0.016	0.004 - 0.014	-	-	0.004 - 0.011	0.004 - 0.011	0.004 - 0.011	0.004 - 0.012	-	-
Wiper Inserts Feed /revolution (fpr)																	
SPHX	GH1	Facing	0.039 - 0.157	0.039 - 0.118	0.031 - 0.098	0.031 - 0.079	0.039 - 0.098	0.031 - 0.087	0.031 - 0.079	-	-	-	-	-	-	-	-
SPHX	SA9608	Facing	0.039 - 0.157	0.039 - 0.118	0.031 - 0.098	0.031 - 0.079	0.039 - 0.098	0.031 - 0.087	0.031 - 0.079	-	-	0.020 - 0.059	0.020 - 0.059	0.020 - 0.059	0.020 - 0.071	-	-

Note: HTA = High Temperature Alloys

Speed recommendations can be found on page A152.

Speed v_c (SFM)

80_0VR00-_R-16 Series

Wear Resistance: – ⟵ +

Speed min. - max.

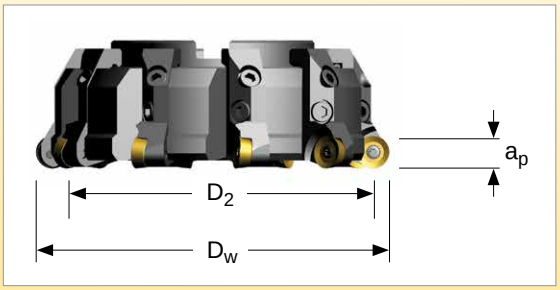
Coolant Recommendation
Recommended ● Possible ⦿

ISO	Materials	Rm and Hardness	Coolant	PVD X Grade	CVD X Grade	PVD Standard	CVD Standard	Uncoated Micrograin	Uncoated Cermet
				X400	X500	SP6519	MP91M	GH1*	SA9608
P	Unalloyed Steel	<600 N/mm² <180 HBN	⦿ ●	395 - 855	425 - 885	425 - 970		785 - 1130	870 -1245
		<950 N/mm² <280 HBN	⦿ ●	345 - 755	375 - 785	375 - 855		705 - 1000	770 - 1100
	Alloyed Steel	700-950 N/mm² 200-280 HBN	⦿ ●	310 - 655	330 - 690	330 - 755		625 - 885	675 - 970
		950-1200 N/mm² 280-355 HBN	⦿ ●	230 - 490	245 - 525	245 - 575		460 - 675	510 - 740
		1200-1400 N/mm² 355-415 HBN	●	150 - 310	165 - 330	165 - 360		295 - 425	330 - 475
M	Stainless Steel	Austenitic + Ferritic 300 series	⦿ ●		375 - 820	375 - 885		705 - 1000	770 - 1100
		Martensitic 400 series	⦿ ●		330 - 720	345 - 770		640 - 900	705 -1000
	PH Stainless	Refractory P.H.	●		165 - 360	165 - 395		295 - 590	330 - 660
K	Cast Iron	Grey GG-Ft			395 - 920	460 - 970	475 - 1200	425 - 950	920 - 1310
		Spheroidal-Ductile GGG-FGS	⦿ ●		345 - 675	360 - 785	375 - 935	390 - 805	720 -1035
		Malleable GTS - MN/MP			310 - 560	330 - 720	345 - 855	377 - 655	655 -935
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN							
		Aluminum + Silicon > 16% Si 92 HBN							
S	High Temperature Alloys	Iron Based			75 - 160	75 - 180			165 - 250
		Cobalt Based	●		70 - 145	70 - 160		●	160 - 230
		Nickel Based			80 - 170	80 - 180			170 - 250
		Titanium Based			115 - 240	120 - 260			195 - 300
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN	●	150 - 310					
		Chilled Cast Iron >1400 N/mm² > 400 HBN		115 - 260					

* Note: Wiper Insert SPHX12M512EN GH1 can be used for Steel, Steel Alloys, Stainless Steel and Cast Iron.

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80_0VR00-_R-16 Technical Information



Working Diameter:

Formula to evaluate the correct working diameter based on axial depth of cut (a_p).

$$D_w = D_2 + 2 \times \sqrt{r^2 - (r - a_p)^2}$$

where:

- D_w = Working Diameter
- D_2 = Diameter of cutter insert center to center
- r = Insert radius
- a_p = Axial Depth of Cut

80_0VR00-_R-16 Technical Information

where:

- f_z = Feed per tooth
- h_m = Average chip thickness
- r = Insert radius
- a_e = Radial Depth of Cut
- a_p = Axial Depth of Cut

Formula to find programmed feed rate based on radial engagement and axial depth of cut.

$$f_z = \frac{h_m}{\frac{\sqrt{r^2-(r-a_e)^2}}{r} \times \frac{\sqrt{r^2-(r-a_p)^2}}{r}}$$

Formula to calculate the average chip thickness h_m in relation with radial engagement and depth of cut.

$$h_m = f_z \times \frac{\sqrt{r^2-(r-a_e)^2}}{r} \times \frac{\sqrt{r^2-(r-a_p)^2}}{r}$$

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Simplified formulas to evaluate h_m and f_z based on axial depth of cut or radial engagement.

Calculation of the average chip thickness in relation with the D.O.C. (Axial)

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_p}}$$

h_m = Average chip thickness
a_p = Depth of cut
f_z = Feed per tooth
d = Insert diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_p}{d}}$$

Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of dia.

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

With round inserts, the thickness of the chip varies depending on the axial depth of cut and is related to the size of the cutting edge-preparation. For best tool-life it is important to maintain the proper chip thickness as shown below. This chart calculates in relation with axial depth of cut (a_p) only and not radial cut.

RP..1606.. Insert

Insert	Insert size (inch)	a_p d.o.c. (inch)	h_m (inch)		f_z (ipt)	
			min.	max.	min.	max.
RPMT1606M0E-41	0.630	0.050	0.002	0.014	0.007	0.050
	0.630	0.100	0.002	0.014	0.005	0.035
	0.630	0.120	0.002	0.014	0.005	0.032
	0.630	0.150	0.002	0.014	0.004	0.029
	0.630	0.200	0.002	0.014	0.004	0.025
	0.630	0.250	0.002	0.014	0.003	0.022
	0.630	0.315	0.002	0.014	0.003	0.020
RPHT1606M0S	0.630	0.050	0.004	0.020	0.014	0.071
	0.630	0.100	0.004	0.020	0.010	0.050
	0.630	0.120	0.004	0.020	0.009	0.046
	0.630	0.150	0.004	0.020	0.008	0.041
	0.630	0.200	0.004	0.020	0.007	0.035
	0.630	0.250	0.004	0.020	0.006	0.032
	0.630	0.315	0.004	0.020	0.006	0.028
RPHT1606M0T	0.630	0.050	0.004	0.018	0.014	0.064
	0.630	0.100	0.004	0.018	0.010	0.045
	0.630	0.120	0.004	0.018	0.009	0.041
	0.630	0.150	0.004	0.018	0.008	0.037
	0.630	0.200	0.004	0.018	0.007	0.032
	0.630	0.250	0.004	0.018	0.006	0.029
	0.630	0.315	0.004	0.018	0.006	0.025



STELLRAM



CARTRIDGE ROUND INSERT MILLING ASSEMBLIES

The **80_0VRD00-_R-20** cutter series with 0.250" thick round button inserts is one of our strongest cutters.

These cutters machine very efficiently irregular surfaces and rough scale. They can also be used in heavy duty applications up to 0.394" depth of cut.

This cutter series has an anti-rotation design which ensures a precise number of indexes per insert. This gives a maximum possible usage of the available edges for roughing applications.

This unique patented pocket system prevents the inserts from rotating in the pocket, during heavy feed machining and unstable conditions.

Applications:

The 80_0VRD00-_R-20 cutters are assembled with cartridges for RD..2006.. milling inserts for face milling applications. Available with medium pitch.

The cutter series **8000VRD00-_R-20** has an unequal medium pitch for reducing vibration and are for roughing of Steel, Steel Alloys, Stainless Steel and Cast Iron.

The cutter series **8010VRD00-_R-20** has an equal medium pitch and is especially recommended for roughing, of High Temperature Alloys such as Iron Based Alloys, Cobalt Based Alloys, Nickel Based Alloys and Titanium.

NOTE: The 80_0VRD00-_R-20 series when mounted with cartridge 80VRD00R-20 using RD..2006.. round button inserts cannot utilize the wiper cartridge for finishing, when a fine finished surface is required.

80_0VR00-_R-20

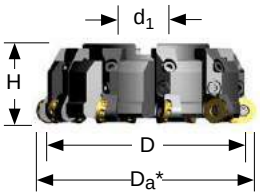
8000VR00-_R-20:
Maximum a_p = 0.394"
Effective Cutting Diameter
Range = 3.780" to 15.591"

**Denotes non stock items diameter 12.244" and 15.591"

8010VR00-_R-20:
Maximum a_p = 0.394"
Effective Cutting Diameter
Range = 3.780" to 7.717"

**Denotes non stock items diameter 3.780" to 7.717"



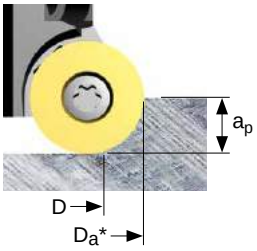




Cutter Body & Cartridges



80VRP00R-20



Depth of Cut (a_p)

Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D Effective Cutting Diameter	D_a*	H	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
8000VR00-_ R-20 Bodies with Unequal Medium Pitch & Cartridges												
033150	**A8000VR00-100R-20**	3.780	4.567	2.680	1.250	0.394	6	*029640*	D6014T	*015241*	T20	93.00
033151	**A8000VR00-125R-20**	4.764	5.551	2.480	1.500	0.394	8					
033152	**A8000VR00-160R-20**	6.142	6.929	2.480	1.500	0.394	10					
033153	**A8000VR00-200R-20**	7.717	8.504	2.480	2.500	0.394	12					
033154	**A8000VR00-250R-20**	9.685	10.472	2.480	2.500	0.394	16					
033155	**A8000VR00-315R-20****	12.244	13.031	3.150	2.500	0.394	20					
033156	**A8000VR00-400R-20****	15.591	16.378	3.150	2.500	0.394	24					
8010VR00-_ R-20 Bodies with Equal Medium Pitch & Cartridges												
033157	**A8010VR00-100R-20****	3.780	4.567	2.680	1.250	0.394	6	*029640*	D6014T	*015241*	T20	93.00
033158	**A8010VR00-125R-20****	4.764	5.551	2.480	1.500	0.394	8					
033159	**A8010VR00-160R-20****	6.142	6.929	2.480	1.500	0.394	10					
033160	**A8010VR00-200R-20****	7.717	8.504	2.480	2.500	0.394	12					

** Denotes non stock items.

D_a* = Outside Diameter

Product		Spares								
EDP	**Item Description**	*EDP*		*EDP*		Screw Tightening in. lbs.	*Cartridge Screw EDP*		*Adjustment Screw EDP*	
Cartridge & Spares										
030969	**80VRD00R-20**	*029640*	D6014T	*015241*	T20	93.00	*022646*	7065	-	-

Note: Mounting instructions refer to page A162.

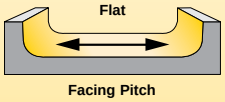
Note: RD..2006.. Round button cutter assemblies cannot utilize the finishing wiper cartridges.

80_0VR00-_R-20 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
033150	**A8000VR00-100R-20**	3.780	3.30	7.638	9.055	0.200	10,800
033151	**A8000VR00-125R-20**	4.764	2.35	9.600	11.016	0.200	9,200
033152	**A8000VR00-160R-20**	6.142	1.80	12.359	13.776	0.200	7,800
033153	**A8000VR00-200R-20**	7.717	1.40	15.591	16.936	0.200	6,800
033154	**A8000VR00-250R-20**	9.685	1.10	19.454	20.876	0.200	5,900
033155	**A8000VR00-315R-20****	12.244	-	-	-	-	5,200
033156	**A8000VR00-400R-20****	15.591	-	-	-	-	4,500
033157	**A8010VR00-100R-20****	3.780	3.30	7.638	9.055	0.200	10,800
033158	**A8010VR00-125R-20****	4.764	2.35	9.600	11.016	0.200	9,200
033159	**A8010VR00-160R-20****	6.142	1.80	12.359	13.776	0.200	7,800
033160	**A8010VR00-200R-20****	7.717	1.40	15.591	16.936	0.200	6,800

** Denotes non stock items.

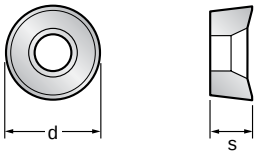




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RDHT20-42-X8 RDHW20-E-X8 RDHW20-S-X8 RDHW20-S-25-X8





Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.394	a_p min. - max. 0.040 - 0.200	a_p min. - max. 0.008 - 0.040					
029310	RDHT2006M0E-42-X8	X500	■◆■	■◆■	-	0.787	-	0.250	0.394	0.003
031533	RDHT2006M0E-42-X8	SP6519	◆□●	◆□●	-	0.787	-	0.250	0.394	0.003
029309	RDHW2006M0E-X8	X500	-	●●●○●◆	-	0.787	-	0.250	0.394	0.004
031661	RDHW2006M0S-X8	X500	●○◆	■■■	-	0.787	-	0.250	0.394	0.006
031662	RDHW2006M0S-X8	SP6519	■■■	◆◆◆	-	0.787	-	0.250	0.394	0.006
031660	RDHW2006M0S-25-X8	X500	●●●	-	-	0.787	-	0.250	0.394	0.010
031576	RDHW2006M0S-25-X8	SP6519	◆◆◆	-	-	0.787	-	0.250	0.394	0.010

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

INSERT APPLICATION NOTES:

RDHW2006MOE-X8 X500 should be your first choice for medium roughing application when machining Titanium without heavy scale.
RDHW2006M0S-X8 SP6519 should be used when machining Stainless Steel with heavy scale.
RDHW2006M0S-X8 X500 should be used when machining High Temperature Alloys with heavy scale.
RDHT2006M0E-42-X8 should be used when the machine tool has low power available and when the conditions are stable.
RDHW2006M0S-25-X8 should be used for heavy duty applications.

80_0VR00-_R-20 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
E-42-X8	X500	Facing	-	-	0.006 - 0.014	0.006 - 0.012	-	-	-	-	-	0.005 - 0.010	0.005 - 0.010	0.005 - 0.010	0.005 - 0.012	-	-
E-42-X8	SP6519	Facing	-	-	0.006 - 0.014	0.006 - 0.011	-	-	-	-	-	0.005 - 0.010	0.005 - 0.010	0.005 - 0.010	0.005 - 0.012	-	-
E-X8	X500	Facing	0.008 - 0.012	0.007 - 0.011	0.008 - 0.016	0.008 - 0.012	0.008 - 0.014	0.008 - 0.014	0.008 - 0.012	-	-	0.008 - 0.011	0.008 - 0.011	0.008 - 0.011	0.008 - 0.013	-	-
S-X8	X500	Facing	0.010 - 0.018	0.010 - 0.014	0.010 - 0.018	0.010 - 0.013	0.010 - 0.018	0.010 - 0.018	0.010 - 0.016	-	-	0.010 - 0.013	0.010 - 0.013	0.010 - 0.013	0.010 - 0.014	-	-
S-X8	SP6519	Facing	0.010 - 0.018	0.010 - 0.014	-	-	0.010 - 0.018	0.010 - 0.018	0.010 - 0.016	-	-	-	-	-	-	-	-
S-25-X8	X500	Facing	0.014 - 0.024	0.014 - 0.020	-	-	0.014 - 0.024	0.014 - 0.022	0.014 - 0.018	-	-	-	-	-	-	-	-
S-25-X8	SP6519	Facing	0.014 - 0.022	0.014 - 0.018	-	-	0.014 - 0.022	0.014 - 0.020	0.014 - 0.016	-	-	-	-	-	-	-	-

Note: HTA = High Temperature Alloys

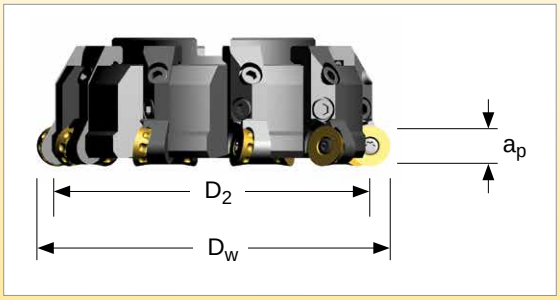
Speed recommendations can be found on page A158.

Speed v_c (SFM)

80_VR00_R20 Series			Wear Resistance – +					
			Speed min. - max.					
Coolant Recommendation Recommended ● Possible ⦿					CVD X Grade			PVD Standard
ISO	Materials	Rm and Hardness	💧	🚫	X500	💧	🚫	SP6519
P	Unalloyed Steel	<600 N/mm² <180 HBN	⦿	●	425 - 885	⦿	●	425 - 970
		<950 N/mm² <280 HBN			375 - 785			375 - 855
	Alloyed Steel	700-950 N/mm² 200-280 HBN	⦿	●	330 - 690	⦿	●	330 - 755
		950-1200 N/mm² 280-355 HBN			245 - 525			245 - 575
		1200-1400 N/mm² 355-415 HBN		●	165 - 330		●	165 - 360
M	Stainless Steel	Austenitic + Ferritic 300 series	⦿	●	375 - 820	⦿	●	375 - 885
		Martensitic 400 series			330 - 720			345 - 770
	PH Stainless	Refractory P.H.	●		165 - 360	●		165 - 395
K	Cast Iron	Grey GG-Ft	⦿	●	395 - 920	⦿	●	450 - 970
		Spheroidal-Ductile GGG-FGS			345 - 675			360 - 785
		Malleable GTS - MN/MP			310 - 560			330 - 720
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN						
		Aluminum + Silicon > 16% Si 92 HBN						
S	High Temperature Alloys	Iron Based	●		75 - 160	●		75 - 180
		Cobalt Based			70 - 145			70 - 150
		Nickel Based			80 - 170			80 - 180
		Titanium Based			115 - 240			115 - 260
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN						
		Chilled Cast Iron >1400 N/mm² > 400 HBN						

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80_0VR00-_R-20 Technical Information



Working Diameter:

Formula to evaluate the correct working diameter based on axial depth of cut (a_p).

$$D_w = D_2 + 2 \times \sqrt{r^2 - (r - a_p)^2}$$

where:

- D_w = Working Diameter
- D_2 = Diameter of cutter insert center to center
- r = Insert radius
- a_p = Axial Depth of Cut

80_0VR00-_R-20 Technical Information

where:

- f_z = Feed per tooth
- h_m = Average chip thickness
- r = Insert radius
- a_e = Radial Depth of Cut
- a_p = Axial Depth of Cut

Formula to find programmed feed rate based on radial engagement and axial depth of cut.

$$f_z = \frac{h_m}{\frac{\sqrt{r^2-(r-a_e)^2}}{r} \times \frac{\sqrt{r^2-(r-a_p)^2}}{r}}$$

Formula to calculate the average chip thickness h_m in relation with radial engagement and depth of cut.

$$h_m = f_z \times \frac{\sqrt{r^2-(r-a_e)^2}}{r} \times \frac{\sqrt{r^2-(r-a_p)^2}}{r}$$

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Simplified formulas to evaluate h_m and f_z based on axial depth of cut or radial engagement.

Calculation of the average chip thickness in relation with the D.O.C. (Axial)

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_p}}$$

h_m = Average chip thickness
a_p = Depth of cut
f_z = Feed per tooth
d = Insert diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_p}{d}}$$

Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of dia.

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

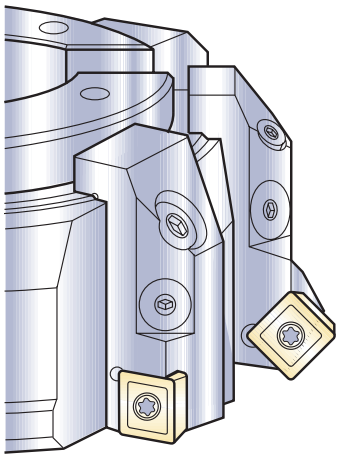
Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

With round inserts, the thickness of the chip varies depending on the axial depth of cut (a_p) and is related to the size of the cutting edge-preparation. For best tool life it is important to maintain the proper chip thickness as shown below. This chart calculates in relation with axial depth of cut (a_p) only and not radial cut (a_e).

RD..2006.. Inserts

Insert	Insert size (inch)	a_p d.o.c. (inch)	h_m (inch)		f_z (ipt)	
			min.	max.	min.	max.
RDHT2006M0E-42-X8	0.787	0.050	0.003	0.013	0.012	0.052
	0.787	0.100	0.003	0.013	0.008	0.036
	0.787	0.120	0.003	0.013	0.008	0.033
	0.787	0.150	0.003	0.013	0.007	0.030
	0.787	0.200	0.003	0.013	0.006	0.026
	0.787	0.250	0.003	0.013	0.005	0.022
	0.787	0.300	0.003	0.013	0.005	0.021
	0.787	0.394	0.003	0.013	0.004	0.018
RDHW2006M0E-X8	0.787	0.050	0.004	0.016	0.016	0.063
	0.787	0.100	0.004	0.016	0.011	0.045
	0.787	0.120	0.004	0.016	0.010	0.041
	0.787	0.150	0.004	0.016	0.009	0.037
	0.787	0.200	0.004	0.016	0.008	0.032
	0.787	0.250	0.004	0.016	0.007	0.028
	0.787	0.300	0.004	0.016	0.006	0.026
	0.787	0.394	0.006	0.016	0.006	0.023
RDHW2006M0S-X8	0.787	0.050	0.006	0.018	0.026	0.071
	0.787	0.100	0.006	0.018	0.017	0.050
	0.787	0.120	0.006	0.018	0.015	0.046
	0.787	0.150	0.006	0.018	0.014	0.041
	0.787	0.200	0.006	0.018	0.012	0.036
	0.787	0.250	0.006	0.018	0.011	0.032
	0.787	0.300	0.009	0.018	0.010	0.029
	0.787	0.394	0.009	0.018	0.008	0.025
RDHW2006M0S-25-X8	0.787	0.050	0.009	0.023	0.036	0.091
	0.787	0.100	0.009	0.023	0.025	0.065
	0.787	0.120	0.009	0.023	0.023	0.059
	0.787	0.150	0.009	0.023	0.021	0.053
	0.787	0.200	0.009	0.023	0.018	0.046
	16	0.250	0.004	0.023	0.016	0.042
	16	0.300	0.004	0.023	0.015	0.037
	16	0.394	0.004	0.023	0.013	0.033



Surface Finishing with 81FS00 Cartridges

The cartridge 81 FS 00 R-12 is intended to perform finishing operations when used in conjunction with other cartridges as shown in the diagram opposite. They have a fine adjusting set screw to enable the cartridge to be pulled back and pushed forward again to the initial preset position.

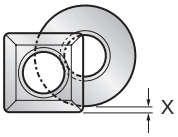
Stock removal for finishing should be no more than 0.040 in. and preferably 0.020 in. The finishing insert actually removing a maximum 0.0012 in. due to it trailing the main cutting inserts.

On the cutter series 8000V one, two or even three (according to diameter) of the roughing cartridges may be replaced by an 81 FS 00 R-12 finishing cartridge. One corresponding pocket for a wiper cartidge is marked with an “F”.

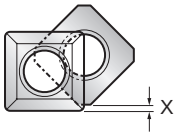
These cartridges, having a fine adjusting set screw, are set according to the dimension (axial shift) “X”.

X = 0.0012 - 0.0020 in.
(X = 0.0008 in. with a pressed insert with a nose radius)

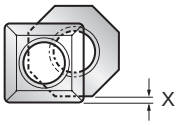
Maximum feed = 0.118 ipr



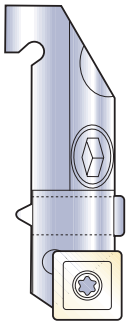
8000VR00 (R-16 only)



8000VS / VSE45



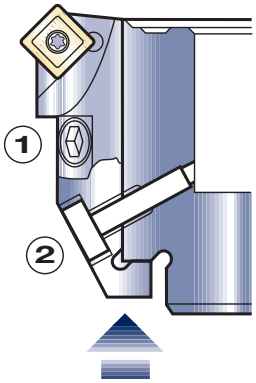
8000VOD45



Note: 8000V Series assemblies that cannot use wiper cartridges are 90 degree A-Style, 20mm Round Button and 12mm and 16mm High Feed Mills.

Also, all 8010V cutter series are not possible to assemble with a wiper insert cartridge.

Product	Spares				
Finishing Insert Part Number	Finishing Cartridge	Cartridge Fixing Screw	Adjusting Cartridge Screw	Fixing Insert Screw	Screwdriver
SPHX 12 M5 12-EN	81 FS 00 R-12	7065	72.602	D5013T	T20

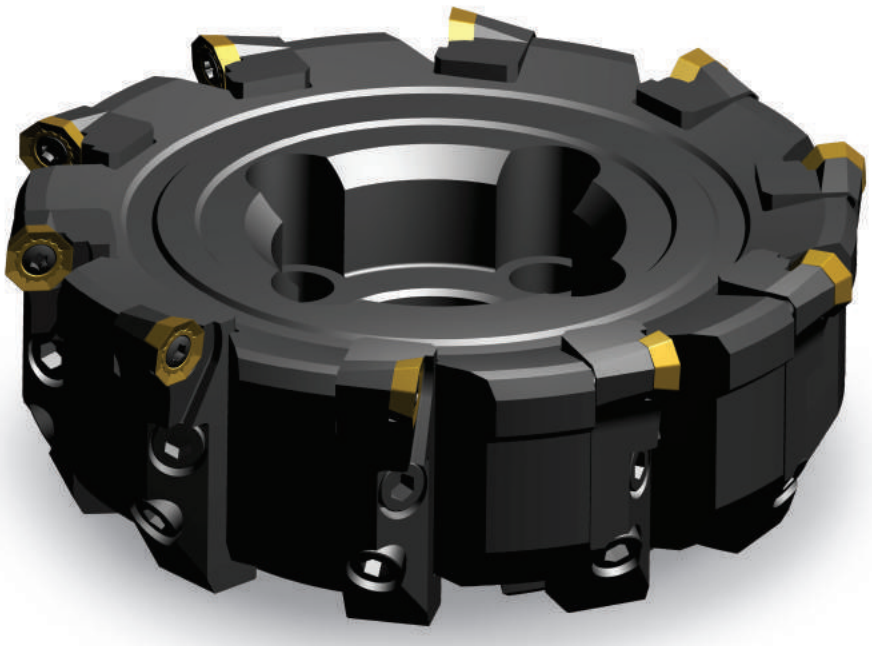


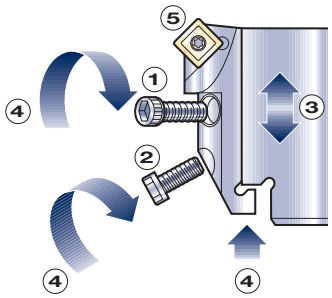
General Cartridge Mounting Instructions

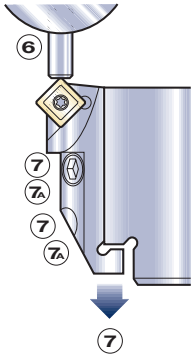
For the majority of current applications, 8000V and 8010V cutters with interchangeable cartridges do not have to be adjusted. The cartridges therefore are mounted by pressing the calibrated heel up against the setting track on the tool body (runout 0.002 in. max., with inserts with ground wiper edges). However, if greater accuracy is required, they may be adjusted individually with a runout of 0.0008 in.

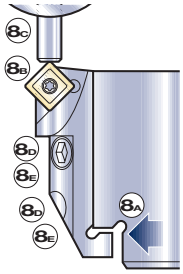
A Mounting of Cartridges without Adjustment

1. Lubricate the screw under the head and on the thread (preferably with copper paste).
2. Clean cartridges and their pockets located in the milling cutter.
3. Introduce the first cartridge into its pocket and check if it moves freely.
4. Introduce screw No. 1 and tighten it moderately whilst pushing the cartridge against its axial setting track; mount all the cartridges in the same way.
5. Introduce screw No. 2 and lock it (tightening torque 7.37 Ft. Lbs.).
6. Lock screw No. 1 well with an extended allen key (tightening torque 13.26 Ft. Lbs.).
7. Mount the indexable inserts.









B Mounting of Cartridges with Adjustment

1. Lubricate the screws under the head and on the thread (preferably with copper paste).
2. Clean the cartridges and their pockets located in the milling cutter.
3. Introduce the first cartridge into its pocket and check it moves freely.
4. Introduce screws No. 1 and No. 2 while pushing the cartridge against its axial setting track, tighten screw No. 1.
5. Mount an insert with ground periphery which will serve as a gauge.
6. Gauge the height of the first mounted cartridge, then set the pre-setter to zero. Set the the pre-setter so that the measuring system indicates +0.0008 in.
7. Slightly loosen both screws; reverse the cartridge to just below zero in relation to pre-set +0.0008 in. and again moderately tighten screw No. 1. Using screw No. 2 advance the cartridge to zero. Then loosen screw No. 2.

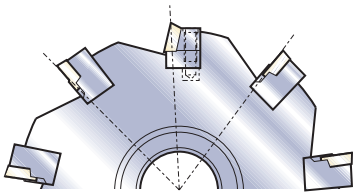
Instructions for Tightening

After height zero has been reached:

- **A** Lock screw No. 1 securely with an extended allen key (tightening torque 13.26 Ft. Lbs.). When doing this it is possible that the cartridge may reverse a little.
- **B** Re-tighten screw No. 2 to jack cartridge back to zero position.

8. To adjust the other cartridges, proceed as follows:
   - **A** Mount the cartridge using screw No. 1 which must be moderately tightened.
   - **B** Mark, as a reference face with a red felt-tipped pen, the insert from the preceding cartridge and introduce it so as to use the same wiper edge.
   - **C** Rotate the cutter (8A) with the mounted insert (8B) in the position of the lens (8C) on the pre-setter to measure the height.
   - **D** Introduce screw No. 2 which will help push the cartridge up to position zero on the dial. Loosen the screw.
   - **E** From this point onwards, follow the tightening instructions described above.
   - **F** Then tighten all screws Nr.2 moderately.
9. Once the mounting of the cartridges is complete, mount the indexable inserts.

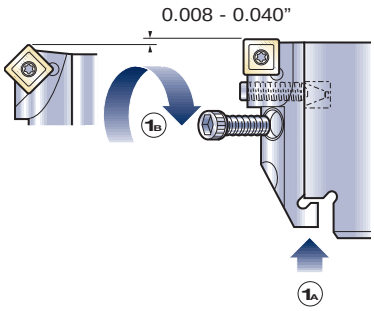
NOTE: By proceeding in this way with the mounting of cartridges, the insert seats should all be at a precise height (±0.0008 in.); only variations in the insert dimensions will then influence the axial runout of the milling cutter.

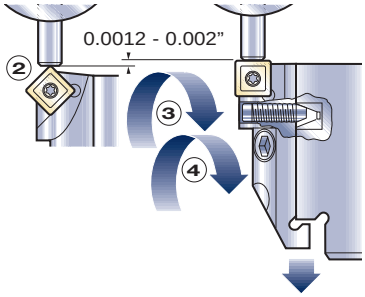


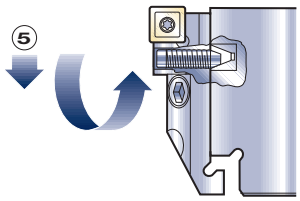
C Mounting & Setting of the Finishing Cartridges

The 8000V series of milling cutters have no additional and independent pockets, but according to their diameter one, two or even three roughing cartridges can be replaced by one finishing cartridge - 81 FS 00 R-12. One corresponding pocket for a wiper cartridge is marked with an “F”.

NOTE: When using two or even three finishing cartridges, their equal spacing on the milling cutter circumference must be ensured and the axial runout between the edges of the wiper inserts must be as small as possible.







MOUNTING & SETTING INSTRUCTIONS

1. **A** After the 81 FS 00 R-12 cartridge and its pocket in the cutter body have been cleaned, place the cartridge into its pocket and locate the heel against the setting track.
   B Introduce the cartridge fixing screw and lightly tighten. The finishing inserts will protrude from the cutting plane of the roughing cartridges 0.008 - 0.040 in. depending upon the roughing inserts being used.
2. Check each insert on the roughing cartridges, whose mounting is described in **A** and **B** so that the highest insert can be marked and used to set the pre-setter to zero.
3. **A** Rotate the cutter until the plunger / lens is placed above the center of the finishing insert cutting edge.
   B Screw in the set screw, which will move the 81 FS 00 R-12 finishing cartridge off the setting track until the measuring system indicates +0.0012 to 0.0020 in. from the zero already set. If the roughing cartridges are equipped with SCMT utility inserts (with as pressed periphery), the offset should only be +0.0008 in.
   C Loosen the cartridge fixing screw and move the cartridge up and down to verify the dimension already set. If necessary, correct the preset dimension by adjusting the set screw.
4. Lightly tighten the cartridge fixing screw.
5. The 81 FS 00 R-12 finishing cartridges are able to be pulled back or pushed forward as necessary to allow for roughing or finishing work as they will always return to the dimension as preset in 3 B and C. So, simply unscrew the fixing screw, push the finishing cartridge either forward or backwards, then lock the screw again.

Note: Not suitable for use on 8010 V cutter bodies.



STELLRAM



HIGH PERFORMANCE LONG EDGE MILLING CUTTERS

The Stellram **5230VS09** and **VS12** Cutter Series is perfectly qualified for profiling and full slotting.

Designed for high material removal rates in Titanium and High Temperature Alloys. Several applications have shown metal removal rates of up to two times greater than the previous operating cutting parameters.

The advanced Chevron design ensures that one cutting point is always in contact with the material during entrance and exit. This provides optimum harmonic stability - resulting in maximum tool life and a 30% improvement in surface finish. A generous flute capacity coupled with each individual cutting edge having its own jet of coolant, provides for excellent chip evacuation. This works to further enhance surface finish and increases metal removal rates to a higher level of productivity.

The advanced **5230VS** series is ideal for rough machining of Steel, Alloyed Steel, Stainless Steel and particular for Titanium and High Temperature Alloys.

Features and Benefits

- Insert positioning provides smooth progressive penetration and cutting action for extended tool life.
- Individual coolant jets to each insert provides constant chip evacuation and Temperature stability in the cutting zone.
- The advanced Chevron design improves stability and lowers power consumption.
- Proven versatility in a wide application area in Titanium and High Temperature Alloys increasing productivity.

5230VS

5230VS09:

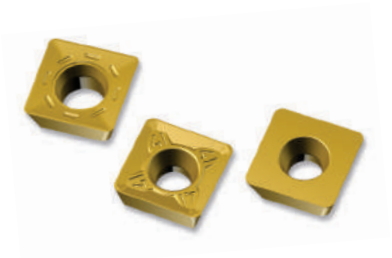
(a_p max is determined by selection of Cutter Diameter)

Diameter Range and Maximum a_p =
2.000" Dia. with a_p 2.010",
3.150" or 4.000"

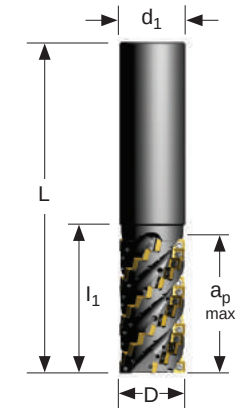
5230VS12:

(a_p max is determined by selection of Cutter Diameter)

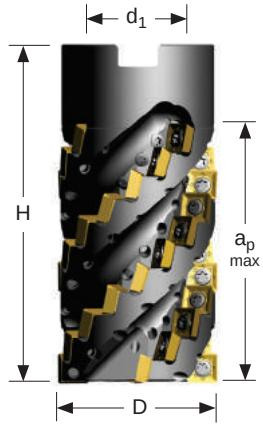
Diameter Range and Maximum a_p =
2.500" Dia. with a_p 2.244" or 3.700"
3.000" Dia. with a_p 2.560" or 4.433"
4.000" Dia. with a_p 3.000" or 5.236"



STELLRAM



Cylindrical Shank



Shell Mill Fixation

Product		Dimensions (inch)								Spares				
EDP	**Item Description**	D	L/H	l_1	d_1	a_p max	a_p max Slotting*	No. of flutes	No. of inserts	*EDP*		*EDP*		Screw Tightening in. lbs.
5230VS09 Cylindrical Shank														
033073	**C5230VS09-CA2.0Z4R4.0**	2.000	10.000	4.500	2.000	4.000	-	4	56	*015269*	F3508T	*015240*	T15	18.60
5230VS09 Shell Mill Fixation														
031430	**C5230VS09-A2.0Z4R2.0**	2.000	2.990	-	1.000	2.010	1.750	4	28	*015269*	F3508T	*015240*	T15	18.60
031581	**C5230VS09-A2.0Z4R3.1**	2.000	4.173	-	1.000	3.150	-	4	44	*015269*	F3508T	*015240*	T15	18.60

* Note: Please do not surpass the recommended max. a_p for slotting.

Cylindrical Shanks are supplied with insert screws and coolant control screws only.
Shell Mills are supplied with inserts screws, coolant control screws, steel coolant plug, nord-lock washer and mounting screw.

5230VS09 Spare Parts

Cutter	Coolant control screw			*Screwdriver EDP*		Steel Coolant Plug		Coolant Plug tightening Ft lbs.
	Screw EDP	Screw	Qty.			*EDP*	Description	
C5230VS09-CA2.0Z4R4.0	*015062*	F3006T	6	*013214*	T9	-	-	-
C5230VS09-A2.0Z4R2.0			8			*031436*	SB-3413	25
C5230VS09-A2.0Z4R3.1			12			*031582*	SB-3621	

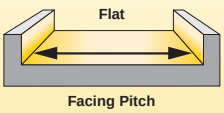
5230VS09 Torque Values and Spare Parts

Cutter	Nord Lock Washer		Mounting Bolt (through coolant)		**Torque Values in FT Lbs.	
	EDP	Description	*EDP*	Description	Normal Condition	Excessive Condition
C5230VS09-CA2.0Z4R4.0	-	-	-	-	-	-
C5230VS09-A2.0Z4R2.0	*031258*	NLW-0.375	*017240*	1/2-20 x 1-1/4 SHCSA	59	74
C5230VS09-A2.0Z4R3.1						

** Torque values for mounting bolts. Excessive condition is when long reach extensions are required or when cutting parameters are elevated to extreme parameters.

5230VS09 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
033073	**C5230VS09-CA2.0Z4R4.0**	2.000	-	-	-	-	32,500
031430	**C5230VS09-A2.0Z4R2.0**	2.000	-	-	-	-	32,500
031581	**C5230VS09-A2.0Z4R3.1**	2.000	-	-	-	-	32,500



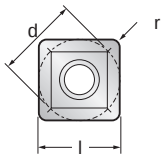
STELLRAM


SDHT09-422


SDHT09-423


SDMT09-41


SDMW09



Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max* or a_e max.*	a_p max. and a_e max. 15% D**	a_p min. - max.					
031261	**SDHT09T308EN-422**	**X500**	◆ ■	● ● ●	-	0.375	0.375	0.156	0.031	0.001
033075	**SDHT09T308EN-422**	**SP6519**	◆ ●	◆ ◆ ■	-	0.375	0.375	0.156	0.031	0.001
031260	**SDHT09T308EN-423**	**X500**	□ ◆	-	-	0.375	0.375	0.156	0.031	0.002
033074	**SDHT09T308EN-423**	**SP6519**	■ ●	■ □ ◆	-	0.375	0.375	0.156	0.031	0.002
014410	**SDMT09T308EN-41**	**X500**	●	■ ■ ●	-	0.375	0.375	0.156	0.031	0.002
031479	**SDMT09T308EN-41**	**SP6519**	■ ■ ●	■	-	0.375	0.375	0.156	0.031	0.002
017325	**SDMT09T308EN-41**	**MP91M**	■	● ● ◆	-	0.375	0.375	0.156	0.031	0.002
015232	**SDMW09T308TN**	**X500**	● ●	-	-	0.375	0.375	0.156	0.031	0.006
031482	**SDMW09T308TN**	**SP6519**	◆ ◆	-	-	0.375	0.375	0.156	0.031	0.006
017327	**SDMW09T308TN**	**MP91M**	◆	-	-	0.375	0.375	0.156	0.031	0.006

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

* Note: Please do not surpass the recommended max. a_p for slotting as shown on the steel body page A166.

* Note: a_p max. for profiling is only possible when a_e < 75% of the Diameter.

** Note: For semi finishing, axial engagement $\mathbf{a_p}$ for slotting and radial engagement $\mathbf{a_e}$ for profiling should be max. 15% of the Diameter. Inserts SDHT09T308EN-423 to be used in unstable conditions.

Note: Feed recommendations can be found on page A168. Speed recommendations can be found on page A169.



5230VS09 Feeds f_z (inch/flute)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
EN-422	X500	Shoulder/ Profiling	-	-	0.002 - 0.005	0.002 - 0.005	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.006	-	-
		Slotting	-	-	0.002 - 0.004	0.002 - 0.004	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.005	-	-
EN-422	SP6519	Shoulder/ Profiling	-	-	0.002 - 0.005	0.002 - 0.004	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.006	-	-
		Slotting	-	-	0.002 - 0.004	0.002 - 0.004	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.005	-	-
EN-423	X500	Shoulder/ Profiling	-	-	-	0.002 - 0.005	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.006	-	-
		Slotting	-	-	-	0.002 - 0.004	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.005	-	-
EN-423	SP6519	Shoulder/ Profiling	-	-	0.002 - 0.005	0.002 - 0.004	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.006	-	-
		Slotting	-	-	0.002 - 0.004	0.002 - 0.004	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.005	-	-
EN-41	X500	Shoulder/ Profiling	0.002 - 0.006	0.002 - 0.006	0.002 - 0.005	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.005	-	-	-	-	-	-	-	-
		Slotting	0.002 - 0.005	0.002 - 0.005	0.002 - 0.004	-	0.002 - 0.005	0.002 - 0.005	0.002 - 0.004	-	-	-	-	-	-	-	-
EN-41	SP6519	Shoulder/ Profiling	0.002 -0.006	0.002 - 0.006	-	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.005	-	-	-	-	-	-	-	-
		Slotting	0.002 - 0.005	0.002 - 0.005	-	-	0.002 - 0.005	0.002 - 0.005	0.002 - 0.004	-	-	-	-	-	-	-	-
EN-41	MP91M	Shoulder/ Profiling	0.002 - 0.005	0.002 - 0.005	-	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.005	-	-	-	-	-	-	-	-
		Slotting	0.002 - 0.004	0.002 - 0.004	-	-	0.002 - 0.005	0.002 - 0.005	0.002 - 0.004	-	-	-	-	-	-	-	-
TN	X500	Shoulder/ Profiling	0.006 - 0.008	0.005 - 0.007	-	-	-	-	-	-	-	-	-	-	-	-	-
		Slotting	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TN	SP6519	Shoulder/ Profiling	0.006 - 0.008	0.005 - 0.007	-	-	-	-	-	-	-	-	-	-	-	-	-
		Slotting	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TN	MP91M	Shoulder/ Profiling	-	-	-	-	0.006 - 0.007	0.006 - 0.007	0.006 - 0.007	-	-	-	-	-	-	-	-
		Slotting	-	-	-	-	-	-	-	-	-	-	-	-	-		

Note: HTA = High Temperature Alloys

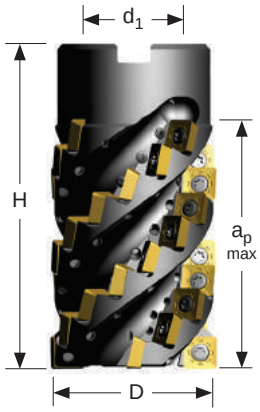
Note: Above feed rates are calculated on centerline.

Speed recommendations can be found on page A169.

Speed v_c (SFM)

5230VS Series			Wear Resistance – → +								
			Speed min. - max.								
Coolant Recommendation Recommended ● Possible ⦿					CVD X Grade			PVD Standard			CVD Standard
ISO	Materials	Rm and Hardness	💧	🚫	X500	💧	🚫	SP6519	💧	🚫	MP91M
P	Unalloyed Steel	<600 N/mm² <180 HBN	⦿	●	425 - 885	⦿	●	425 - 970		●	460 - 1130
		<950 N/mm² <280 HBN			375 - 785			375 - 855			395 - 1000
	Alloyed Steel	700-950 N/mm² 200-280 HBN	⦿	●	330 - 690	⦿	●	330 - 755		●	345 - 885
		950-1200 N/mm² 280-355 HBN			245 - 525			245 - 575			260 - 675
		1200-1400 N/mm² 355-415 HBN		●	165 - 330		●	165 - 360		●	165 - 425
M	Stainless Steel	Austenitic + Ferritic 300 series	⦿	●	375 - 820	⦿	●	375 - 885			
		Martensitic 400 series			330 - 720			345 - 770			
	PH Stainless	Refractory P.H.	●		165 - 360	●		165 - 395			
K	Cast Iron	Grey GG-Ft	⦿	●	395 - 920	⦿	●	460 - 970		●	475 - 1200
		Spheroidal-Ductile GGG-FGS			345 - 675			360 - 785			375 - 935
		Malleable GTS - MN/MP			310 - 560			330 - 720			345 - 855
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN									
		Aluminum + Silicon > 16% Si 92 HBN									
S	High Temperature Alloys	Iron Based	●		75 - 160	●		75 - 180			
		Cobalt Based			70 - 145			70 - 160			
		Nickel Based			80 - 170			80 - 180			
		Titanium Based			115 - 240			120 - 260			
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN									
		Chilled Cast Iron >1400 N/mm² > 400 HBN									

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Shell Mill Fixation

Product		Dimensions (inch)								Spares				
EDP	**Item Description**	D	L/H	l_1	d_1	a_p max	a_p max Slotting*	No. of flutes	No. of inserts	*EDP*		*EDP*		Screw Tightening in. lbs.
5230VS12 Shell Mill Fixation														
031234	**C5230VS12-A2.5Z4R2.24**	2.500	3.346	-	1.000	2.244	2.000	4	24	*015270*	F4011T	*015241*	T20	27.40
031133	**C5230VS12-A2.5Z4R3.70**	2.500	4.881	-	1.000	3.700	-	4	40	*015270*	F4011T	*015241*	T20	27.40
031606	**C5230VS12-A3.0Z5R2.56**	3.000	3.740	-	1.250	2.560	2.360	5	35	*015270*	F4011T	*015241*	T20	27.40
031607	**C5230VS12-A3.0Z5R4.33**	3.000	5.629	-	1.250	4.433	-	5	60	*015270*	F4011T	*015241*	T20	27.40
031236	**C5230VS12-A4.0Z6R3.00**	4.000	3.937	-	1.500	3.000	2.760	6	48	*015270*	F4011T	*015241*	T20	27.40
031237	**C5230VS12-A4.0Z6R5.23**	4.000	6.496	-	1.500	5.236	-	6	84	*015270*	F4011T	*015241*	T20	27.40

* Note: Please do not surpass the recommended max. a_p for slotting.

Shell Mills are supplied with inserts screws, coolant control screws, steel coolant plug, nord-lock washer and mounting screw.

5230VS12 Spare Parts

Cutter	Coolant control screw			*Screwdriver EDP*		Steel Coolant Plug		Coolant Plug tightening Ft lbs.
	Screw *EDP*	Screw	Qty.			*EDP*	Description	
C5230VS12-A2.5Z4R2.24	*015062*	F3006T	8	*013214*	T9	*031262*	SB-3229	25
C5230VS12-A2.5Z4R3.70			12			*031263*	SB-3230	
C5230VS12-A3.0Z5R2.56			10			*031264*	SB-3231	45
C5230VS12-A3.0Z5R4.33			15			*031265*	SB-3232	
C5230VS12-A4.0Z6R3.00			12			*031266*	SB-3233	45
C5230VS12-A4.0Z6R5.23			18			*031267*	SB-3234	

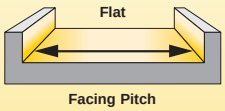
5230VS12 Torque Values and Spare Parts

Cutter	Nord Lock Washer		Mounting Bolt (through coolant)		**Torque Values in FT Lbs.	
	EDP	Description	*EDP*	Description	Normal Condition	Excessive Condition
C5230VS12-A2.5Z4R2.24	031258	NLW-0.375	017420	1/2-20 x 1-1/4 SHCSA	59	74
C5230VS12-A2.5Z4R3.70						
C5230VS12-A3.0Z5R2.56	031226	NLW-12SP	017424	5/8-18 x 1-1/2 SHCSA	81.1	110.6
C5230VS12-A3.0Z5R4.33						
C5230VS12-A4.0Z6R3.00	031259	NLW-16SP	017422	3/4-16 x 1-3/4 SHCSA	88.5	132.76
C5230VS12-A4.0Z6R5.23						

** Torque values for mounting bolts. Excessive condition is when long reach extensions are required or when cutting parameters are elevated to extreme parameters.

5230VS12 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
031234	**C5230VS12-A2.5Z4R2.24**	2.500	-	-	-	-	21,000
031133	**C5230VS12-A2.5Z4R3.70**	2.500	-	-	-	-	21,000
031606	**C5230VS12-A3.0Z5R2.56**	3.000	-	-	-	-	18,500
031607	**C5230VS12-A3.0Z5R4.33**	3.000	-	-	-	-	18,500
031236	**C5230VS12-A4.0Z6R3.00**	4.000	-	-	-	-	16,000
031237	**C5230VS12-A4.0Z6R5.23**	4.000	-	-	-	-	16,000



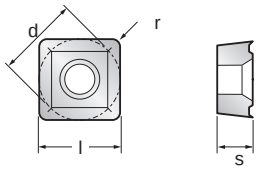
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SDHT12-422


SDHT12-423


SDMT12-41


SDMW12-TN



Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
			Depth of Cut (inch)							
EDP	Item Description	Grade	a_p max* or a_e max.*	a_p max. and a_e max. 15% D**	a_p min. - max.	d (IC)	l	s	r	h_m min
030717	SDHT120412EN-422	X500	◆◆	●○●	-	0.500	0.500	0.187	0.047	0.002
030728	SDHT120412EN-422	SP6519	◆○	◆◆◆	-	0.500	0.500	0.187	0.047	0.002
031218	SDHT120412EN-423	X500	□■	-	-	0.500	0.500	0.187	0.047	0.002
031321	SDHT120412EN-423	SP6519	■●	□□■	-	0.500	0.500	0.187	0.047	0.002
014411	SDMT120412EN-41	X500	●	■■●	-	0.500	0.500	0.187	0.047	0.002
031480	SDMT120412EN-41	SP6519	■■●	◆◆■	-	0.500	0.500	0.187	0.047	0.002
017326	SDMT120412EN-41	MP91M	■	●●◆	-	0.500	0.500	0.187	0.047	0.002
015233	SDMW120412TN	X500	●●	-	-	0.500	0.500	0.187	0.047	0.006
034518	SDMW120412TN	SP6519	◆◆	-	-	0.500	0.500	0.187	0.047	0.006
017328	SDMW120412TN	MP91M	◆	-	-	0.500	0.500	0.187	0.047	0.006

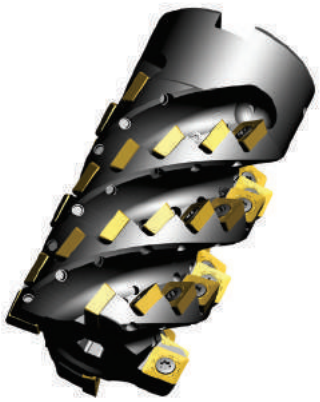
Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5

* Note: Please do not surpass the recommended max. a_p for slotting as shown on the steel body page A170.

* Note: a_p max. for profiling is only possible when a_e < 75% of the Diameter.

** Note: For semi finishing, axial engagement $\mathbf{a_p}$ for slotting and radial engagement $\mathbf{a_e}$ for profiling should be max. 15% of the Diameter. Inserts SDHT120412EN-423 to be used in unstable conditions.

Note: Feed recommendations can be found on page A172. Speed recommendations can be found on page A173.



5230VS12 Feeds f_z (inch/flute)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
EN-422	X500	Shoulder/ Profiling	-	-	0.002 - 0.006	0.002 - 0.006	-	-	-	-	-	0.002 - 0.005	0.002 - 0.005	0.002 - 0.005	0.002 - 0.005	-	-
		Slotting	-	-	0.002 - 0.005	0.002 - 0.005	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	-	-
EN-422	SP6519	Shoulder/ Profiling	-	-	0.002 - 0.006	0.002 - 0.006	-	-	-	-	-	0.002 - 0.005	0.002 - 0.005	0.002 - 0.005	0.002 - 0.005	-	-
		Slotting	-	-	0.002 - 0.005	0.002 - 0.005	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	-	-
EN-423	X500	Shoulder/ Profiling	-	-	-	0.002 - 0.006	-	-	-	-	-	0.002 - 0.005	0.002 - 0.005	0.002 - 0.005	0.002 - 0.006	-	-
		Slotting	-	-	-	0.002 - 0.005	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	-	-
EN-423	SP6519	Shoulder/ Profiling	-	-	0.002 - 0.006	0.002 - 0.006	-	-	-	-	-	0.002 - 0.005	0.002 - 0.005	0.002 - 0.005	0.002 - 0.006	-	-
		Slotting	-	-	0.002 - 0.005	0.002 - 0.005	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	-	-
EN-41	X500	Shoulder/ Profiling	0.002 - 0.007	0.002 - 0.007	0.002 - 0.006	-	0.002 - 0.007	0.002 - 0.007	0.002 - 0.006	-	-	-	-	-	-	-	-
		Slotting	0.002 - 0.006	0.002 - 0.006	0.002 - 0.005	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.005	-	-	-	-	-	-	-	-
EN-41	SP6519	Shoulder/ Profiling	0.002 - 0.007	0.002 - 0.007	-	-	0.002 - 0.007	0.002 - 0.007	0.002 - 0.006	-	-	-	-	-	-	-	-
		Slotting	0.002 - 0.006	0.002 - 0.006	-	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.005	-	-	-	-	-	-	-	-
EN-41	MP91M	Shoulder/ Profiling	0.002 - 0.007	0.002 - 0.007	-	-	0.002 - 0.007	0.002 - 0.007	0.002 - 0.006	-	-	-	-	-	-	-	-
		Slotting	0.002 - 0.006	0.002 - 0.006	-	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.005	-	-	-	-	-	-	-	-
TN	X500	Shoulder/ Profiling	0.006 - 0.008	0.005 - 0.007	-	-	-	-	-	-	-	-	-	-	-	-	-
		Slotting	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TN	SP6519	Shoulder/ Profiling	0.006 - 0.008	0.005 - 0.007	-	-	-	-	-	-	-	-	-	-	-	-	-
		Slotting	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TN	MP91M	Shoulder/ Profiling	-	-	-	-	0.005 - 0.008	0.005 - 0.008	0.005 - 0.007	-	-	-	-	-	-	-	-
		Slotting	-	-	-	-	-	-	-	-	-	-	-	-	-		

Note: HTA = High Temperature Alloys

Note: Above feed rates are calculated on centerline.

Speed recommendations can be found on page A173.

Speed v_c (SFM)

5230VS Series			Wear Resistance – +								
			Speed min. - max.								
Coolant Recommendation Recommended ● Possible ⦿					CVD X Grade			PVD Standard			CVD Standard
ISO	Materials	Rm and Hardness	💧	🚫	X500	💧	🚫	SP6519	💧	🚫	MP91M
P	Unalloyed Steel	<600 N/mm² <180 HBN	⦿	●	425 - 885	⦿	●	425 - 970		●	460 - 1130
		<950 N/mm² <280 HBN			375 - 785			375 - 855			395 - 1000
	Alloyed Steel	700-950 N/mm² 200-280 HBN	⦿	●	330 - 690	⦿	●	330 - 755		●	345 - 885
		950-1200 N/mm² 280-355 HBN			245 - 525			245 - 575			260 - 675
		1200-1400 N/mm² 355-415 HBN		●	165 - 330		●	165 - 360		●	165 - 425
M	Stainless Steel	Austenitic + Ferritic 300 series	⦿	●	375 - 820	⦿	●	375 - 885			
		Martensitic 400 series			330 - 720			345 - 770			
	PH Stainless	Refractory P.H.	●		165 - 360	●		165 - 395			
K	Cast Iron	Grey GG-Ft	⦿	●	395 - 920	⦿	●	460 - 970		●	475 - 1200
		Spheroidal-Ductile GGG-FGS			345 - 675			360 - 785			375 - 935
		Malleable GTS - MN/MP			310 - 560			330 - 720			345 - 855
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN									
		Aluminum + Silicon > 16% Si 92 HBN									
S	High Temperature Alloys	Iron Based	●		75 - 160	●		75 - 180			
		Cobalt Based			70 - 145			70 - 160			
		Nickel Based			80 - 170			80 - 180			
		Titanium Based			115 - 240			120 - 260			
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN									
		Chilled Cast Iron >1400 N/mm² > 400 HBN									

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Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of dia.

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

Formula: Average Chip Thickness (h_m)

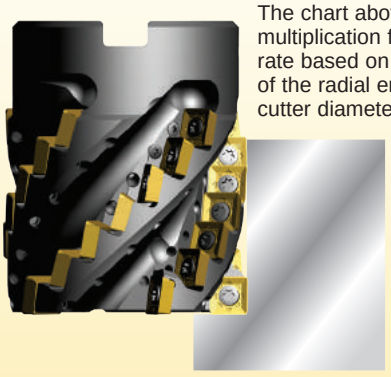
$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

h_m Correction Coefficient Chart

Cutter Ø 2.000"			Cutter Ø 2.500"			Cutter Ø 3.000"			Cutter Ø 4.000"		
a_e%	a_e (Inch)	Coefficient Factor	a_e%	a_e (Inch)	Coefficient Factor	a_e%	a_e (Inch)	Coefficient Factor	a_e%	a_e (Inch)	Coefficient Factor
5	0.100	2.294	**5**	0.125	2.329	5	0.150	2.294	**5**	0.200	2.294
10	0.200	1.667	**10**	0.250	1.667	**10**	0.300	1.667	**10**	0.400	1.667
15	0.300	1.400	**15**	0.375	1.425	**15**	0.450	1.407	**15**	0.600	1.407
20	0.400	1.250	**20**	0.500	1.250	**20**	0.600	1.250	**20**	0.800	1.250
25	0.500	1.155	**25**	0.625	1.160	**25**	0.750	1.155	**25**	1.000	1.155
35	0.700	1.048	**35**	0.875	1.056	**35**	1.050	1.048	**35**	1.400	1.056
50 - 100	1.000 - 2.000	1.000	**50 - 100**	1.250 - 2.500	1.000	**50 - 100**	1.500 - 3.000	1.000	**50 - 100**	2.000 - 4.000	1.000

Example: A 3.000" diameter cutter using a 0.300" radial engagement (a_e) = 10% of the cutter diameter.

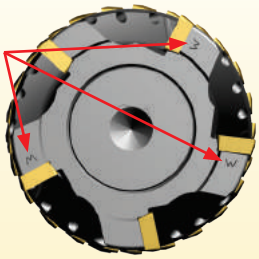
At 10%, your coefficient is 1.667 (see above table); therefore you must multiply your feed rate by 1.667 for correcting the feed for profiling.



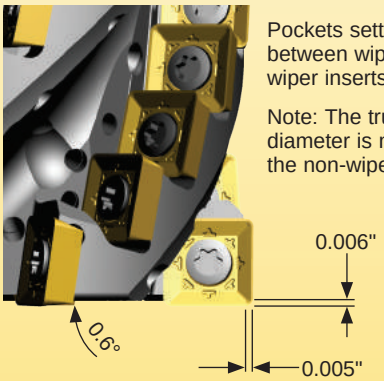
The chart above shows the multiplication factor for the feed rate based on the percentage of the radial engagement of the cutter diameter.



Wiper pockets are identified with a **W** engraved on the face of the body.

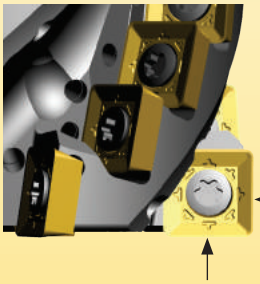


The 5230VS cutter series is designed with wiper pockets which provide a much better face surface finish. The non-wiper pockets generate the 90° corner. The same inserts can be utilized in all pockets.



Pockets setting difference between wiper and non-wiper inserts.

Note: The true cutter diameter is measured at the non-wiper pockets.



Non wiper pocket positions are set back & square to axis to give a true 90 degree approach.

Wiper pocket positions are in front and angled to allow facing.

Cutter Diameter (inch)	No. of Wiper Inserts
2.000	2
2.500	2
3.000	3
4.000	3

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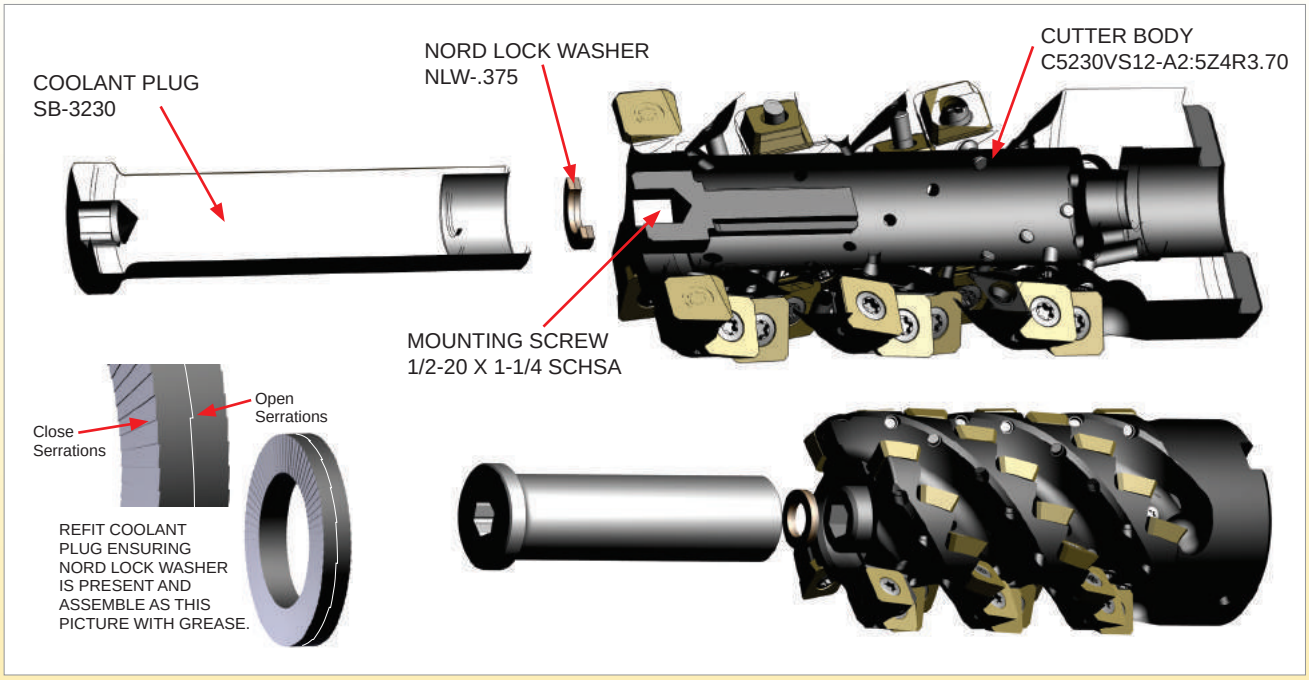
5230VS09 and VS12 Fitting Instructions for Shell Mill Cutters

NOTE: All Shell Mill 5230VS09 and VS12 Chevron Porcupine Cutters are supplied assembled with mounting bolt, nord lock washer and steel coolant plug.

Please follow the instructions below to disassemble the cutter, attach the cutter to a shell mill adapter and reassemble coolant plug. It is very important to use the proper torque when reassembling the cutter with the mounting bolt, nord lock washer and coolant plug.



Example of cutter: C5230VS12-A2.5Z4R3.70 assembly



1. Remove coolant plug. *(Note: Ensure the nord lock washer is retained to the bottom of the coolant plug.)*
2. Fit the cutter body to the shell mill adapter and secure using the mounting bolt supplied with the cutter.
   Note: The mounting bolt must be properly torqued to the specified torque setting shown in the chart (page A176) in Detail 1.
3. Refit coolant plug ensuring nord lock washer is present and in the proper location on the bottom of the coolant plug.
   A small amount of grease can be used to hold the nord lock washer in place.
4. Tighten coolant plug with specified torque setting shown in the chart (page A176) in Detail 2.
5. Note: If axial depth of cut (a_p) is less then maximum a_p of the cutter, then F3006T coolant control screws supplied seperately can be used to block coolant holes forcing more coolant to the front of the cutter. If these screws are used, please secure with loctite or similar product.

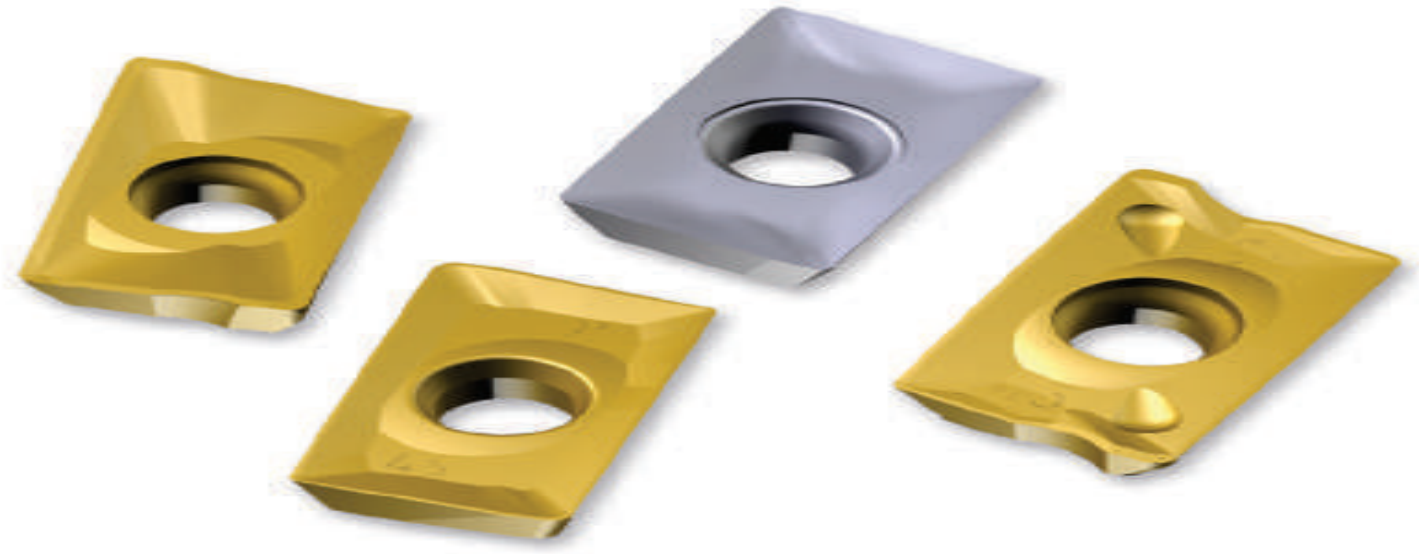
Torque values for mounting bolts
Excessive condition is when long reach extensions are required or when cutting parameters are elevated to extreme parameters.

5230VS09	Detail 1			Detail 2	
Cutter	Mounting Bolt Description	**Torque Values in FT Lbs. for Mounting Bolt		Coolant Plug Description	Coolant Plug tightening Ft lbs.
		Normal Condition	Excessive Condition		
C5230VS09-A2.0Z4R2.0	1/2-20 x 1-1/4 SHCSA	59	74	SB-3413	25
C5230VS09-A2.0Z4R3.1				SB-3621	

5230VS12	Detail 1			Detail 2	
Cutter	Mounting Bolt Description	**Torque Values in FT Lbs. for Mounting Bolt		Coolant Plug Description	Coolant Plug tightening Ft lbs.
		Normal Condition	Excessive Condition		
C5230VS12-A2.5Z4R2.24	1/2-20 x 1-1/4 SHCSA	59	74	SB-3229	25
C5230VS12-A2.5Z4R3.70				SB-3230	
C5230VS12-A3.0Z5R2.56	5/8-18 x 1-1/2 SHCSA	81.1	110.6	SB-3231	45
C5230VS12-A3.0Z5R4.33				SB-3232	
C5230VS12-A4.0Z6R3.00	3/4-16 x 1-3/4 SHCSA	88.5	132.76	SB-3233	45
C5230VS12-A4.0Z6R5.23				SB-3234	

Mounting Bolt Hex Keys

M12 = Hex Key Size 10
M16 = Hex Key Size 14
M20 = Hex Key Size 17



STELLRAM



LONG EDGE MILLING CUTTER

The **5315VA** family is the long edge cutter version of our versatile 7690VA shoulder milling series.

This 5315VA series offers full effective flutes with right-hand helix angle for high feed rates.

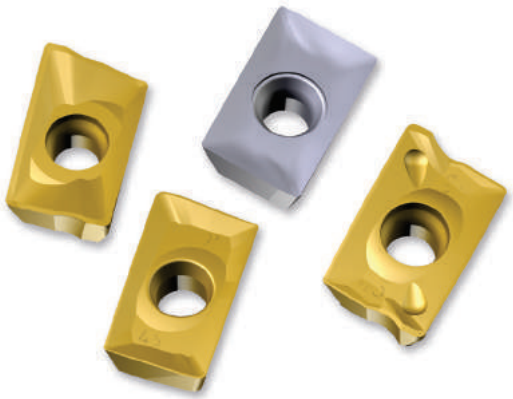
This cutter is ideal for side milling and slotting applications.

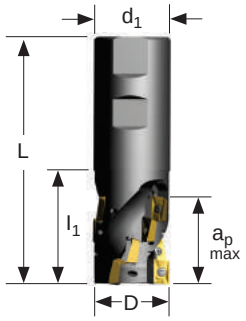
The main characteristic of this cutter family is it's lower cutting force due to the high helix design.

The 5315VA series are designed for roughing and semi-finishing applications on Steel, Alloyed Steel, Stainless Steel, High Temperature Alloys, Cast Iron, and Aluminum Alloys.

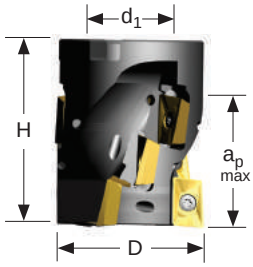
5315VA

5315VA12:
Maximum a_p = 0.900" to 1.770"
Diameter Range = 1.000" to 1.500"





Weldon Shank



Shell Mill Fixation

Product		Dimensions (inch)								Spares				
EDP	**Item Description**	D	L/H	l_1	d_1	ap max	a_{p1} max Slotting*	No. of flutes	No. of inserts	*EDP*		*EDP*		Screw Tightening in. lbs.
5315VA12 Weldon Shank														
029349	**C5315VA12WA1.00R0.9**	1.000	3.850	1.570	1.000	0.900	0.591	2	4	*027860*	F3007T	*022157*	T8	12.40
029350	**C5315VA12WA1.00R1.37**	1.000	4.280	2.000	1.000	1.370	-	2	6	*027860*	F3007T	*022157*	T8	12.40
029351	**C5315VA12WA1.25R1.37**	1.250	4.280	2.000	1.250	1.370	0.787	3	9	*027860*	F3007T	*022157*	T8	12.40
029352	**C5315VA12WA1.50R1.77**	1.500	5.040	2.350	1.500	1.770	0.787	3	12	*027860*	F3007T	*022157*	T8	12.40
5315VA12 Shell Mill Fixation														
029353	**C5315VA12-A1.50R1.33**	1.500	2.000	-	0.500	1.330	0.787	3	9	*027860*	F3007T	*022157*	T8	12.40

* Note: Please do not surpass the recommended max. a_p for slotting.

Note: Please note that a maximum of 0.031" insert radius is allowed on the 5315VA12 range of cutters.
Larger radii inserts can be used on the leading pocket only if the body is modified by the end user.

5315VA12 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
029349	**C5315VA12WA1.00R0.9**	1.000	-	-	-	-	36,100
029350	**C5315VA12WA1.00R1.37**	1.000	-	-	-	-	36,100
029351	**C5315VA12WA1.25R1.37**	1.250	-	-	-	-	30,400
029352	**C5315VA12WA1.50R1.77**	1.500	-	-	-	-	26,400
029353	**C5315VA12-A1.50R1.33**	1.500	-	-	-	-	26,400



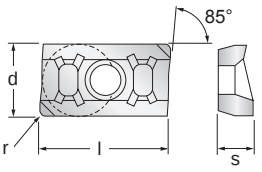
STELLRAM


ADGT12-721


ADET12-48


ADHT12-46


ADKT12-45





Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max* or a_e max.*	a_p max. and a_e max. 15% D**	a_p min. - max.					
029098	ADGT12T3PDFR-721	GH1	◆	◆	-	0.309	0.500	0.156	Facet	0.002
030856	ADET12T308ER-48	X500	◆	◆	-	0.309	0.500	0.156	0.031	0.002
030857	ADET12T308ER-48	SP6519	○ ■	● ○ ■	-	0.309	0.500	0.156	0.031	0.002
030807	ADET12T3PDER-48	X500	◆	◆	-	0.309	0.500	0.156	Facet	0.002
030770	ADET12T3PDER-48	SP6519	○ ■	● ○ ■	-	0.309	0.500	0.156	Facet	0.002
029329	ADHT12T308ER-46	X500	■ ◆ ●	-	-	0.309	0.500	0.156	0.031	0.002
030406	ADHT12T308ER-46	X700	-	◆ ●	-	0.309	0.500	0.156	0.031	0.002
031526	ADHT12T308ER-46	SP6519	◆ □	■ □	-	0.309	0.500	0.156	0.031	0.002
029327	ADHT12T3PDER-46	X500	■ ◆ ●	-	-	0.309	0.500	0.156	Facet	0.002
031525	ADHT12T3PDER-46	SP6519	◆ □	■ □	-	0.309	0.500	0.156	Facet	0.002
027913	ADKT12T3PDER-45	X500	● ■ ●	● ●	-	0.309	0.500	0.156	Facet	0.003
031514	ADKT12T3PDER-45	SP6519	◆ ◆ ■	◆ ◆ ■	-	0.309	0.500	0.156	Facet	0.003
027915	ADKT12T3PDER-45	MP91M	■ ● ●	■ ■ ●	-	0.309	0.500	0.156	Facet	0.003
027916	ADKT12T3PDER-45	SC3025	◆	◆	-	0.309	0.500	0.156	Facet	0.003

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

* Note: Please do not surpass the recommended max. a_p for slotting as shown on the steel body page A178.

* Note: Please respect the following rule for profiling with a_p max:

for Weldon shank cutter Diameter 1.000”	a_e < 25% D
for Weldon shank cutter Diameter 1.250”	a_e < 35% D
for Weldon shank cutter Diameter 1.500”	a_e < 40% D
for Shell mill cutter Diameter 1.500”	a_e < 75% D

** Note: For semi finishing, axial engagement $\mathbf{a_p}$ for slotting and radial engagement $\mathbf{a_e}$ for profiling should be max. 15% of the Diameter.

Note: Feed recommendations can be found on page A180. Speed recommendations can be found on page A181.

5315VA12 Feeds f_z (inch/flute)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
FR-721	GH1	Shoulder / Profiling	-	-	-	-	-	-	-	0.002 - 0.008	0.002 - 0.007	-	-	-	-	-	-
		Slotting	-	-	-	-	-	-	-	0.002 - 0.006	0.002 - 0.006	-	-	-	-	-	-
ER-48	X500	Shoulder / Profiling	-	-	-	-	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.006	-	-
		Slotting	-	-	-	-	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.005	-	-
ER-48	SP6519	Shoulder / Profiling	-	-	0.002 - 0.006	0.002 - 0.005	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.006	-	-
		Slotting	-	-	0.002 - 0.006	0.002 - 0.004	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.005	-	-
ER-46	X500	Shoulder / Profiling	-	-	0.002 - 0.006	0.002 - 0.006	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.006	-	-
		Slotting	-	-	0.002 - 0.005	0.002 - 0.004	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.005	-	-
ER-46	X700	Shoulder / Profiling	-	-	0.002 - 0.006	0.002 - 0.005	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.006	-	-
		Slotting	-	-	0.002 - 0.004	0.002 - 0.004	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.005	-	-
ER-46	SP6519	Shoulder / Profiling	-	-	0.002 - 0.006	0.002 - 0.005	-	-	-	-	-	-	-	-	-	-	-
		Slotting	-	-	0.002 - 0.005	0.002 - 0.004	-	-	-	-	-	-	-	-	-	-	-
ER-45	X500	Shoulder / Profiling	0.003 - 0.007	0.003 - 0.006	0.003 - 0.006	-	-	-	-	-	-	-	-	-	-	-	-
		Slotting	0.003 - 0.006	0.003 - 0.005	0.003 - 0.006	-	-	-	-	-	-	-	-	-	-	-	-
ER-45	SP6519	Shoulder / Profiling	0.003 - 0.007	0.003 - 0.006	-	-	0.003 - 0.007	0.003 - 0.006	0.003 - 0.006	-	-	-	-	-	-	-	-
		Slotting	0.003 - 0.006	0.003 - 0.005	-	-	0.003 - 0.006	0.003 - 0.005	0.003 - 0.004	-	-	-	-	-	-	-	-
ER-45	MP91M	Shoulder / Profiling	0.003 - 0.006	0.003 - 0.006	-	-	0.003 - 0.007	0.003 - 0.006	0.003 - 0.006	-	-	-	-	-	-	-	-
		Slotting	0.003 - 0.005	0.003 - 0.004	-	-	0.003 - 0.006	0.003 - 0.005	0.003 - 0.004	-	-	-	-	-	-	-	-
ER-45	SC3025	Shoulder / Profiling	-	-	-	-	0.003 - 0.007	0.003 - 0.006	0.003 - 0.006	-	-	-	-	-	-	-	-
		Slotting	-	-	-	-	0.003 - 0.006	0.003 - 0.005	0.003 - 0.004	-	-	-	-	-	-		

Note: HTA = High Temperature Alloys

Speed recommendations can be found on page A181.

Speed v_c (SFM)

5315VA Series

Wear Resistance: – ⟵ +

Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

ISO	Materials	Rm and Hardness	CVD X Grade		PVD X Grade		PVD Standard		CVD Standard		CVD Standard		Uncoated Micrograin
			X500		X700		SP6519		MP91M		SC3025		GH1
P	Unalloyed Steel	<600 N/mm² <180 HBN	425 - 885				425 - 970		460 - 1130				
		<950 N/mm² <280 HBN	375 - 785				375 - 855		395 - 1000				
	Alloyed Steel	700-950 N/mm² 200-280 HBN	330 - 690				330 - 755		345 - 885				
		950-1200 N/mm² 280-355 HBN	245 - 525				245 - 575		260 - 675				
		1200-1400 N/mm² 355-415 HBN	165 - 330				165 - 360		165 - 425				
M	Stainless Steel	Austenitic + Ferritic 300 series	375 - 820		375 - 855		375 - 885						
		Martensitic 400 series	330 - 720		345 - 755		345 - 770						
	PH Stainless	Refractory P.H.	165 - 360		165 - 375		165 - 395						
K	Cast Iron	Grey GG-Ft					460 - 970		475 - 1200		445 - 950		
		Spheroidal-Ductile GGG-FGS					360 - 785		375 - 935		395 - 805		
		Malleable GTS - MN/MP					330 - 720		345 - 855		375 - 655		
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN											1310 - 10005
		Aluminum + Silicon > 16% Si 92 HBN											970 - 8005
S	High Temperature Alloys	Iron Based	75 - 160		75 - 170		75 - 180						
		Cobalt Based	70 - 145		70 - 150		70 - 160						
		Nickel Based	80 - 170		80 - 175		80 - 180						
		Titanium Based	115 - 240		120 - 250		120 - 260						
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN											
		Chilled Cast Iron >1400 N/mm² > 400 HBN											

STELLRAM

Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of dia.

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

Multiplication factor for the feed rate based on the percentage of radial engagement of the cutter diameter

Cutter Ø 1.000"			Cutter Ø 1.250"			Cutter Ø 1.500"		
a_e %	a_e Inch	F1	a_e %	a_e Inch	F1	a_e %	a_e Inch	F1
5	0.050	2.300	5	0.060	2.339	5	0.075	2.339
10	0.100	1.667	10	0.125	1.667	10	0.150	1.667
15	0.150	1.400	15	0.187	1.452	15	0.236	1.400
20	0.200	1.250	20	0.250	1.250	20	0.315	1.250
25	0.250	1.160	25	0.312	1.162	25	0.393	1.160
35	0.350	1.048	35	0.438	1.047	35	0.552	1.041
50 - 100	0.500 - 1.000	1.000	50 - 100	0.625- 1.250	1.000	50 - 100	0.750 - 1.500	1.000

Example: A 1.500" diameter cutter using a 0.150" radial engagement (a_e) = 10% of the cutter diameter.
At 10%, your coefficient is 1.667 (see chart); therefore you must multiply your feed rate by 1.667 for correcting the feed for profiling.



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Copy / 3D
Contour Milling

BALL NOSE CONTOUR MILLING CUTTER

The **5505VX**. Ball Nose Cutters have a reinforced design feature, which delivers a high volume of chip removal.

The chip breaker geometry provides excellent chip control and evacuation during machining and prevents edge build up.

5505VX Roughing Ball Nose Cutters are ideal for roughing and semi-finishing of profiles and complex contours.

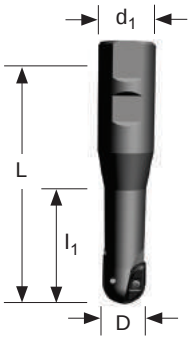
One grade and one geometry are qualified to machine Steel, Alloyed Steel, Stainless Steel, High Temperature Alloys and Cast Iron.

5505VX

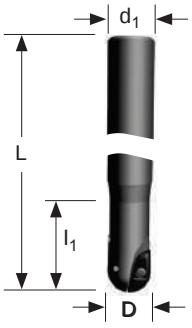
5505VX:
Diameter Range = 0.625" to 2.000"



STELLRAM



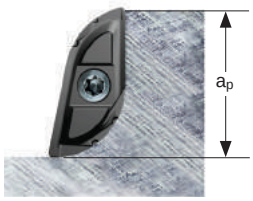
Weldon Shank



Cylindrical Shank



Modular Head



Depth of Cut (a_p)

Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D	L/H	l_1	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
5505VX Weldon Shank												
030823	**C5505VX06WA.750R2.00**	0.750	4.282	2.000	1.000	0.750	2	*030672*	FP3007T	*031451*	TP8	16.00
030824	**C5505VX08WA1.00R2.37**	1.000	4.650	2.370	1.000	1.000	2	*015262*	D4010T	*015240*	T15	27.40
030825	**C5505VX08WA1.00R3.55**	1.000	5.830	3.550	1.000	1.000	2	*015262*	D4010T	*015240*	T15	27.40
030826	**C5505VX10WA1.25R3.00**	1.250	5.250	3.000	1.250	1.250	2	*015266*	D5013T	*015241*	T20	53.10
030827	**C5505VX10WA1.25R4.00**	1.250	6.280	4.000	1.250	1.250	2	*015266*	D5013T	*015241*	T20	53.10
030828	**C5505VX12WA1.50R4.00**	1.500	6.687	4.000	1.500	1.500	2	*029640*	D6014T	*015241*	T20	93.00
030829	**C5505VX12WA1.50R6.00**	1.500	8.687	6.000	1.500	1.500	2	*029640*	D6014T	*015241*	T20	93.00
030830	**C5505VX16WA2.00R4.00**	2.000	6.687	4.000	1.500	2.000	2	*029641*	F8017S	*018288*	KH5005	216.00
030831	**C5505VX16WA2.00R6.00**	2.000	9.250	6.000	2.000	2.000	2	*029641*	F8017S	*018288*	KH5005	216.00
5505VX Cylindrical Shank												
031088	**C5505VX05CA.62R1.6**	0.625	5.500	1.575	0.625	0.625	2	*031448*	FP3006T	*031451*	TP8	16.00
030988	**C5505VX05CA.75/.62R1**	0.625	7.000	1.181	0.750	0.625	2	*031448*	FP3006T	*031451*	TP8	16.00
030989	**C5505VX06CA.75R1.7**	0.750	5.000	2.000	0.750	0.750	2	*030672*	FP3007T	*031451*	TP8	16.00
030990	**C5505VX06CA1/.75R1.5**	0.750	8.000	1.574	1.000	0.750	2	*030672*	FP3007T	*031451*	TP8	16.00
030991	**C5505VX08CA1.00R2.2**	1.000	10.000	2.165	1.000	1.000	2	*015262*	D4010T	*015240*	T15	27.40
030992	**C5505VX10CA1.25R2.2**	1.250	10.000	2.165	1.250	1.250	2	*015266*	D5013T	*015241*	T20	53.10

Product		Dimensions (inch)						Spares				
EDP	**Item Description**	D	L/H	M	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
5505VX Modular Head												
030833	**A5505VX05SA.625R1.00**	0.625	1.000	M8	0.335	0.625	2	*031448*	FP3006T	*031451*	TP8	16.00
030834	**A5505VX06SA.750R1.377**	0.750	1.377	M10	0.413	0.750	2	*030672*	FP3007T	*031451*	TP8	16.00
030835	**A5505VX08SA1.00R1.575**	1.000	1.575	M12	0.492	1.000	2	*015262*	D4010T	*015240*	T15	27.40
030836	**A5505VX10SA1.25R1.968**	1.250	1.986	M16	0.669	1.250	2	*015266*	D5013T	*015241*	T20	53.10

Note: For cylindrical shank extensions in high density alloy with through coolant refer to page A78.

Note: Do not remove the radial screw; this is a fixed location for the insert see page A188.

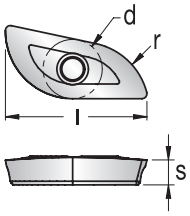
5505VX Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
030823	**C5505VX06WA.750R2.00**	-	85	-	-	-	37,250
030824	**C5505VX08WA1.00R2.37**	-	85	-	-	-	30,250
030825	**C5505VX08WA1.00R3.55**	-	85	-	-	-	30,250
030826	**C5505VX10WA1.25R3.00**	-	85	-	-	-	23,500
030827	**C5505VX10WA1.25R4.00**	-	85	-	-	-	23,500
030828	**C5505VX12WA1.50R4.00**	-	85	-	-	-	19,000
030829	**C5505VX12WA1.50R6.00**	-	85	-	-	-	19,000
030830	**C5505VX16WA2.00R4.00**	-	85	-	-	-	16,750
030831	**C5505VX16WA2.00R6.00**	-	85	-	-	-	16,750
031088	**C5505VX05CA.62R1.6**	-	85	-	-	-	54,250
030988	**C5505VX05CA.75/.62R1**	-	85	-	-	-	54,250
030989	**C5505VX06CA.75R1.7**	-	85	-	-	-	37,250
030990	**C5505VX06CA1/.75R1.5**		85				37,250
030991	**C5505VX08CA1.00R2.2**	-	85	-	-	-	30,250
030992	**C5505VX10CA1.25R2.2**	-	85	-	-	-	23,500
030833	**A5505VX05SA.625R1.00**	-	85	-	-	-	54,250
030834	**A5505VX06SA.750R1.377**	-	85	-	-	-	37,250
030835	**A5505VX08SA1.00R1.575**	-	85	-	-	-	30,250
030836	**A5505VX10SA1.25R1.968**	-	85	-	-	-	23,500


Ramping



XPNT-F



Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
			Depth of Cut (inch)							
EDP	Item Description	Grade	a_p max.*	a_e / a_p max. 10% of the cutter diameter	a_e / a_p max. -	d (IC)	l	s	r	h_m min
030737	**XPNT05/0522.R-F**	**SP6519**	◆ ■ ●	◆ ■ ●	-	0.291	0.685	0.125	0.312	0.002
030740	**XPNT06/062.51.5.R-F**	**SP6519**	◆ ■ ●	◆ ■ ●	-	0.336	0.783	0.156	0.375	0.002
030746	**XPNT08/0832.R-F**	**SP6519**	◆ ■ ●	◆ ■ ●	-	0.433	1.023	0.187	0.500	0.002
030749	**XPNT10/1043.R-F**	**SP6519**	◆ ■ ●	◆ ■ ●	-	0.555	1.315	0.249	0.625	0.002
030752	**XPNT12/1254.R-F**	**SP6519**	◆ ■ ●	◆ ■ ●	-	0.669	1.575	0.312	0.750	0.002
030758	**XPNT16/1654.R-F**	**SP6519**	◆ ■ ●	◆ ■ ●	-	0.875	2.081	0.336	1.000	0.002



Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

* Note: a_p max. is dependent on several insert sizes, see steel cutter pages A184 for a_p max.

5505VX Feeds f_z (inch/tooth)

Tool Diameter	Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
				Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.625	R-F	SP6519	Contouring	0.002 - 0.006	0.002 - 0.005	0.002 - 0.004	0.002 - 0.004	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	-	-
0.750	R-F	SP6519	Contouring	0.002 - 0.007	0.002 - 0.006	0.002 - 0.006	0.002 - 0.005	0.002 - 0.007	0.002 - 0.007	0.002 - 0.007	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	-	-
1.000	R-F	SP6519	Contouring	0.002 - 0.008	0.002 - 0.007	0.002 - 0.006	0.002 - 0.006	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	-	-	0.002 - 0.005	0.002 - 0.005	0.002 - 0.005	0.002 - 0.005	-	-
1.250	R-F	SP6519	Contouring	0.002 - 0.009	0.002 - 0.008	0.002 - 0.007	0.002 - 0.007	0.002 - 0.009	0.002 - 0.009	0.002 - 0.009	-	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	0.002 - 0.007	-	-
1.500	R-F	SP6519	Contouring	0.002 - 0.010	0.002 - 0.009	0.002 - 0.009	0.002 - 0.008	0.002 - 0.010	0.002 - 0.010	0.002 - 0.010	-	-	0.002 - 0.007	0.002 - 0.007	0.002 - 0.007	0.002 - 0.009	-	-
2.000	R-F	SP6519	Contouring	0.002 - 0.011	0.002 - 0.010	0.002 - 0.009	0.002 - 0.009	0.002 - 0.011	0.002 - 0.011	0.002 - 0.011	-	-	0.040 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.009	-	-

Note: HTA = High Temperature Alloys

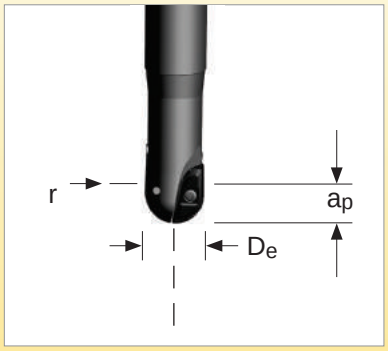
Speed recommendations can be found on page A187.

Speed v_c (SFM)

5505VX Series					
					Speed min. - max..
Coolant Recommendation Recommended ● Possible ⦿					PVD Standard
ISO	Materials	Rm and Hardness	💧	🚫	SP6519
P	Unalloyed Steel	<600 N/mm² <180 HBN	⦿	●	425 - 970
		<950 N/mm² <280 HBN			375 - 855
	Alloyed Steel	700-950 N/mm² 200-280 HBN	⦿	●	330 - 755
		950-1200 N/mm² 280-355 HBN			245 - 575
		1200-1400 N/mm² 355-415 HBN		●	165 - 360
M	Stainless Steel	Austenitic + Ferritic 300 series	⦿	●	375 - 885
		Martensitic 400 series			345 - 770
	PH Stainless	Refractory P.H.	●		165 - 395
K	Cast Iron	Grey GG-Ft	⦿	●	460 - 970
		Spheroidal-Ductile GGG-FGS			360 - 785
		Malleable GTS - MN/MP			330 - 720
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN			
		Aluminum + Silicon > 16% Si 92 HBN			
S	High Temperature Alloys	Iron Based	●		75 - 180
		Cobalt Based			70 - 160
		Nickel Based			80 - 180
		Titanium Based			120 - 260
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN			
		Chilled Cast Iron >1400 N/mm² > 400 HBN			

STELLRAM

5505VX Technical Information



Working Diameter:

$$D_e = 2 \times \sqrt{r^2 - (r - a_p)^2}$$

where:

D_e = Working Diameter
r = Cutter radius
a_p = Axial Depth of Cut



5505VX Technical Information

where:

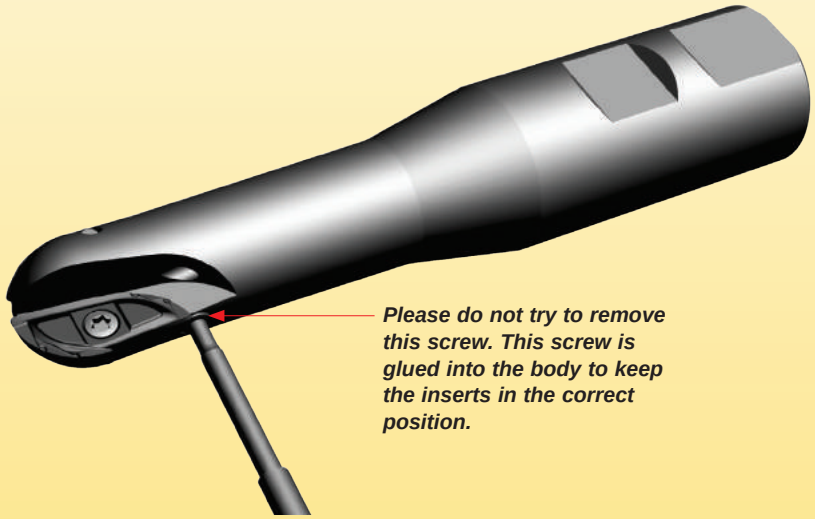
f_z = Feed per tooth
h_m = Average chip thickness
r = Insert radius
a_e = Radial Depth of Cut
a_p = Axial Depth of Cut

Average chip thickness: h_m

$$h_m = f_z \times \frac{\sqrt{r^2 - (r - a_e)^2}}{r} \times \frac{\sqrt{r^2 - (r - a_p)^2}}{r}$$

To find programmed feedrate: f_z

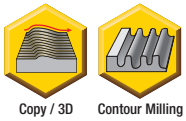
$$f_z = \frac{h_m}{\frac{\sqrt{r^2 - (r - a_e)^2}}{r} \times \frac{\sqrt{r^2 - (r - a_p)^2}}{r}}$$



Please do not try to remove this screw. This screw is glued into the body to keep the inserts in the correct position.



STELLRAM



BALL NOSE FINISHING CONTOUR MILLING CUTTERS

5500V cutters are for profiling and finishing operations. A centrally located screw and vee-shaped insert base provide a very precise position in the tool body.

This precise insert position gives a max. run out of less than 0.0008".

This cutter is ideal for contour and copy milling.

This specific insert geometry design allows shoulder finishing applications up to 90°.

One grade for all applications. Grade SP1019 is a micrograin carbide substrate with a new generation TiAlN coating that makes this new PVD grade virtually free of residual stress and extremely hard for unmatched performance. Ideal for finishing ball nose applications at higher surface speeds, or for greater wear resistance .

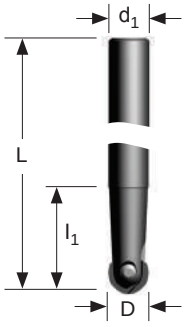
Qualified for a wide range of materials: Steels, Tool Steels, Stainless Steels, Cast Iron and High Temperature Alloys.

5500V

5000V:
Diameter Range = 0.375" to 1.000"



STELLRAM

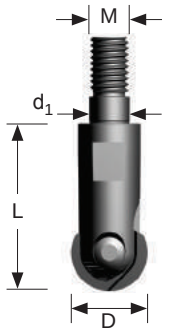


Cylindrical Shank

Product		Dimensions (inch)					Spares				
EDP	**Item Description**	D	L/H	l_1	d_1	No. of Inserts*	*EDP*		*EDP*		Screw Tightening in. lbs.
5500V Cylindrical Shank											
014858	**C5500V.375CR**	0.375	6.000	1.000	0.500	1	*015250*	55.672	*018488*	T7	7.08
014293	**C5500V.500CR**	0.500	7.000	1.180	0.500	1	*015251*	55.674	*013215*	T10	18.60
023817	**C5500V.625CR**	0.625	8.000	1.575	0.625	1	*022150*	55.675	*015240*	T15	27.40
014294	**C5500V.750CR**	0.750	8.000	1.969	0.750	1	*015252*	55.676	*015241*	T20	53.10
014295	**C5500V1.00CR**	1.000	8.000	1.969	1.000	1	*015253*	55.677	*015241*	T20	53.10

NOTE: All the above cutter bodies can also use the metric size inserts found on page A194.

* Denotes: 5500V cutter bodies take one insert with a full ball nose insert designed with two cutting edges. When programming feed rates use two cutting edges and not one.



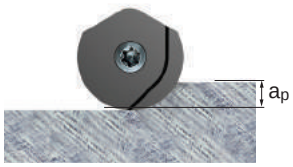
Modular Head

Product		Dimensions (inch)					Spares				
EDP	**Item Description**	D	L/H	M	d_1	No. of Inserts*	*EDP*		*EDP*		Screw Tightening in. lbs.
5500V Modular Head											
029129	**A5500V.375SR1.00**	0.375	1.000	M8	0.335	1	*015250*	55.672	*018488*	T7	7.08
029130	**A5500V.500SR1.377**	0.500	1.377	M8	0.335	1	*015251*	55.674	*013215*	T10	18.60
029131	**A5500V.625SR1.377**	0.625	1.377	M8	0.335	1	*022150*	55.675	*015240*	T15	27.40
029132	**A5500V.750SR1.377**	0.750	1.377	M10	0.413	1	*015252*	55.676	*015241*	T20	53.10
029133	**A5500V1.00SR1.693**	1.000	1.693	M12	0,492	1	*015253*	55.677	*015241*	T20	53.10

Note: For cylindrical shank extensions in high density alloy with through coolant refer to page A78.
5500V modular heads do not have through coolant capability.

NOTE: All the above cutter bodies can also use the metric size inserts found on page A194.

* Denotes: 5500V cutter bodies take one insert with a full ball nose insert designed with two cutting edges. When programming feed rates use two cutting edges and not one.



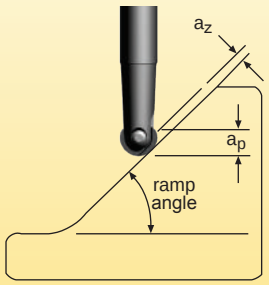
Depth of Cut (a_p)

5500V Technical Information

Product		Angles ° / Dimensions (inch)												
EDP	Item Description	Ramping Data												Max RPM
		15°		30°		45°		60°		75°		85°		
		a_z max	a_p max	a_z max	a_p max	a_z max	a_p max	a_z max	a_p max	a_z max	a_p max	a_z max	a_p max	
014858	**C5500V.375CR**	0.140	0.181	0.094	0.162	0.055	0.133	0.025	0.094	0.006	0.049	0.004	0.016	63,500
014293	**C5500V.500CR**	0.185	0.250	0.125	0.216	0.073	0.177	0.034	0.125	0.010	0.125	0.004	0.022	58,500
023817	**C5500V.625CR**	0.236	0.303	0.157	0.271	0.094	0.220	0.043	0.157	0.012	0.078	0.004	0.027	40,000
014294	**C5500V.750CR**	0.278	0.362	0.188	0.325	0.110	0.265	0.050	0.187	0.013	0.100	0.004	0.040	34,000
014295	**C5500V1.00CR**	0.375	0.490	0.250	0.440	0.146	0.354	0.067	0.250	0.017	0.130	0.004	0.050	22,000
029129	**A5500V.375SR1.00**	0.140	0.181	0.094	0.162	0.055	0.133	0.025	0.094	0.006	0.049	0.004	0.016	63,500
029130	**A5500V.500SR1.377**	0.185	0.250	0.125	0.216	0.073	0.177	0.034	0.125	0.010	0.125	0.004	0.022	58,500
029131	**A5500V.625SR1.377**	0.236	0.303	0.157	0.271	0.094	0.220	0.043	0.157	0.012	0.078	0.004	0.027	40,000
029132	**A5500V.750SR1.377**	0.278	0.362	0.188	0.325	0.110	0.265	0.050	0.187	0.013	0.100	0.004	0.040	34,000
029133	**A5500V1.00SR1.693**	0.375	0.490	0.250	0.440	0.146	0.354	0.067	0.250	0.017	0.130	0.004	0.050	22,000

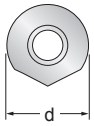


Ramping





RG_S





Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
					a_p / a_e min. - max. 0.004 - <0.040					
031490	**RG.375S**	**SP1019**	-	-	◆◆◆◆◆◆◆◆	0.375	-	0.078	0.188	0.0008
031491	**RG.500S**	**SP1019**	-	-	◆◆◆◆◆◆◆◆	0.500	-	0.098	0.250	0.0008
031492	**RG.625S**	**SP1019**	-	-	◆◆◆◆◆◆◆◆	0.625	-	0.118	0.312	0.0008
031493	**RG.750S**	**SP1019**	-	-	◆◆◆◆◆◆◆◆	0.750	-	0.138	0.375	0.0008
031494	**RG1.00S**	**SP1019**	-	-	◆◆◆◆◆◆◆◆	1.000	-	0.157	0.500	0.0008

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

INSERT APPLICATION NOTES:
Note: Insert Interchangeability allows Metric inserts to be used in Inch cutters and vice-versa. Except for the 8mm (RG08S) insert where there is not an Inch body available. Please see chart in technical section page A194.

Speed recommendations can be found on page A193.

5500V Feeds f_z (inch/tooth)

Insert Diameter	Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
				Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.375	S	SP1019	Contouring	0.001 - 0.004	0.001 - 0.004	0.001 - 0.003	0.001 - 0.003	0.001 - 0.004	0.001 - 0.004	0.001 - 0.004	0.001 - 0.004	0.001 - 0.004	0.001 - 0.003	0.001 - 0.003	0.001 - 0.003	0.001 - 0.003	0.001 - 0.003	0.001 - 0.003
0.500	S	SP1019	Contouring	0.001 - 0.004	0.001 - 0.004	0.001 - 0.004	0.001 - 0.004	0.001 - 0.005	0.001 - 0.005	0.001 - 0.005	0.001 - 0.005	0.001 - 0.005	0.001 - 0.004	0.001 - 0.004	0.001 - 0.004	0.001 - 0.004	0.001 - 0.004	0.001 - 0.003
0.625	S	SP1019	Contouring	0.001 - 0.006	0.001 - 0.006	0.001 - 0.006	0.001 - 0.005	0.001 - 0.006	0.001 - 0.006	0.001 - 0.006	0.001 - 0.007	0.001 - 0.006	0.001 - 0.005	0.001 - 0.005	0.001 - 0.005	0.001 - 0.006	0.001 - 0.005	0.001 - 0.005
0.750	S	SP1019	Contouring	0.001 - 0.008	0.001 - 0.008	0.001 - 0.007	0.001 - 0.007	0.001 - 0.008	0.001 - 0.008	0.001 - 0.008	0.001 - 0.008	0.001 - 0.008	0.001 - 0.007	0.001 - 0.007	0.001 - 0.007	0.001 - 0.007	0.001 - 0.007	0.001 - 0.007
1.000	S	SP1019	Contouring	0.001 - 0.010	0.001 - 0.010	0.001 - 0.009	0.001 - 0.009	0.001 - 0.010	0.001 - 0.010	0.001 - 0.010	0.001 - 0.010	0.001 - 0.009	0.001 - 0.009	0.001 - 0.009	0.001 - 0.009	0.001 - 0.009	0.001 - 0.008	0.001 - 0.008

Note: HTA = High Temperature Alloys

Speed v_c (SFM)

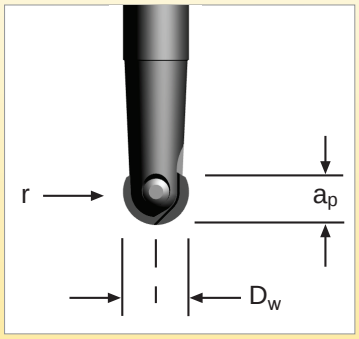
5500V Series			Speed min. - max.		
Coolant Recommendation Recommended ● Possible ⦿					PVD Micrograin
ISO	Materials	Rm and Hardness	💧	⊘	SP1019
P	Unalloyed Steel	<600 N/mm² <180 HBN		●	740 - 1245
		<950 N/mm² <280 HBN			655 - 1100
	Alloyed Steel	700-950 N/mm² 200-280 HBN		●	575 - 970
		950-1200 N/mm² 280-355 HBN			425 - 740
		1200-1400 N/mm² 355-415 HBN		●	280 - 475
M	Stainless Steel	Austenitic + Ferritic 300 series	⦿	●	655 - 1100
		Martensitic 400 series			590 - 1000
	PH Stainless	Refractory P.H.	●		280 - 475
K	Cast Iron	Grey GG-Ft	⦿	●	785 - 1310
		Spheroidal-Ductile GGG-FGS			605 - 1115
		Malleable GTS - MN/MP			560 - 935
N	Aluminium & Alloys	Aluminum & Alloys < 16% Si 116 HBN	●		1310 - 9005
		Aluminium + Silicon > 16% Si 92 HBN			970 - 7005
S	High Temperature Alloys	Iron Based	●		130 - 220
		Cobalt Based			120 - 205
		Nickel Based			140 - 235
		Titanium Based			200 - 340
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN		●	165 - 360
		Chilled Cast Iron >1400 N/mm² > 400 HBN			150 - 330

5500V Technical Information

Insert Interchangeability					
Inch			Metric		
EDP	Dia. (inch)	Description	*EDP*	Dia. (mm)	Description
N/A	N/A	N/A	*031484*	8,00	**RG08S**
031490	0.375	**RG.375S**	*031485*	10,00	**RG10S**
031491	0.500	**RG.500S**	*031486*	12,00	**RG12S**
031492	0.625	**RG.625S**	*031487*	16,00	**RG16S**
031493	0.750	**RG.750S**	*031488*	20,00	**RG20S**
031494	1.000	**RG1.00S**	*031489*	25,00	**RG25S**

INSERT APPLICATION NOTES:
Note: Insert Interchangeability allows Metric inserts to be used in Inch cutters and vice-versa.

Except for the 8mm (RG08S) insert where there is not an Inch body available.



Working Diameter:

$$D_w = 2 \times \sqrt{r^2 - (r - a_p)^2}$$

where: D_w = Working Diameter
r = Cutter radius
a_p = Axial Depth of Cut

5500V Technical Information

where:
f_z = Feed per tooth
h_m = Average chip thickness
r = Insert radius
a_e = Radial Depth of Cut
a_p = Axial Depth of Cut

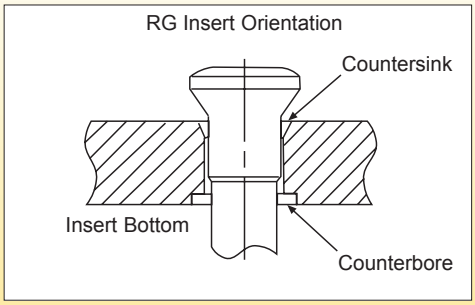
Average chip thickness: h_m

$$h_m = f_z \times \frac{\sqrt{r^2 - (r - a_e)^2}}{r} \times \frac{\sqrt{r^2 - (r - a_p)^2}}{r}$$

To find programmed feedrate: f_z

$$f_z = \frac{h_m}{\frac{\sqrt{r^2 - (r - a_e)^2}}{r} \times \frac{\sqrt{r^2 - (r - a_p)^2}}{r}}$$

Insert Assembly Information



Insert through hole has a countersink on one side and a counterbore on the other side. Assemble as shown to create proper pull back against the cutter pocket.



STELLRAM



ROUND INSERT MILLING CUTTERS WITHOUT INDEXATION

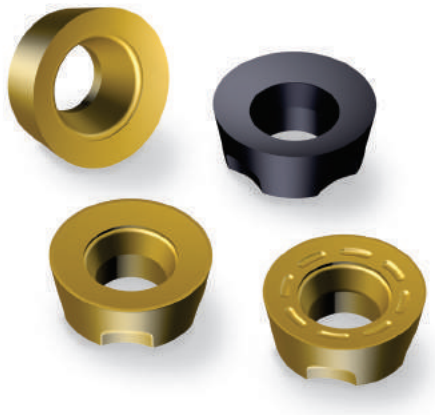
The **7700VR** series is mainly for medium roughing and semi-finishing with low axial depth of cut as well as for finishing of Steel, Tool Steel, Stainless Steel, High Temperature Alloys and Aluminum.

This cutter series is without an anti-rotation pocket, which allows a maximum number of insert indexing according to the axial depth of cut requirement. This is an advantage when the cutter is being used for semi-finishing and finishing.

7700VR

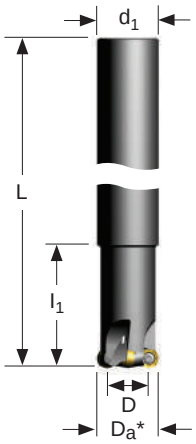
7700VR08:
Maximum a_p = 0.157"
Diameter Range = 0.625" to 1.250"

7700VR10:
Maximum a_p = 0.197"
Diameter Range = 1.000" to 1.250"



STELLRAM



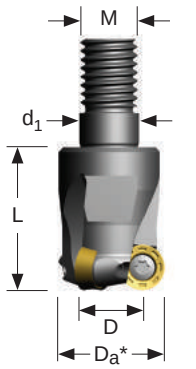


Cylindrical Shank

Product		Dimensions (inch)							Spares				
EDP	**Item Description**	D_a*	D	L	l_1	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7700VR08 Cylindrical Shank - Medium and Fine Pitch													
031138	**C7700VR08CA0.75Z3R1.5**	0.750	0.435	7.000	1.575	0.750	0.157	3	*015062*	F3006T	*013214*	T9	12.40
031139	**C7700VR08CA1.00Z3R1.9**	1.000	0.685	8.000	1.969	1.000	0.157	3	*015062*	F3006T	*013214*	T9	12.40
031140	**C7700VR08CA1.00Z4R1.9**	1.000	0.685	8.000	1.969	1.000	0.157	4	*015062*	F3006T	*013214*	T9	12.40
031141	**C7700VR08CA1.25Z4R2.7**	1.250	0.935	10.000	2.756	1.250	0.157	4	*015062*	F3006T	*013214*	T9	12.40
031142	**C7700VR08CA1.25Z5R2.7**	1.250	0.935	10.000	2.756	1.250	0.157	5	*015062*	F3006T	*013214*	T9	12.40

D = Effective Diameter (Axis) from insert centerline to centerline.

Da* = Outside Diameter



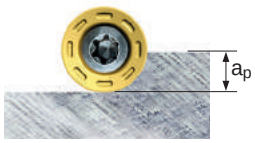
Modular Head

Product		Dimensions (inch)							Spares				
EDP	**Item Description**	D_a*	D	L	M	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7700VR08 Modular Head - Medium and Fine Pitch													
031128	**A7700VR08SA.625Z2R1.0**	0.625	0.310	1.000	M8	0.335	0.157	2	*015062*	F3006T	*013214*	T9	12.40
031129	**A7700VR08SA.750Z3R1.0**	0.750	0.435	1.000	M10	0.413	0.157	3	*015062*	F3006T	*013214*	T9	12.40
031130	**A7700VR08SA1.00Z3R1.4**	1.000	0.685	1.400	M12	0.492	0.157	3	*015062*	F3006T	*013214*	T9	12.40
031131	**A7700VR08SA1.00Z4R1.4**	1.000	0.685	1.400	M12	0.492	0.157	4	*015062*	F3006T	*013214*	T9	12.40
031132	**A7700VR08SA1.25Z5R1.4**	1.250	0.935	1.400	M16	0.669	0.157	5	*015062*	F3006T	*013214*	T9	12.40

D = Effective Diameter (Axis) from insert centerline to centerline.

Da* = Outside Diameter

Note: For Cylindrical Shank extensions in high density alloy with through coolant refer to page A78.

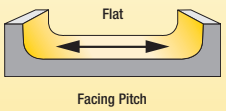


Depth of Cut (a_p)

7700VR08 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
031138	**C7700VR08CA0.75Z3R1.5**	0.435	7.20	0.949	1.421	0.100	84,000
031139	**C7700VR08CA1.00Z3R1.9**	0.685	7.85	1.449	1.921	0.100	67,000
031140	**C7700VR08CA1.00Z4R1.9**	0.685	7.85	1.449	1.921	0.100	67,000
031141	**C7700VR08CA1.25Z4R2.7**	0.935	7.40	1.949	2.421	0.100	57,000
031142	**C7700VR08CA1.25Z5R2.7**	0.935	7.40	1.949	2.421	0.100	57,000
031128	**A7700VR08SA.625Z2R1.0**	0.310	9.00	0.699	1.171	0.100	99,000
031129	**A7700VR08SA.750Z3R1.0**	0.435	13.00	0.949	1.421	0.100	84,000
031130	**A7700VR08SA1.00Z3R1.4**	0.685	7.85	1.449	1.921	0.100	67,000
031131	**A7700VR08SA1.00Z4R1.4**	0.685	7.85	1.449	1.921	0.100	67,000
031132	**A7700VR08SA1.25Z5R1.4**	0.935	7.20	1.949	2.421	0.100	57,000



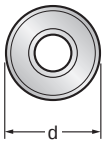


STELLRAM


RPEX08-701


RPMT08-41


RPHT08-422







Contour Mills

Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max -	a_p min - max 0.030 - 0.060	a_p min - max 0.004 - 0.030					
034544	RPEX0803M3F-701	SP4019	-	■	■■	0.315	-	0.125	0.157	0.001
023315	RPEX0803M3F-701	GH1	-	♦	♦	0.315	-	0.125	0.157	0.001
031312	RPEX0803M3E-701	X500	-	●	-	0.315	-	0.125	0.157	0.001
034543	RPEX0803M3E-701	SP6519	-	-	♦■●	0.315	-	0.125	0.157	0.001
015220	RPMT0803M3E-41	X500	-	●●	-	0.315	-	0.125	0.157	0.002
031473	RPMT0803M3E-41	SP6519	-	■■●	■■●●■	0.315	-	0.125	0.157	0.002
017308	RPMT0803M3E-41	MP91M	-	●♦	●♦	0.315	-	0.125	0.157	0.002
031186	RPHT0803M3E-422	X500	-	●■♦	●	0.315	-	0.125	0.157	0.002
031187	RPHT0803M3E-422	SP6519	-	♦♦♦■■■	♦■●●●	0.315	-	0.125	0.157	0.002

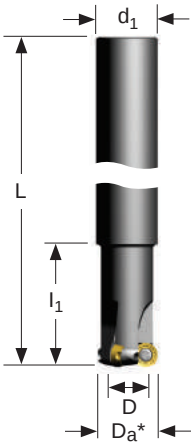
Machining Choice: ♦ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

7700VR08 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
F-701	SP4019	Contouring	-	-	-	-	-	-	-	0.001 - 0.003	0.001 - 0.002	0.001 - 0.002	0.001 - 0.002	0.001 - 0.003	0.001 - 0.004	-	-
F-701	GH1	Contouring	-	-	-	-	-	-	-	0.001 - 0.003	0.001 - 0.002	-	-	-	-	-	-
E-701	X500	Contouring	-	-	-	-	-	-	-	-	-	0.001 - 0.002	0.001 - 0.002	0.001 - 0.003	0.001 - 0.004	-	-
E-701	SP6519	Contouring	-	-	0.001 - 0.004	0.001 - 0.004	-	-	-	-	-	0.001 - 0.002	0.001 - 0.002	0.001 - 0.003	0.001 - 0.004	-	-
E-41	X500	Contouring	-	-	0.002 - 0.005	0.002 - 0.004	-	-	-	-	-	-	-	-	-	-	-
E-41	SP6519	Contouring	0.002 - 0.006	0.002 - 0.005	0.002 - 0.005	0.002 - 0.004	0.002 - 0.006	0.002 - 0.006	0.002 - 0.005	-	-	-	-	-	-	-	-
E-41	MP91M	Contouring	0.002 - 0.005	-	-	-	0.002 - 0.005	0.002 - 0.005	0.002 - 0.004	-	-	-	-	-	-	-	-
E-422	X500	Contouring	-	0.002 - 0.005	0.002 - 0.006	0.002 - 0.004	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	-	-
E-422	SP6519	Contouring	0.002 - 0.006	0.002 - 0.005	0.002 - 0.006	0.002 - 0.004	0.002 - 0.006	0.002 - 0.006	0.002 - 0.005	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	-	-

Note: HTA = High Temperature Alloys

Note: Speed recommendations can be found on page A200.

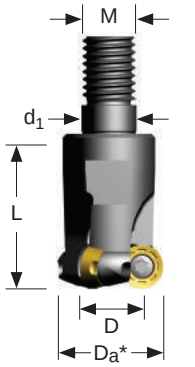


Cylindrical Shank

Product		Dimensions (inch)							Spares				
EDP	**Item Description**	D_a*	D	L	l_1	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7700VR10 Cylindrical Shank - Medium and Fine Pitch													
031207	**C7700VR10CA1.00Z3R2.0**	1.000	0.606	7.880	2.000	1.000	0.197	3	*031223*	D4007T	*015240*	T15	27.40
031208	**C7700VR10CA1.25Z3R2.7**	1.250	0.856	9.880	2.700	1.250	0.197	3	*015260*	D4008T	*015240*	T15	27.40
031209	**C7700VR10CA1.25Z4R2.7**	1.250	0.856	9.880	2.700	1.250	0.197	4	*015260*	D4008T	*015240*	T15	27.40

D = Effective Diameter (Axis) from insert centerline to centerline.

Da* = Outside Diameter



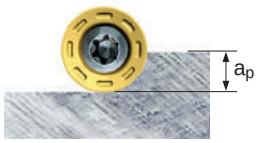
Modular Head

Product		Dimensions (inch)							Spares				
EDP	**Item Description**	D_a*	D	L	M	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7700VR10 Modular Head - Medium and Fine Pitch													
031214	**A7700VR10SA1.00Z3R1.4**	1.000	0.606	1.378	M12	0.492	0.197	3	*031223*	D4007T	*015240*	T15	27.40
031215	**A7700VR10SA1.25Z3R1.7**	1.250	0.856	1.693	M16	0.669	0.197	3	*015260*	D4008T	*015240*	T15	27.40
031216	**A7700VR10SA1.25Z4R1.7**	1.250	0.856	1.693	M16	0.669	0.197	4	*015260*	D4008T	*015240*	T15	27.40

D = Effective Diameter (Axis) from insert centerline to centerline.

Da* = Outside Diameter

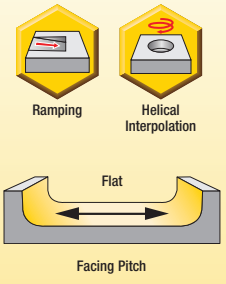
Note: For Cylindrical Shank extensions in high density alloy with through coolant refer to page A78.



Depth of Cut (a_p)

7700VR10 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
031207	**C7700VR10CA1.00Z3R2.0**	0.606	8.00	1.291	1.921	0.130	65,000
031208	**C7700VR10CA1.25Z3R2.7**	0.856	7.55	1.791	2.421	0.130	53,000
031209	**C7700VR10CA1.25Z4R2.7**	0.856	7.55	1.791	2.421	0.130	53,000
031214	**A7700VR10SA1.00Z3R1.4**	0.606	9.90	1.291	1.921	0.130	65,000
031215	**A7700VR10SA1.25Z3R1.7**	0.856	7.55	1.791	2.421	0.130	53,000
031216	**A7700VR10SA1.25Z4R1.7**	0.856	7.55	1.791	2.421	0.130	53,000



STELLRAM


RPEX10-701

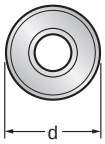

RPHT10-421


RPMT10-41


RPHT10-422


RPHT10-T


RPMW10-T







Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max -	a_p min - max 0.040 - 0.080	a_p min - max 0.008 - 0.040					
034546	RPEX10T3M0F-701-X4	SP4019	-	■	■◆	0.394	-	0.156	0.197	0.001
030456	RPEX10T3M0F-701-X4	GH1	-	◆	◆	0.394	-	0.156	0.197	0.001
034545	RPEX10T3M0E-701-X4	SP6519	-	-	■	0.394	-	0.156	0.197	0.001
030449	RPHT10T3M0E-421-X4	X500	-	●	-	0.394	-	0.156	0.197	0.002
030410	RPHT10T3M0E-421-X4	X700	-	-	●	0.394	-	0.156	0.197	0.002
030452	RPMT10T3M0E-41-X4	X500	-	●	-	0.394	-	0.156	0.197	0.002
031539	RPMT10T3M0E-41-X4	SP6519	-	-	■■●●	0.394	-	0.156	0.197	0.002
030451	RPMT10T3M0E-41-X4	MP91M	-	■	●●◆	0.394	-	0.156	0.197	0.002
030697	RPHT10T3M0E422-X4	X500	-	■◆	●	0.394	-	0.156	0.197	0.002
030767	RPHT10T3M0E-422-X4	X700	-	●	◆◆	0.394	-	0.156	0.197	0.002
030862	RPHT10T3M0E-422-X4	SP6519	-	●●◆■●■	◆◆■■■	0.394	-	0.156	0.197	0.002
030329	RPHT10T3M0T-X4	X500	-	■■	-	0.394	-	0.156	0.197	0.003
031555	RPHT10T3M0T-X4	SP6519	-	◆◆◆	-	0.394	-	0.156	0.197	0.003
030454	RPMW10T3M0T-X4	X500	-	◆◆◆◆◆	-	0.394	-	0.156	0.197	0.005

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

RPMW10T3MOT-X4 X500 is recommended for materials with heavy scale.

7700VR10 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
F-701-X4	SP4019	Contouring	-	-	-	-	-	-	-	0.001 - 0.004	0.001 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	-	-
F-701-X4	GH1	Contouring	-	-	-	-	-	-	-	0.001 - 0.004	0.001 - 0.003	-	-	-	-	-	-
E-701-X4	SP6519	Contouring	-	-	-	-	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	-	-
E-421-X4	X500	Contouring	-	-	-	-	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	-	-
E-421-X4	X700	Contouring	-	-	-	-	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	-	-
E-41-X4	X500	Contouring	-	-	0.002 - 0.007	-	-	-	-	-	-	-	-	-	-	-	-
E-41-X4	SP6519	Contouring	0.002 - 0.007	0.002 - 0.006	0.002 - 0.007	-	0.002 - 0.007	0.002 - 0.007	0.002 - 0.006	-	-	-	-	-	-	-	-
E-41-X4	MP91M	Contouring	0.002 - 0.007	0.002 - 0.006	-	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	-	-	-	-	-	-	-	-
E-422-X4	X500	Contouring	-	-	0.002 - 0.012	0.002 - 0.010	-	-	-	-	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	0.002 - 0.007	-	-
E-422-X4	X700	Contouring	-	-	0.002 - 0.011	0.002 - 0.009	-	-	-	-	-	-	-	-	-	-	-
E-422-X4	SP6519	Contouring	0.002 - 0.012	0.002 - 0.010	0.002 - 0.011	0.002 - 0.009	0.002 - 0.010	0.002 - 0.010	0.002 - 0.009	-	-	0.002 - 0.005	0.002 - 0.005	0.002 - 0.006	0.002 - 0.006	-	-
T-X4	X500	Contouring	0.006 - 0.013	0.006 - 0.011	-	-	-	-	-	-	-	-	-	-	-	-	-
T-X4	SP6519	Contouring	0.006 - 0.013	0.006 - 0.010	-	-	0.003 - 0.012	0.003 - 0.012	0.003 - 0.011	-	-	-	-	-	-	-	-
T-X4	X500	Contouring	0.008 - 0.014	0.008 - 0.013	0.008 - 0.014	0.008 - 0.012	-	-	-	-	-	0.005 - 0.007	0.005 - 0.007	0.005 - 0.008	0.005 - 0.009	-	-

Note: HTA = High Temperature Alloys

Note: Speed recommendations can be found on page A200.

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Contour Mills

Speed v_c (SFM)

7700VR Series

Wear Resistance: – ⟵ +

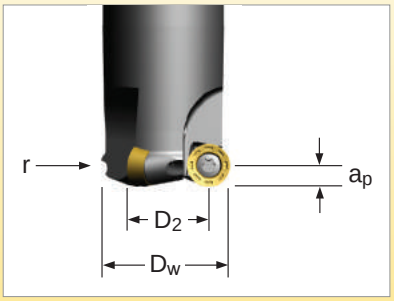
Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

ISO	Materials	Rm and Hardness			CVD X Grade			PVD X Grade			PVD Standard			PVD Standard			CVD Standard			Uncoated Micrograin
			💧	🚫	X500	💧	🚫	X700	💧	🚫	SP6519	💧	🚫	SP4019	💧	🚫	MP91M	💧	🚫	GH1
P	Unalloyed Steel	<600 N/mm² <180 HBN	⦿	●	425 - 885				⦿	●	425 - 970					●	460 - 1130			
		<950 N/mm² <280 HBN			375 - 785						375 - 855						395 - 1000			
	Alloyed Steel	700-950 N/mm² 200-280 HBN	⦿	●	330 - 690				⦿	●	330 - 755					●	345 - 885			
		950-1200 N/mm² 280-355 HBN			245 - 525						245 - 575						260 - 675			
		1200-1400 N/mm² 355-415 HBN		●	165 - 330					●	165 - 360					●	165 - 425			
M	Stainless Steel	Austenitic + Ferritic 300 series	⦿	●	375 - 820	⦿	●	375 - 855	⦿	●	375 - 885									
		Martensitic 400 series			330 - 720			345 - 755			345 - 770									
	PH Stainless	Refractory P.H.	●		165 - 360	●		165 - 375	●		165 - 395									
K	Cast Iron	Grey GG-Ft									460 - 970						475 - 1200			
		Spheroidal-Ductile GGG-FGS							⦿	●	360 - 785					●	375 - 935			
		Malleable GTS - MN/MP									330 - 720						345 - 855			
N	Aluminium & Alloys	Aluminum & Alloys < 16% Si 116 HBN										●		1310 - 9500				●		1310 -10005
		Aluminum + Silicon > 16% Si 92 HBN												970 - 7615						970 - 8005
S	High Temperature Alloys	Iron Based	●		75 - 160	●		75 - 170	●		75 - 180	●		80 - 210						
		Cobalt Based			70 - 145			70 - 150			70 - 160			75 - 170						
		Nickel Based			80 - 170			80 - 175			80 - 180			85 - 190						
		Titanium Based			115 - 240			120 - 250			120 - 260			120 - 275						
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN																		
		Chilled Cast Iron >1400 N/mm² > 400 HBN																		

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7700VR Technical Information



Working Diameter:

$$D_w = D_2 + 2 \times \sqrt{r^2 - (r - a_p)^2}$$

where:
- D_w = Working Diameter
- D_z = Diameter of cutter insert center to center
- **r** = Insert radius
- a_p = Axial Depth of Cut

7700VR Technical Information

where:
- f_z = Feed per tooth
- h_m = Average chip thickness
- **r** = Insert radius
- a_e = Radial Depth of Cut
- a_p = Axial Depth of Cut

Formula to find programmed feed rate based on radial engagement and axial depth of cut.

$$f_z = \frac{h_m}{\frac{\sqrt{r^2-(r-a_e)^2}}{r} \times \frac{\sqrt{r^2-(r-a_p)^2}}{r}}$$

Formula to calculate the average chip thickness h_m in relation with radial engagement and depth of cut.

$$h_m = f_z \times \frac{\sqrt{r^2-(r-a_e)^2}}{r} \times \frac{\sqrt{r^2-(r-a_p)^2}}{r}$$

Simplified formulas to evaluate h_m and f_z based on radial engagement or depth of cut.

Calculation of the average chip thickness in relation with the D.O.C. (Axial)

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_p}}$$

- h_m = Average chip thickness
- a_p = Depth of cut
- f_z = Feed per tooth
- **d** = Insert diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_p}{d}}$$

Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of Dia.

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

- h_m = Average chip thickness
- a_e = Radial engagement
- f_z = Feed per tooth
- **d** = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

With round inserts, the thickness of the chip varies depending on the axial depth of cut and is related to the size of the cutting edge-prep.
For best tool-life it is improtant to maintain the proper chip thickness as shown below.
This chart calculates in relation with axial depth of cut (ap) only and not radial cut (ae).

7700VR08 Inserts RP..0803..

Dimensions (inch)						
Inserts Geometry	Insert Size	a_p Axial d.o.c.	h_m min.	h_m max.	f_z min.	f_z max.
F-701	0.315	0.010	0.001	0.002	0.006	0.011
	0.315	0.020	0.001	0.002	0.004	0.008
	0.315	0.030	0.001	0.002	0.003	0.006
	0.315	0.040	0.001	0.002	0.003	0.006
	0.315	0.050	0.001	0.002	0.003	0.005
	0.315	0.060	0.001	0.002	0.002	0.005
E-701	0.315	0.010	0.001	0.002	0.006	0.011
	0.315	0.020	0.001	0.002	0.004	0.008
	0.315	0.030	0.001	0.002	0.003	0.006
	0.315	0.040	0.001	0.002	0.003	0.006
	0.315	0.050	0.001	0.002	0.003	0.005
	0.315	0.060	0.001	0.002	0.002	0.005
E-41	0.315	0.010	0.002	0.003	0.011	0.017
	0.315	0.020	0.002	0.003	0.008	0.012
	0.315	0.030	0.002	0.003	0.006	0.010
	0.315	0.040	0.002	0.003	0.006	0.008
	0.315	0.050	0.002	0.003	0.005	0.008
	0.315	0.060	0.002	0.003	0.005	0.007
E-422	0.315	0.010	0.002	0.004	0.011	0.022
	0.315	0.020	0.002	0.004	0.008	0.016
	0.315	0.030	0.002	0.004	0.006	0.013
	0.315	0.040	0.002	0.004	0.006	0.011
	0.315	0.050	0.002	0.004	0.005	0.010
	0.315	0.060	0.002	0.004	0.005	0.009

7700VR10 Inserts RP..10T3..

Dimensions (inch)						
Inserts Geometry	Insert Size	a_p Axial d.o.c.	h_m min.	h_m max.	f_z min.	f_z max.
F-701-X4	0.394	0.010	0.001	0.002	0.006	0.013
	0.394	0.020	0.001	0.002	0.004	0.009
	0.394	0.040	0.001	0.002	0.003	0.006
	0.394	0.060	0.001	0.002	0.003	0.005
	0.394	0.080	0.001	0.002	0.002	0.004
E-701-X4	0.394	0.010	0.001	0.003	0.006	0.019
	0.394	0.020	0.001	0.003	0.004	0.013
	0.394	0.040	0.001	0.003	0.003	0.009
	0.394	0.060	0.001	0.003	0.003	0.008
	0.394	0.080	0.001	0.003	0.002	0.007
E-421-X4	0.394	0.010	0.002	0.003	0.013	0.019
	0.394	0.020	0.002	0.003	0.009	0.013
	0.394	0.040	0.002	0.003	0.006	0.009
	0.394	0.060	0.002	0.003	0.005	0.008
	0.394	0.080	0.002	0.003	0.004	0.007
E-41-X4	0.394	0.010	0.002	0.004	0.013	0.025
	0.394	0.020	0.002	0.004	0.009	0.018
	0.394	0.040	0.002	0.004	0.006	0.013
	0.394	0.060	0.002	0.004	0.005	0.010
	0.394	0.080	0.002	0.004	0.004	0.009
E-422-X4	0.394	0.010	0.002	0.005	0.013	0.031
	0.394	0.020	0.002	0.005	0.009	0.022
	0.394	0.040	0.002	0.005	0.006	0.016
	0.394	0.060	0.002	0.005	0.005	0.013
	0.394	0.080	0.002	0.005	0.004	0.011
RPHT-T-X4	0.394	0.010	0.003	0.005	0.019	0.031
	0.394	0.020	0.003	0.005	0.013	0.022
	0.394	0.040	0.003	0.005	0.009	0.016
	0.394	0.060	0.003	0.005	0.008	0.013
	0.394	0.080	0.003	0.005	0.007	0.011
RPHW-T-X4	0.394	0.010	0.004	0.006	0.025	0.038
	0.394	0.020	0.004	0.006	0.018	0.027
	0.394	0.040	0.004	0.006	0.013	0.019
	0.394	0.060	0.004	0.006	0.010	0.015
	0.394	0.080	0.004	0.006	0.009	0.013



STELLRAM



ROUND INSERT MILLING CUTTERS WITH INDEXATION

The **7710VRD** cutter series is excellent for heavy roughing and semi-finishing of all materials. Specifically for Stainless Steels, High Temperature Alloys as well as for Unalloyed Steel, Alloyed Steel and Cast Irons.

This cutter design is perfectly suited for face milling forgings where material allowance is unpredictable.

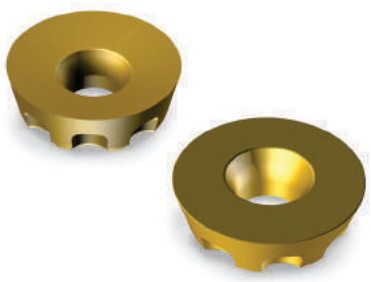
The 7710VRD cutter series with anti-rotation ensures a precise number of indexes per insert.

This unique patented pocket design prevents the inserts from rotating in the pocket, during heavy feed machining and unstable conditions.

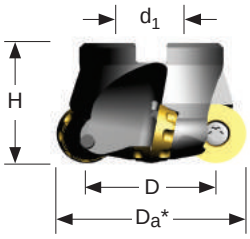
This 20mm (0.787") insert size is 8 times indexable that gives a maximum possible usage of the available edges.

7710VRD20

7710VRD20:
Maximum a_p = 0.394"
Diameter Range = 2.500" to 8.500"
Note: Larger diameter Shell Mill Fixation cutters with interchangeable cartridges are available. Please see page A156.





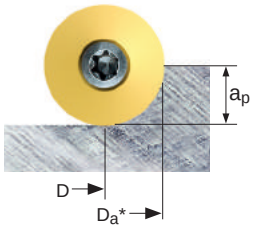


Shell Mill Fixation

Product		Dimensions (inch)							Spares				
EDP	**Item Description**	D_a*	D Effective Cutting Diameter	H	l1	d1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7710VRD20 Shell Mill Fixation													
030945	**C7710VRD20A2.50Z04R**	2.500	1.713	1.575	-	0.750	0.394	4	*029640*	D6014T	*015241*	T20	93.00
030668	**C7710VRD20A3.00Z05R**	3.000	2.213	1.969	-	1.000	0.394	5					
030664	**C7710VRD20A4.00Z06R**	4.000	3.213	1.969	-	1.250	0.394	6					
030667	**C7710VRD20A5.00Z07R**	5.000	4.213	2.480	-	1.500	0.394	7					
030666	**C7710VRD20A6.00Z08R**	6.000	5.213	2.480	-	1.500	0.394	8					
031077	**C7710VRD20-8.50Z12R**	8.500	7.713	2.480	-	2.500	0.394	12					

D = Effective Diameter (Axis) from Insert centerline to centerline

D_a* = Outside Diameter

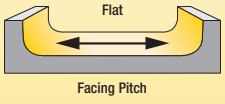


Depth of Cut (a_p)

7710VRD20 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
030945	**C7710VRD20A2.50Z04R**	1.713	7.30	3.504	4.921	0.260	21,700
030668	**C7710VRD20A3.00Z05R**	2.213	6.40	4.504	5.921	0.260	19,100
030664	**C7710VRD20A4.00Z06R**	3.213	4.10	6.504	7.921	0.260	15,900
030667	**C7710VRD20A5.00Z07R**	4.213	3.00	8.504	9.921	0.260	13,800
030666	**C7710VRD20A6.00Z08R**	5.213	2.40	10.504	11.921	0.260	12,400
031077	**C7710VRD20-8.50Z12R**	7.713	1.70	15.504	16.921	0.260	10,200





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RDHT20-42-X8


RDHW20-E-X8

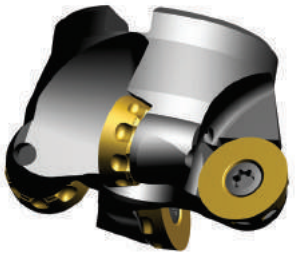

RDHW20-S-X8


RDHW20-25-X8



Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max 0.394*	a_p min. - max. 0.040 - 0.125	a_p min. - max. 0.008 - 0.040					
029310	RDHT2006M0E-42-X8	X500	◆■	◆■	-	0.787	-	0.250	0.394	0.003
031533	RDHT2006M0E-42-X8	SP6519	◆□●	◆□●	-	0.787	-	0.250	0.394	0.003
029309	RDHW2006M0E-X8	X500	-	●●●○●◆	-	0.787	-	0.250	0.394	0.004
031661	RDHW2006M0S-X8	X500	●○◆	■■■	-	0.787	-	0.250	0.394	0.006
031662	RDHW2006M0S-X8	SP6519	■■■	◆◆◆	-	0.787	-	0.250	0.394	0.006
031660	RDHW2006M0S-25-X8	X500	●●●	-	-	0.787	-	0.250	0.394	0.009
031576	RDHW2006M0S-25-X8	SP6519	◆◆◆	-	-	0.787	-	0.250	0.394	0.009

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.



Contour Mills

* Max. recommended a_p = 0.300" (depending on the application)

INSERT APPLICATION NOTES:

RDHW2006MOE-X8 X500 should be your first choice for medium roughing application when machining Titanium without heavy scale.
RDHW2006M0S-X8 SP6519 should be used when machining Stainless Steel with heavy scale.
RDHW2006M0S-X8 X500 should be used when machining High Temperature Alloys with heavy scale.
RDHT2006M0E-42-X8 should be used when the machine tool has low power available and when the conditions are stable.
RDHW2006M0S-25-X8 should be used for heavy duty applications.

7710VRD20 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
E-42-X8	X500	Facing	-	-	0.006 - 0.013	0.006 - 0.012	-	-	-	-	-	0.005 - 0.010	0.005 - 0.010	0.005 - 0.010	0.005 - 0.012	-	-
E-42-X8	SP6519	Facing	-	-	0.006 - 0.013	0.006 - 0.010	-	-	-	-	-	0.005 - 0.010	0.005 - 0.010	0.005 - 0.010	0.005 - 0.012	-	-
E-X8	X500	Facing	0.008 - 0.012	0.007 - 0.010	0.008 - 0.016	0.008 - 0.012	0.008 - 0.013	0.008 - 0.013	0.008 - 0.012	-	-	0.008 - 0.010	0.008 - 0.010	0.008 - 0.010	0.008 - 0.012	-	-
S-X8	X500	Facing	0.010 - 0.018	0.010 - 0.013	0.010 - 0.018	0.010 - 0.012	0.010 - 0.018	0.010 - 0.018	0.010 - 0.016	-	-	0.010 - 0.012	0.010 - 0.012	0.010 - 0.012	0.010 - 0.013	-	-
S-X8	SP6519	Facing	0.010 - 0.018	0.010 - 0.013	-	-	0.010 - 0.018	0.010 - 0.018	0.010 - 0.016	-	-	-	-	-	-	-	-
S-25-X8	X500	Facing	0.013 - 0.023	0.013 - 0.020	-	-	0.013 - 0.023	0.013 - 0.020	0.013 - 0.018	-	-	-	-	-	-	-	-
S-25-X8	SP6519	Facing	0.013 - 0.022	0.013 - 0.018	-	-	0.013 - 0.022	0.013 - 0.020	0.013 - 0.016	-	-	-	-	-	-	-	-

Note: HTA = High Temperature Alloys

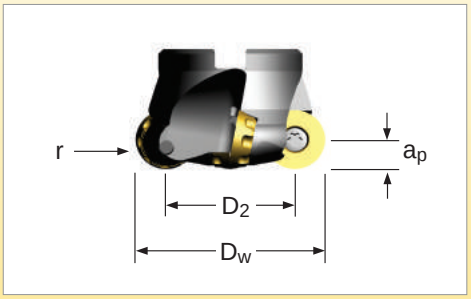
Note: Speed recommendations can be found on page A206.

Speed v_c (SFM)

7710VRD20 Series			Wear Resistance – +					
			Speed min. - max.					
Coolant Recommendation Recommended ● Possible ⦿					CVD X Grade			PVD Standard
ISO	Materials	Rm and Hardness	💧	🚫	X500	💧	🚫	SP6519
P	Unalloyed Steel	<600 N/mm² <180 HBN	⦿	●	425 - 885	⦿	●	425 - 970
		<950 N/mm² <280 HBN			375 - 785			375 - 855
	Alloyed Steel	700-950 N/mm² 200-280 HBN	⦿	●	330 - 690	⦿	●	330 - 755
		950-1200 N/mm² 280-355 HBN			245 - 525			245 - 575
		1200-1400 N/mm² 355-415 HBN		●	165 - 330		●	165 - 360
M	Stainless Steel	Austenitic + Ferritic 300 series	⦿	●	375 - 820	⦿	●	375 - 885
		Martensitic 400 series			330 - 720			345 - 770
	PH Stainless	Refractory P.H.	●		165 - 360	●		165 - 395
K	Cast Iron	Grey GG-Ft	⦿	●	395 - 920	⦿	●	460 - 970
		Spheroidal-Ductile GGG-FGS			345 - 675			360 - 785
		Malleable GTS - MN/MP			310 - 560			330 - 720
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN						
		Aluminum + Silicon > 16% Si 92 HBN						
S	High Temperature Alloys	Iron Based	●		75 - 160	●		75 - 180
		Cobalt Based			70 - 145			70 - 160
		Nickel Based			80 - 170			80 - 180
		Titanium Based			115 - 240			120 - 260
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN						
		Chilled Cast Iron >1400 N/mm² > 400 HBN						

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7710VRD20 Technical Information



Working Diameter:

Formula to evaluate the correct working diameter based on axial depth of cut (a_p).

$$D_w = D_2 + 2 \times \sqrt{r^2 - (r - a_p)^2}$$

where:

- D_w = Working Diameter
- D_2 = Diameter of cutter insert center to center
- r = Insert radius
- a_p = Axial Depth of Cut

7710VRD20 Technical Information

where:

- f_z = Feed per tooth
- h_m = Average chip thickness
- r = Insert radius
- a_e = Radial Depth of Cut
- a_p = Axial Depth of Cut

Formula to find programmed feed rate based on radial engagement and axial depth of cut.

$$f_z = \frac{h_m}{\frac{\sqrt{r^2 - (r - a_e)^2}}{r} \times \frac{\sqrt{r^2 - (r - a_p)^2}}{r}}$$

Formula to calculate the average chip thickness h_m in relation with radial engagement and depth of cut.

$$h_m = f_z \times \frac{\sqrt{r^2 - (r - a_e)^2}}{r} \times \frac{\sqrt{r^2 - (r - a_p)^2}}{r}$$

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Simplified formulas to evaluate h_m and f_z based on axial depth of cut (a_p) or radial engagement (a_e).

Calculation of the average chip thickness in relation with the D.O.C. (Axial)

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_p}}$$

h_m = Average chip thickness
a_p = Depth of cut
f_z = Feed per tooth
d = Insert diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_p}{d}}$$

Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of dia.

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

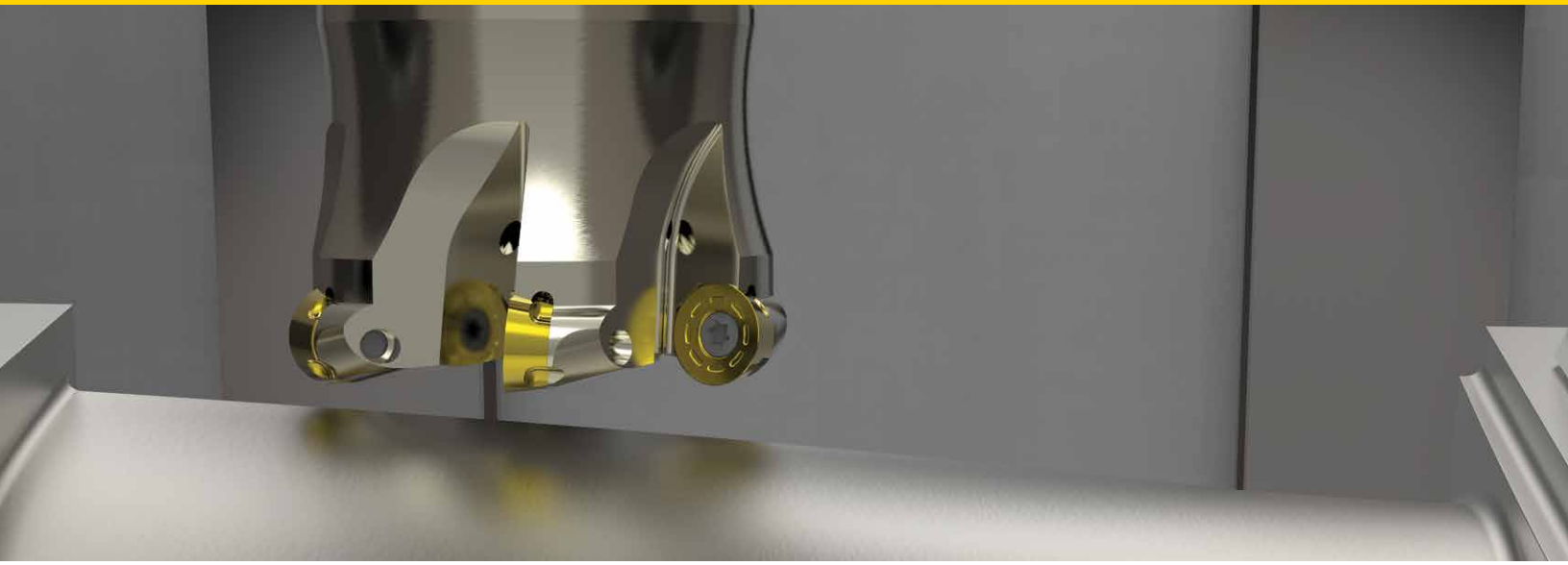
Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

With round inserts, the thickness of the chip varies depending on the axial depth of cut (a_p) and is related to the size of the cutting edge-preparation. For best tool life it is important to maintain the proper chip thickness as shown below. This chart calculates in relation with axial depth of cut (a_p) only and not radial cut (a_e).

RD..2006..insert

Insert	Insert size (inch)	a_p d.o.c. (inch)	h_m (inch)		f_z (ipt)	
			min.	max.	min.	max.
RDHT2006M0E-42-X8	0.787	0.050	0.003	0.013	0.012	0.051
	0.787	0.100	0.003	0.013	0.008	0.037
	0.787	0.120	0.003	0.013	0.008	0.033
	0.787	0.150	0.003	0.013	0.007	0.030
	0.787	0.200	0.003	0.013	0.006	0.026
	0.787	0.250	0.003	0.013	0.005	0.023
	0.787	0.300	0.003	0.013	0.005	0.021
	0.787	0.394	0.003	0.013	0.004	0.018
RDHW2006M0E-X8	0.787	0.050	0.00	0.016	0.016	0.064
	0.787	0.100	0.004	0.016	0.011	0.045
	0.787	0.120	0.004	0.016	0.010	0.041
	0.787	0.150	0.004	0.016	0.009	0.037
	0.787	0.200	0.004	0.016	0.008	0.032
	0.787	0.250	0.004	0.016	0.007	0.028
	0.787	0.300	0.004	0.016	0.007	0.026
	0.787	0.394	0.004	0.016	0.006	0.023
RDHW2006M0S-X8	0.787	0.050	0.006	0.018	0.024	0.071
	0.787	0.100	0.006	0.018	0.017	0.051
	0.787	0.120	0.006	0.018	0.015	0.046
	0.787	0.150	0.006	0.018	0.014	0.041
	0.787	0.200	0.006	0.018	0.012	0.036
	0.787	0.250	0.006	0.018	0.011	0.032
	0.787	0.300	0.006	0.018	0.010	0.029
	0.787	0.394	0.006	0.018	0.009	0.025
RDHW2006M0S-25-X8	0.787	0.050	0.009	0.023	0.036	0.091
	0.787	0.100	0.009	0.023	0.025	0.065
	0.787	0.120	0.009	0.023	0.023	0.059
	0.787	0.150	0.009	0.023	0.021	0.053
	0.787	0.200	0.009	0.023	0.018	0.046
	0.787	0.250	0.009	0.023	0.016	0.041
	0.787	0.300	0.009	0.023	0.015	0.037
	0.787	0.394	0.009	0.023	0.013	0.033



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ROUND INSERT MILLING CUTTER WITH INDEXATION

The **7713VR** is our newest round insert cutter series. Designed with a new nickel plated surface treatment that reduces the body degradation, during high performance applications and enhances the body tool life.

The cutter series has a anti-rotation design which ensures a precise number of indexes per insert. This gives a maximum possible usage of the available edges for roughing applications.

This unique patented pocket system prevents the inserts from rotating in the pocket, during heavy feed machining and unstable conditions.

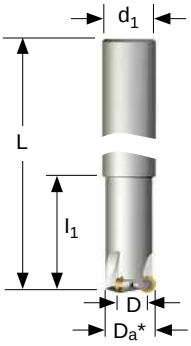
This 7713VR cutter is excellent for roughing and semi-finishing of all materials. Specifically for Stainless Steels and High Temperature Alloys as well as Steel, Tool Steel and Aluminum Alloys.

7713VR

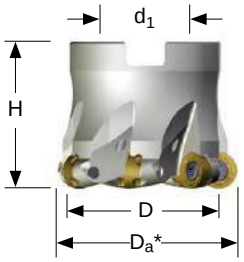
7713VR10:
Maximum a_p = 0.197"
Diameter Range = 1.000" to 2.500"

7713VR12:
Maximum a_p = 0.240"
Diameter Range = 1.000" to 3.000"

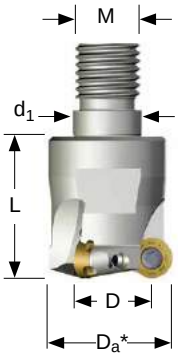




Cylindrical Shank



Shell Mill Fixation



Modular Head



Depth of Cut (a_p)

Product		Dimensions (inch)							Spares				
EDP	**Item Description**	Da*	D Effective Diameter	L/H	l_1	d_1	ap max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7713VR10 Cylindrical Shank - Medium and Fine Pitch													
033076	**C7713VR10CA1.00Z3R2.0**	1.000	0.607	7.874	1.970	1.000	0.197	3	*031223*	D4007T	*031654*	TB15	27.40
033077	**C7713VR10CA1.25Z3R2.7**	1.250	0.857	9.840	2.700	1.250	0.197	3	*015260*	D4008T	*031654*	TB15	27.40
033078	**C7713VR10CA1.25Z4R2.7**	1.250	0.857	9.840	2.700	1.250	0.197	4	*015260*	D4008T	*031654*	TB15	27.40
7713VR10 Shell Mill Fixation - Fine Pitch													
033079	**C7713VR10-A1.50Z05R**	1.500	1.107	1.260	-	0.500	0.197	5	*015260*	D4008T	*031654*	TB15	27.40
033080	**C7713VR10-A2.00Z07R**	2.000	1.607	1.570	-	0.750	0.197	7	*015260*	D4008T	*031654*	TB15	27.40
033081	**C7713VR10-A2.50Z08R**	2.500	2.107	1.570	-	0.750	0.197	8	*015260*	D4008T	*031654*	TB15	27.40

D = Effective Diameter (Axis) from Insert centerline to centerline

Da* = Outside Diameter

Product		Dimensions (inch)							Spares				
EDP	**Item Description**	Da*	D Effective Diameter	L	M	d_1	ap max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7713VR10 Modular Head - Medium and Fine Pitch													
033082	**A7713VR10SA1.00Z2R1.4**	1.000	0.607	1.377	M12	0.492	0.197	2	*031223*	D4007T	*031654*	TB15	27.40
033083	**A7713VR10SA1.00Z3R1.4**	1.000	0.607	1.377	M12	0.492	0.197	3	*031223*	D4007T	*031654*	TB15	27.40
033084	**A7713VR10SA1.25Z3R1.7**	1.250	0.857	1.693	M16	0.669	0.197	3	*015260*	D4008T	*031654*	TB15	27.40
033085	**A7713VR10SA1.25Z4R1.7**	1.250	0.857	1.693	M16	0.669	0.197	4	*015260*	D4008T	*031654*	TB15	27.40

D = Effective Diameter (Axis) from Insert centerline to centerline

Da* = Outside Diameter

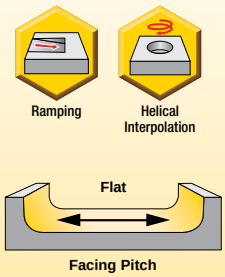
Note: For cylindrical shank extensions in high density alloy with through coolant refer to page A78.

The 7713VR10 series with anti-rotation pocket ensures a precise number of indexes per insert.

This unique patented pocket design prevents the inserts from rotating in the pocket during heavy feed machining and unstable conditions.

7713VR10 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		ap max Helical / Linear	Max RPM
033076	**C7713VR10CA1.00Z3R2.0**	0.607	5.13	1.291	1.921	0.130	64,000
033077	**C7713VR10CA1.25Z3R2.7**	0.857	8.68	1.791	2.421	0.130	53,500
033078	**C7713VR10CA1.25Z4R2.7**	0.857	8.68	1.791	2.421	0.130	53,500
033079	**C7713VR10-A1.50Z05R**	1.107	7.75	2.291	2.921	0.130	47,000
033080	**C7713VR10-A2.00Z07R**	1.607	5.10	3.291	3.921	0.130	39,500
033081	**C7713VR10-A2.50Z08R**	2.107	3.70	4.291	4.921	0.130	34,000
033082	**A7713VR10SA1.00Z2R1.4**	0.607	5.13	1.291	1.921	0.130	64,000
033083	**A7713VR10SA1.00Z3R1.4**	0.607	5.13	1.291	1.921	0.130	64,000
033084	**A7713VR10SA1.25Z3R1.7**	0.857	8.68	1.791	2.421	0.130	53,500
033085	**A7713VR10SA1.25Z4R1.7**	0.857	8.68	1.791	2.421	0.130	53,500



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RPEX10-701

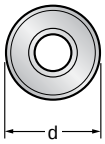

RPHT10-421


RPMT10-41


RPHT10-422


RPHT10


RPMW10







Contour Mills

Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max 0.197*	a_p min. - max. 0.040 - 0.080	a_p min. - max. 0.008 - 0.040					
030546	RPEX10T3M0F-701-X4	SP4019	■	■	■◆	0.394	-	0.156	0.197	0.001
030456	RPEX10T3M0F-701-X4	GH1	◆	◆	◆	0.394	-	0.156	0.197	0.001
030545	RPEX10T3M0E-701-X4	SP6519	-	-	■	0.394	-	0.156	0.197	0.001
030449	RPHT10T3M0E-421-X4	X500	-	●	-	0.394	-	0.156	0.197	0.002
030410	RPHT10T3M0E-421-X4	X700	-	-	●	0.394	-	0.156	0.197	0.002
030452	RPMT10T3M0E-41-X4	X500	-	●	-	0.394	-	0.156	0.197	0.002
031539	RPMT10T3M0E-41-X4	SP6519	-	-	■■●●	0.394	-	0.156	0.197	0.002
030451	RPMT10T3M0E-41-X4	MP91M	-	■	●●◆	0.394	-	0.156	0.197	0.002
030697	RPHT10T3M0E422-X4	X500	■◆●	■◆	○	0.394	-	0.156	0.197	0.002
030767	RPHT10T3M0E-422-X4	X700	●○●	○	◆◆	0.394	-	0.156	0.197	0.002
030862	RPHT10T3M0E-422-X4	SP6519	●●◆□●■	●●◆□●■	◆◆■□■	0.394	-	0.156	0.197	0.002
030329	RPHT10T3M0T-X4	X500	■■	■■	-	0.394	-	0.156	0.197	0.003
031555	RPHT10T3M0T-X4	SP6519	◆◆◆	◆◆◆	-	0.394	-	0.156	0.197	0.003
030454	RPMW10T3M0T-X4	X500	◆◆◆◆◆	◆◆◆◆◆	-	0.394	-	0.156	0.197	0.005

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

RPMW10T3MOT-X4 X500 should be used for materials with heavy scale.
Max. recommended a_p = 0.100" (depending on the application)

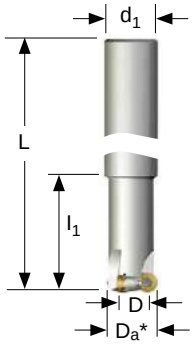
7713VR10 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
F-701-X4	SP4019	Contouring	-	-	-	-	-	-	-	0.001 - 0.004	0.001 - 0.003	0.001 - 0.003	0.001 - 0.003	0.002 - 0.003	0.003 - 0.004	-	-
F-701-X4	GH1	Contouring	-	-	-	-	-	-	-	0.001 - 0.004	0.001 - 0.003	-	-	-	-	-	-
E-701-X4	SP6519	Contouring	-	-	-	-	-	-	-	-	-	0.001 - 0.003	0.001 - 0.003	0.002 - 0.003	0.001 - 0.004	-	-
E-421-X4	X500	Contouring	-	-	-	-	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	-	-
E-421-X4	X700	Contouring	-	-	-	-	-	-	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.004	0.002 - 0.004	-	-
E-41-X4	X500	Contouring	-	-	0.002 - 0.007	-	-	-	-	-	-	-	-	-	-	-	-
E-41-X4	SP6519	Contouring	0.002 - 0.007	0.002 - 0.006	0.002 - 0.007	-	0.002 - 0.007	0.04 - 0.007	0.002 - 0.006	-	-	-	-	-	-	-	-
E-41-X4	MP91M	Contouring	0.002 - 0.007	0.002 - 0.006	-	-	0.002 - 0.006	0.04 - 0.006	0.002 - 0.005	-	-	-	-	-	-	-	-
E-422-X4	X500	Contouring	-	-	0.002 - 0.012	0.002 - 0.010	-	-	-	-	-	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	0.002 - 0.007	-	-
E-422-X4	X700	Contouring	-	-	0.002 - 0.011	0.002 - 0.009	-	-	-	-	-	0.002 - 0.005	0.002 - 0.005	0.002 - 0.006	0.002 - 0.006	-	-
E-422-X4	SP6519	Contouring	0.002 - 0.012	0.002 - 0.010	0.002 - 0.011	0.002 - 0.009	0.002 - 0.010	0.06 - 0.010	0.002 - 0.009	-	-	0.002 - 0.005	0.002 - 0.005	0.002 - 0.006	0.002 - 0.006	-	-
T-X4	X500	Contouring	0.003 - 0.013	0.003 - 0.011	-	-	-	-	-	-	-	-	-	-	-	-	-
T-X4	SP6519	Contouring	0.003 - 0.013	0.003 - 0.011	-	-	0.003 - 0.012	0.008 - 0.012	0.003 - 0.011	-	-	-	-	-	-	-	-
T-X4	X500	Contouring	0.005 - 0.014	0.005 - 0.013	0.005 - 0.012	0.005 - 0.012	-	-	-	-	-	0.005 - 0.007	0.005 - 0.007	0.005 - 0.008	0.005 - 0.009	-	-

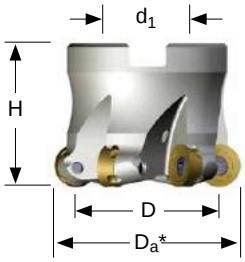
Speed recommendations can be found on page A215.

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Cylindrical Shank



Shell Mill Fixation



Modular Head



Depth of Cut (a_p)

Product		Dimensions (inch)							Spares				
EDP	**Item Description**	Da*	D Effective Diameter	L/H	l_1	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7713VR12 Cylindrcal Shank													
033086	**C7713VR12CA1.00Z2R2.0**	1.000	0.528	7.874	1.968	1.000	0.236	2	*015260*	D4008T	*015240*	T15	27.40
033087	**C7713VR12CA1.25Z3R2.7**	1.250	0.778	9.842	2.755	1.250	0.236	3	*015260*	D4008T	*015240*	T15	27.40
7713VR12 Shell Mill Fixation - Medium and Fine Pitch													
033088	**C7713VR12-A1.50Z4R**	1.500	1.028	1.574	-	0.500	0.236	4	*015262*	D4010T	*015240*	T15	27.40
033089	**C7713VR12-A1.50Z5R**	1.500	1.028	1.574	-	0.500	0.236	5	*015262*	D4010T	*031654*	TB15	27.40
033090	**C7713VR12-A2.00Z4R**	2.000	1.528	1.574	-	0.750	0.236	4	*015262*	D4010T	*015240*	T15	27.40
033091	**C7713VR12-A2.00Z5R**	2.000	1.528	1.574	-	0.750	0.236	5	*015262*	D4010T	*015240*	T15	27.40
033092	**C7713VR12-A2.00Z6R**	2.000	1.528	1.574	-	0.750	0.236	6	*015262*	D4010T	*031654*	TB15	27.40
033093	**C7713VR12-A2.50Z6R**	2.500	2.028	1.986	-	0.750	0.236	6	*015262*	D4010T	*015240*	T15	27.40
033094	**C7713VR12-A2.50Z7R**	2.500	2.028	1.986	-	0.750	0.236	7	*015262*	D4010T	*031654*	TB15	27.40
033095	**C7713VR12-A3.00Z8R**	3.000	2.528	1.986	-	1.000	0.236	8	*015262*	D4010T	*015240*	T15	27.40

D = Effective Diameter (Axis) from Insert centerline to centerline

Da* = Outside Diameter

Product		Dimensions (inch)							Spares				
EDP	**Item Description**	Da*	D Effective Diameter	L	M	d_1	a_p max	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.
7713VR12 Modular Head - Medium and Fine Pitch													
033096	**A7713VR12SA1.00Z2R1.4**	1.000	0.528	1.377	M12	0.472	0.236	2	*015260*	D4008T	*015240*	T15	27.40
033097	**A7713VR12SA1.25Z3R1.7**	1.250	0.778	1.692	M16	0.669	0.236	3	*015260*	D4008T	*015240*	T15	27.40
033098	**A7713VR12SA1.50Z4R1.7**	1.500	1.028	1.692	M16	0.669	0.236	4	*015260*	D4008T	*015240*	T15	27.40
033099	**A7713VR12SA1.50Z5R1.7**	1.500	1.028	1.692	M16	0.669	0.236	5	*015260*	D4008T	*031654*	TB15	27.40

D = Effective Diameter (Axis) from Insert centerline to centerline

Da* = Outside Diameter

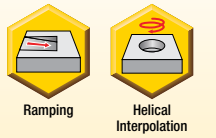
Note: For cylindrical shank extensions in high density alloy with through coolant refer to page A78.

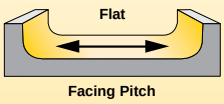
The 7713VR12 series with anti-rotation pocket ensures a precise number of indexes per insert.

This unique patented pocket design prevents the inserts from rotating in the pocket during heavy feed machining and unstable conditions.

7713VR12 Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
033086	**C7713VR12CA1.00Z2R2.0**	0.528	9.50	1.134	1.921	0.160	49,000
033087	**C7713VR12CA1.25Z3R2.7**	0.778	12.40	1.634	2.421	0.160	40,500
033088	**C7713VR12-A1.50Z4R**	1.028	8.60	2.134	2.921	0.160	35,000
033089	**C7713VR12-A1.50Z5R**	1.028	8.60	2.134	2.921	0.160	35,000
033090	**C7713VR12-A2.00Z4R**	1.528	5.50	3.134	3.921	0.160	28,500
033091	**C7713VR12-A2.00Z5R**	1.528	5.50	3.134	3.921	0.160	28,500
033092	**C7713VR12-A2.00Z6R**	1.528	5.50	3.134	3.921	0.160	28,500
033093	**C7713VR12-A2.50Z6R**	2.028	3.90	4.134	4.921	0.160	25,000
033094	**C7713VR12-A2.50Z7R**	2.028	3.90	4.134	4.921	0.160	25,000
033095	**C7713VR12-A3.00Z8R**	2.528	2.95	5.134	5.921	0.160	22,500
033096	**A7713VR12SA1.00Z2R1.4**	0.528	9.50	1.134	1.921	0.160	49,000
033097	**A7713VR12SA1.25Z3R1.7**	0.778	12.40	1.634	2.421	0.160	40,500
033098	**A7713VR12SA1.50Z4R1.7**	1.028	8.60	2.134	2.921	0.160	35,000
033099	**A7713VR12SA1.50Z5R1.7**	1.028	8.60	2.134	2.921	0.160	35,000





STELLRAM

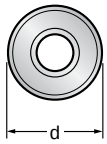

RPEX12-701


RPHT12-421


RPHT12-442


RPHT12-T


RPMW12-T







Contour Mills

Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max 0.197	a_p min. - max. 0.040 - 0.080	a_p min. - max. 0.008 - 0.040					
029284	RPEX1204M0F-701-X4	GH1	♦	♦	♦	0.472	-	0.187	0.236	0.001
029282	RPEX1204M0E-701-X4	X500	-	-	●	0.472	-	0.187	0.236	0.002
029286	RPHT1204M0E-421-X4	X500	-	●	■	0.472	-	0.187	0.236	0.002
029700	RPHT1204M0E-421-X4	X700	-	-	♦♦	0.472	-	0.187	0.236	0.002
029272	RPMT1204M0E-41-X4	X500	●	●	-	0.472	-	0.187	0.236	0.002
031517	RPMT1204M0E-41-X4	SP6519	-	■●	●●	0.472	-	0.187	0.236	0.002
029291	RPMT1204M0E-41-X4	MP91M	-	■	●■	0.472	-	0.187	0.236	0.002
032129	RPHT1204M0E-442-X4	X500	■♦	■♦	-	0.472	-	0.187	0.236	0.002
032130	RPHT1204M0E-442-X4	X700	●	●●	●●	0.472	-	0.187	0.236	0.002
032128	RPHT1204M0E-442-X4	SP6519	♦■	♦♦■■	♦■■	0.472	-	0.187	0.236	0.002
029034	RPHT1204M0T-X4	X500	●	-	-	0.472	-	0.187	0.236	0.004
029699	RPHT1204M0T-X4	X700	●	-	-	0.472	-	0.187	0.236	0.004
031516	RPHT1204M0T-X4	SP6519	●■	-	-	0.472	-	0.187	0.236	0.004
029295	RPMW1204M0T-X4	X500	♦♦	-	-	0.472	-	0.187	0.236	0.005
031518	RPMW1204M0T-X4	SP6519	■♦	-	-	0.472	-	0.187	0.236	0.005
029294	RPMW1204M0T-X4	MP91M	♦♦	-	♦	0.472	-	0.187	0.236	0.005

Machining Choice: ♦ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

RPMW1204M0T-X4 should be used for materials with heavy scale.

* Max. recommended a_p = 0.140" (depending on the application)

Note: Feed recommendations can be found on page A214. Speed recommendations can be found on page A215.

7713VR12 Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
F-701-X4	GH1	Contouring	-	-	-	-	-	-	-	0.001 - 0.005	0.001 - 0.004	-	-	-	-	-	-
E-701-X4	X500	Contouring	-	-	-	-	-	-	-	-	-	0.001 - 0.003	0.001 - 0.003	0.001 - 0.004	0.001 - 0.004	-	-
E-421-X4	X500	Contouring	-	-	-	-	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.009	0.002 - 0.010	-	-
E-421-X4	X700	Contouring	-	-	0.002 - 0.010	0.002 - 0.005	-	-	-	-	-	0.002 - 0.008	0.002 - 0.008	0.002 - 0.008	0.002 - 0.009	-	-
E-41-X4	X500	Contouring	-	0.002 - 0.009	0.002 - 0.010	-	-	-	-	-	-	-	-	-	-	-	-
E-41-X4	SP6519	Contouring	0.002 - 0.010	0.002 - 0.009	-	-	0.002 - 0.010	0.002 - 0.010	0.002 - 0.008	-	-	-	-	-	-	-	-
E-41-X4	MP91M	Contouring	0.002 - 0.010	0.002 - 0.009	-	-	0.002 - 0.010	0.002 - 0.010	0.002 - 0.008	-	-	-	-	-	-	-	-
E-442-X4	X500	Contouring	-	-	0.002 - 0.016	0.002 - 0.013	-	-	-	-	-	0.002 - 0.010	0.002 - 0.010	0.002 - 0.010	0.002 - 0.010	-	-
E-442-X4	X700	Contouring	-	-	0.002 - 0.015	0.002 - 0.012	-	-	-	-	-	0.002 - 0.009	0.002 - 0.009	0.002 - 0.009	0.002 - 0.010	-	-
E-442-X4	SP6519	Contouring	0.002 - 0.018	0.002 - 0.015	0.002 - 0.015	0.002 - 0.012	0.002 - 0.016	0.002 - 0.016	0.002 - 0.014	-	-	0.002 - 0.009	0.002 - 0.009	0.002 - 0.009	0.002 - 0.010	-	-
RPHT-T-X4	X500	Contouring	-	0.006 - 0.016	-	-	-	-	-	-	-	-	-	-	-	-	-
RPHT-T-X4	X700	Contouring	-	-	-	0.006 - 0.014	-	-	-	-	-	-	-	-	-	-	-
RPHT-T-X4	SP6519	Contouring	0.006 - 0.018	0.006 - 0.016	-	-	0.006 - 0.018	0.006 - 0.018	0.006 - 0.016	-	-	-	-	-	-	-	-
RPMW-T-X4*	X500	Contouring	-	-	0.005 - 0.014	0.005 - 0.011	-	-	-	-	-	0.005 - 0.010	0.005 - 0.010	0.005 - 0.011	0.005 - 0.011	-	-
RPMW-T-X4*	SP6519	Contouring	0.005 - 0.018	0.005 - 0.016	-	-	0.005 - 0.018	0.005 - 0.018	0.005 - 0.016	-	-	-	-	-	-	-	-
RPMW-T-X4*	MP91M	Contouring	0.005 - 0.017	-	-	-	0.005 - 0.017	0.005 - 0.017	0.005 - 0.014	-	-	-	-	-	-	0.004 - 0.006	0.004 - 0.006

Note: HTA = High Temperature Alloys

Speed recommendations can be found on page A215.

Speed v_c (SFM)

7713VR Series

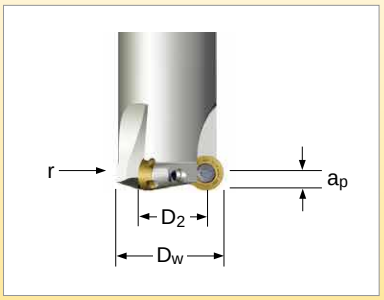
Wear Resistance: − ⟵ +

Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

ISO	Materials	Rm and Hardness			CVD X Grade			PVD X Grade			PVD Standard			PVD Standard			CVD Standard			Uncoated Micrograin
			💧	🚫	X500	💧	🚫	X700	💧	🚫	SP6519	💧	🚫	SP4019	💧	🚫	MP91M	💧	🚫	GH1
P	Unalloyed Steel	<600 N/mm² <180 HBN	⦿	●	425 - 885				⦿	●	425 - 970		●	460 - 1035		●	460 - 1130			
		<950 N/mm² <280 HBN			375 - 785						375 - 855			395 - 900			395 - 1000			
	Alloyed Steel	700-950 N/mm² 200-280 HBN	⦿	●	330 - 690				⦿	●	330 - 755		●	345 - 805		●	345 - 885			
		950-1200 N/mm² 280-355 HBN			245 - 525						245 - 575			260 - 625			260 - 675			
		1200-1400 N/mm² 355-415 HBN		●	165 - 330					●	165 - 360		●	165 - 395		●	165 - 425			
M	Stainless Steel	Austenitic + Ferritic 300 series	⦿	●	375 - 820	⦿	●	375 - 855	⦿	●	375 - 885									
		Martensitic 400 series			330 - 720			345 - 755			345 - 770									
	PH Stainless	Refractory P.H.	●		165 - 360	●		165 - 375	●		165 - 395	●		165 - 425						
K	Cast Iron	Grey GG-Ft									460 - 970						475 - 1200			
		Spheroidal-Ductile GGG-FGS							⦿	●	360 - 785					●	375 - 935			
		Malleable GTS - MN/MP									330 - 720						345 - 855			
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN										●		1310 - 9500				●		1310 - 10005
		Aluminum + Silicon > 16% Si 92 HBN												970 - 7615						970 - 8005
S	High Temperature Alloys	Iron Based	●		75 - 160	●		75 - 170	●		75 - 180	●		80 - 210						
		Cobalt Based			70 - 145			70 - 150			70 - 160			75 - 170						
		Nickel Based			80 - 170			80 - 175			80 - 180			85 - 190						
		Titanium Based			115 - 240			120 - 250			120 - 260			120 - 275						
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN														●	165 - 345			
		Chilled Cast Iron >1400 N/mm² > 400 HBN															130 - 310			

7713VR Technical Information



Working Diameter:

Formula to evaluate the correct working diameter based on axial depth of cut (a_p).

$$D_w = D_2 + 2 \times \sqrt{r^2 - (r - a_p)^2}$$

where:

- D_w = Working Diameter
- D_2 = Diameter of cutter insert center to center
- r = Insert radius
- a_p = Axial Depth of Cut

7713VR Technical Information

where:

- f_z = Feed per tooth
- h_m = Average chip thickness
- r = Insert radius
- a_e = Radial Depth of Cut
- a_p = Axial Depth of Cut

Formula to find programmed feed rate based on radial engagement and axial depth of cut.

$$f_z = \frac{h_m}{\frac{\sqrt{r^2-(r-a_e)^2}}{r} \times \frac{\sqrt{r^2-(r-a_p)^2}}{r}}$$

Formula to calculate the average chip thickness h_m in relation with radial engagement and depth of cut.

$$h_m = f_z \times \frac{\sqrt{r^2-(r-a_e)^2}}{r} \times \frac{\sqrt{r^2-(r-a_p)^2}}{r}$$

Simplified formulas to evaluate h_m and f_z based on radial engagement or depth of cut.

Calculation of the average chip thickness in relation with the D.O.C. (Axial)

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_p}}$$

- h_m = Average chip thickness
- a_p = Depth of cut
- f_z = Feed per tooth
- d = Insert diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_p}{d}}$$

Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of Dia.

Formula: Program Feed Rate (f_z)

$$\sqrt{\frac{d}{a_e}}$$

- h_m = Average chip thickness
- a_e = Radial engagement
- f_z = Feed per tooth
- d = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

STELLRAM

With round inserts, the thickness of the chip varies depending on the axial depth of cut and is related to the size of the cutting edge preparation.
For best tool-life it is important to maintain the proper chip thickness as shown below.

Inserts RP..10T3..

Dimensions (inch)						
Inserts Geometry	Insert Size	a_p Axial d.o.c.	h_m min.	h_m max.	f_z min.	f_z max.
F-701-X4	0.394	0.010	0.001	0.002	0.006	0.013
	0.394	0.020	0.001	0.002	0.004	0.009
	0.394	0.040	0.001	0.002	0.003	0.006
	0.394	0.060	0.001	0.002	0.003	0.005
	0.394	0.080	0.001	0.002	0.002	0.004
	0.394	0.100	0.001	0.002	0.002	0.004
E-701-X4	0.394	0.010	0.001	0.003	0.006	0.019
	0.394	0.020	0.001	0.003	0.004	0.013
	0.394	0.040	0.001	0.003	0.003	0.009
	0.394	0.060	0.001	0.003	0.003	0.008
	0.394	0.080	0.001	0.003	0.002	0.007
	0.394	0.100	0.001	0.003	0.002	0.006
E-421-X4	0.394	0.010	0.002	0.003	0.013	0.019
	0.394	0.020	0.002	0.003	0.009	0.013
	0.394	0.040	0.002	0.003	0.006	0.009
	0.394	0.060	0.002	0.003	0.005	0.008
	0.394	0.080	0.002	0.003	0.004	0.007
	0.394	0.100	0.002	0.003	0.004	0.006
E-41-X4	0.394	0.010	0.002	0.004	0.013	0.025
	0.394	0.020	0.002	0.004	0.009	0.018
	0.394	0.040	0.002	0.004	0.006	0.013
	0.394	0.060	0.002	0.004	0.005	0.010
	0.394	0.080	0.002	0.004	0.004	0.009
	0.394	0.100	0.002	0.004	0.004	0.008
E-422-X4	0.394	0.010	0.002	0.005	0.013	0.031
	0.394	0.020	0.002	0.005	0.009	0.022
	0.394	0.040	0.002	0.005	0.006	0.016
	0.394	0.060	0.002	0.005	0.005	0.013
	0.394	0.080	0.002	0.005	0.004	0.011
	0.394	0.100	0.002	0.005	0.004	0.010
RPHT-T-X4	0.394	0.010	0.003	0.005	0.019	0.031
	0.394	0.020	0.003	0.005	0.013	0.022
	0.394	0.040	0.003	0.005	0.009	0.016
	0.394	0.060	0.003	0.005	0.008	0.013
	0.394	0.080	0.003	0.005	0.007	0.011
	0.394	0.100	0.003	0.005	0.006	0.010
RPMW-T-X4	0.394	0.010	0.004	0.006	0.025	0.038
	0.394	0.020	0.004	0.006	0.018	0.027
	0.394	0.040	0.004	0.006	0.013	0.019
	0.394	0.060	0.004	0.006	0.010	0.015
	0.394	0.080	0.004	0.006	0.009	0.013
	0.394	0.100	0.004	0.006	0.008	0.012

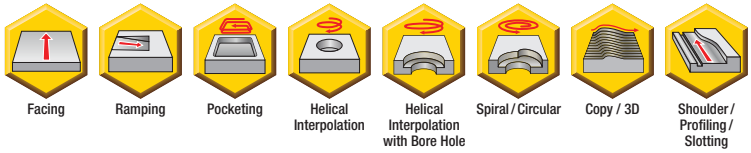
With round inserts, the thickness of the chip varies depending on the axial depth of cut and is related to the size of the cutting edge preparation.
For best tool-life it is important to maintain the proper chip thickness as shown below.

Inserts RP..1204..

Dimensions (inch)						
Inserts Geometry	Insert Size	a_p Axial d.o.c.	h_m min.	h_m max.	f_z min.	f_z max.
F-701-X4	0.472	0.010	0.001	0.004	0.007	0.027
	0.472	0.020	0.001	0.004	0.005	0.019
	0.472	0.040	0.001	0.004	0.003	0.014
	0.472	0.060	0.001	0.004	0.003	0.011
	0.472	0.080	0.001	0.004	0.002	0.010
	0.472	0.100	0.001	0.004	0.002	0.009
	0.472	0.120	0.001	0.004	0.002	0.008
	0.472	0.140	0.001	0.004	0.002	0.007
E-701-X4	0.472	0.010	0.001	0.005	0.007	0.034
	0.472	0.020	0.001	0.005	0.005	0.024
	0.472	0.040	0.001	0.005	0.003	0.017
	0.472	0.060	0.001	0.005	0.003	0.014
	0.472	0.080	0.001	0.005	0.002	0.012
	0.472	0.100	0.001	0.005	0.002	0.011
	0.472	0.120	0.001	0.005	0.002	0.010
	0.472	0.140	0.001	0.005	0.002	0.009
E-421-X4	0.472	0.010	0.002	0.006	0.014	0.041
	0.472	0.020	0.002	0.006	0.010	0.029
	0.472	0.040	0.002	0.006	0.007	0.021
	0.472	0.060	0.002	0.006	0.006	0.017
	0.472	0.080	0.002	0.006	0.005	0.015
	0.472	0.100	0.002	0.006	0.004	0.013
	0.472	0.120	0.002	0.006	0.004	0.012
	0.472	0.140	0.002	0.006	0.004	0.011
E-41-X4	0.472	0.010	0.002	0.006	0.014	0.041
	0.472	0.020	0.002	0.006	0.010	0.029
	0.472	0.040	0.002	0.006	0.007	0.021
	0.472	0.060	0.002	0.006	0.006	0.017
	0.472	0.080	0.002	0.006	0.005	0.015
	0.472	0.100	0.002	0.006	0.004	0.013
	0.472	0.120	0.002	0.006	0.004	0.012
	0.472	0.140	0.002	0.006	0.004	0.011
E-442-X4	0.472	0.010	0.002	0.008	0.014	0.055
	0.472	0.020	0.002	0.008	0.010	0.039
	0.472	0.040	0.002	0.008	0.007	0.027
	0.472	0.060	0.002	0.008	0.006	0.022
	0.472	0.080	0.002	0.008	0.005	0.019
	0.472	0.100	0.002	0.008	0.004	0.017
	0.472	0.120	0.002	0.008	0.004	0.016
	0.472	0.140	0.002	0.008	0.004	0.015
RPHT-T-X4	0.472	0.010	0.004	0.008	0.027	0.055
	0.472	0.020	0.004	0.008	0.019	0.039
	0.472	0.040	0.004	0.008	0.014	0.027
	0.472	0.060	0.004	0.008	0.011	0.022
	0.472	0.080	0.004	0.008	0.010	0.019
	0.472	0.100	0.004	0.008	0.009	0.017
	0.472	0.120	0.004	0.008	0.008	0.016
	0.472	0.140	0.004	0.008	0.007	0.015
RPMW-T-X4	0.472	0.010	0.005	0.009	0.034	0.062
	0.472	0.020	0.005	0.009	0.024	0.044
	0.472	0.040	0.005	0.009	0.017	0.031
	0.472	0.060	0.005	0.009	0.014	0.025
	0.472	0.080	0.005	0.009	0.012	0.022
	0.472	0.100	0.005	0.009	0.011	0.020
	0.472	0.120	0.005	0.009	0.010	0.018
	0.472	0.140	0.005	0.009	0.009	0.017



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ALUMINUM HIGH SPEED MILLING CUTTERS

5182VZ Cutter Series are a unique design for high performance machining of Aluminum Alloys. This high speed cutter is specifically designed for high metal removal rates due to the large axial depth of cut capability.

This cutter and inserts design features a positive rake which reduces cutting forces, built-up edge and power consumption. This design greatly reduces deformation when machining thin walled components.

Two screws locate the micrograin inserts in each pocket for accurate indexing. The inserts are precision ground to close tolerances, offering an excellent surface finish and eliminating the need for regrinding as with other types of tools.

This cutter is excellent for machining very complex components especially in the Aerospace Industry.

A maximum ramp angle of 15 degrees is possible.

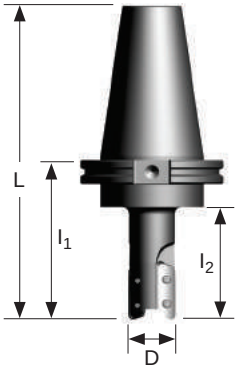
5182VZ

C5182VZ32:
Maximum a_p = 1.250"
Diameter Range = 1.250"

C5182VZ33:
Maximum a_p = 1.300"
Diameter Range = 1.500"

C5182VZ53:
Maximum a_p = 2.080"
Diameter Range = 2.00" to 2.50"





Caterpillar Vee Flange

Product		Dimensions (inch)								Spares				
EDP	**Item Description**	D	L	l_1	l_2	Taper	Radius max	a_p max	No. of Teeth	*EDP*	*	*EDP*	*	Screw Tightening in. lbs.
5182VZ32 Caterpillar Vee Flange 50 Taper														
018598	**C5182VZ32FA50/1.25R3.00-4**	1.250	8.375	4.375	3.000	Cat. 50	4.00	1.250	2	*023144*	D4008A	*015240*	T15	35.40
5182VZ33 Caterpillar Vee Flange 50 Taper														
018599	**C5182VZ33FA50/1.50R4.00-4**	1.500	9.375	5.375	4.000	Cat. 50	4.00	1.300	2	*015261*	D4010A	*015240*	T15	35.40
5182VZ53 Caterpillar Vee Flange 50 Taper														
018600	**C5182VZ53FA50/2.00R4.00-4**	2.000	8.750	4.750	3.375	Cat. 50	4.00	2.080	2	*030820*	DP5009A	*030819*	TP20	53.10
018601	**C5182VZ53FA50/2.50R5.00-4**	2.500	10.380	6.375	5000	Cat. 50	4.00	2.080	2	*030820*	DP5009A	*030819*	TP20	53.10

Note:

*Screw DP5009A & Screw driver TP20 are being used for new cutters as of production date **January 2014**.

* Old screws D5010A & screw driver T20 have to be used for cutters produced prior to production date above.

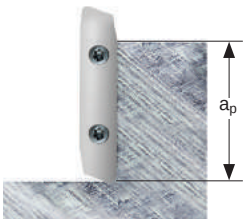
* Old screws D5010A & new screws cannot be mixed and used on the same cutter.

5182VZ Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
018598	**C5182VZ32FA50/1.25R3.00-4**	1.250	15.00	1.641	2.421	0.240	18,000
018599	**C5182VZ33FA50/1.50R4.00-4**	1.500	15.00	2.107	2.921	0.240	12,000
018600	**C5182VZ53FA50/2.00R4.00-4**	2.000	15.00	2.913	3.921	0.240	21,000
018601	**C5182VZ53FA50/2.50R5.00-4**	2.500	15.00	3.913	4.921	0.240	18,000

Note: Because the overall length of the insert is reduced, as the corner radius increases, the L, l_1, l_2 and a_p dimensions will reduce/increase as the radius size increases/reduces.

The numbers above assume a 0.157 in. corner radius.
Part number ending -4 means 0.157 in. max radius on insert.



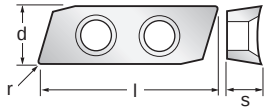
Depth of Cut (a_p)

STELLRAM


ZECX32-701


ZDCX33-701


ZDCX53-701



Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_e / a_p max.**	a_e min. - max. 0.040 - 0.400 a_p max.*	a_e min. - max. 0.008 - 0.040 a_p max.*					
025787	ZECX32T302ER-701	GH2	♦	♦	○●♦●	0.469	1.457	0.156	0.008	0.001
029643	ZECX32T325ER-701	GH2	♦	♦	○●♦●	0.469	1.457	0.156	0.098	0.001
017485	ZECX32T330ER-701	GH2	♦	♦	○●♦●	0.469	1.457	0.156	0.118	0.001
025788	ZECX32T340ER-701	GH2	♦	♦	○●♦●	0.469	1.457	0.156	0.157	0.001
025785	ZDCX330402ER-701	GH2	♦	♦	○●♦●	0.531	1.457	0.187	0.008	0.001
023734	ZDCX330425ER-701	GH2	♦	♦	○●♦●	0.531	1.457	0.187	0.098	0.001
025786	ZDCX330440ER-701	GH2	♦	♦	○●♦●	0.531	1.457	0.187	0.157	0.001
025770	ZDCX530402ER-701	GH2	♦	♦	○●♦●	0.583	2.520	0.187	0.008	0.001
017479	ZDCX530430ER-701	GH2	♦	♦	○●♦●	0.583	2.520	0.187	0.118	0.001
025769	ZDCX530440ER-701	GH2	♦	♦	○●♦●	0.583	2.520	0.187	0.157	0.001

Machining Choice: ♦ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.



** Max. recommended a_e/a_p = 100%; (depending on the application). For slotting = 65% of the cutter diameter.

* a_p max. is determined by the cutter selection.

5182VZ Feeds f_z (inch/tooth)

Insert Size	Radius	Operation	Grade	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
				Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
32,33 & 53	0.008	ER-701	GH2	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.001 - 0.010	0.001 - 0.008	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	-	-
32,33 & 53	0.098	ER-701	GH2	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.001 - 0.010	0.001 - 0.008	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	-	-
32,33 & 53	0.118	ER-701	GH2	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.001 - 0.010	0.001 - 0.008	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	-	-
32,33 & 53	0.157	ER-701	GH2	-	-	-	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.001 - 0.010	0.001 - 0.008	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	0.002 - 0.003	-	-

Note: HTA = High Temperature Alloys

Speed recommendations can be found on page A222.

Speed v_c (SFM)

5182VZ Series

Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

ISO	Materials	Rm and Hardness			Uncoated Micrograin
					GH1
P	Unalloyed Steel	<600 N/mm² <180 HBN			
		<950 N/mm² <280 HBN			
	Alloyed Steel	700-950 N/mm² 200-280 HBN			
		950-1200 N/mm² 280-355 HBN			
		1200-1400 N/mm² 355-415 HBN			
M	Stainless Steel	Austenitic + Ferritic 300 series			
		Martensitic 400 series			
	PH Stainless	Refractory P.H.	●		270 - 400
K	Cast Iron	Grey GG-Ft	⦿	●	445 - 1140
		Spheroidal-Ductile GGG-FGS			395 - 805
		Malleable GTS - MN/MP			375 - 655
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN	●		1310 - 10005
		Aluminum + Silicon > 16% Si 92 HBN			970 - 8005
S	High Temperature Alloys	Iron Based	●		150 - 190
		Cobalt Based			150 - 190
		Nickel Based			150 - 190
		Titanium Based			150 - 220
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN			
		Chilled Cast Iron >1400 N/mm² > 400 HBN			

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Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of dia.

Formula: Program Feed Rate (f_z)

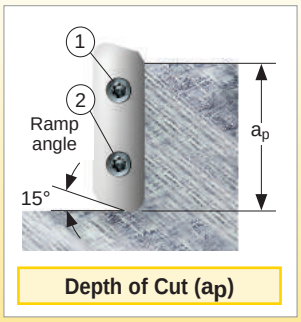
$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

5182VZ32 Technical Information

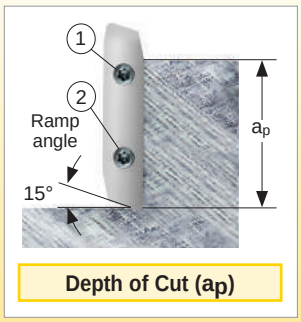


Maximum RPM when balanced = 18,000 RPM.
Maximum ramp angle = 15°

Fixing screws:

1) Loosely tighten screws number 1 and 2.
2) Tighten screw number 1 to 31-35 in. lbs.
3) Tighten screw number 2 to 31-35 in. lbs.

5182VZ33 Technical Information

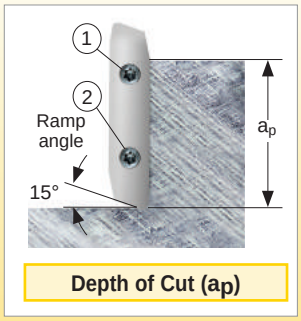


Maximum RPM when balanced = 12,000 RPM.
Maximum ramp angle = 15°

Fixing screws:

1) Loosely tighten screws number 1 and 2.
2) Tighten screw number 1 to 31-35 in. lbs.
3) Tighten screw number 2 to 31-35 in. lbs.

5182VZ53 Technical Information



Maximum RPM when balanced = 12,000 RPM
Maximum ramp angle = 15°

Fixing screws:

1) Loosely tighten screws number 1 and 2.
2) Tighten screw number 1 to 44-48 in. lbs.
3) Tighten screw number 2 to 44-48 in. lbs.





STELLRAM



ALUMINUM HIGH SPEED MILLING CUTTERS

Stellram's **5702VZD14** cutter is designed, manufactured and tested in accordance with EN ISO 15641:2001 to ensure maximum stability in high speed applications. The tool is capable of 43,000 RPM.

This cutter is specially designed for machining pockets and profiles on Aluminum and Aluminum Alloys. This cutter design also performs contouring operations (finishing) in composite materials and Titanium Alloys, due to the fully ground 701 geometry.

Stellram's **5720VZ16** cutters are our latest design for high metal removal in Aluminum applications. This tool is designed, manufactured and tested in accordance with EN ISO 15641:2001 for maximum stability in high speed applications. The tools are capable of 51,000 rpm depending on the cutter diameter.

This new patented design allows each body to hold all inserts with different radii without losing any gauge height of the cutter length.

Features and Benefits of the 5702VZD and 5720VZ:

All Stellram profile and pocketing cutters feature through-tool coolant allowing better chip evacuation and higher feed rates.

Cylindrical Shank and special HSK Integral Shanks on any 5702VZD14 and 5720VZ16 are designed and balanced to G6.3 at 30,000 rpm for diameters 2.000" and below. Diameters larger then 2.000" are balanced to G6.3 at 24,000 rpm.

The pockets are reinforced to allow for heavy feed, safe ramping and more line contact when utilizing a larger radius insert for more stability during machining. These features increase tool life and productivity.

These unique ZDCX14…FR-701 and ZDET16…FR-721 insert designs allow machining in thin-walled applications due to very low cutting pressure.

For the 5702VZD: 5 different radii are available. For the 5720VZ: 12 different radii are available, each with the same cutting depth capacity of 16mm.

Standard radii are available from facet to 0.157" (4,00mm) for the 5702VZD14 and facet to 0.236" (6,00mm) for the 5720VZ16.

57_VZ.

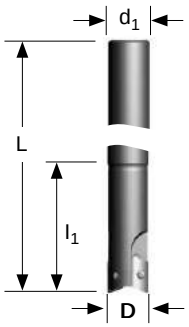
5702VZD14:
Maximum a_p = 0.472"
Diameter Range = 0.750" only

5720VZ16:
Maximum a_p = 0.630"
Diameter Range = 1.000" to 3.000"

Note: Shell mill and modular head cutters are not balanced. It is recommended to balance the cutter and adapter as an assembly for high speed machining at 8,000 rpm or above. See detailed notes on the following product pages.

HSK specials are available upon request with specific shank and reach lengths.





Cylindrical Shank

Product		Dimensions (inch)							Spares				
EDP	**Item Description**	D	L	l_1	d_1	ap max	No. of Teeth	Insert radius range	*EDP*		*EDP*		Screw Tightening in. lbs.*
5702VZD14 Cylindrical Shank													
028995	**C5702VZD14CA.75R2.3-2**	0.750	4.281	2.250	0.750	0.472	2	< 0.079	*015060*	F2505T	*018488*	T7	7.08
029008	**C5702VZD14CA.75R2.3-4**	0.750	4.281	2.250	0.750	0.472	2	0.098 to 0.157	*015060*	F2505T	*018488*	T7	7.08

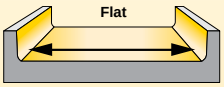
*** It is important to change the screw each time the insert is changed to ensure the highest security.**
A dynamometric key and the right torque value are important. See above for the correct torque information.

5702VZD Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
028995	**C5702VZD14CA.75R2.3-2**	0.750	11.0*	0.981	1.421	0.120	43,000
029008	**C5702VZD14CA.75R2.3-4**	0.750	11.0*	0.981	1.421	0.120	43,000



* Max. ramping angle for insert is calculated with facet



Find the different ramping angles for all available insert radii on technical information page A232.

Radial depth of cut = 0.008" up to full cutter diameter.

These tools have been designed, manufactured and tested in accordance with EN ISO standard 15641:2001

These tools are stocked without an electronic chip.

Note: If using a insert with radius, then the facing pitch for the 5702VZD cutter is equal to the cutting diameter (D) minus 2 x chosen radius.

Cylindrical Shanks or Special HSK Integral Shanks are designed and balanced to G6.3 at 30,000 RPM for diameters 2.000" and below. Diameters larger then 2.000" are balanced to G6.3 at 24,000 rpm.

Cylindrical Shank tools mounted in a shrink fit holder or any other mill chuck holder + inserts + screws must be re-inspected for balance as an assembly by the end user when at or exceeding 8,000 rpm. End user must balance the assembly to a G6.3 value minimum.

Additional Balancing and Torque values can be found in the technical section pages A234.

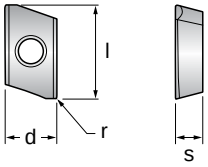


Depth of Cut (a_p)

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ZDCX14-701



Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_p max. 0.472*	a_p min. - max. 0.040 - 0.160	a_p min. - max. 0.008 - 0.040					
029027	ZDCX1403PDFR-701	GH1	♦	♦	♦	0.299	0.663	0.125	Facet	0.001
029028	ZDCX140320FR-701	GH1	♦	♦	♦	0.299	0.663	0.125	0.079	0.001
026019	ZDCX140325FR-701	GH1	♦	♦	♦	0.299	0.663	0.125	0.098	0.001
029029	ZDCX140330FR-701	GH1	♦	♦	♦	0.299	0.663	0.125	0.118	0.001
026020	ZDCX140340FR-701	GH1	♦	♦	♦	0.299	0.663	0.125	0.157	0.001

Machining Choice: ♦ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

* Max. possible a_p of 0.472" and a_e is full diameter (depending on the application).
* For slotting applications with 5702VZD14 series the maximum a_p on page A231.

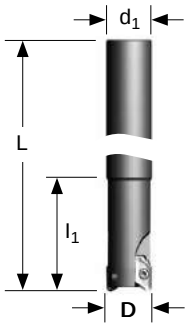


5702VZD Feeds f_z (inch/tooth)

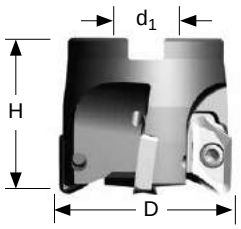
Size	Geometry	Grade	Operation	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN
				Min. - Max.	Min. - Max.
14mm	FR-701	GH1	Profile/ Pocketing	0.001 - 0.010	0.001 - 0.008

Speed v_c (SFM)

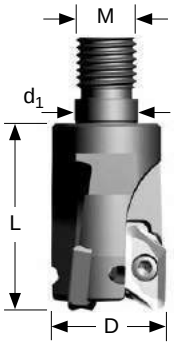
5702VZD Series			K10-K20/C3 - C2 ISO / ANSI	
			Speed min. - max.	
Coolant Recommendation Recommended ● Possible ⦿				Uncoated Micrograin
ISO	Materials	Rm and Hardness	💧	⊘	GH1
N	Aluminium & Alloys	Aluminum & Alloys < 16% Si 116 HBN	●		1310 - 10005
		Aluminum + Silicon > 16% Si 92 HBN			970 - 8005



Cylindrical Shank



Shell Mill Fixation



Modular Head



Depth of Cut (ap)

Product		Dimensions (inch)							Spares				
EDP	**Item Description**	D	L/H	l_1	d_1	ap max	No. of Teeth	Insert radius range	*EDP*		*EDP*		Screw Tightening in. lbs.*
5720VZ16 Cylindrical Shank - Coarse and Medium Pitch													
034613	**C5720VZ16CA1.0Z2R2.75**	1.000	5.030	2.750	1.000	0.630	2	Facet to 0.236	*030820*	DP5009A	*030819*	TP20	53.10
034622	**C5720VZ16CA1.25Z2R3.0**	1.250	5.280	3.000	1.250	0.630	2	Facet to 0.236	*030820*	DP5009A	*030819*	TP20	53.10
031664	**C5720VZ16CA1.25Z3R3.0**	1.250	5.280	3.000	1.250	0.630	3	Facet to 0.236	*030820*	DP5009A	*030819*	TP20	53.10
5720VZ16 Shell Mill Fixation - Coarse and Medium Pitch													
034620	**C5720VZ16-A1.50Z03R**	1.500	1.574	-	0.500	0.630	3	Facet to 0.236	*030820*	DP5009A	*030819*	TP20	53.10
031332	**C5720VZ16-A2.00Z03R**	2.000	1.574	-	0.750	0.630	3	Facet to 0.236	*030820*	DP5009A	*030819*	TP20	53.10
031333	**C5720VZ16-A2.00Z04R**	2.000	1.574	-	0.750	0.630	4	Facet to 0.236	*030820*	DP5009A	*030819*	TP20	53.10
031334	**C5720VZ16-A2.50Z04R**	2.500	1.574	-	1.000	0.630	4	Facet to 0.236	*030820*	DP5009A	*030819*	TP20	53.10
031335	**C5720VZ16-A2.50Z05R**	2.500	1.574	-	1.000	0.630	5	Facet to 0.236	*030820*	DP5009A	*030819*	TP20	53.10
031336	**C5720VZ16-A3.00Z04R**	3.000	1.970	-	1.000	0.630	4	Facet to 0.236	*030820*	DP5009A	*030819*	TP20	53.10
031337	**C5720VZ16-A3.00Z05R**	3.000	1.970	-	1.000	0.630	5	Facet to 0.236	*030820*	DP5009A	*030819*	TP20	53.10

*** It is important to change the screw each time the insert is changed to ensure the highest security.**
A dynamometric key and the right torque value are important. See above for the correct torque information.

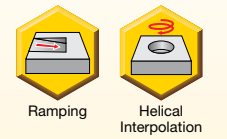
Product		Dimensions (inch)							Spares				
EDP	**Item Description**	D	L/H	M	d_1	ap max	No. of Teeth	Insert radius range	*EDP*		*EDP*		Screw Tightening in. lbs.*
5720VZ16 Modular Head - Coarse and Medium Pitch													
034615	**A5720VZ16SA1.00Z2R2**	1.000	1.970	M12	0.492	0.630	2	Facet to 0.236	*030820*	DP5009A	*030819*	TP20	53.10
034621	**A5720VZ16SA1.25Z2R2**	1.250	1.970	M16	0.669	0.630	2	Facet to 0.236	*030820*	DP5009A	*030819*	TP20	53.10
031640	**A5720VZ16SA1.25Z3R2**	1.250	1.970	M16	0.669	0.630	3	Facet to 0.236	*030820*	DP5009A	*030819*	TP20	53.10

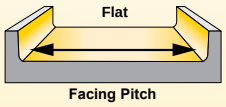
*** It is important to change the screw each time the insert is changed to ensure the highest security.**
A dynamometric key and the right torque value are important. See above for the correct torque information.

Note: For cylindrical shank extensions in high density alloy with through coolant refer to page A78.

5720VZ Technical Information (inch)

Product		Dimensions					
EDP	**Item Description**	Facing Pitch	Ramping Angle °	Helical Hole min. - max.		a_p max Helical / Linear	Max RPM
034613	**C5720VZ16CA1.0Z2R2.75**	1.000	14.7*	1.193	1.921	0.160	50,000
034622	**C5720VZ16CA1.25Z2R3.0**	1.250	11.5*	1.693	2.421	0.160	41,500
031664	**C5720VZ16CA1.25Z3R3.0**	1.250	11.5*	1.693	2.421	0.160	41,500
034620	**C5720VZ16-A1.50Z03R**	1.500	8.1*	2.193	2.921	0.160	36,500
031332	**C5720VZ16-A2.00Z03R**	2.000	7.8*	3.193	3.921	0.160	30,000
031333	**C5720VZ16-A2.00Z04R**	2.000	7.8*	3.193	3.921	0.160	30,000
031334	**C5720VZ16-A2.50Z04R**	2.500	5.8*	4.193	4.921	0.160	26,000
031335	**C5720VZ16-A2.50Z05R**	2.500	5.8*	4.193	4.921	0.160	26,000
031336	**C5720VZ16-A3.00Z04R**	3.000	4.6*	5.193	5.921	0.160	23,000
031337	**C5720VZ16-A3.00Z05R**	3.000	4.6*	5.193	5.921	0.160	23,000
034615	**A5720VZ16SA1.00Z2R2**	1.000	14.7*	1.193	1.921	0.160	50,000
034621	**A5720VZ16SA1.25Z2R2**	1.250	11.5*	1.693	2.421	0.160	41,500
031640	**A5720VZ16SA1.25Z3R2**	1.250	11.5*	1.693	2.421	0.160	41,500





* Max. ramping angle for insert is calculated with facet

Find the different ramping angles for all available insert radii on technical information page A232.

Radial depth of cut = 0.008" up to full cutter diameter.

These tools have been designed, manufactured and tested in accordance with EN ISO standard 15641:2001

These tools are stocked without an electronic chip.

Note: If using a insert with radius, then the facing pitch for the 5702VZ cutter is equal to the cutting diameter (D) minus 2 x chosen radius.

Cylindrical Shanks or Special HSK Integral Shanks are designed and balanced to G6.3 at 30,000 RPM for diameters 2.000" and below. Diameters larger then 2.000" are balanced to G6.3 at 24,000 rpm.

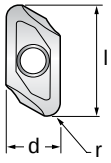
Cylindrical Shank tools mounted in a shrink fit holder or any other mill chuck holder + inserts + screws must be re-inspected for balance as an assembly by the end user when at or exceeding 8,000 rpm. End user must balance the assembly to a G6.3 value minimum.

Shell Mills and Modular Heads are not balanced. These tools must be re-inspected for balance as an assembly, cutter + adapter + inserts + screws by the end user when at or exceeding 8,000 rpm. End user must balance the assembly to a G6.3 value minimum.

Additional Balancing and Torque values can be found in the technical section pages A234.



ZDET16-721



Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
			Depth of Cut (inch)							
EDP	**Item Description**	**Grade**	a_p max. 0.630*	a_p min. - max. 0.040 - 0.200	a_p min. - max. 0.008 - 0.040	d (IC)	l	s	r	h_m min
030927	**ZDET16M5PDFR-721**	**GH1**	⧫	⧫	⧫	0.445	0.902	0.197	Facet	0.001
031384	**ZDET16M504FR-721**	**GH1**	⧫	⧫	⧫	0.445	0.902	0.197	0.016	0.001
030928	**ZDET16M508FR-721**	**GH1**	⧫	⧫	⧫	0.445	0.902	0.197	0.031	0.001
031385	**ZDET16M512FR-721**	**GH1**	⧫	⧫	⧫	0.445	0.902	0.197	0.047	0.001
030929	**ZDET16M516FR-721**	**GH1**	⧫	⧫	⧫	0.445	0.902	0.197	0.062	0.001
030930	**ZDET16M520FR-721**	**GH1**	⧫	⧫	⧫	0.445	0.902	0.197	0.079	0.001
030931	**ZDET16M525FR-721**	**GH1**	⧫	⧫	⧫	0.445	0.902	0.197	0.098	0.001
030932	**ZDET16M530FR-721**	**GH1**	⧫	⧫	⧫	0.445	0.902	0.197	0.118	0.001
030933	**ZDET16M532FR-721**	**GH1**	⧫	⧫	⧫	0.445	0.902	0.197	0.125	0.001
030934	**ZDET16M540FR-721**	**GH1**	⧫	⧫	⧫	0.445	0.902	0.197	0.157	0.001
030935	**ZDET16M550FR-721**	**GH1**	⧫	⧫	⧫	0.445	0.902	0.197	0.216	0.001
030936	**ZDET16M560FR-721**	**GH1**	⧫	⧫	⧫	0.445	0.902	0.197	0.236	0.001

Machining Choice: ⧫ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

* Max. possible a_p of 0.630" and a_e is full diameter (depending on the application).

* For slotting applications with 5720VZ16 series please see recommendations for maximum a_p on page A232.



5720VZ Feeds f_z (inch/tooth)

Size	Geometry	Grade	Operation	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN
				Min. - Max.	Min. - Max.
16mm	FR-721	GH1	Profile/ Pocketing	0.001 - 0.010	0.001 - 0.008

Speed v_c (SFM)

5720VZ Series			K10-K20/C3 - C2 ISO / ANSI	
			Speed min. - max.	
Coolant Recommendation Recommended ● Possible ⦿				Uncoated Micrograin
ISO	**Materials**	**Rm and Hardness**		GH1
N	**Aluminum & Alloys**	Aluminum & Alloys < 16% Si 116 HBN	●	1310 - 10005
		Aluminum + Silicon > 16% Si 92 HBN	●	970 - 8005

STELLRAM

Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of Dia.

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

Ramping angle 5702 (inch)					
Insert ZDCX1403...FR-701 Radius inch (mm)					
Cutter Diameter	Facet	2.0mm	2.50mm	3.00mm	4.00mm
	Facet	0.079"	0.098"	0.118"	0.157"
0.750	11.0°	9.8°	9.0°	8.0°	6.3°

*For Slotting applications with 5702VZD14 series the maximum a_p is 0.240".

These tools are designed, manufactured, tested and balanced in accordance with EN ISO 15641:2001 for maximum stability in high speed applications.

Metal Removal (inch)		
Calculated for 24,000 rpm		
Diameter (inch)	Z	Qmax - in^3/min
0.750	2	44

The chart above shows total metal removal capacity (based on 24,000 RPM) by cutter diameter and number of teeth (2).

The maximum RPM is engraved on all cutter bodies.

Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of Dia.

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

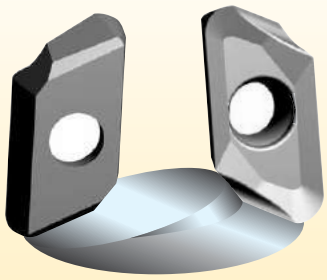
5720VZ16 Ramp Angle °

Cutter Dia. (inch)	Insert ZDET16M5… FR-721 (Radius inch)									
	mm	PDFR to R1.2	R1.6	R2.0	R2.5	R3.0	R3.2	R4.0	R5.0	R6.0
	inch	Facet 0.047	0.062	0.079	0.098	0.118	0.125	0.157	0.216	0.236
1.000	14.8		16.9	9.2	9.4	18.5	18.5	8.8	10.9	7.0
1.250	11.5		12.1	12.1	12.4	12.7	12.7	13.4	14.0	13.6
1.500	8.1		8.5	8.5	8.7	8.8	8.8	9.1	9.5	9.8
2.000	7.8		7.1	7.2	7.7	7.4	7.4	8.8	8.8	9.0
2.500	5.8		5.3	5.4	5.7	5.5	5.5	6.9	6.5	6.6
3.000	4.6		4.3	4.3	4.6	4,4	4,4	5.4	5.1	5.2

Possible Max a_p Slotting

Chart for maxium a_p when slotting with 5720VZ16 series

Diameter (inch)	No. of Inserts	a_p max (inch)
1.000	2	0.300
1.250	2	0.435
1.250	3	0.240
1.500	3	0.350
2.000	3	0.435
2.000	4	0.350
2.500	4	0.435
2.500	5	0.350
3.000	4	0.435
3.000	5	0.435



Possible Metal Removal (inch)

Calculated for N24,000 rpm

Diameter (inch)	Z	MRR in^3/min
1.00	2	97
1.25	2	197
1.25	3	182.7
1.50	3	316
2.00	3	483
2.00	4	527
2.50	4	811
2.50	5	830
3.00	4	1030
3.00	5	1288

a_p max in connection with: The cutter diameter, rigidity of the cutter / machine and the size of the flute.

The chart above shows total metal removal capacity (based on 24,000 RPM) by cutter diameter and number of teeth.

The maximum RPM is engraved on all cutter bodies.

Machinability by Materials (Aluminum)

Alloy Group	Alloy Designation	CHEMICAL COMPOSITION LIMITS (WT%)												Typical tremper	Rm (Mpa)	Machinability Chip formation	Machinability	Typical Applications	v_c SFM min. - max.	f_z IPT max.
		Cu	Si	Fe	Mn	Mg	Zn	Cr	Ti	Pb	Bi	Al	Others							
Al	1050	0.05	0.25	0.4	0.5	0.05	0.05	-	-	-	-	99.50min	-	H14	105	D	A	Chemical equipment Sheet metal work Coiled tube	1970 - 9840	0.008
	1100	0.05~0.20	Si+Fe1.0max		0.05	-	0.1	-	-	-	-	99.00min	-	H14	90	D	A			
Al-Cu	2011	50.~60.	0.4	0.7	-	-	0.3	-	-	0.2	0.6	remaining	-	T3	310	A	A	Screw machine products. Tuck frame. Aircraft structure. Jet engine impellers. Aircraft engine cylinder heads.	1310 - 8200	0.010
	2014	3.9~5.0	0.5~1.2	0.7	0.4~1.2	0.2~0.8	0.25	0.1	0.15	-	-	remaining	-	T6	430	B	A			
	2017	3.5~4.5	0.2~0.8	0.7	0.4~1.0	0.4~0.8	0.25	0.1	0.15	-	-	remaining	-	T4	390	B	A			
	2024	3.8~4.9	0.5	0.5	0.3~0.9	1.2~1.8	0.25	0.1	0.15	-	-	remaining	-	T4	465	B	A			
	2218	3.5~4.5	0.9	1	0.2	1.2~1.8	0.25	0.1	-	-	-	remaining	Ni1.7~2.3	T72	331	B	B			
	2224	3.8~4.4	0.12	0.15	0.30~0.9	1.2~1.8	0.25	0.1	0.15	-	-	remaining	-			A	A			
Al-Mn	3003	0.05~0.20	0.6	0.7	1.0~1.5	-	0.1	-	-	-	-	remaining	-	H14	140	D	B	Cooking utensils. Chemical equipment.	655 - 8200	0.010
Al-Si	4032	0.5~1.3	11.0~13.5	1	-	0.8~1.3	0.25	0.1	-	-	-	remaining	Ni0.5~1.3	T6	379	B	D	Pistons.	655 - 3280	0.007
Al-Mg	5052	0.1	0.25	0.4	0.1	2.2~2.8	0.1	0.15~0.35	-	-	-	remaining	- H34	H14	260	C	A	Architectural. Cable Sheeting. Welded pressure vessels. Hydraulic tubes. Transportation equipment.	1310 - 9840	0.010
	5056	0.1	0.3	0.4	0.05~0.20	4.5~5.6	0.1	0.05~0.20	-	-	-	remaining	- H32	H12	300	C	A			
	5083	0.1	0.4	0.4	0.4~1.0	4.0~4.9	0.25	0.05~0.25	0.15	-	-	remaining	-	H112	335	C	A			
	5086	0.1	0.4	0.5	0.20~0.7	3.5~4.5	0.25	0.05~0.25	0.15	-	-	remaining	- H116	H32	300	C	A			
Al-Mg-Si	6061	0.15~0.40	0.4~0.8	0.7	0.15	0.8~1.2	0.25	0.04~0.35	0.15	-	-	remaining	-	T6	300	C	B	Heavy duty structure. Furniture. Architectural. Heavy duty welded structure. Pipeline. Heat Sink.	1310 - 8200	0.008
	6063	0.1	0.2~0.6	0.35	0.1	0.45~0.9	0.1	0.1	0.1	-	-	remaining	-	T5	200	C	B			
	6070	0.15~0.40	1.0~1.7	0.5	0.40~1.0	0.50~1.2	0.25	0.1	0.15	-	-	remaining	-	T6	379	C	C			
	6151	0.35	0.6~1.2	1	0.2	0.45~0.8	0.25	0.15~0.35	0.15	-	-	remaining	-	T6		C	C			
	6262	0.15~0.40	0.4~0.8	0.7	0.15	0.8~1.2	0.25	0.04~0.14	0.15	0.4	0.7	remaining	-	T9	400	B	B			
	6351	0.1	0.7~1.3	0.5	0.4~0.8	0.40~0.8	0.2	-	0.2	-	-	remaining	-	T6	310	D	C			
	6463	0.2	0.20~0.6	0.15	0.05	0.45~0.9	0.05	-	-	-	-	remaining	-	T6	241	C	B			
Al-Zn	7001	1.6~2.6	0.35	0.4	0.2	2.6~3.4	6.8~8.0	0.18~0.35	0.2	-	-	remaining	-	O		B	A	High strength structure. Aircraft structure. Bat.	1310 - 9840	0.010
	7003	0.2	0.3	0.35	0.3	0.50~1.0	5.0~6.5	0.2	0.2	-	-	remaining	Zr0.05~0.25	T5	400	B	A			
	7050	2.0~2.6	0.12	0.15	0.1	1.9~2.6	5.7~6.7	0.04	0.06	-	-	remaining	Zr0.08~0.15	T73	530	B	A			
	7075	1.2~2.0	0.4	0.5	0.3	2.1~2.9	5.1~6.1	0.18~0.28	0.2	-	-	remaining	-	T6	570	B	A			
	7178	1.6~2.4	0.4	0.5	0.3	2.4~3.1	6.3~7.3	0.18~0.35	0.2	-	-	remaining	-	T6	600	B	A			
	7475	1.2~1.9	0.1	0.12	0.06	1.9~2.6	5.2~6.2	0.18~0.25	0.06	-	-	remaining	-	T61	565	B	A			

Machinability

- **A** EXCELLENT
- **B** GOOD-TO-EXCELLENT
- **C** GOOD
- **D** NOT GOOD

$$V_C = \frac{\pi \times D \times N}{12} \qquad N = \frac{12 \times V_C}{\pi \times D}$$

D: Tool diameter, N: RPM, V_C: Cutting speed (SFM), $\pi = 3.1416$

Choose a cutting speed in the range of values, compatible with the cutter max rotation capacity (engraved on the body) and your spindle stability.

Recommendations for High Speed Machining at 8,000 rpm or above.

- Check spindle condition:
  Runout
  Balancing
  Clamping of the attachment in traction
  Marking and cleanliness
- Check that the tool is suitable for the required use.
- Inserts must be locked positively in the pocket and secured using the torx screw provided. The screw must be torqued to the correct value as indicated in our charts on the steel product pages A226 & A228.
  For security use a new screw each time.
- Check the balancing of the – assembled tool – cutter body, inserts and attachment.
- Before start up, note the maximum RPM engraved on the tool or in our technical documents. The maximum RPM is linked to a precise balancing value.
- Ensure that the field of application of the tool shown in our technical documents and technological parameters is observed:

a_e (inch)	width of cut, lateral engagement (radial)
a_p (inch)	Axial depth of cut
f_z (inch/tooth)	Feed per tooth
n (rpm)	RPM

Stellram cannot accept responsibility for misuse of this product:

- Non observance of the above instructions
- Machine without casing
- Incorrect clamping of workpieces
- No safety device on the machine
- Any misuse or incorrect clamping

The optimum rotation must be determined by condition of the spindle. The spindle must be rigid to run at these higher RPMs.

Under no circumstances must any attempt be made to repair this tool. The only permitted maintenance is the indexing or replacement of the inserts. Use a new screw for each insert replacement.

When assembling the cutter to a shrink fit holder, the maximum protrusion can not exceed 10% of the reach of tool.

The Cutter Nomenclature Code:

Example: C-5702VZD14CA.75R2.3-2

5702	=	Stellram Product Family
V	=	Screw fixation
Z	=	Insert shape (parallelogram)
D	=	ISO insert clearance (D = 15°)
14	=	Insert edge length (14mm) 0.472"
C	=	Plain straight shank (No flats)
A	=	Through the tool coolant
.75	=	Cutting diameter (inch) .750"
R	=	Right hand tool
2.3	=	Reach of tool in (inch) 2.250"
-2	=	Maximum value of the insert radius in .004" increments (2 = .008")

This tool must only be used for the following applications: Face milling, shoulder milling, slotting and pocketing.

Cylindrical Shanks: 5702VZD14 and 5720VZ16 are designed and balanced to G6.3 at 30,000 rpm for diameters 50mm and below. Diameters larger then 50mm are stocked to G6.3 at 24,000 rpm. Cylindrical shank tools mounted in a shrink fit holder or any other mill chuck holder + inserts + screws must be re-inspected for balance by the end user when exceeding 8,000 rpm. End user must balance the assemblies to a G6.3 value minimum.

Shell Mills and Modular Heads: 5720VZ16 Shell Mills and Modular Heads are not balanced. These tools must be re-inspected for balance as an assembly, cutter + adapter + inserts + screws by the end user when at or exceeding 8,000 rpm. End user must balance the assembly to a G6.3 value minimum.

Balancing requires removing some material by drilling or milling operations. To avoid making modular heads weaker, limit these operations by avoiding high rpm.

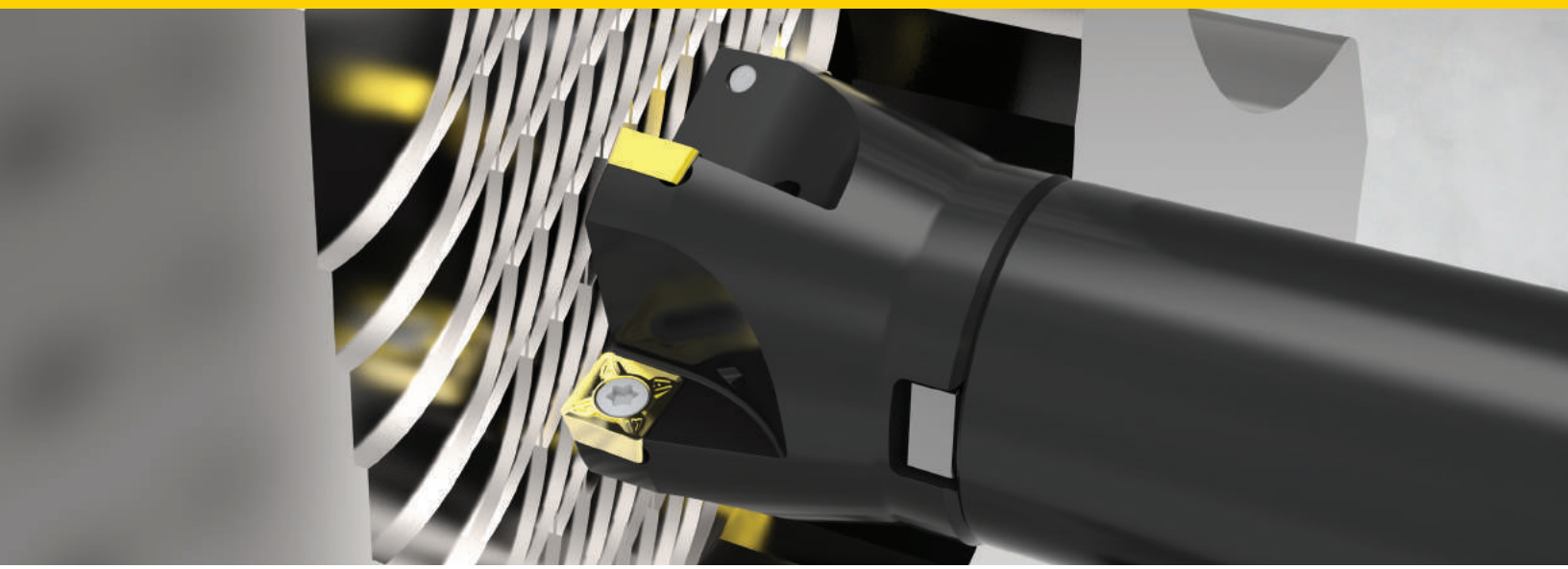
For each new modular head added to the same extension, re-balance the assembly. For each new Shell Mill installed on the same toolholder, re-balance the assembly.

Tighten the Modular Head to the Extension, with lubricant, apply the torque value of:

Thread sizes (mm)	Torque Values Ft. Lbs.
M6	7.37
M8	22.12
M10	36.87
M12	59.00
M16	81.13

Tighten the bolt between the shell mill and tool holder, with lubricant apply the torque value of:

Thread sizes (inch)	Cutter Bore Size (inch)	Torque Values Ft. Lbs.
0.250	0.500	7.37
0.375	0.750	22.12
0.500	1.000	36.87
0.625	1.250	59.00
0.750	1.500	81.13



STELLRAM

Plunging

PLUNGE MILLING CUTTERS

7791VS cutters are designed for high metal removal rates, particularly for rough machining. A wide range of indexable inserts and plunge milling cutters are available.

This robust plunge milling cutter is ideal for machining a variety of materials such as Steel, Alloyed Steel, Stainless Steel, Cast Iron, High Temperature Alloys and Aluminum Alloys.

Utilizing plunge milling techniques may increase productivity 2 to 5 times over traditional profiling operations.

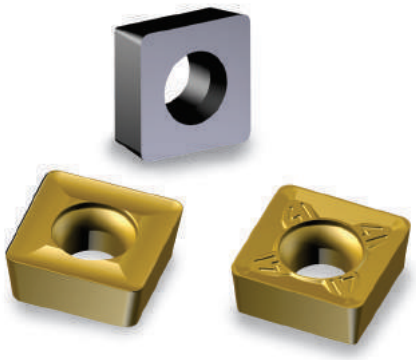
Stellram 7791VS family utilizes square inserts with 4 cutting edges. The available insert range takes either an 0.315" or 0.433" possible radial cut.

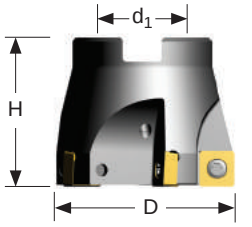
The capability of this cutter design allows plunging vertically, horizontally, down a slope or a profile.

7791VS

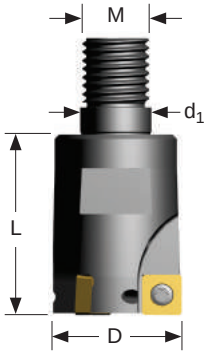
7791VS09:
Maximum a_e = 0.315"
Diameter Range = 1.000" - 2.500"

7791VS12:
Maximum a_e = 0.433"
Diameter Range = 2.000" to 6.000"





Shell Mill Fixation



Modular Head

Product		Dimensions (inch)						Spares					
EDP	**Item Description**	D	L/H	l_1	d_1	a_e max plunging	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.	Max RPM
7791VS09 Shell Mill Fixation													
029342	**C7791VS09-A1.50Z4R**	1.500	1.260	-	0.500	0.315	4	*015262*	D4010T	*015240*	T15	27.40	39,000
029343	**C7791VS09-A2.00Z5R**	2.000	1.575	-	0.750	0.315	5	*015262*	D4010T	*015240*	T15	27.40	32,500
031083	**C7791VS09A2.50Z07R**	2.500	1.575	-	0.750	0.315	7	*015262*	D4010T	*015240*	T15	27.40	28,500
7791VS12 Shell Mill Fixation													
031082	**C7791VS12A2.00Z5R**	2.000	1.575	-	0.750	0.433	5	*015270*	F4011T	*015240*	T20	27.40	32,500
029344	**C7791VS12-A2.50Z5R**	2.500	1.575	-	0.750	0.433	5	*015270*	F4011T	*015240*	T20	27.40	31,000
029345	**C7791VS12-A3.00Z6R**	3.000	1.969	-	1.000	0.433	6	*015270*	F4011T	*015240*	T20	27.40	27,000
029346	**C7791VS12-A4.00Z8R**	4.000	1.969	-	1.250	0.433	8	*015270*	F4011T	*015240*	T20	27.40	14,500
029347	**C7791VS12-A5.00Z9R**	5.000	2.480	-	1.500	0.433	9	*015270*	F4011T	*015240*	T20	27.40	13,000
029348	**C7791VS12-6.00Z12R**	6.000	2.480	-	1.500	0.433	12	*015270*	F4011T	*015240*	T20	27.40	11,500

Product		Dimensions (inch)						Spares					
EDP	**Item Description**	D	L/H	M	d_1	a_e max plunging	No. of Teeth	*EDP*		*EDP*		Screw Tightening in. lbs.	Max RPM
7791VS09 Modular Head													
031182	**A7791VS09SA1.00Z2R1.4**	1.000	1.377	M12	0.492	0.315	2	*015262*	D4008T	*015240*	T15	27.40	52,500
032266	**A7791VS09SA1.25Z3R1.7**	1.250	1.693	M16	0.696	0.315	3	*015262*	D4008T	*015240*	T15	27.40	44,500

Note: For Cylindrical Shank extensions in high density alloy with through coolant refer to page A78.

STELLRAM


SCMT09-E

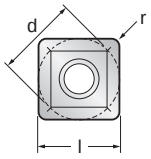

SCMT09-41


SCMT09-T


SCHT12-422


SCMT12-41


SCMT12



Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_e max. 0.315	a_e min. - max. 0.040 - 0.120	a_e min. - max. -					
7791VS09 Milling Inserts										
018186	**SCMT09T308E**	**GH1**	●	●●	-	0.375	0.375	0.156	0.031	0.001
015147	**SCMT09T308EN-41**	**X500**	■◆	●●■◆◆	-	0.375	0.375	0.156	0.031	0.002
031474	**SCMT09T308EN-41**	**SP6519**	●●◆□	◆◆◆□◆■	-	0.375	0.375	0.156	0.031	0.002
017315	**SCMT09T308EN-41**	**MP91M**	-	■■■●	-	0.375	0.375	0.156	0.031	0.002
034550	**SCMT09T308T**	**X400**	■◆	◆	-	0.375	0.375	0.156	0.031	0.005
031568	**SCMT09T308T**	**SP6519**	◆■◆	-	-	0.375	0.375	0.156	0.031	0.005
034551	**SCMT09T308T**	**SP4019**	●○■	■	-	0.375	0.375	0.156	0.031	0.005

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

SCMT09T308E GH1 is limited usage for Aluminum Alloys.
SCMT09T308T SP4019 is for Stainless Steel with heavy scale.

Product			Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼					
EDP	Item Description	Grade	Depth of Cut (inch)			d (IC)	l	s	r	h_m min
			a_e max. 0.433	a_e min. - max. 0.040 - 0.160	a_e min. - max. -					
7791VS12 Milling Inserts										
030671	**SCHT12M512EN-422**	**X700**	-	◆◆◆	-	0.500	0.500	0.197	0.047	0.003
015226	**SCMT12M512EN-41**	**X500**	■◆	●●●□■	-	0.500	0.500	0.197	0.047	0.002
031475	**SCMT12M512EN-41**	**SP6519**	◆□	◆◆■○◆●	-	0.500	0.500	0.197	0.047	0.002
017317	**SCMT12M512EN-41**	**MP91M**	-	■■■	-	0.500	0.500	0.197	0.047	0.002
034554	**SCMT12M512T**	**X400**	■◆	◆	-	0.500	0.500	0.197	0.047	0.005
024129	**SCMT12M512T**	**X500**	●■	-	-	0.500	0.500	0.197	0.047	0.005
034555	**SCMT12M512T**	**SP6519**	◆●●	-	-	0.500	0.500	0.197	0.047	0.005
034553	**SCMT12M512T**	**SP4019**	●○■	■	--	0.500	0.500	0.197	0.047	0.005
017316	**SCMT12M512T**	**MP91M**	◆	●	-	0.500	0.500	0.197	0.047	0.005

Machining Choice: ◆ 1st Choice ■ 2nd Choice ● 3rd Choice | Material Guide Key descriptions found on page A5.

SCMT12M512T SP4019 is for Stainless Steel with heavy scale.

Note: Feed recommendations can be found on page A238. Speed recommendations can be found on page A239.



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7791VS Feeds f_z (inch/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Gray Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
7791VS09 Insert Size																	
E	GH1	Plunging	-	-	-	-	0.005 - 0.010	0.005 - 0.010	0.005 - 0.008	0.005 - 0.010	-	-	-	-	-	-	-
EN-41	X500	Plunging	0.002 - 0.013	0.002 - 0.012	0.002 - 0.011	0.002 - 0.010	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.006	-	-
EN-41	SP6519	Plunging	0.002 - 0.013	0.002 - 0.012	0.002 - 0.011	0.002 - 0.010	0.002 - 0.012	0.002 - 0.012	0.002 - 0.010	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.006	-	-
EN-41	MP91M	Plunging	0.002 - 0.012	0.005 - 0.011	-	-	0.002 - 0.012	0.002 - 0.012	0.002 - 0.009	-	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004
T	X400	Plunging	0.005 - 0.014	0.005 - 0.013	-	-	-	-	-	-	-	-	-	-	-	0.003 - 0.006	0.003 - 0.006
T	SP6519	Plunging	0.005 - 0.014	0.005 - 0.013	-	-	0.005 - 0.014	0.005 - 0.014	0.005 - 0.012	-	-	-	-	-	-	-	-
T	SP4019	Plunging	-	-	0.006 - 0.012	0.006 - 0.011	0.005 - 0.014	0.005 - 0.014	0.005 - 0.012	-	-	-	-	-	-	0.003 - 0.006	0.003 - 0.006
7791VS12 Insert Size																	
EN-422	X700	Plunging	-	-	0.003 - 0.011	0.003 - 0.010	-	-	-	-	-	0.003 - 0.004	0.003 - 0.004	0.003 - 0.005	0.003 - 0.006	-	-
EN-41	X500	Plunging	0.002 - 0.015	0.002 - 0.014	0.002 - 0.013	0.002 - 0.012	-	-	-	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.006	-	-
EN-41	SP6519	Plunging	0.002 - 0.015	0.002 - 0.014	0.002 - 0.013	0.002 - 0.012	0.002 - 0.015	0.002 - 0.015	0.002 - 0.012	-	-	0.002 - 0.004	0.002 - 0.004	0.002 - 0.005	0.002 - 0.006	-	-
EN-41	MP91M	Plunging	0.002 - 0.013	0.002 - 0.012	-	-	0.002 - 0.015	0.002 - 0.015	0.002 - 0.012	-	-	-	-	-	-	-	-
T	X400	Plunging	0.005 - 0.017	0.005 - 0.015	-	-	-	-	-	-	-	-	-	-	-	0.004 - 0.006	0.004 - 0.006
T	X500	Plunging	0.005 - 0.017	0.005 - 0.015	-	-	-	-	-	-	-	-	-	-	-	-	-
T	SP6519	Plunging	0.005 - 0.017	0.005 - 0.015	-	-	0.005 - 0.017	0.005 - 0.017	0.005 - 0.015	-	-	-	-	-	-	-	-
T	SP4019	Plunging	-	-	0.005 - 0.014	0.005 - 0.012	0.005 - 0.017	0.005 - 0.017	0.005 - 0.015	-	-	-	-	-	-	0.004 - 0.006	0.004 - 0.006
T	MP91M	Plunging	-	-	-	-	0.005 - 0.017	0.005 - 0.017	0.005 - 0.015	-	-	-	-	-	-	0.004 - 0.006	0.004 - 0.006

Note: HTA = High Temperature Alloys

Speed recommendations can be found on page A239.

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Speed v_c (SFM)

7791VS Series

Wear Resistance: – ⟵ +

Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

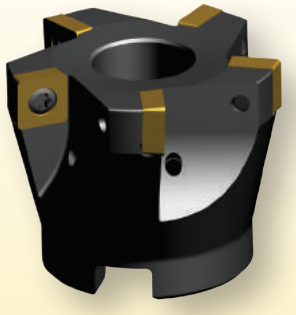
ISO	Materials	Rm and Hardness	PVD X Grade X400	PVD X Grade X500	PVD X Grade X700	PVD Standard SP6519	PVD Standard SP4019	CVD Standard MP91M	Uncoated Micrograin GH1
P	Unalloyed Steel	<600 N/mm² <180 HBN	395 - 855	425 - 885		425 - 970		460 - 1130	
		<950 N/mm² <280 HBN	345 - 755	375 - 785		375 - 855		395 - 1000	
	Alloyed Steel	700-950 N/mm² 200-280 HBN	310 - 655	330 - 690		330 - 755		345 - 885	
		950-1200 N/mm² 280-355 HBN	230 - 490	245 - 525		245 - 575		260 - 675	
		1200-1400 N/mm² 355-415 HBN	150 - 310	165 - 330		165 - 360		165 - 425	
M	Stainless Steel	Austenitic + Ferritic 300 series		375 - 820	375 - 855	375 - 885	395 - 920		
		Martensitic 400 series		330 - 720	345 - 755	345 - 770	360 - 820		
	PH Stainless	Refractory P.H.		165 - 360	165 - 375	165 - 395	165 - 425		
K	Cast Iron	Grey GG-Ft				460 - 970	475 - 1085	475 - 1200	445 - 950
		Spheroidal-Ductile GGG-FGS				360 - 785	375 - 835	375 - 935	395 - 805
		Malleable GTS - MN/MP				330 - 720	345 - 770	345 - 855	375 - 655
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN							1310 - 10005
		Aluminum + Silicon > 16% Si 92 HBN							970 - 8005
S	High Temperature Alloys	Iron Based		75 - 160	75 - 170	75 - 180			
		Cobalt Based		70 - 145	70 - 150	70 - 160			
		Nickel Based		80 - 170	80 - 175	80 - 180			
		Titanium Based		115 - 240	120 - 250	120 - 260			
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN	150 - 310				165 - 330	165 - 345	
		Chilled Cast Iron >1400 N/mm² > 400 HBN	115 - 260				130 - 295	130 - 310	

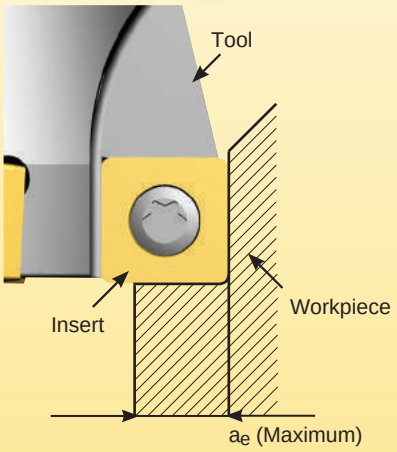
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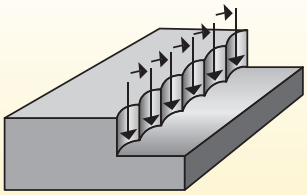
Tool Definition

Scallop height and step over- Dimensions (inch)					
Diameter	1.000	1.250	1.500	2.000	2.500
Insert size	0.375	0.375	0.375	0.375	0.375
a_e max	0.315	0.315	0.315	0.315	0.315
Scallop height	Step over (inch)				
0.010	0.197	0.221	0.242	0.280	0.313
0.020	0.278	0.311	0.341	0.395	0.442
0.030	0.339	0.380	0.417	0.482	0.540
0.040	0.389	0.437	0.480	0.556	0.622
0.080	0.539	0.607	0.669	0.778	0.873
0.118	0.645	0.731	0.808	0.943	1.061
0.157	0.729	0.830	0.920	1.077	1.215
0.200	0.795	0.911	1.013	1.192	1.347
0.236	0.850	0.979	1.093	1.291	1.463
0.276	0.894	1.036	1.162	1.379	1.566
0.315	0.929	1.085	1.222	1.457	1.659
0.354	-	-	-	-	-
0.394	-	-	-	-	-

The scallop height is calculated in relation with the step over.

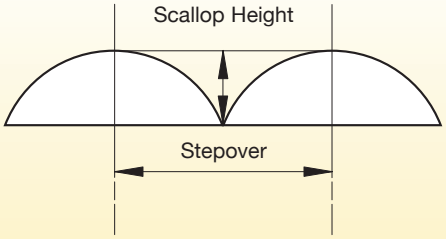






The maximum radial engagement is directly in relation with insert cutting edge length.

For insert type: **SC…09 the a_e, max is 0.315".**



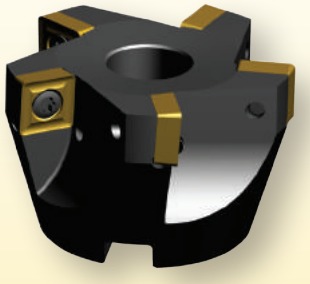
The cutting edge should not be in contact with the material face after machining to maintain the cutting edge quality.

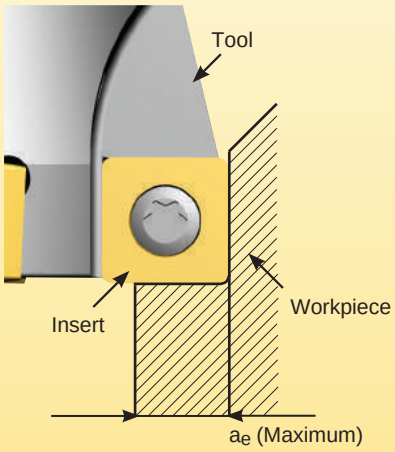
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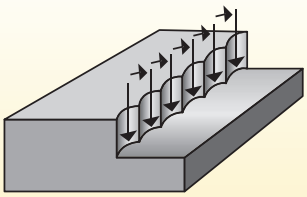
Tool Definition

Scallop height and step over - Dimensions (inch)						
Diameter	2.000	2.500	3.000	4.000	5.000	6.000
Insert size	0.500	0.500	0.500	0.500	0.500	0.500
a_e max	0.433	0.433	0.433	0.433	0.433	0.433
Scallop height		Step over (inch)				
0.010	0.280	0.313	0.343	0.396	0.443	0.486
0.020	0.395	0.442	0.484	0.560	0.626	0.686
0.030	0.482	0.590	0.592	0.685	0.766	0.840
0.040	0.556	0.622	0.683	0.790	0.884	0.969
0.080	0.778	0.873	0.959	1.111	1.245	1.366
0.118	0.943	1.061	1.167	1.354	1.519	1.667
0.157	1.077	1.215	1.338	1.556	1.797	1.918
0.197	1.192	1.347	1.486	1.730	1.945	2.138
0.236	1.291	1.463	1.616	1.886	2.122	2.334
0.276	1.379	1.566	1.733	2.026	2.282	2.512
0.315	1.457	1.659	1.839	2.155	2.429	2.676
0.354	1.527	1.744	1.940	2.273	2.566	2.829
0.394	1.590	1.820	2.030	2.380	2.690	2.970
0.433	1.650	1.890	2.110	2.490	2.810	3.110

The scallop height is calculated in relation with the step over.

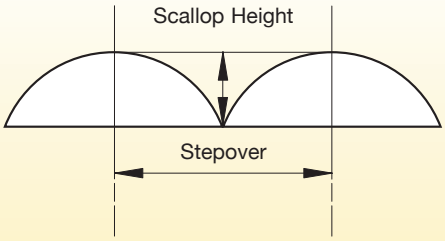






The maximum radial engagement is directly in relation with insert cutting edge length.

For insert type: **SC…12 the a_e, max is 0.433".**



The cutting edge should not be in contact with the material face after machining to maintain the cutting edge quality.

Mounting Bolts with Through Coolant and Torque Values for Shell Mill Cutters

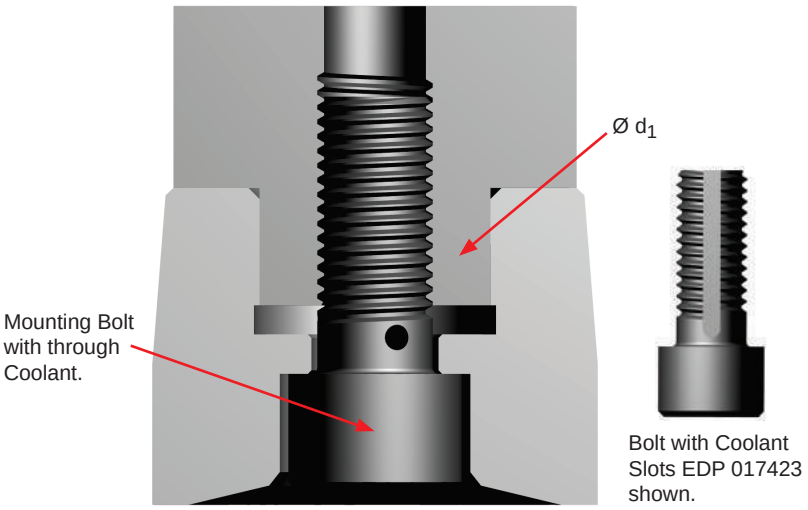
All Inch Shell Mills are supplied with coolant through bolts (Socket Head Cap Screws).

For replacement bolts please use the chart below.

Chart is based on Bore Size of the Shell Mill Cutter

Bolts for cutters with 0.500" to 1.000" bores are supplied with coolant grooves.

Bolts for cutters with 1.250" and 1.500" bores are supplied with cross drilled holes.



			**Torque Values in Ft. Lbs.	
EDP	**Socket Head Cap Screw**	Inch Bore d_1	Normal Condition	Excessive Condition
017421	**1/4-28 x 3/4 SHCS-A**	0.500	7.3	8.85
017423	**3/8-24 x 1.0 SHCS-A**	0.750	22.1	23.6
017420	**1/2-20 x 1-1/4 SHCS-A**	1.000	59	73.7
029695	**1/2-20 x 1-1/4 LHSCS-A**	1.000	59	73.7
017424	**5/8-18 x 1-1/2 SHCS-A**	1.250	81.1	110.6
017422	**3/4-16 x 1-3/4 SHCS-A**	1.500	88.5	132.76

** Torque values for mounting bolts.
Excessive condition is when long reach extensions are required or when cutting parameters are elevated to extreme parameters.

Note: All 1.000" bore Shell Mills take Bolt EDP# 017420 (1/2-20 x 1-1/4 SHCS-A) except for the following cutters which require the Low Head Bolt EDP# 029695 (1/2-20 x 1-1/4 LHSCS-A).

EDP#	Cutter Description
029482	C7792VXD12-A2.50Z4R
029483	C7792VXD12-A2.50Z5R
031282	C7792VXE16-A2.50Z05R
034569	C7690VAP16-A2.50Z07R

Hex Keys

M6 = Hex Key Size 5
M8 = Hex Key Size 86
M10 = Hex Key Size 8
M12 = Hex Key Size 10
M16 = Hex Key Size 14
M20 = Hex Key Size 17

STELLRAM

ISO Grade Classification

Groups	Materials	Code	Uncoated		Cermet		CVD				PVD						Code
			GH1	GH2	SA9608	SA9808	SC3025	SC6525	MP91M	X500	SP1019	SP4019	SP6519	X700	X400	SP5419	
			Uncoated	Uncoated	Uncoated	Uncoated	TiN-TiCN-Al_2O_3	TiN-TiCN-Al_2O_3	TiN-MT-TiCN-Al_2O_3	TiN-TiC TiN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	
P	Unalloyed and Alloyed Steel	P01			SA9608												P01
		P05				SA9808		SC6525			SP1019						P05
		P10							MP91M			SP4019					P10
		P15															P15
		P20											SP6519				P20
		P25													X400		P25
		P30								X500							P30
		P35														SP5419	P35
		P40															P40
		P45															P45
		P50															P50
M	Stainless Steels	M01			SA9608												M01
		M05				SA9808					SP1019						M05
		M10										SP4019					M10
		M15											SP6519	X700			M15
		M20															M20
		M25															M25
		M30								X500							M30
		M35															M35
		M40															M40
K	Cast Irons	K01															K01
		K05	GH1		SA9608												K05
		K10				SA9808	SC3025				SP1019						K10
		K15		GH2				SC6525	MP91M			SP4019					K15
		K20											SP6519				K20
		K25								X500							K25
		K30															K30
		K35															K35
		K40															K40
N	Aluminum & Alloys	N01															N01
		N05	GH1								SP1019						N05
		N10										SP4019					N10
		N15		GH2													N15
		N20															N20
		N25															N25
		N30															N30
S	High Temperature Alloys	S01			SA9608						SP1019						S01
		S05										SP4019					S05
		S10											SP6519				S10
		S15												X700			S15
		S20															S20
		S25								X500							S25
		S30															S30
H	Hard Materials	H01															H01
		H05									SP1019						H05
		H10															H10
		H15										SP4019					H15
		H20							MP91M								H20
		H25													X400		H25
		H30															H30
			GH1	GH2	SA9608	SA9808	SC3025	SC6525	MP91M	X500	SP1019	SP4019	SP6519	X700	X400	SP5419	

Increasing - wear resistance - Increasing cutting speed

Increasing - shock resistance - Increasing - feed

Technical

STELLRAM

Speed v_C (SFM)

For all Families

Wear Resistance: – ⟵ +

Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

ISO	Materials	Rm and Hardness	PVD Standard SP5419		PVD X Grade X400		CVD X Grade X500		PVD X Grade X700		PVD Standard SP6519		Uncoated Micrograin GH2		PVD Standard SP4019		
			💧	🚫	💧	🚫	💧	🚫	💧	🚫	💧	🚫	💧	🚫	💧	🚫	
P	Unalloyed Steel	<600 N/mm² <180 HBN	⦿	●	⦿	●	⦿	●			⦿	●				●	460 - 1035
		<950 N/mm² <280 HBN															395 - 900
					345 - 605		345 - 755		375 - 785		375 - 855						
	Alloyed Steel	700-950 N/mm² 200-280 HBN	⦿	●	⦿	●	⦿	●			⦿	●				●	345 - 805
		950-1200 N/mm² 280-355 HBN															260 - 625
					295 - 525		310 - 655		330 - 690		330 - 755						
					230 - 395		230 - 490		245 - 525		245 - 575						
		1200-1400 N/mm² 355-415 HBN		●		●		●	165 - 330			●	165 - 360			●	165 - 395
					150 - 260		150 - 310										
M	Stainless Steel	Austenitic + Ferritic 300 series						⦿	●	⦿	●	375 - 855	⦿	●	375 - 885		395 - 920
		Martensitic 400 series														⦿	●
									375 - 820								
									330 - 720			345 - 755			345 - 770		360 - 820
	PH Stainless	Refractory P.H.						●		●		165 - 375	●		165 - 395	●	165 - 425
									165 - 360								
K	Cast Iron	Grey GG-Ft															475 - 1085
		Spheroidal-Ductile GGG-FGS						⦿	●			⦿	●	⦿	●	●	375 - 835
		Malleable GTS - MN/MP															345 - 770
									395 - 920			460 - 970			395 - 820		
									345 - 675			360 - 785			345 - 705		
									310 - 560			330 - 720			330 - 605		
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN													1310 - 9005		1310 - 9500
		Aluminum + Silicon > 16% Si 92 HBN												●		●	
															970 - 7005		970 - 7615
S	High Temperature Alloys	Iron Based							75 - 160		75 - 170		75 - 180				80 - 210
		Cobalt Based						●	70 - 145	●	70 - 150	●	70 - 160			●	75 - 170
		Nickel Based							80 - 170		80 - 175		80 - 180				85 - 190
		Titanium Based							115 - 240		120 - 250		120 - 260				120 - 275
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN				●	150 - 310									●	165 - 330
		Chilled Cast Iron >1400 N/mm² > 400 HBN					115 - 260										130 - 295

Technical

STELLRAM

Speed v_C (SFM)

For all Families

Wear Resistance: – ⟵ +

Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

ISO	Materials	Rm and Hardness	CVD Standard MP91M	CVD Standard SC6525	CVD Standard SC3025	Uncoated Micrograin GH1*	PVD Micrograin SP1019	Uncoated Cermet SA9808	Uncoated Cermet SA9608
P	Unalloyed Steel	<600 N/mm² <180 HBN	460 - 1130	460 - 1190		785 - 1130	740 - 1245	785 - 1130	870 -1245
		<950 N/mm² <280 HBN	395 - 1000	395 - 1050		705 - 1000	655 - 1100	705 - 1000	770 - 1100
	Alloyed Steel	700-950 N/mm² 200-280 HBN	345 - 885	345 - 930		625 - 885	575 - 970	625 - 885	675 - 970
		950-1200 N/mm² 280-355 HBN	260 - 675	260 - 705		460 - 675	425 - 740	460 - 675	510 - 740
		1200-1400 N/mm² 355-415 HBN	165 - 425	165 - 445		295 - 425	280 - 475	295 - 425	330 - 475
M	Stainless Steel	Austenitic + Ferritic 300 series				705 - 1000	655 - 1100		770 - 1100
		Martensitic 400 series				640 - 900	590 - 1000		705 -1000
	PH Stainless	Refractory P.H.				295 - 590	280 - 475		330 - 660
K	Cast Iron	Grey GG-Ft	475 - 1200	475 - 1280	490 - 1295	445 - 950	785 - 1310		920 - 1310
		Spheroidal-Ductile GGG-FGS	375 - 935	375 - 1000	395 - 1100	395 - 805	605 - 1115		720 -1035
		Malleable GTS - MN/MP	345 - 855		345 - 900	375 - 655	560 - 935		655 -935
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN				1310 - 10005	1310 - 9005		
		Aluminum + Silicon > 16% Si 92 HBN				970 - 8005	970 - 7005		
S	High Temperature Alloys	Iron Based					130 - 220		165 - 250
		Cobalt Based					120 - 205		160 - 230
		Nickel Based					140 - 235		170 - 250
		Titanium Based					200 - 340		195 - 300
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN	165 - 345				165 - 360		
		Chilled Cast Iron >1400 N/mm² > 400 HBN	130 - 310				150 - 330		

* Note: Wiper Insert SPHX12M512EN GH1 can be used for Steel, Steel Alloys, Stainless Steel and Cast Iron.
* Note: All other GH1 Grade Inserts are only for Aluminum or Cast Iron depending on the selected Geometry.

STELLRAM

Speed-Spindle Rotation (rpm)

$$n = \frac{V_c \times 12}{D_c \times \pi}$$

Cutting Speed (sfm)

$$V_c = \frac{D_c \times \pi \times n}{12}$$

Feed Rate (ipm)

$$V_f = f_z \times Z \times n$$

Feed Per Tooth (ipt)

$$f_z = \frac{V_f}{Z \times n}$$

Feed Per Revolution (ipr)

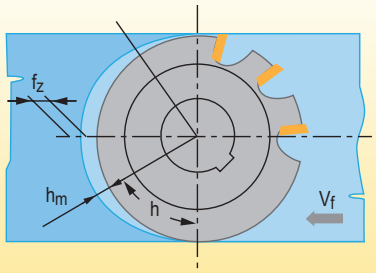
$$f_n = f_z \times Z$$

Metal Removal Rate (in^3/min.)

$$Q = a_e \times a_p \times V_f$$

Medium Chip Thickness

Inch $\quad h_m = f_z \times \sqrt{\frac{a_e}{D_c}} \quad$ or $\quad f_z = h_m \times \sqrt{\frac{D_c}{a_e}}$



Terminology

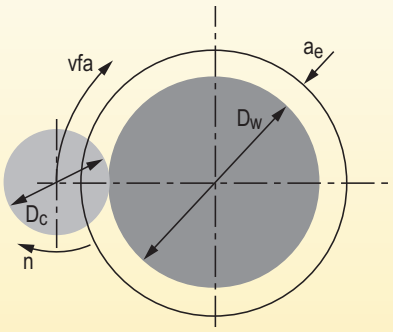
n	Spindle speed	rpm
D_c	Cutting diameter	inch
a_p	Cut depth (Axial)	inch
a_e	Cut width (Radial)	inch
Z	No. of teeth	
V_c	Cutting speed	sfm
V_f	Feed rate	ipm
f_z	Feed per tooth	ipt
f_n	Feed per revolution	ipr
Q	Metal removal rate	in^3/min
h_m	Medium chip thickness	inch
π	Pi Symbol (3.1416)	pi

STELLRAM

Feed Rate Compensation

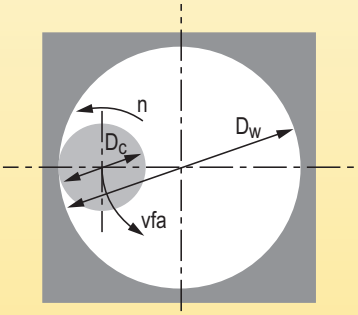
V_f	feed rate of tool	ipm
Vfa	feed rate of tool axis	ipm
D_c	cutter diameter	inch
D_w	workpiece diameter	inch
n	rotation	rpm
f_z	feed per tooth	ipt
Z	number of teeth	

$$V_f = n \times f_z \times Z$$



External

$$Vfa = V_f \times \left(\frac{D_w + D_c}{D_w}\right)$$



Internal

$$Vfa = V_f \times \left(\frac{D_w - D_c}{D_w}\right)$$

Technical

STELLRAM

Brinell	Rockwell		Vickers	Tensile Strength	
HBN Hardness	HRC Hardness	HRB Hardness	HV Hardness	Rm Tensile Strength	Rm Tensile Strength
Brinell 3000 Kgf	Diamond penetrator	Ball 1/16"	Vickers 30	N / mm² MPa	KSI
92	-	49	-	320	46
94	-	51	-	330	48
-	-	54	-	-	-
100	-	55	100	340	49
101	-	56	101	-	-
103	-	57	103	350	51
104	-	58	104	-	-
106	-	59	106	360	52
107	-	60	107	-	-
108	-	61	108	-	-
110	-	62	110	370	54
112	-	63	112	-	-
114	-	64	114	-	-
116	-	65	116	385	56
117	-	66	117	395	57
119	-	67	119	400	58
121	-	68	121	405	59
123	-	69	123	415	60
125	-	70	125	420	61
127	-	71	127	425	62
130	-	72	130	435	63
132	-	73	132	440	64
135	-	74	135	450	65
137	-	75	137	455	66
139	-	76	139	460	67
141	-	77	141	470	68
144	-	78	144	475	69
147	-	79	147	485	70
150	-	80	150	495	72
153	-	81	153	505	73
156	-	82	156	530	77
159	-	83	159	550	80
162	-	84	162	560	81
165	-	85	165	565	82
169	-	86	169	570	83
172	-	87	172	580	84
176	-	88	176	590	86
180	-	89	180	605	88
185	-	90	185	615	89
190	-	91	190	620	90
195	-	92	195	635	92
200	-	93	200	650	94
205	-	94	205	675	98
210	-	95	210	690	100
216	-	96	216	705	102
222		97	222	715	104
228	-	98	228	750	109
234	-	99	234	785	114
240	-	100	240	800	116

Brinell	Rockwell		Vickers	Tensile Strength	
HBN Hardness	HRC Hardness	HRB Hardness	HV Hardness	Rm Tensile Strength	Rm Tensile Strength
Brinell 3000 Kgf	Diamond penetrator	Ball 1/16"	Vickers 30	N / mm² MPa	KSI
226	20	-	238	760	110
231	21	-	243	770	112
237	22	-	248	790	115
243	23	-	254	810	117
247	24	-	260	820	119
253	25	-	266	850	123
258	26	-	272	860	125
264	27	-	279	880	128
271	28	-	286	900	131
279	29	-	294	930	135
286	30	-	302	950	138
294	31	-	310	970	141
301	32	-	318	1010	146
311	33	-	327	1050	149
319	34	-	336	1080	152
327	35	-	345	1110	157
336	36	-	354	1140	161
344	37	-	363	1140	165
353	38	-	372	1180	171
362	39	-	382	1220	177
371	40	-	392	1250	181
381	41	-	402	1300	189
390	42	-	412	1340	194
400	43	-	423	1390	202
409	44	-	434	1430	207
421	45	-	446	1480	215
432	46	-	458	1520	220
442	47	-	471	1580	229
455	48	-	484	1640	238
468	49	-	498	1700	247
482	50	-	513	1760	255
496	51	-	528	1820	264
512	52	-	544	1880	273
525	53	-	560	1950	283
543	54	-	577	2010	292
560	55	-	595	2070	300
577	56	-	613	2160	313
595	57	-	633	2240	325
615	58	-	653	2330	338
634	59	-	674	2420	351
654	60	-	697	-	-
670	61	-	720	-	-
688	62	-	746	-	-
706	63	-	772	-	-
722	64	-	800	-	-
739	65	-	832	-	-
-	66	-	865	-	-
-	67	-	900	-	-
-	68	-	940	-	-

HV = Vickers hardness
HBN = Brinell hardness
HRC = Rockwell hardness, C scale
HRB = Rockwell hardness, B scale



STELLRAM®

MILLING

Solid Carbide Milling

KENNAMETAL®



Kennametal is committed to being the leading manufacturer and supplier of solid carbide rotary cutting tools in the world. Through a combination of state-of-the-art technology, rigorous quality procedures and highly skilled people, we strive to provide cost effective solutions and support to increase your competitive advantage.



Technology

Major investment in the latest CNC grinding and inspection equipment has enabled Kennametal to become a major supplier of standard and special solid carbide tooling worldwide.

Technical

An experienced team of application sales engineers together with a dedicated in-house department is focussed to offer technical support and deliver production engineering improvements.

STELLRAM

Solid Carbide Milling

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AEROSPACE END MILLS
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C XER 0500 N N 4 - L

1	2	3	4	5	6	7

1 Unit Measure

C = Imperial
No “C” = Metric

2 End Mill Family

B - Ball Nosed End Mill
E- Standard End Mill (Square Ended)
EA - End Mill - Aluminum
ER - Standard End Mill with Radius
ERC - Roughing End Mill with Chamfer
HB - High Performance End Mill - Ballnosed
HE - High Performance End Mill
HER - High Performance End Mill with Radius
HMN - High Performance Multiflute End Mill (Negative)
HMR - High Performance Multiflute End Mill with Radius
HPA - High Performance End Mill - Aluminum
RSM - Reduced Shank - Multiflute End Mill
XE - Unequal Form Aerospace End Mill
XER - Unequal Form Aerospace End Mill with Radius

3 Cutting Diameter



4 Overall Length

N = Normal
S = Short
M = Medium
K = Intermediate
L = Long
XL = Extra Long
T* = Taper
X = Special

5 Flute length

N = Normal
S = Short
M = Medium
K = Intermediate
L = Long
XL = Extra Long
X = Special

6 Number of Flutes



Z** = 2 - 10

7 Radius

Imperial	Metric
C = 0.010	C = 0.25
D = 0.015	D = 0.30
E = 0.020	E = 0.50
F = 0.030	F = 0.75
G = 0.040	G = 1.00
H = 0.050	H = 1.25
J = 0.060	J = 1.50
K = 0.090	K = 2.00
L = 0.120	L = 2.50
M = 0.156	M = 3.00
P = 0.190	P = 4.00
Q = 0.250	Q = 5.00

* When cutting diameter (D) is smaller than the shank diameter (d1), the overall length designation is followed by a “T”.

eg. CXER0125NT4-C

** An “X” following the number of flutes designation signifies the use of special geometry.

eg. CRSM1000LM10X-L

Number of Flutes / Cutting Edges


2 Flute


3 Flute


4 Flute


4 Flute with Radius


2 Flute Ball Nosed


4 Flute Ball Nosed


4 Flute - Independent Edges


6 Flute


6 Flute - Non Center Cutting


8 Flute - Non Center Cutting


10 Flute - Non Center Cutting

Helix



30° Helix



35° Helix



38° Helix



45° Helix



50° Helix



55° Helix

Corner Style



Sharp Corner



Ball Nosed



Corner Radius



Corner Chamfer

Shank Style



Cylindrical Shank



Weldon Shank*

Shank Tolerance



Shank Tolerance

Performance



High Speed Machining



High Performannce Machining

* Available on request

Manufacturing Standards



Manufactured to DIN 6535



Manufactured to DIN 6527L


Works Standard

Coating



Uncoated Carbide Grade



PVD Coated Carbide Grade

General Applications



Slotting - Square Ended



Slotting - Ball Nosed

Slotting Application
Technical information provided with each family.



Shoulder Milling - Square Ended



Shoulder Milling - Ball Nosed

Profiling / Shoulder Milling Application
Technical information provided with each family.

Tool Path Strategies



Pocketing

Tool Suitable for Pocketing
Technical information provided with each family. (As Slotting Parameters)



Drilling

Tool Suitable for Drilling
See Page B106 - for Technical Details



Helical Interpolation

Tool Suitable for Helical Interpolation
See Page B106 - for Technical Details



Ramping

Tool Suitable for Ramping
See Page B105 - for Technical Details



Copy / 3D

Tool Suitable for Copy Milling
See Page B107 - for Technical Details



Facing

Tool Suitable for Facing



Trochoidal

Tool Suitable for Trochoidal Milling
See Page B106 - for Technical Details

			Aerospace			Rapide© High Speed / High Performance Machining Series							
													
Familiy Range			**CXE** / *XE*	**CXER** / *XER*	**CRSM** / *RSM*	**CERC** / *ERC*	**CHE** / *HE*	*HER*	**CHB** / *HB*	**CHMR** / *HMR*	**CHMN** / *HMN*	**CEA** / *EA*	**CHPA** / *HPA*
Number of Flutes / Cutting Edges			4	4	6 - 8 - 10	3	4	4	2	6	6	2	2
Length			Medium	Normal	Long	Normal / Long	Normal	Normal	Long	Normal	Normal	Normal	Normal
Corner style			Radius			Chamfer	Sharp	Radius	Ball Nose	Radius	Sharp	Sharp	Sharp
Helix angle			35° - 38°			45°	30°	30°	30°	45°	50°	30°	55°
Coating			PVD		Uncoated	PVD						Uncoated	
Shank Style			HA Cylindrical			HA Cylindrical							
Manufacturing Standards				*DIN*[2]		*DIN*[3]							
inch	Diameter Range	**inch**	**0.125 - 1.000**	**0.125 - 1.000**	**0.375 - 1.00**	**0.125 - 0.625**	**0.063 - 0.750**	**-**	**0.063 - 0.625**	**0.125 - 0.750**	**0.250 - 0.750**	**0.063 - 0.750**	**0.125 - 0.750**
mm		*mm*	*2.00 - 20.00*	*2.00 - 20.00*	*10.00 - 25.00*	*3.00 - 20.00*	*2.00 - 16.00*	*6.00 - 12.00*	*3.00 - 12.00*	*3.00 - 20.00*	*6.00 - 20.00*	*2.00 - 20.00*	*3.00 - 20.00*
	Page		**B10 - B15**	**B10 - B15**	**B18 - B22**	**B24 -B26**	**B27 - B29**	**B30 - B32**	**B33 - B35**	**B36 - B40**	**B410 - B43**	**B44 - B46**	**B47 - B49**
General Application	Slotting - Square Ended		♦♦♦♦	♦♦♦♦		♦♦♦♦	♦♦♦	♦♦♦		♦♦♦♦	♦♦♦	♦	♦
	Slotting - Ball Nosed								♦♦♦♦				
	Shoulder Milling - Square Ended		♦♦♦♦	♦♦♦♦	♦	♦♦♦♦	♦♦♦	♦♦♦		♦♦♦♦		♦	♦
	Shoulder Milling - Ball Nosed								♦♦♦♦				
Tool Path Strategy	Pocketing		♦♦♦♦	♦♦♦♦		♦♦♦♦	♦♦♦	♦♦♦	♦♦♦♦	♦♦♦♦		♦	♦
	Drilling					♦♦♦♦						♦	♦
	Helical Interpolation		♦♦♦♦	♦♦♦♦		♦♦♦♦						♦	♦
	Ramping					♦♦♦♦						♦	♦
	Copy / 3D								♦♦♦♦				
	Facing		♦♦♦♦	♦♦♦♦	♦	♦♦♦♦	♦♦♦	♦♦♦		♦♦♦♦	♦♦♦	♦	♦
	Trochoidal		♦♦♦♦	♦♦♦♦		♦♦♦♦	♦♦♦	♦♦♦		♦♦♦♦	♦♦♦	♦	♦

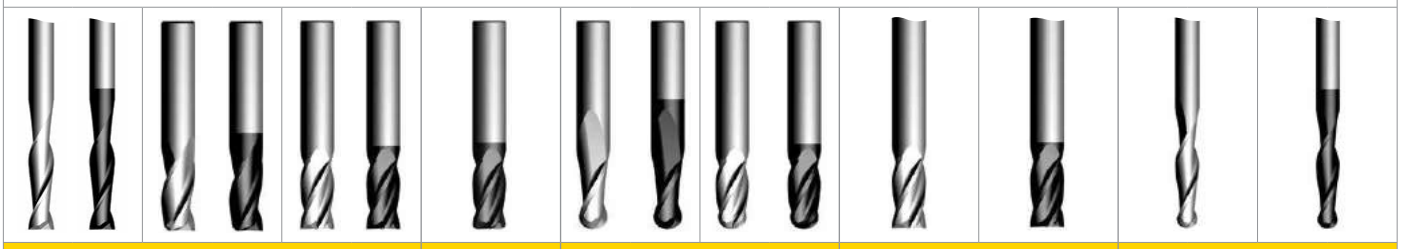
Availability Key: **Bold = Inch Only** | *Italic = Metric Only* | Regular Font = Inch & Metric

Note: DIN[1] = DIN6535, DIN[2] = DIN6527L, DIN[3] = DIN6535 and DIN 6527L.

STELLRAM

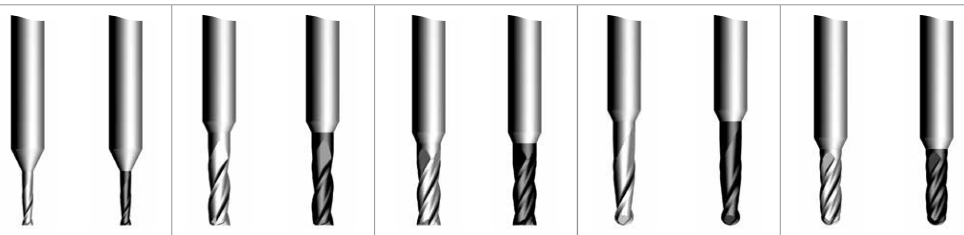
Application

General Purpose Milling Series

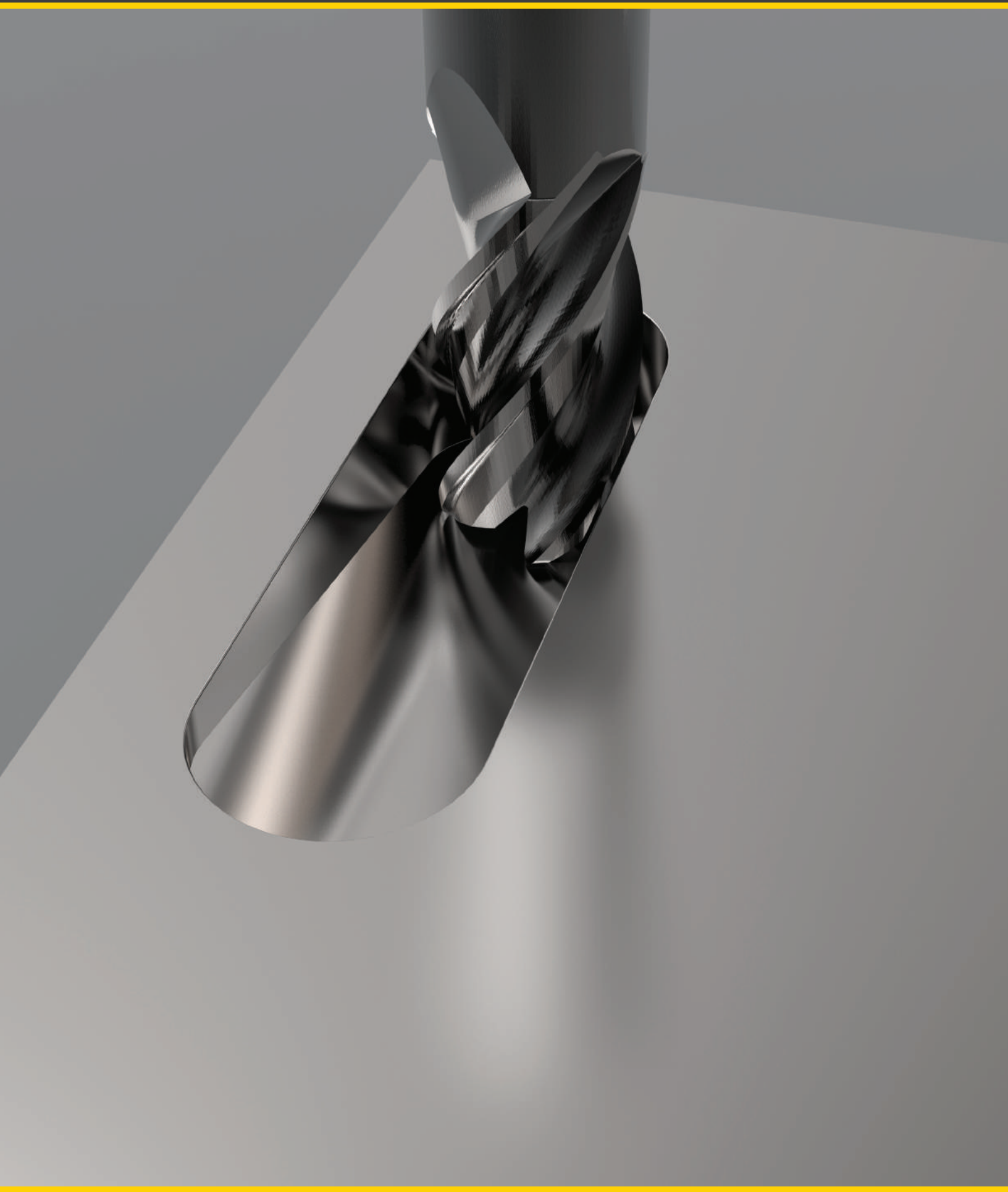


CE / *E*						*ER*	**CB** / *B*				**CE** / *E*				**CB** / *B*				
2		3		4		4	2		4		4				2				
Normal											Long	X-Long	Long		Long	X-Long	Long		X-Long
Sharp						Radius	Ball Nose				Sharp				Ball Nose				
30°						30°	30°				30°				30°				
Uncoated	PVD	Uncoated	PVD	Uncoated	PVD	PVD	Uncoated	PVD	Uncoated	PVD	Uncoated		PVD		Uncoated		PVD		
HA Cylindrical						HA Cylindrical					HA Cylindrical				HA Cylindrical				
0.125 - 0.750		**0.125 - 0.750**		**0.125 - 0.750**		**-**	**0.125 - 0.750**		**0.125 - 0.750**		**0.125 - 0.750**		**0.125 - 0.750**		**0.250 - 0.750**				
3.00 - 20.00		*3.00 - 20.00*		*3.00 - 20.00*		*3.00 - 16.00*	*3.00 - 20.00*		*3.00 - 12.00*		*4.00 - 20.00*		*6.00 - 16.00*		*4.00 - 12.00*				
B52 - B55		**B56 - B59**		**B60 - B63**		**B64 - B66**	**B67 - B70**		**B71- B74**		**B75 - B78**		**B75 - B78**		**B79 - B82**		**B79 - B82**		

Note: DIN[1] = DIN6535, DIN[2] = DIN6527L, DIN[3] = DIN6535 and DIN 6527L.

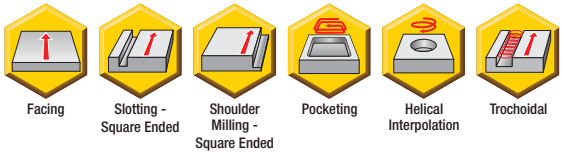
			Miniature Milling Series									
												
Familiy Range			CE / E						CB / B			
Number of Flutes / Cutting Edges			2		3		4		2		4	
Length			Normal						Normal			
Corner style			Sharp						Ball Nose			
Helix angle			30°						30°			
Coating			Uncoated	PVD	Uncoated	PVD	Uncoated	PVD	Uncoated	PVD	Uncoated	PVD
Shank Style			HA Cylindrical						HA Cylindrical			
Manufacturing Standards												
inch	Diameter Range	inch	0.063 - 0.094		0.063 - 0.094		0.063 - 0.094		0.063 - 0.094		0.063 - 0.094	
mm		*mm*	*0.40 - 2.50*		*1.00 - 2.50*		*1.00 - 2.00*		*0.40 - 2.50*		*1.00 - 2.50*	
Page			B83 - B86		B87 - B90		B91 - B94		B95 - B98		B99 - B102	
General Application	Slotting - Square Ended		◆	◆◆	◆	◆◆						
	Slotting - Ball Nosed								◆	◆◆		
	Shoulder Milling - Square Ended		◆	◆◆	◆	◆◆	◆	◆◆				
	Shoulder Milling - Ball Nosed								◆	◆◆	◆	◆◆
Tool Path Strategy	Pocketing		◆	◆◆	◆	◆◆	◆	◆◆	◆	◆◆		
	Drilling											
	Helical Interpolation		◆	◆◆	◆	◆◆						
	Ramping											
	Copy / 3D								◆	◆◆	◆	◆◆
	Facing											
	Trochoidal		◆	◆◆	◆	◆◆	◆	◆◆				

Note: DIN[1] = DIN6535, DIN[2] = DIN6527L, DIN[3] = DIN6535 and DIN 6527L.





STELLRAM



AEROSPACE RADIUS END MILL

CXE / CXER / XE / XER End Mills have been specifically designed and manufactured for the machining of Titanium and High Temperature Alloys that are typically found in Aerospace, Defense, Medical and Oils & Gas Segments.

Key Features

- Advanced Geometric design
- Tough and Wear resistant Submicron Substrate
- Advanced Nano - Composite PVD Coating
- High Precision Radii

Benefits

- Improved stability with the suppression of vibration & harmonics
- Excellent chip control
- Increased application capacity for Slotting and Profiling
- Increased metal removal rates by up to 2X against comparable tools

CXE / XE / CXER / XER

Range:

CXE / XE:
Ø: 0.125" (1/8) - 1.000" (1")
Radii : 0.010"
Ø: 2.00mm - 20.00mm
Radii : 0.25mm

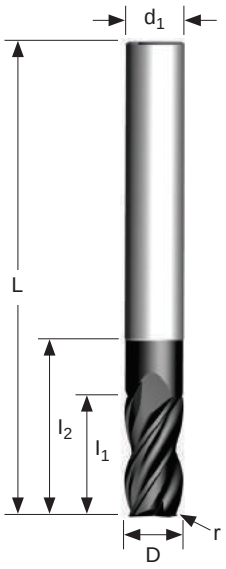
CXER / XER:
Ø: 0.125" (1/8) - 1.000" (1")
Radii : 0.010" - 0.190"
Ø : 2.00mm - 20.00mm
Radii : 0.25mm - 4.00mm



Materials Application

SP4060					
P	M	K	N	S	H

PVD



4 - Flute End Mill

STELLRAM

Solid Carbide
Aerospace End Mills



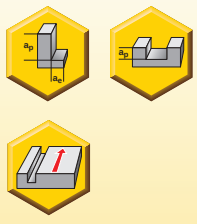
Inch Product		Dimensions (inch)										
EDP	**Item Description**	D	L	l_1	l_2	d_1	r	a_p max	No. of Teeth	Helical Hole min - max		Trochoidal min
031373	**CXE 0125MTN4-C**	0.125_(1/8)	2.500	0.250	-	0.250	0.010	0.250	4	0.179	0.225	0.179
031374	**CXE 0156MTN4-C**	0.156_(5/32)	2.500	0.313	-	0.250		0.313	4	0.223	0.285	0.223
031375	**CXE 0187MTN4-C**	0.188_(3/16)	3.000	0.375	-	0.250		0.375	4	0.269	0.347	0.269
031376	**CXE 0250MN4-C**	0.250_(1/4)	3.000	0.500	0.750	0.250		0.500	4	0.358	0.468	0.358
031377	**CXE 0312MN4-C**	0.313_(5/16)	3.000	0.625	0.938	0.313		0.625	4	0.448	0.591	0.448
031378	**CXE 0375MN4-C**	0.375_(3/8)	4.000	0.750	1.125	0.375		0.750	4	0.536	0.712	0.536
031379	**CXE 0500MN4-C**	0.500_(1/2)	4.000	1.000	1.500	0.500		1.000	4	0.715	0.956	0.715
031380	**CXE 0625MN4-C**	0.625_(5/8)	4.500	1.250	1.875	0.625		1.250	4	0.894	1.200	0.894
031381	**CXE 0750MN4-C**	0.750_(3/4)	5.000	1.500	2.250	0.750		1.500	4	1.073	1.443	1.073
031382	**CXE 1000MN4-C**	1.000 (1)	6.000	2.000	3.000	1.000		2.000	4	1.430	1.931	1.430

Metric Product		Dimensions (mm)										
EDP	**Item Description**	D	L	l_1	l_2	d_1	r	a_p max	No. of Teeth	Helical Hole min - max		Trochoidal min
031360	**XE 020MTN4-C**	2.00	65.00	4.00	-	6.00	0.25	4.00	4	2.86	3.41	2.86
031361	**XE 025MTN4-C**	2.50	65.00	5.00	-	6.00		5.00	4	3.58	4.39	3.58
031362	**XE 030MTN4-C**	3.00	65.00	6.00	-	6.00		6.00	4	4.29	5.36	4.29
031363	**XE 035MTN4-C**	3.50	65.00	7.00	-	6.00		7.00	4	3.40	5.85	5.25
031364	**XE 040MTN4-C**	4.00	65.00	8.00	-	6.00		4.00	4	5.72	7.31	5.72
031365	**XE 045MTN4-C**	4.50	65.00	9.00	-	6.00		9.00	4	6.44	8.29	6.44
031366	**XE 050MTN4-C**	5.00	75.00	10.00	-	6.00		10.00	4	7.15	9.26	7.15
031367	**XE 060MN4-C**	6.00	75.00	12.00	18.00	6.00		12.00	4	8.58	11.21	8.58
031368	**XE 080MN4-C**	8.00	75.00	16.00	24.00	8.00		16.00	4	11.44	15.11	11.44
031369	**XE 100MN4-C**	10.00	100.00	20.00	30.00	10.00		20.00	4	14.30	19.01	14.30
031370	**XE 120MN4-C**	12.00	100.00	24.00	36.00	12.00		24.00	4	17.16	22.91	17.16
031371	**XE 160MN4-C**	16.00	115.00	32.00	48.00	16.00		32.00	4	22.88	30.71	22.88
031372	**XE 200MN4-C**	20.00	120.00	40.00	60.00	20.00		40.00	4	28.60	38.51	28.60

Technical Information

CXE / XE - Radial a_e and Axial a_p depth of cut range

Product	Dimensions						
Grade	Shoulder Milling						Slotting
	Roughing			Finishing			
	a_e%	a_p%	f_z	a_e%	a_p%	f_z	a_p%
SP4060	0.2 - 0.5 D	0.5 - 2.0 D	Mid - High	0.05 - 0.2 D	0.5 - 2.0 D	Low - Mid	0.5 - 1.25 D



Slotting - Square Ended

Note: For ramping angle, helical a_p max. and trochoidal application details, refer to pages B105 - B106.

STELLRAM

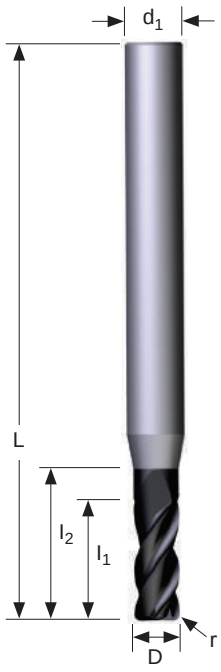
Materials Application

SP4060

P	M	K	N	S	H

PVD

Solid Carbide
Aerospace End Mills



4 - Flute End Mill

Inch Product		Dimensions (inch)										
EDP	**Item Description**	D	L	l_1	l_2	d_1	r	a_p max	No. of Teeth	Helical Hole min - max		Trochoidal min
032074	**CXER 0125NTN4-C**	0.125_(1/8)	2.500	0.290	-	0.250	0.010	0.290	4	0.179	0.224	0.179
032075	**CXER 0125NTN4-F**	0.125_(1/8)	2.500	0.290	-	0.250	0.030	0.290	4	0.179	0.185	0.179
032076	**CXER 0156NTN4-C**	0.156_(5/32)	2.500	0.353	-	0.250	0.010	0.353	4	0.223	0.285	0.223
032077	**CXER 0187NTN4-C**	0.188_(3/16)	2.500	0.415	-	0.250	0.010	0.415	4	0.269	0.347	0.269
032078	**CXER 0187NTN4-F**	0.188_(3/16)	2.500	0.415	-	0.250	0.030	0.415	4	0.269	0.308	0.269
032079	**CXER 0218NTN4-C**	0.219_(7/32)	2.500	0.478	-	0.250	0.010	0.478	4	0.313	0.408	0.313
032080	**CXER 0218NTN4-E**	0.219_(7/32)	2.500	0.478	-	0.250	0.020	0.478	4	0.313	0.388	0.313
032081	**CXER 0250NN4-C**	0.250 (1/4)	2.500	0.540	0.750	0.250	0.010	0.540	4	0.358	0.468	0.358
032082	**CXER 0250NN4-E**	0.250 (1/4)	2.500	0.540	0.750	0.250	0.020	0.540	4	0.358	0.449	0.358
032083	**CXER 0250NN4-F**	0.250 (1/4)	2.500	0.540	0.750	0.250	0.030	0.540	4	0.358	0.429	0.358
032084	**CXER 0281NTN4-C**	0.281 _(9/32)	2.500	0.603	-	0.313	0.010	0.603	4	0.402	0.528	0.402
032085	**CXER 0281NTN4-E**	0.281 _(9/32)	2.500	0.603	-	0.313	0.020	0.603	4	0.402	0.509	0.402
032086	**CXER 0312NN4-C**	0.313_ (5/16)	2.500	0.665	0.938	0.313	0.010	0.665	4	0.448	0.591	0.448
032087	**CXER 0312NN4-E**	0.313_ (5/16)	2.500	0.665	0.938	0.313	0.020	0.665	4	0.448	0.571	0.448
032088	**CXER 0312NN4-F**	0.313_ (5/16)	2.500	0.665	0.938	0.313	0.030	0.665	4	0.448	0.552	0.448
032089	**CXER 0343NTN4-C**	0.344 _(11/32)	2.500	0.728	-	0.375	0.010	0.728	4	0.492	0.651	0.492
032090	**CXER 0343NTN4-E**	0.344 _(11/32)	2.500	0.728	-	0.375	0.020	0.728	4	0.492	0.632	0.492
032091	**CXER 0375NN4-C**	0.375_(3/8)	2.500	0.790	1.125	0.375	0.010	0.790	4	0.536	0.712	0.536
032092	**CXER 0375NN4-E**	0.375_(3/8)	2.500	0.790	1.125	0.375	0.020	0.790	4	0.536	0.692	0.536
032093	**CXER 0375NN4-F**	0.375_(3/8)	2.500	0.790	1.125	0.375	0.030	0.790	4	0.536	0.673	0.536
032094	**CXER 0375NN4-J**	0.375_(3/8)	2.500	0.790	1.125	0.375	0.060	0.790	4	0.536	0.614	0.536
032095	**CXER 0406NTN4-C**	0.406_(13/32)	3.000	0.853	-	0.438	0.010	0.853	4	0.581	0.772	0.581
032096	**CXER 0406NTN4-E**	0.406_(13/32)	3.000	0.853	-	0.438	0.020	0.853	4	0.581	0.753	0.581
032097	**CXER 0437NN4-C**	0.438_(7/16)	3.000	0.915	1.313	0.438	0.010	0.915	4	0.626	0.835	0.626
032098	**CXER 0437NN4-E**	0.438_(7/16)	3.000	0.915	1.313	0.438	0.020	0.915	4	0.626	0.815	0.626
032099	**CXER 0437NN4-F**	0.438_(7/16)	3.000	0.915	1.313	0.438	0.030	0.915	4	0.626	0.796	0.626
032100	**CXER 0437NN4-J**	0.438_(7/16)	3.000	0.915	1.313	0.438	0.060	0.915	4	0.626	0.737	0.626
032101	**CXER 0469NTN4-C**	0.469_(15/32)	3.000	0.978	-	0.500	0.010	0.978	4	0.671	0.895	0.671
032102	**CXER 0469NTN4-E**	0.469_(15/32)	3.000	0.978	-	0.500	0.020	0.978	4	0.671	0.876	0.671

Technical Information

CXER - Radial a_e and Axial a_p depth of cut range

Product	Dimensions						
Grade	Shoulder Milling						Slotting
	Roughing			Finishing			
	ae%	ap%	fz	ae%	ap%	fz	ap%
SP4060	0.2 - 0.5 D	0.5 - 2.0 D	Mid - High	0.05 - 0.2 D	0.5 - 2.0 D	Low - Mid	0.5 - 1.25 D

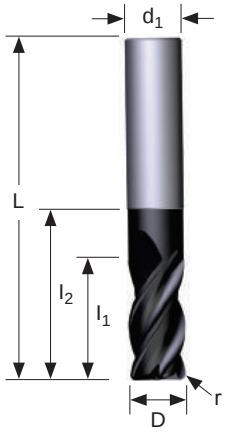
Slotting - Square Ended

Note: For ramping angle, helical a_p max. and trochoidal application details, refer to pages B105 - B106.

Materials Application

SP4060					
P	M	K	N	S	H
◆	◆			◆	

PVD



4 - Flute End Mill

STELLRAM

Solid Carbide
Aerospace End Mills



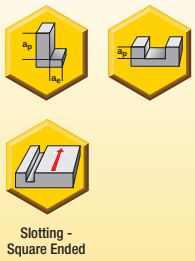
Inch Product		Dimensions (inch)										
EDP	**Item Description**	D	L	l_1	l_2	d_1	r	a_p max	No. of Teeth	Helical Hole min - max		Trochoidal min
032103	**CXER 0500NN4-C**	0.500_(1/2)	3.000	1.040	1.500	0.500	0.010	1.040	4	0.715	0.956	0.715
032104	**CXER 0500NN4-F**	0.500_(1/2)	3.000	1.040	1.500	0.500	0.030	1.040	4	0.715	0.917	0.715
032105	**CXER 0500NN4-J**	0.500_(1/2)	3.000	1.040	1.500	0.500	0.060	1.040	4	0.715	0.858	0.715
032106	**CXER 0500NN4-K**	0.500_(1/2)	3.000	1.040	1.500	0.500	0.090	1.040	4	0.715	0.800	0.715
032107	**CXER 0500NN4-L**	0.500_(1/2)	3.000	1.040	1.500	0.500	0.120	1.040	4	0.715	0.741	0.715
032108	**CXER 0625NN4-C**	0.625_ (5/8)	3.500	1.290	1.875	0.625	0.010	1.290	4	0.894	1.199	0.894
032109	**CXER 0625NN4-F**	0.625_ (5/8)	3.500	1.290	1.875	0.625	0.030	1.290	4	0.894	1.160	0.894
032110	**CXER 0625NN4-J**	0.625_ (5/8)	3.500	1.290	1.875	0.625	0.060	1.290	4	0.894	1.102	0.894
032111	**CXER 0625NN4-K**	0.625_ (5/8)	3.500	1.290	1.875	0.625	0.090	1.290	4	0.894	1.043	0.894
032112	**CXER 0625NN4-L**	0.625_ (5/8)	3.500	1.290	1.875	0.625	0.120	1.290	4	0.894	0.985	0.894
032113	**CXER 0750NN4-C**	0.750_(3/4)	4.000	1.540	2.250	0.750	0.010	1.540	4	1.073	1.443	1.073
032114	**CXER 0750NN4-F**	0.750_(3/4)	4.000	1.540	2.250	0.750	0.030	1.540	4	1.073	1.404	1.073
032115	**CXER 0750NN4-J**	0.750_(3/4)	4.000	1.540	2.250	0.750	0.060	1.540	4	1.073	1.346	1.073
032116	**CXER 0750NN4-K**	0.750_(3/4)	4.000	1.540	2.250	0.750	0.090	1.540	4	1.073	1.287	1.073
032117	**CXER 0750NN4-L**	0.750_(3/4)	4.000	1.540	2.250	0.750	0.120	1.540	4	1.073	1.229	1.073
032118	**CXER 0750NN4-M**	0.750_(3/4)	4.000	1.540	2.250	0.750	0.156	1.540	4	1.073	1.158	1.073
032119	**CXER 0750NN4-P**	0.750_(3/4)	4.000	1.540	2.250	0.750	0.190	1.540	4	1.073	1.092	1.073
032120	**CXER 1000NN4-C**	1.000_(1)	5.000	2.040	3.000	1.000	0.010	2.040	4	1.430	1.931	1.430
032121	**CXER 1000NN4-F**	1.000_(1)	5.000	2.040	3.000	1.000	0.030	2.040	4	1.430	1.892	1.430
032122	**CXER 1000NN4-J**	1.000_(1)	5.000	2.040	3.000	1.000	0.060	2.040	4	1.430	1.833	1.430
032123	**CXER 1000NN4-K**	1.000_(1)	5.000	2.040	3.000	1.000	0.090	2.040	4	1.430	1.775	1.430
032124	**CXER 1000NN4-L**	1.000_(1)	5.000	2.040	3.000	1.000	0.120	2.040	4	1.430	1.716	1.430
032125	**CXER 1000NN4-M**	1.000_(1)	5.000	2.040	3.000	1.000	0.156	2.040	4	1.430	1.646	1.430
032126	**CXER 1000NN4-P**	1.000_(1)	5.000	2.040	3.000	1.000	0.190	2.040	4	1.430	1.580	1.430

Technical Information

CXER - Radial a_e and Axial a_p depth of cut range

Product	Dimensions						
Grade	Shoulder Milling						Slotting
	Roughing			Finishing			
	a_e%	a_p%	f_z	a_e%	a_p%	f_z	a_p%
SP4060	0.2 - 0.5 D	0.5 - 2.0 D	Mid - High	0.05 - 0.2 D	0.5 - 2.0 D	Low - Mid	0.5 - 1.25 D

Note: For ramping angle, helical a_p max. and trochoidal application details, refer to pages B105 - B106.



Slotting - Square Ended

STELLRAM

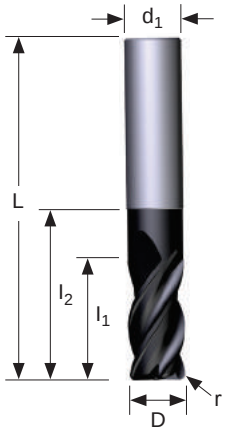
Solid Carbide
Aerospace End Mills

Materials Application

SP4060

P	M	K	N	S	H

PVD



4 - Flute End Mill

Metric Product		Dimensions (mm)										
EDP	**Item Description**	D	L	l_1	l_2	d_1	r	a_p max	No. of Teeth	Helical Hole min - max		Trochoidal min
031936	**XER 020NTN4-C**	2.00	57.00	7.00	-	6.00	0.25	7.00	4	2.86	3.41	2.86
031937	**XER 025NTN4-C**	2.50	57.00	8.00	-	6.00	0.25	8.00	4	3.58	4.39	3.58
031938	**XER 030NTN4-C**	3.00	57.00	8.00	-	6.00	0.25	8.00	4	4.29	5.36	4.29
031939	**XER 035NTN4-C**	3.50	57.00	10.00	-	6.00	0.25	10.00	4	5.01	6.34	5.01
031940	**XER 040NTN4-C**	4.00	57.00	11.00	-	6.00	0.25	11.00	4	5.72	7.31	5.72
031941	**XER 040NTN4-E**	4.00	57.00	11.00	-	6.00	0.50	11.00	4	5.72	6.83	5.72
031942	**XER 050NTN4-C**	5.00	57.00	13.00	-	6.00	0.25	13.00	4	7.15	9.26	7.15
031943	**XER 050NTN4-E**	5.00	57.00	13.00	-	6.00	0.50	13.00	4	7.15	8.78	7.15
031944	**XER 050NTN4-F**	5.00	57.00	13.00	-	6.00	0.75	13.00	4	7.15	8.29	7.15
031945	**XER 060NN4-C**	6.00	57.00	13.00	21.00	6.00	0.25	13.00	4	8.58	11.21	8.58
031946	**XER 060NN4-E**	6.00	57.00	13.00	21.00	6.00	0.50	13.00	4	8.58	10.73	8.58
031947	**XER 060NN4-G**	6.00	57.00	13.00	21.00	6.00	1.00	13.00	4	8.58	9.75	8.58
031948	**XER 080NN4-C**	8.00	63.00	19.00	27.00	8.00	0.25	19.00	4	11.44	15.11	11.44
031949	**XER 080NN4-E**	8.00	63.00	19.00	27.00	8.00	0.50	19.00	4	11.44	14.63	11.44
031950	**XER 080NN4-G**	8.00	63.00	19.00	27.00	8.00	1.00	19.00	4	11.44	13.65	11.44
031951	**XER 100NN4-C**	10.00	72.00	22.00	32.00	10.00	0.25	22.00	4	14.30	19.01	14.30
031952	**XER 100NN4-E**	10.00	72.00	22.00	32.00	10.00	0.50	22.00	4	14.30	18.53	14.30
031953	**XER 100NN4-G**	10.00	72.00	22.00	32.00	10.00	1.00	22.00	4	14.30	17.55	14.30
031954	**XER 100NN4-J**	10.00	72.00	22.00	32.00	10.00	1.50	22.00	4	14.30	16.58	14.30
031955	**XER 120NN4-C**	12.00	83.00	26.00	38.00	12.00	0.25	26.00	4	17.16	22.91	17.16
031956	**XER 120NN4-E**	12.00	83.00	26.00	38.00	12.00	0.50	26.00	4	17.16	22.43	17.16
031957	**XER 120NN4-G**	12.00	83.00	26.00	38.00	12.00	1.00	26.00	4	17.16	21.45	17.16
031958	**XER 120NN4-J**	12.00	83.00	26.00	38.00	12.00	1.50	26.00	4	17.16	20.48	17.16
032269	**XER 120NN4-L**	12.00	83.00	26.00	38.00	12.00	2.50	26.00	4	17.16	18.53	17.16
031959	**XER 160NN4-C**	16.00	92.00	32.00	44.00	16.00	0.25	32.00	4	22.88	30.71	22.88
031960	**XER 160NN4-G**	16.00	92.00	32.00	44.00	16.00	1.00	32.00	4	22.88	29.25	22.88
031961	**XER 160NN4-J**	16.00	92.00	32.00	44.00	16.00	1.50	32.00	4	22.88	28.28	22.88
031962	**XER 160NN4-K**	16.00	92.00	32.00	44.00	16.00	2.00	32.00	4	22.88	27.30	22.88
032270	**XER 160NN4-L**	16.00	92.00	32.00	44.00	16.00	2.50	32.00	4	22.88	26.33	22.88
031963	**XER 160NN4-M**	16.00	92.00	32.00	44.00	16.00	3.00	32.00	4	22.88	25.35	22.88
032271	**XER 160NN4-P**	16.00	92.00	32.00	44.00	16.00	4.00	32.00	4	22.88	23.40	22.88
031964	**XER 200NN4-C**	20.00	104.00	38.00	54.00	20.00	0.25	38.00	4	28.60	38.51	28.60
031965	**XER 200NN4-G**	20.00	104.00	38.00	54.00	20.00	1.00	38.00	4	28.60	37.05	28.60
031966	**XER 200NN4-J**	20.00	104.00	38.00	54.00	20.00	1.50	38.00	4	28.60	36.08	28.60
031967	**XER 200NN4-K**	20.00	104.00	38.00	54.00	20.00	2.00	38.00	4	28.60	35.10	28.60
032272	**XER 200NN4-L**	20.00	104.00	38.00	54.00	20.00	2.50	38.00	4	28.60	34.13	28.60
031968	**XER 200NN4-M**	20.00	104.00	38.00	54.00	20.00	3.00	38.00	4	28.60	33.15	28.60
032273	**XER 200NN4-P**	20.00	104.00	38.00	54.00	20.00	4.00	38.00	4	28.60	31.20	28.60

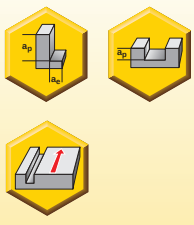
Technical Information

XER - Radial a_e and Axial a_p depth of cut range

Product	Dimensions						
Grade	Shoulder Milling						Slotting
	Roughing			Finishing			
	a_e%	a_p%	f_z	a_e%	a_p%	f_z	a_p%
SP4060	0.2 - 0.5 D	0.5 - ap Max*	Mid - High	0.05 - 0.2 D	0.5 - ap Max*	Low - Mid	0.5 - 1.16 D

* Do not exceed 2 D for a_p max - where 2D is available.

Note: For ramping angle, helical a_p max. and trochoidal application details, refer to pages B105 - B106.



Slotting - Square Ended

STELLRAM

Solid Carbide
Aerospace End Mills

Recommended Feeds

CXE / XE / CXER / XER Feeds fz (ipt) - Slotting / Pocketing

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
-	-	-	-	0.0002	0.0002	0.0002	0.0002	0.0001	-	-	-	-	-	0.0002	0.0001	0.0001	0.0002	-	-
2.0mm				0.0003	0.0003	0.0003	0.0003	0.0002						0.0003	0.0002	0.0002	0.0003		
-	-	-	-	0.0002	0.0002	0.0002	0.0002	0.0001	-	-	-	-	-	0.0002	0.0001	0.0001	0.0002	-	-
2.5mm				0.0003	0.0003	0.0003	0.0003	0.0002						0.0003	0.0002	0.0002	0.0003		
0.125	-	-	-	0.0004	0.0004	0.0004	0.0003	0.0003	-	-	-	-	-	0.0004	0.0003	0.0003	0.0004	-	-
3.0mm				0.0007	0.0006	0.0006	0.0005	0.0005						0.0007	0.0006	0.0005	0.0007		
-	-	-	-	0.0004	0.0004	0.0004	0.0003	0.0003	-	-	-	-	-	0.0004	0.0003	0.0003	0.0004	-	-
3.5mm				0.0007	0.0006	0.0006	0.0005	0.0005						0.0007	0.0006	0.0005	0.0007		
0.156	-	-	-	0.0004	0.0004	0.0004	0.0003	0.0003	-	-	-	-	-	0.0004	0.0003	0.0003	0.0005	-	-
4.0mm				0.0007	0.0006	0.0007	0.0006	0.0006						0.0010	0.0008	0.0007	0.0015		
0.188	-	-	-	0.0006	0.0005	0.0006	0.0004	0.0005	-	-	-	-	-	0.0006	0.0004	0.0004	0.0006	-	-
5.0mm				0.0011	0.0009	0.0010	0.0009	0.0008						0.0012	0.0010	0.0009	0.0012		
0.219	-	-	-	0.0007	0.0006	0.0007	0.0005	0.0006	-	-	-	-	-	0.0008	0.0005	0.0005	0.0008	-	-
-				0.0018	0.0010	0.0012	0.0015	0.0010						0.0015	0.0013	0.0011	0.0015		
0.250	-	-	-	0.0008	0.0007	0.0008	0.0005	0.0006	-	-	-	-	-	0.0008	0.0005	0.0005	0.0008	-	-
6.0mm				0.0016	0.0012	0.0015	0.0012	0.0011						0.0017	0.0014	0.0012	0.0017		
0.281	-	-	-	0.0009	0.0007	0.0009	0.0006	0.0007	-	-	-	-	-	0.0009	0.0006	0.0007	0.0009	-	-
-				0.0018	0.0013	0.0018	0.0015	0.0013						0.0020	0.0016	0.0014	0.0020		
0.313	-	-	-	0.0010	0.0008	0.0010	0.0007	0.0008	-	-	-	-	-	0.0010	0.0007	0.0007	0.0010	-	-
8.0mm				0.0020	0.0014	0.0019	0.0016	0.0014						0.0022	0.0019	0.0016	0.0022		
0.344	-	-	-	0.0010	0.0009	0.0011	0.0008	0.0008	-	-	-	-	-	0.0011	0.0008	0.0009	0.0011	-	-
-				0.0022	0.0015	0.0022	0.0018	0.0016						0.0025	0.0021	0.0018	0.0025		
0.375	-	-	-	0.0012	0.0010	0.0012	0.0008	0.0009	-	-	-	-	-	0.0012	0.0008	0.0009	0.0012	-	-
10.0mm				0.0024	0.0017	0.0024	0.0019	0.0017						0.0028	0.0023	0.0019	0.0027		
0.406	-	-	-	0.0013	0.0010	0.0013	0.0013	0.0010	-	-	-	-	-	0.0013	0.0009	0.0009	0.0013	-	-
-				0.0026	0.0018	0.0025	0.0020	0.0018						0.0030	0.0024	0.0020	0.0030		
0.437	-	-	-	0.0013	0.0010	0.0013	0.0013	0.0010	-	-	-	-	-	0.0013	0.0009	0.0009	0.0013	-	-
-				0.0028	0.0019	0.0026	0.0022	0.0019						0.0032	0.0026	0.0021	0.0032		
0.469	-	-	-	0.0014	0.0011	0.0014	0.0010	0.0011	-	-	-	-	-	0.0014	0.0010	0.0010	0.0014	-	-
-				0.0029	0.0020	0.0028	0.0023	0.0200						0.0034	0.0028	0.0023	0.0034		
0.500	-	-	-	0.0015	0.0012	0.0015	0.0015	0.0012	-	-	-	-	-	0.0015	0.0011	0.0011	0.0015	-	-
12.0mm				0.0030	0.0023	0.0030	0.0025	0.0023						0.0035	0.0030	0.0025	0.0035		
0.625	-	-	-	0.0018	0.0014	0.0018	0.0013	0.0014	-	-	-	-	-	0.0018	0.0013	0.0013	0.0018	-	-
16.0mm				0.0380	0.0026	0.0038	0.0031	0.0027						0.0045	0.0038	0.0031	0.0045		
0.750	-	-	-	0.0020	0.0016	0.0020	0.0015	0.0016	-	-	-	-	-	0.0020	0.0015	0.0015	0.0020	-	-
20.0mm				0.0042	0.0029	0.0044	0.0035	0.0030						0.0052	0.0043	0.0035	0.0052		
1.000	-	-	-	0.0025	0.0018	0.0025	0.0017	0.0018	-	-	-	-	-	0.0025	0.0017	0.0018	0.0025	-	-
-				0.0047	0.0032	0.0049	0.0039	0.0033						0.0058	0.0048	0.0039	0.0058		

Note: HTA = High Temperature Alloys

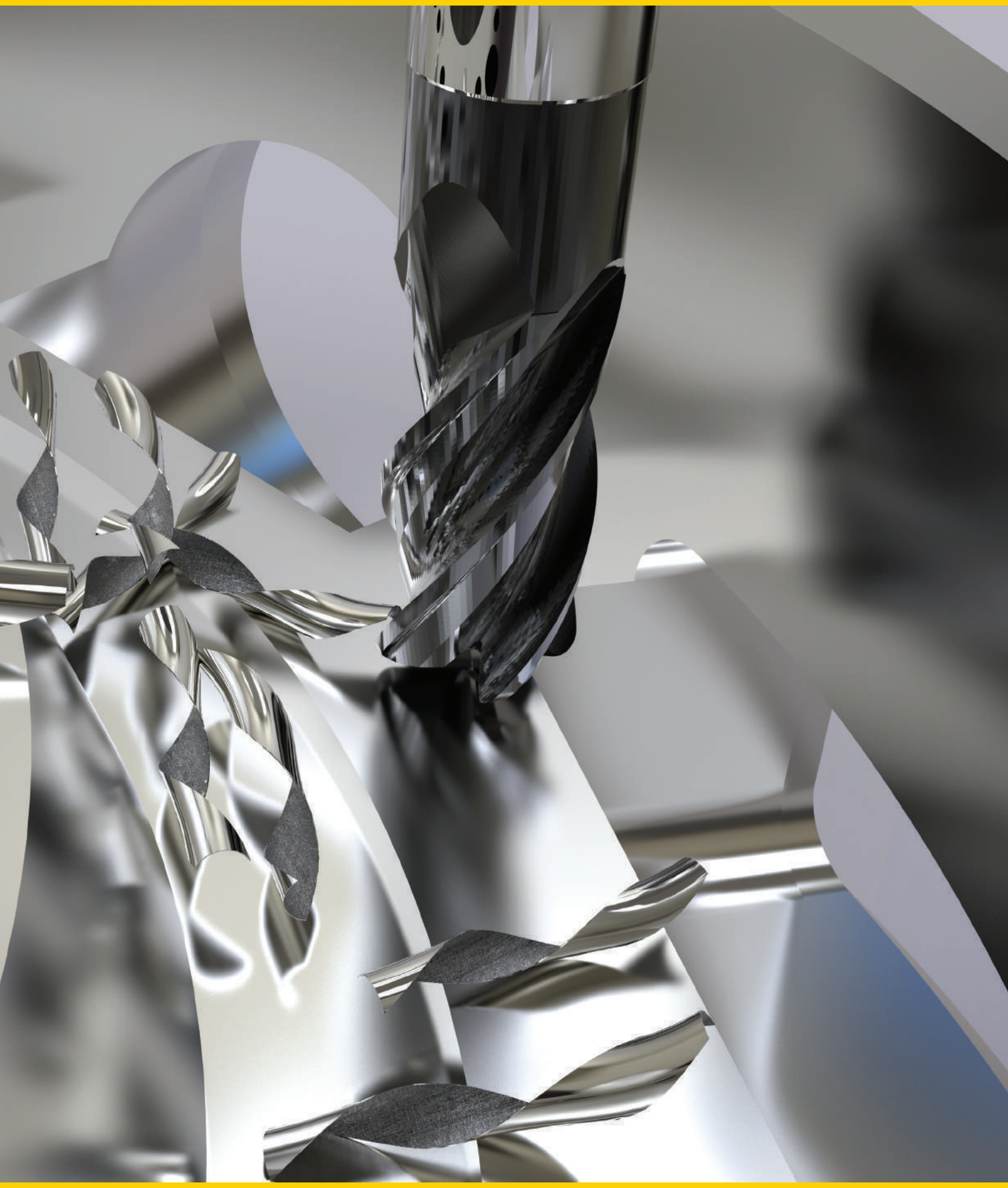
Shoulder Milling / Profiling	Feed Correction Parameters	
	ae	Correction Factor
	0.05 D	2.30 x fz
	0.10 D	1.65 x fz
	0.15 D	1.40 x fz
	0.20 D	1.25 x fz
	0.30 D	1.09 x fz

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

Recommended Speeds

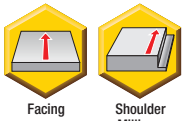
Speed v_c (SFM)

CXE / XE / CXER / XER Series					
			Speed min. - max.		
Coolant Recommendation					PVD Standard
ISO	Materials	Rm and Hardness			SP4060
P	Unalloyed Steel	<600 N/mm² <180 HBN			
		<950 N/mm² <280 HBN			
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●	⦿	
		950-1200 N/mm² 280-355 HBN			165 - 920
		1200-1400 N/mm² 355-415 HBN			50 - 525
M	Stainless Steel	Austenitic + Ferritic 300 series	●	⦿	315 - 665
		Martensitic 400 series			230 - 475
	PH Stainless	Refractory P.H.	●		195 - 360
K	Cast Iron	Grey GG-Ft			
		Spheroidal-Ductile GGG-FGS			
		Malleable GTS - MN/MP			
N	Aluminium & Alloys	Aluminum & Alloys < 16% Si 116 HBN			
		Aluminum + Silicon > 16% Si 92 HBN			
S	High Temperature Alloys	Iron Based	●		195 - 455
		Cobalt Based			65 - 245
		Nickel Based			80 - 260
		Titanium Based			130 - 390
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN			
		Chilled Cast Iron >1400 N/mm² > 400 HBN			





STELLRAM



RSM AEROSPACE PROGRAM

The RSM program is specially designed to overcome a number of problems usually associated with machining Titanium components, in particular the profiling of walls, pockets and surfaces in 2D and 3D applications.

Issues such as vibration and material tarnishing are significantly reduced by the tool's unique geometry. The tool also features a reduced shank which offers optimum flexibility. This allows the user to obtain maximum reach and workholding length* to suit individual requirements, thereby reducing required inventory.

* Recommended minimum secure clamping length is 2.5 x shank diameter.

CRSM / RSM

RSM Range:
Ø: 0.375" (3/8) - 1.000" (1)
Radii*: 0.030" - 0.250"
Ø: 10.00mm - 25.00mm
Radii*: 0.50mm - 5.00mm

Z*: 6, 8 & 10

* Radii and number of cutting edges are dependent on diameter

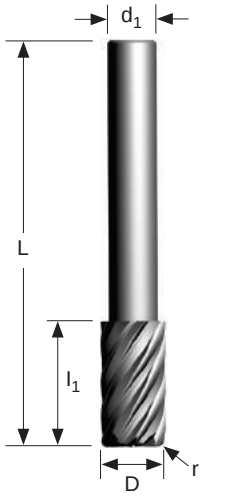


Materials Application

SU4000

P	M	K	N	S	H
				◆	

Uncoated



Multi-Flute End Mill

STELLRAM

Solid Carbide
Aerospace End Mills

Inch Product		Dimensions (inch)									
EDP	**Item Description**	D	L	l_1	d_1	r	a_p max	No. of Teeth	Helical Hole min - max		Trochoidal min
031061	**CRSM0375LM6X-F**	0.375	5.000	0.790	0.312	0.030	0.790	6	-	-	-
031062	**CRSM0375LM6X-J**	0.375	5.000	0.790	0.312	0.060	0.790	6	-	-	-
031063	**CRSM0375LM6X-K**	0.375	5.000	0.790	0.312	0.090	0.790	6	-	-	-
031064	**CRSM0375LM6X-L**	0.375	5.000	0.790	0.312	0.120	0.790	6	-	-	-
033044	**CRSM0500LM6X-F**	0.500	5.000	0.940	0.438	0.030	0.940	6	-	-	-
033045	**CRSM0500LM6X-J**	0.500	5.000	0.940	0.438	0.060	0.940	6	-	-	-
033046	**CRSM0500LM6X-K**	0.500	5.000	0.940	0.438	0.090	0.940	6	-	-	-
033047	**CRSM0500LM6X-L**	0.500	5.000	0.940	0.438	0.120	0.940	6	-	-	-
031049	**CRSM0625LM6X-J**	0.625	6.000	1.250	0.562	0.060	1.250	6	-	-	-
031050	**CRSM0625LM6X-K**	0.625	6.000	1.250	0.562	0.090	1.250	6	-	-	-
031051	**CRSM0625LM6X-L**	0.625	6.000	1.250	0.562	0.120	1.250	6	-	-	-
031052	**CRSM0625LM6X-P**	0.625	6.000	1.250	0.562	0.190	1.250	6	-	-	-
031053	**CRSM0625LM8X-J**	0.625	6.000	1.250	0.562	0.060	1.250	8	-	-	-
031054	**CRSM0625LM8X-K**	0.625	6.000	1.250	0.562	0.090	1.250	8	-	-	-
031055	**CRSM0625LM8X-L**	0.625	6.000	1.250	0.562	0.120	1.250	8	-	-	-
031056	**CRSM0625LM8X-P**	0.625	6.000	1.250	0.562	0.190	1.250	8	-	-	-
033048	**CRSM0750LM6X-J**	0.750	6.250	1.540	0.688	0.060	1.540	6	-	-	-
033049	**CRSM0750LM6X-K**	0.750	6.250	1.540	0.688	0.090	1.540	6	-	-	-
033050	**CRSM0750LM6X-L**	0.750	6.250	1.540	0.688	0.120	1.540	6	-	-	-
033051	**CRSM0750LM6X-P**	0.750	6.250	1.540	0.688	0.190	1.540	6	-	-	-
033052	**CRSM0750LM6X-Q**	0.750	6.250	1.540	0.688	0.250	1.540	6	-	-	-
033053	**CRSM0750LM8X-J**	0.750	6.250	1.540	0.688	0.060	1.540	8	-	-	-
033054	**CRSM0750LM8X-K**	0.750	6.250	1.540	0.688	0.090	1.540	8	-	-	-
033055	**CRSM0750LM8X-L**	0.750	6.250	1.540	0.688	0.120	1.540	8	-	-	-
033056	**CRSM0750LM8X-P**	0.750	6.250	1.540	0.688	0.190	1.540	8	-	-	-
033057	**CRSM0750LM8X-Q**	0.750	6.250	1.540	0.688	0.250	1.540	8	-	-	-
033058	**CRSM1000LM8X-K**	1.000	6.250	1.850	0.875	0.090	1.850	8	-	-	-
033059	**CRSM1000LM8X-L**	1.000	6.250	1.850	0.875	0.120	1.850	8	-	-	-
033060	**CRSM1000LM8X-P**	1.000	6.250	1.850	0.875	0.190	1.850	8	-	-	-
033061	**CRSM1000LM8X-Q**	1.000	6.250	1.850	0.875	0.250	1.850	8	-	-	-
033062	**CRSM1000LM10X-K**	1.000	6.250	1.850	0.875	0.090	1.850	10	-	-	-
033063	**CRSM1000LM10X-L**	1.000	6.250	1.850	0.875	0.120	1.850	10	-	-	-
033064	**CRSM1000LM10X-P**	1.000	6.250	1.850	0.875	0.190	1.850	10	-	-	-
033065	**CRSM1000LM10X-Q**	1.000	6.250	1.850	0.875	0.250	1.850	10	-	-	-

For technical information, refer to page B103 - B104.

Recommended Feeds

CRSM Technical Information

Product			Dimensions (inch)																	
			Profiling					Facing					Chip Thickness		Profiling (ipt)				Facing (ipt)	
Family Description	Diameter	Z	a_e min	a_e max	a_p min	a_p max	a_d max in^2	a_e min	a_e max	a_p min	a_p max	a_d max in^2	h_m min	h_m max	For a_e min f_z min	For a_e min f_z max	For a_e max f_z min	For a_e max f_z max	f_z min	f_z max
CRSM0375	0.375	6	0.006	0.025	0.380	0.490	0.010	Radius +0.020	0.281	0.0079	Radius +0.020	0.002	0.0008	0.0020	0.0031	0.0077	0.0016	0.0040	0.0008	0.0022
CRSM0500	0.500	6	0.008	0.033	0.540	0.650	0.018		0.375			0.003			0.0031	0.0077	0.0016	0.0040		
CRSM0625	0.625	6	0.010	0.042	0.700	0.810	0.029		0.469			0.005			0.0031	0.0077	0.0016	0.0040		
CRSM0625	0.625	8	0.008	0.031	0.480	0.810	0.015		0.469			0.005			0.0035	0.0089	0.0018	0.0045		
CRSM0750	0.750	6	0.013	0.050	0.860	0.980	0.043		0.563			0.007			0.0031	0.0077	0.0016	0.0040		
CRSM0750	0.750	8	0.009	0.038	0.600	0.980	0.023		0.563			0.007			0.0035	0.0089	0.0018	0.0045		
CRSM1000	1.000	8	0.013	0.050	0.840	1.300	0.042		0.750			0.013			0.0035	0.0089	0.0018	0.0045		
CRSM1000	1.000	10	0.010	0.040	0.600	1.300	0.024		0.750			0.013			0.0040	0.0099	0.0020	0.0050		

In the application of CRSM end mills, it is vital that a_d max in^2 is not exceeded. For this, adjust a_e & a_p accordingly.

Example:

When using a_p max, then a_e = a_d max in^2 / a_p max
= 0.024 / 1.30
= 0.0185"

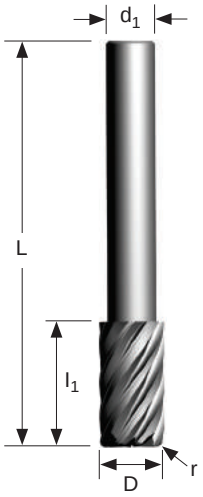
When using a_e max, Then a_p = a_d max in^2 / a_e max
= 0.024 / 0.040
= 0.600"

Example based on values for CRSM1000 (Z=10)

Materials Application

SU4000					
P	M	K	N	S	H
				◆	

Uncoated



Multi-Flute End Mill

STELLRAM

Solid Carbide
Aerospace End Mills

Metric Product		Dimensions (mm)									
EDP	**Item Description**	D	L	l_1	d_1	a_p max	r	No. of Teeth	Helical Hole min - max		Trochoidal min
031027	**RSM100LM6X-E**	10.00	125.00	20.00	9.00	20.00	0.50	6	-	-	-
031028	**RSM100LM6X-G**	10.00	125.00	20.00	9.00	20.00	1.00	6	-	-	-
031029	**RSM100LM6X-K**	10.00	125.00	20.00	9.00	20.00	2.00	6	-	-	-
031030	**RSM100LM6X-M**	10.00	125.00	20.00	9.00	20.00	3.00	6	-	-	-
031023	**RSM120LM6X-E**	12.00	125.00	24.00	10.00	24.00	0.50	6	-	-	-
031024	**RSM120LM6X-G**	12.00	125.00	24.00	10.00	24.00	1.00	6	-	-	-
031025	**RSM120LM6X-K**	12.00	125.00	24.00	10.00	24.00	2.00	6	-	-	-
031026	**RSM120LM6X-M**	12.00	125.00	24.00	10.00	24.00	3.00	6	-	-	-
031015	**RSM160LM6X-G**	16.00	150.00	32.00	14.00	32.00	1.00	6	-	-	-
031016	**RSM160LM6X-K**	16.00	150.00	32.00	14.00	32.00	2.00	6	-	-	-
031017	**RSM160LM6X-M**	16.00	150.00	32.00	14.00	32.00	3.00	6	-	-	-
031018	**RSM160LM6X-P**	16.00	150.00	32.00	14.00	32.00	4.00	6	-	-	-
031019	**RSM160LM8X-G**	16.00	150.00	32.00	14.00	32.00	1.00	8	-	-	-
031020	**RSM160LM8X-K**	16.00	150.00	32.00	14.00	32.00	2.00	8	-	-	-
031021	**RSM160LM8X-M**	16.00	150.00	32.00	14.00	32.00	3.00	8	-	-	-
031022	**RSM160LM8X-P**	16.00	150.00	32.00	14.00	32.00	4.00	8	-	-	-
031005	**RSM200LM6X-G**	20.00	160.00	39.00	18.00	39.00	1.00	6	-	-	-
031006	**RSM200LM6X-K**	20.00	160.00	39.00	18.00	39.00	2.00	6	-	-	-
031007	**RSM200LM6X-M**	20.00	160.00	39.00	18.00	39.00	3.00	6	-	-	-
031008	**RSM200LM6X-P**	20.00	160.00	39.00	18.00	39.00	4.00	6	-	-	-
031009	**RSM200LM6X-Q**	20.00	160.00	39.00	18.00	39.00	5.00	6	-	-	-
031010	**RSM200LM8X-G**	20.00	160.00	39.00	18.00	39.00	1.00	8	-	-	-
031011	**RSM200LM8X-K**	20.00	160.00	39.00	18.00	39.00	2.00	8	-	-	-
031012	**RSM200LM8X-M**	20.00	160.00	39.00	18.00	39.00	3.00	8	-	-	-
031013	**RSM200LM8X-P**	20.00	160.00	39.00	18.00	39.00	4.00	8	-	-	-
031014	**RSM200LM8X-Q**	20.00	160.00	39.00	18.00	39.00	5.00	8	-	-	-
033036	**RSM250LM8X-K**	25.00	160.00	47.00	22.00	47.00	2.00	8	-	-	-
033037	**RSM250LM8X-M**	25.00	160.00	47.00	22.00	47.00	3.00	8	-	-	-
033038	**RSM250LM8X-P**	25.00	160.00	47.00	22.00	47.00	4.00	8	-	-	-
033039	**RSM250LM8X-Q**	25.00	160.00	47.00	22.00	47.00	5.00	8	-	-	-
033040	**RSM250LM10X-K**	25.00	160.00	47.00	22.00	47.00	2.00	10	-	-	-
033041	**RSM250LM10X-M**	25.00	160.00	47.00	22.00	47.00	3.00	10	-	-	-
033042	**RSM250LM10X-P**	25.00	160.00	47.00	22.00	47.00	4.00	10	-	-	-
033043	**RSM250LM10X-Q**	25.00	160.00	47.00	22.00	47.00	5.00	10	-	-	-

For technical information, refer to page B103 - B104.

Recommended Feeds

RSM Technical Information

Product			Dimensions (mm)																	
			Profiling					Facing					Chip Thickness		Profiling (mm/z)				Facing (mm/z)	
Family Description	Diameter	Z	a_e min	a_e max	a_p min	a_p max	a_d max mm²	a_e min	a_e max	a_p min	a_p max	a_d max mm²	h_m min	h_m max	for a_e min f_z min	for a_e min f_z max	for a_e max f_z min	for a_e max f_z max	f_z min	f_z max
RSM100	10.00	6	0.17	0.67	10.30	13.00	6.87	Radius +0.50	7.5	0.20	Radius +0.50	1.25	0.02	0.05	0.078	0.195	0.040	0.100	0.020	0.057
RSM120	12.00	6	0.20	0.80	12.80	15.60	10.24		9			1.80			0.078	0.195	0.040	0.100		
RSM160	16.00	6	0.27	1.07	17.80	20.80	18.99		12			3.20			0.078	0.195	0.040	0.100		
RSM160	16.00	8	0.20	0.80	12.00	20.80	9.60		12			3.20			0.090	0.225	0.046	0.115		
RSM200	20.00	6	0.33	1.33	23.00	26.00	30.67		15			5.00			0.078	0.195	0.040	0.100		
RSM200	20.00	8	0.25	1.00	16.00	26.00	16.00		15			5.00			0.090	0.225	0.046	0.115		
RSM250	25.00	8	0.31	1.25	20.50	32.50	25.63		18.75			7.81			0.090	0.225	0.046	0.115		
RSM250	25.00	10	0.25	1.00	15.50	32.50	15.50		18.75			7.81			0.101	0.251	0.051	0.128		

In the application of RSM end mills, it is vital that a_d max mm² is not exceeded. For this, adjust a_e & a_p accordingly.

Example:

When using a_p max, then a_e = a_d max mm² / a_p max
= 15.50 / 32.50
= 0.47mm

When using a_e max, Then a_p = a_d max mm² / a_e max
= 15.5 / 1
= 15.50mm

Example based on values for RSM250 (Z=10)

STELLRAM

Solid Carbide
Aerospace End Mills

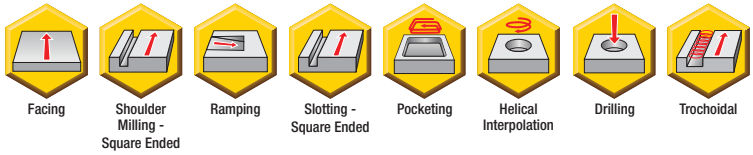
Recommended Speeds

Material Reference Chart and Recommended Surface Speeds

							Imperial		Metric	
Type	Commercial Name	Designation	Hardness HRB HRC HB	Rm N/mm2	WC (0.15) W/cm³/min	WC (0.006) Hp/in³/min	V_C min (sfm)	V_C max (sfm)	V_C min (m/min)	V_C max (m/min)
Titanium a	Ti-5Al-2.5Sn	ATI 5-2.5	HRC36	1130	49	1.08	190	395	60	120
Titanium a	Ti-6Al-4Zr-2Mo-2Sn	ATI 6-2-4-2®	HRC28	900	31	0.67	205	425	60	130
Titanium a	Ti-6Al-4Zr-2Mo-2Sn-0.2Si	ATI 6-2-4-2Si	HRC28	900	31	0.67	205	425	60	130
Titanium a	Ti-8Al-1Mo-1V	ATI 8-1-1®	HRC35	1100	49	1.08	190	395	60	120
Titanium b	Ti-11.5Mo-6Zr-4.5Sn	-	-	-	45	0.99	110	225	35	70
Titanium b	Ti-13V-11Cr-3Al	-	-	-	45	0.99	110	225	35	70
Titanium b	Ti-3Al-8V-6Cr-4Mo-4Zr	ATI 38-644®	HRC32	1000	45	0.99	110	225	35	70
Titanium b	Ti-8Mo-8V-2Fe-3Al		-	-	45	0.99	110	225	35	70
Titanium b	Ti-13V-11Cr-3Al	ATI 13-11-3	HRC40	1270	70	1.53	95	200	30	60
Titanium b	Ti 10.2.3	ATI 10-2-3®	HRC35	1100	62	1.35	90	185	25	60
Titanium b	Ti-15Mo	ATI 15Mo®	HRC24	820	33	0.72	160	335	50	105
Titanium b	Ti-15-333	ATI 15-3-3-3®	HRC32	1000	45	0.99	110	230	35	70
Titanium b	Ti 45Nb	ATI 45Nb®	-	-	30	0.65	145	305	45	95
Titanium b - ab	5Al-5V-5Mo-3Cr	ATI Ti5-5-5-3 Alloy	HRC40	1270	70	1.53	95	200	30	60
Titanium ab	Ti-425	ATI 425® MIL	HRC36	1130	49	1.08	95	200	30	60
Titanium ab	Ti-6AL-4V	ATI 6-4®	HRC30-34	1130	49	1.08	190	395	60	120
Titanium ab	Ti-6Al-4V	ATI 6-4®	HRC35-39	1200	62	1.35	175	365	55	110
Titanium ab	Ti-6Al-5Zr-0.5Mo-0.25Si	-	-	-	49	1.08	160	335	50	105
Titanium ab	Ti-6Al-5Zr-4Mo-Cu-0.2Si	-	-	-	49	1.08	160	335	50	105
Titanium ab	Ti-6Al-6V-2Sn	ATI 6-6-2®	HRC35	1100	49	1.08	175	365	50	110
Titanium ab	Ti-7Al-4Mo	-	-	-	45	0.99	160	335	50	105
Titanium ab	3-2.5	ATI 3-2.5®	HRC24	820	33	0.72	205	425	60	130
Titanium ab	6-4ELI	ATI 6-4 ELI®	HRC32	1000	45	0.99	195	410	60	125
Titanium ab	6-2-4-6	ATI 6-2-4-6®	HRC36	1130	47	1.03	175	365	55	110
Titanium ab	Ti-17	ATI 17®	HRC38	1200	51	1.12	175	365	55	110
Titanium ab	Ti-4Al-4Mo-2Sn-0.5Si	ATI 4-4-2®	HRC35	1100	49	1.08	160	335	50	105
Titanium ab	Ti-4Al-4Mo-4Sn-0.5Si	-	-	-	49	1.08	160	335	50	105
Pure Titanium	Ti 99.5	ATI CP4®	HRB100	780	30	0.65	285	610	90	185
Pure Titanium	Ti 99.6	ATI CP3®	HRB90	600	30	0.65	315	670	95	205
Pure Titanium	Ti 99.7	ATI CP2®	HRB80	510	30	0.65	345	730	105	220
Pure Titanium	Ti 99.8	ATI CP1®	HRB70	430	30	0.65	375	790	115	240



STELLRAM



RAPIDE END MILLS

The Rapide family offers a comprehensive range of end mills suitable for High Speed and High Performance Machining, in an array of materials including Steels, Stainless Steels, High Temperature Alloys, Cast Irons, Hard Materials and Aluminum Alloys.

Key Features

- Material Specific Geometries
- Advanced PVD coating
- Premium Micrograin Carbide

Benefits

- Higher speeds and feeds achievable
- Rapid material removal
- Suitable for machining materials up to 65 HRC
- Dry machining possible

Rapide

Range:
Ø: 0.063” (1/16) - 0.750” (3/4)
Ø: 2.00mm - 20.00mm
Z: 2,3,4 & 6
End Styles: Square Ended, Square Ended with Radius, Ball Nosed

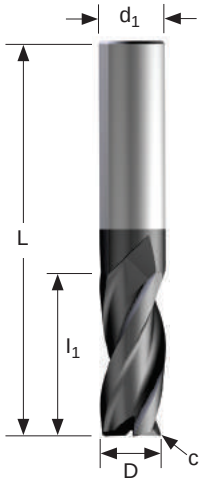


Materials Application

SP4035

P	M	K	N	S	H

PVD



3 - Flute End Mill

STELLRAM

HPM

Solid Carbide
Rapide End Mill

Inch Product		Dimensions (inch)									
EDP	**Item Description**	D	L	l_1	d_1	c	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034091	**CERC 0125NTN3**	0.125 (1/8)	2.000	0.500	0.250	0.004	0.500	3	0.179	0.244	0.179
034093	**CERC 0188NTN3**	0.188 (3/16)	2.000	0.563	0.250	0.004	0.563	3	0.269	0.367	0.269
034095	**CERC 0250NN3**	0.250 (1/4)	2.500	0.625	0.250	0.006	0.625	3	0.358	0.488	0.358
034097	**CERC 0313NN3**	0.313 (5/16)	2.500	0.813	0.313	0.008	0.813	3	0.448	0.610	0.448
034099	**CERC 0375NN3**	0.375 (3/8)	2.500	0.875	0.375	0.008	0.875	3	0.536	0.731	0.536
034101	**CERC 0500NN3**	0.500 (1/2)	3.000	1.250	0.500	0.010	1.250	3	0.715	0.975	0.715
034103	**CERC 0625NN3**	0.625 (5/8)	3.500	1.625	0.625	0.010	1.625	3	0.894	1.219	0.894

Metric Product		Dimensions (mm)									
EDP	**Item Description**	D	L	l_1	d_1	c	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034343	**ERC 030NTN3**	3.00	57.00	8.00	6.00	0.10	8.00	3	4.29	5.85	4.29
034344	**ERC 040NTN3**	4.00	57.00	11.00	6.00	0.10	11.00	3	5.72	7.80	5.72
034345	**ERC 050NTN3**	5.00	57.00	13.00	6.00	0.20	13.00	3	7.15	9.75	7.15
034346	**ERC 060NN3**	6.00	57.00	13.00	6.00	0.20	13.00	3	8.58	11.70	8.58
034347	**ERC 080NN3**	8.00	63.00	20.00	8.00	0.20	20.00	3	11.44	15.60	11.44
034348	**ERC 100NN3**	10.00	72.00	22.00	10.00	0.20	22.00	3	14.30	19.50	14.30
034349	**ERC 120NN3**	12.00	75.00	25.00	12.00	0.25	25.00	3	17.16	23.40	17.16
034839	**ERC 160NN3**	16.00	93.00	35.00	16.00	0.25	35.00	3	22.88	31.20	22.88
034351	**ERC 200NN3**	20.00	100.00	44.00	20.00	0.25	44.00	3	28.60	39.00	28.60

Technical Information

CERC / ERC - Radial a_e and Axial a_p depth of cut range

Product	Dimensions						
Grade	Shoulder Milling						Slotting
	Roughing			Finishing			
	a_e%	a_p%	f_z	a_e%	a_p%	f_z	a_p%
SP4035	0.1 - 0.5 D	0.05 - 2 D	Mid - High	0.05 - 0.1 D	0.05 - 2 D	Low - Mid	0.1 - 1.5 D

Slotting - Square Ended

* For a_p max do not exceed 0.05 D (a_e)

Note: For ramping angle, helical a_p max. and trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

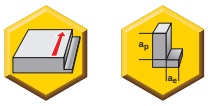
Solid Carbide
Rapide End Mill

Recommended Feeds

CERC / ERC Feeds fz (ipt) - Slotting / Pocketing

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.125	0.0004	0.0004	0.0004	0.0004	0.0003	0.0004	0.0004	0.0003	0.0004	0.0004	0.0004	-	-	0.0004	0.0003	0.0003	0.0004	0.0003	0.0003
3.0mm	0.0006	0.0006	0.0006	0.0006	0.0005	0.0006	0.0005	0.0005	0.0006	0.0006	0.0005			0.0006	0.0006	0.0006	0.0006	0.0004	0.0004
0.156	0.0005	0.0005	0.0005	0.0005	0.0004	0.0005	0.0005	0.0004	0.0005	0.0005	0.0005	-	-	0.0005	0.0004	0.0004	0.0005	0.0004	0.0004
4.0mm	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008	0.0007	0.0006	0.0008	0.0008	0.0007			0.0008	0.0008	0.0008	0.0008	0.0006	0.0006
0.188	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	0.0004	0.0004
5.0mm	0.0010	0.0010	0.0010	0.0009	0.0008	0.0009	0.0008	0.0007	0.0010	0.0009	0.0008			0.0010	0.0010	0.0010	0.0010	0.0007	0.0007
0.250	0.0007	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	-	-	0.0007	0.0007	0.0007	0.0007	0.0005	0.0005
6.0mm	0.0015	0.0015	0.0015	0.0013	0.0011	0.0013	0.0011	0.0010	0.0015	0.0013	0.0011			0.0015	0.0015	0.0014	0.0014	0.0010	0.0009
0.313	0.0009	0.0009	0.0009	0.0009	0.0008	0.0009	0.0009	0.0008	0.0009	0.0009	0.0009	-	-	0.0009	0.0008	0.0008	0.0009	0.0006	0.0006
8.0mm	0.0020	0.0020	0.0020	0.0017	0.0014	0.0017	0.0014	0.0013	0.0021	0.0017	0.0014			0.0021	0.0020	0.0019	0.0019	0.0013	0.0012
0.375	0.0011	0.0011	0.0011	0.0011	0.0009	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011	-	-	0.0011	0.0010	0.0010	0.0011	0.0008	0.0008
10.0mm	0.0025	0.0025	0.0025	0.0021	0.0017	0.0021	0.0017	0.0016	0.0026	0.0021	0.0017			0.0026	0.0025	0.0023	0.0024	0.0016	0.0015
0.500	0.0014	0.0014	0.0014	0.0014	0.0012	0.0014	0.0014	0.0013	0.0014	0.0014	0.0014	-	-	0.0014	0.0013	0.0013	0.0014	0.0010	0.0010
12.0mm	0.0036	0.0036	0.0036	0.0030	0.0024	0.0030	0.0024	0.0022	0.0038	0.0030	0.0024			0.0038	0.0036	0.0034	0.0035	0.0023	0.0021
0.625	0.0018	0.0018	0.0018	0.0018	0.0015	0.0018	0.0018	0.0016	0.0018	0.0018	0.0018	-	-	0.0018	0.0016	0.0016	0.0018	0.0012	0.0012
16.0mm	0.0048	0.0048	0.0048	0.0039	0.0030	0.0039	0.0030	0.0028	0.0052	0.0039	0.0030			0.0052	0.0048	0.0045	0.0046	0.0030	0.0027
0.750	0.0022	0.0022	0.0022	0.0022	0.0018	0.0022	0.0022	0.0019	0.0022	0.0022	0.0022	-	-	0.0022	0.0019	0.0019	0.0022	0.0015	0.0015
20.0mm	0.0061	0.0061	0.0061	0.0049	0.0037	0.0049	0.0037	0.0035	0.0066	0.0049	0.0037			0.0066	0.0061	0.0057	0.0058	0.0037	0.0033

Note: HTA = High Temperature Alloys

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	0.05 D	2.30 x fz
	0.10 D	1.65 x fz
	0.15 D	1.40 x fz
	0.20 D	1.25 x fz
	0.30 D	1.09 x fz

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

STELLRAM

Solid Carbide
Rapide End Mill

Recommended Speeds

Speed v_c (SFM)

CERC / ERC Series

Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

ISO	Materials	Rm and Hardness			PVD Micrograin
			💧		SP4035
P	Unalloyed Steel	<600 N/mm² <180 HBN	●	⦿	262 - 1181
		<950 N/mm² <280 HBN			230 - 1050
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●	⦿	230 - 1050
		950-1200 N/mm² 280-355 HBN			164 - 918
		1200-1400 N/mm² 355-415 HBN			148 - 525
M	Stainless Steel	Austenitic + Ferritic 300 series	●	⦿	262 - 525
		Martensitic 400 series			180 - 394
	PH Stainless	Refractory P.H.	●		164 - 295
K	Cast Iron	Grey GG-Ft	●	⦿	328 - 738
		Spheroidal-Ductile GGG-FGS			230 - 508
		Malleable GTS - MN/MP			213 - 426
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN			
		Aluminum + Silicon > 16% Si 92 HBN			
S	High Temperature Alloys	Iron Based	●	⦿	164 - 295
		Cobalt Based			49 - 164
		Nickel Based			66 - 180
		Titanium Based			98 - 328
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN		⦿	197 - 459
		Chilled Cast Iron >1400 N/mm² > 400 HBN			164 - 426

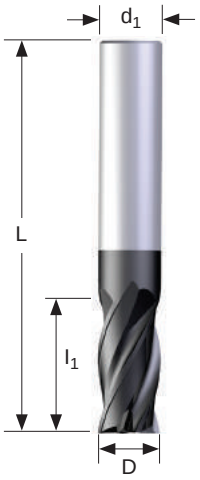
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Materials Application

SP4035

P	M	K	N	S	H

PVD



4 - Flute End Mill

Solid Carbide
Rapide End Mill

HSM · 30° · 90° · h6 · HA

Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034104	**CHE 0063NTN4**	0.063 (1/16)	1.500	0.125	0.125	0.125	4	-	-	0.090
034105	**CHE 0094NTN4**	0.094 (3/32)	1.500	0.250	0.125	0.250	4	-	-	0.134
034106	**CHE 0125NN4**	0.125 (1/8)	1.500	0.313	0.125	0.313	4	-	-	0.179
034107	**CHE 0156NTN4**	0.156 (5/32)	2.000	0.438	0.250	0.438	4	-	-	0.223
034108	**CHE 0188NTN4**	0.188 (3/16)	2.000	0.500	0.250	0.500	4	-	-	0.269
034109	**CHE 0250NN4**	0.250 (1/4)	2.000	0.500	0.250	0.500	4	-	-	0.358
034110	**CHE 0313NN4**	0.313 (5/16)	2.500	0.750	0.313	0.750	4	-	-	0.448
034111	**CHE 0375NN4**	0.375 (3/8)	3.000	0.875	0.375	0.875	4	-	-	0.536
034112	**CHE 0500NN4**	0.500 (1/2)	3.000	1.000	0.500	1.000	4	-	-	0.715
034113	**CHE 0625NN4**	0.625 (5/8)	3.500	1.250	0.625	1.250	4	-	-	0.894
034114	**CHE 0750NN4**	0.750 (3/4)	4.000	1.250	0.750	1.250	4	-	-	1.073

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034352	**HE 020NTN4**	2.00	50.00	6.00	6.00	6.00	4	-	-	2.86
034353	**HE 030NTN4**	3.00	50.00	8.00	6.00	8.00	4	-	-	4.29
034354	**HE 040NTN4**	4.00	50.00	11.00	6.00	11.00	4	-	-	5.72
034355	**HE 050NTN4**	5.00	50.00	13.00	6.00	13.00	4	-	-	7.15
034356	**HE 060NN4**	6.00	50.00	13.00	6.00	13.00	4	-	-	8.58
034357	**HE 080NN4**	8.00	63.00	20.00	8.00	20.00	4	-	-	11.44
034358	**HE 100NN4**	10.00	72.00	22.00	10.00	22.00	4	-	-	14.30
034359	**HE 120NN4**	12.00	75.00	25.00	12.00	25.00	4	-	-	17.16
034360	**HE 160NN4**	16.00	88.00	32.00	16.00	32.00	4	-	-	22.88

Technical Information

CHE / HE - Radial a_e and Axial a_p depth of cut range

Product	Dimensions						
Material	Shoulder Milling						Slotting
	Roughing			Finishing			
	a_e%	a_p%	f_z	a_e%	a_p%	f_z	a_p%
Alloyed Steel / Cast Iron	-	-	-	0.01 - 0.05 D	0.1 - 1.25 D	-	0.05 - 0.2 D
Hard Materials	-	-	-	0.01 - 0.03 D	0.1 - 1 D	-	0.05 - 0.1 D

Slotting - Square Ended

* For a_p max do not exceed 0.05 D (a_e)

Note: For trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

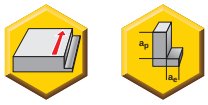
Solid Carbide
Rapide End Mill

Recommended Feeds

CHE / HE Feeds fz (ipt) - Slotting / Pocketing

D	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon > 16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Inch / Metric																			
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.063	-	-	0.0002	0.0002	0.0002	-	-	-	0.0002	0.0002	0.0002	-	-	-	-	-	-	0.0001	0.0001
1.5mm			0.0002	0.0002	0.0002				0.0002	0.0002	0.0002							0.0002	0.0002
0.094	-	-	0.0003	0.0003	0.0003	-	-	-	0.0003	0.0003	0.0003	-	-	-	-	-	-	0.0002	0.0002
2.5mm			0.0004	0.0004	0.0004				0.0004	0.0004	0.0004							0.0003	0.0003
0.125	-	-	0.0003	0.0003	0.0003	-	-	-	0.0003	0.0003	0.0003	-	-	-	-	-	-	0.0002	0.0002
3.0mm			0.0005	0.0005	0.0005				0.0005	0.0005	0.0005							0.0003	0.0003
0.156	-	-	0.0004	0.0004	0.0004	-	-	-	0.0004	0.0004	0.0004	-	-	-	-	-	-	0.0003	0.0003
4.0mm			0.0007	0.0007	0.0006				0.0007	0.0007	0.0006							0.0005	0.0004
0.188	-	-	0.0005	0.0005	0.0004	-	-	-	0.0005	0.0005	0.0005	-	-	-	-	-	-	0.0003	0.0004
5.0mm			0.0009	0.0008	0.0007				0.0009	0.0008	0.0007							0.0006	0.0005
0.250	-	-	0.0006	0.0006	0.0005	-	-	-	0.0006	0.0006	0.0006	-	-	-	-	-	-	0.0004	0.0005
6.0mm			0.0013	0.0011	0.0010				0.0013	0.0011	0.0010							0.0008	0.0007
0.313	-	-	0.0008	0.0008	0.0007	-	-	-	0.0008	0.0008	0.0008	-	-	-	-	-	-	0.0005	0.0006
8.0mm			0.0017	0.0015	0.0013				0.0017	0.0015	0.0013							0.0010	0.0008
0.375	-	-	0.0009	0.0009	0.0008	-	-	-	0.0009	0.0009	0.0009	-	-	-	-	-	-	0.0006	0.0008
10.0mm			0.0022	0.0018	0.0015				0.0022	0.0018	0.0015							0.0013	0.0010
0.500	-	-	0.0013	0.0013	0.0010	-	-	-	0.0013	0.0013	0.0013	-	-	-	-	-	-	0.0008	0.0011
12.0mm			0.0031	0.0026	0.0021				0.0031	0.0026	0.0021							0.0018	0.0014
0.625	-	-	0.0016	0.0016	0.0013	-	-	-	0.0016	0.0016	0.0016	-	-	-	-	-	-	0.0010	0.0014
16.0mm			0.0042	0.0033	0.0027				0.0042	0.0033	0.0027							0.0024	0.0017
0.750	-	-	0.0019	0.0019	0.0015	-	-	-	0.0019	0.0019	0.0019	-	-	-	-	-	-	0.0011	0.0017
20.0mm			0.0053	0.0042	0.0033				0.0053	0.0042	0.0033							0.0030	0.0021

Note: HTA = High Temperature Alloys

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	0.01	5.00 x f_z
	0.03	2.90 x f_z
	0.05	2.25 x f_z
	0.08	1.85 x f_z

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

Recommended Speeds

Speed v_c (SFM)

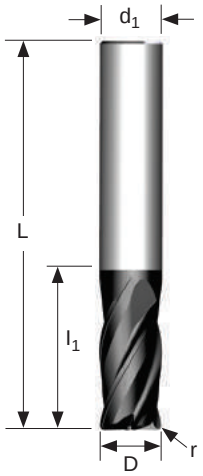
CHE / HE Series					
			Speed min. - max.		
Coolant Recommendation Recommended ● Possible ⦿					PVD Micrograin
ISO	Materials	Rm and Hardness	💧	⊘	SP4035
P	Unalloyed Steel	<600 N/mm² <180 HBN			
		<950 N/mm² <280 HBN			
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●	⦿	230 - 1050
		950-1200 N/mm² 280-355 HBN			164 - 918
		1200-1400 N/mm² 355-415 HBN			148 - 525
M	Stainless Steel	Austenitic + Ferritic 300 series			
		Martensitic 400 series			
	PH Stainless	Refractory P.H.			
K	Cast Iron	Grey GG-Ft	●	⦿	328 - 738
		Spheroidal-Ductile GGG-FGS			230 - 508
		Malleable GTS - MN/MP			213 - 426
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN			
		Aluminum + Silicon > 16% Si 92 HBN			
S	High Temperature Alloys	Iron Based			
		Cobalt Based			
		Nickel Based			
		Titanium Based			
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN		⦿	197 - 459
		Chilled Cast Iron >1400 N/mm² > 400 HBN			164 - 426

Materials Application

SP4035

P	M	K	N	S	H
◆		◆			◆

PVD



4 - Flute Endmill

STELLRAM

Solid Carbide
Rapide End Mill

HSM

Metric Product		Dimensions (mm)									
EDP	**Item Description**	D	L	l_1	d_1	r	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034361	**HER 060NN4-E**	6.00	50.00	13.00	6.00	0.50	13.00	4	-	-	8.58
034362	**HER 060NN4-G**	6.00	50.00	13.00	6.00	1.00	13.00	4	-	-	8.58
034363	**HER 080NN4-E**	8.00	63.00	20.00	8.00	0.50	20.00	4	-	-	11.44
034364	**HER 080NN4-G**	8.00	63.00	20.00	8.00	1.00	20.00	4	-	-	11.44
034365	**HER 100NN4-E**	10.00	72.00	22.00	10.00	0.50	22.00	4	-	-	14.30
034366	**HER 100NN4-G**	10.00	72.00	22.00	10.00	1.00	22.00	4	-	-	14.30
034367	**HER 120NN4-E**	12.00	75.00	25.00	12.00	0.50	25.00	4	-	-	17.16
034368	**HER 120NN4-G**	12.00	75.00	25.00	12.00	1.00	25.00	4	-	-	17.16

Technical Information

HER - Radial a_e and Axial a_p depth of cut range

Material	Shoulder Milling						Slotting
	Roughing			Finishing			
	a_e%	a_p%	f_z	a_e%	a_p%	f_z	a_p%
Alloyed Steel / Cast Iron	-	-	-	0.01 - 0.05 D	0.1 - 1.25 D	Low - Mid	0.05 - 0.2 D
Hard Materials	-	-	-	0.01 - 0.03 D	0.1 - 1 D	Low - Mid	0.05 - 0.1 D

Slotting - Square Ended

* For a_p max do not exceed 0.05 D (a_e)

Note: For trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

Solid Carbide
Rapide End Mill

Recommended Feeds

HER Feeds fz (ipt) - Slotting / Pocketing

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminium & Alloys <16% Si 116 HBN	Aluminium & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.250	-	-	0.0006	0.0006	0.0005	-	-	-	0.0006	0.0006	0.0006	-	-	-	-	-	-	0.0004	0.0005
6.0mm			0.0013	0.0011	0.0010				0.0013	0.0011	0.0010							0.0008	0.0007
0.313	-	-	0.0008	0.0008	0.0007	-	-	-	0.0008	0.0008	0.0008	-	-	-	-	-	-	0.0005	0.0006
8.0mm			0.0017	0.0015	0.0013				0.0017	0.0015	0.0013							0.0010	0.0008
0.375	-	-	0.0009	0.0009	0.0008	-	-	-	0.0009	0.0009	0.0009	-	-	-	-	-	-	0.0006	0.0008
10.mm			0.0022	0.0018	0.0015				0.0022	0.0018	0.0015							0.0013	0.0010
0.500	-	-	0.0013	0.0013	0.0010	-	-	-	0.0013	0.0013	0.0013	-	-	-	-	-	-	0.0008	0.0011
12.0mm			0.0031	0.0026	0.0021				0.0031	0.0026	0.0021							0.0018	0.0014

Note: HTA = High Temperature Alloys

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	0.01	5.00 x f_z
	0.03	2.90 x f_z
	0.05	2.25 x f_z
	0.08	1.85 x f_z

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

STELLRAM

Solid Carbide
Rapide End Mill

Recommended Speeds

Speed v_c (SFM)

HER Series					
			Speed min. - max.		
Coolant Recommendation Recommended ● Possible ⦿					PVD Micrograin
ISO	Materials	Rm and Hardness	💧	⊘	SP4035
P	Unalloyed Steel	<600 N/mm² <180 HBN			
		<950 N/mm² <280 HBN			
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●	⦿	230 - 1050
		950-1200 N/mm² 280-355 HBN			164 - 918
		1200-1400 N/mm² 355-415 HBN			148 - 525
M	Stainless Steel	Austenitic + Ferritic 300 series			
		Martensitic 400 series			
	PH Stainless	Refractory P.H.			
K	Cast Iron	Grey GG-Ft	●	⦿	328 - 738
		Spheroidal-Ductile GGG-FGS			230 - 508
		Malleable GTS - MN/MP			213 - 426
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN			
		Aluminum + Silicon > 16% Si 92 HBN			
S	High Temperature Alloys	Iron Based			
		Cobalt Based			
		Nickel Based			
		Titanium Based			
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN		⦿	197 - 459
		Chilled Cast Iron >1400 N/mm² > 400 HBN			164 - 426

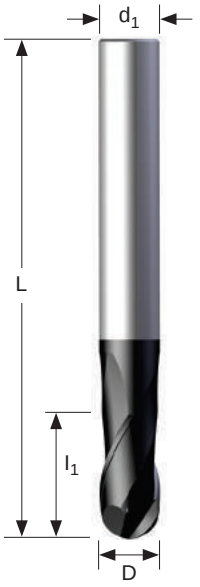
STELLRAM

Materials Application

SP4035

P	M	K	N	S	H

PVD



2-Flute Ball Nose Endmill

Solid Carbide
Rapide End Mill

HSM · 30° · Full Radius · h6 · HA

Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max	No. of Teeth	Helical Hole min - max		Trochoidal min
034120	**CHB 0063LTL2**	0.063 (1/16)	1.500	0.078	0.250	0.078	2	-	-	-
034121	**CHB 0094LTL2**	0.094 (3/32)	1.500	0.250	0.250	0.250	2	-	-	-
034122	**CHB 0125LTL2**	0.125 (1/8)	2.500	0.250	0.250	0.250	2	-	-	-
034123	**CHB 0156LTL2**	0.156 (5/32)	2.500	0.313	0.250	0.313	2	-	-	-
034124	**CHB 0188LTL2**	0.188 (3/16)	3.000	0.500	0.250	0.500	2	-	-	-
034125	**CHB 0250LL2**	0.250 (1/4)	3.000	0.500	0.250	0.500	2	-	-	-
034126	**CHB 03130LL2**	0.313 (5/16)	3.000	0.563	0.313	0.563	2	-	-	-
034127	**CHB 03750LL2**	0.375 (3/8)	4.000	0.688	0.375	0.688	2	-	-	-
034128	**CHB 0500LL2**	0.500 (1/2)	4.000	0.875	0.500	0.875	2	-	-	-
034129	**CHB 0625LL2**	0.625 (5/8)	4.500	1.250	0.625	1.250	2	-	-	-

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max	No. of Teeth	Helical Hole min - max		Trochoidal min
034375	**HB 030LTL2**	3.00	63.00	8.00	6.00	8.00	2	-	-	-
034376	**HB 040LTL2**	4.00	63.00	8.00	6.00	8.00	2	-	-	-
034377	**HB 060LL2**	6.00	75.00	12.00	6.00	12.00	2	-	-	-
034378	**HB 080LL2**	8.00	75.00	14.00	8.00	14.00	2	-	-	-
034379	**HB 100LL2**	10.00	100.00	18.00	10.00	18.00	2	-	-	-
034380	**HB 120LL2**	12.00	100.00	22.00	12.00	22.00	2	-	-	-

Technical Information

CHB / HB - Radial a_e and Axial a_p depth of cut range

Product	Dimensions						
Material	Shoulder Milling						Slotting
	Roughing			Finishing			
	a_e%	a_p%	f_z	a_e%	a_p%	f_z	a_p%
Alloyed Steel / Cast Iron	-	-	-	0.03 - 0.05 D	0.1 - 0.8 D	-	0.05 - 0.2 D
Hard Materials	-	-	-	0.01 - 0.03 D	0.1 - 0.5 D	-	0.05 - 0.1 D



Slotting - Ball Nosed

For copy milling & shoulder milling applications, refer to page B107.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

Solid Carbide
Rapide End Mill

Recommended Feeds

CHB / HB Feeds fz (ipt) - Slotting / Pocketing

D	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon > 16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Inch / Metric																			
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.063	-	-	0.0002	0.0002	0.0002	-	-	-	0.0002	0.0002	0.0002	-	-	-	-	-	-	0.0001	0.0001
1.5mm			0.0002	0.0002	0.0002				0.0002	0.0002	0.0002							0.0002	0.0002
0.094	-	-	0.0003	0.0003	0.0003	-	-	-	0.0003	0.0003	0.0003	-	-	-	-	-	-	0.0002	0.0002
2.5mm			0.0004	0.0004	0.0004				0.0004	0.0004	0.0004							0.0003	0.0003
0.125	-	-	0.0003	0.0003	0.0003	-	-	-	0.0003	0.0003	0.0003	-	-	-	-	-	-	0.0002	0.0002
3.0mm			0.0005	0.0005	0.0005				0.0005	0.0005	0.0005							0.0003	0.0003
0.156	-	-	0.0004	0.0004	0.0004	-	-	-	0.0004	0.0004	0.0004	-	-	-	-	-	-	0.0003	0.0003
4.0mm			0.0007	0.0007	0.0006				0.0007	0.0007	0.0006							0.0005	0.0004
0.188	-	-	0.0005	0.0005	0.0004	-	-	-	0.0005	0.0005	0.0005	-	-	-	-	-	-	0.0003	0.0004
5.0mm			0.0009	0.0008	0.0007				0.0009	0.0008	0.0007							0.0006	0.0005
0.250	-	-	0.0006	0.0006	0.0005	-	-	-	0.0006	0.0006	0.0006	-	-	-	-	-	-	0.0004	0.0005
6.0mm			0.0013	0.0011	0.0010				0.0013	0.0011	0.0010							0.0008	0.0007
0.313	-	-	0.0008	0.0008	0.0007	-	-	-	0.0008	0.0008	0.0008	-	-	-	-	-	-	0.0005	0.0006
8.0mm			0.0017	0.0015	0.0013				0.0017	0.0015	0.0013							0.0010	0.0008
0.375	-	-	0.0009	0.0009	0.0008	-	-	-	0.0009	0.0009	0.0009	-	-	-	-	-	-	0.0006	0.0008
10.0mm			0.0022	0.0018	0.0015				0.0022	0.0018	0.0015							0.0013	0.0010
0.500	-	-	0.0013	0.0013	0.0011	-	-	-	0.0013	0.0013	0.0013	-	-	-	-	-	-	0.0008	0.0011
12.0mm			0.0031	0.0026	0.0021				0.0031	0.0026	0.0021							0.0018	0.0014
0.625	-	-	0.0016	0.0016	0.0013	-	-	-	0.0016	0.0016	0.0016	-	-	-	-	-	-	0.0010	0.0014
16.0mm			0.0042	0.0033	0.0027				0.0042	0.0033	0.0027							0.0024	0.0017

Note: HTA = High Temperature Alloys

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	For copy milling & shoulder milling applications, refer to page B107.	

Recommended Speeds

Speed v_c (SFM)

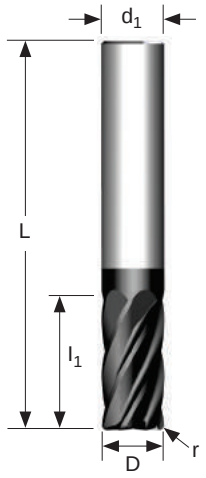
CHB / HB Series					
			Speed min. - max.		
Coolant Recommendation Recommended ● Possible ⦿					PVD Micrograin
ISO	Materials	Rm and Hardness	💧	⊘	SP4035
P	Unalloyed Steel	<600 N/mm² <180 HBN			
		<950 N/mm² <280 HBN			
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●	⦿	295 - 1312
		950-1200 N/mm² 280-355 HBN			197 - 1148
		1200-1400 N/mm² 355-415 HBN			180 - 656
M	Stainless Steel	Austenitic + Ferritic 300 series			
		Martensitic 400 series			
	PH Stainless	Refractory P.H.			
K	Cast Iron	Grey GG-Ft	●	⦿	394 - 918
		Spheroidal-Ductile GGG-FGS			295 - 623
		Malleable GTS - MN/MP			262 - 525
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN			
		Aluminum + Silicon > 16% Si 92 HBN			
S	High Temperature Alloys	Iron Based			
		Cobalt Based			
		Nickel Based			
		Titanium Based			
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN		⦿	262 - 574
		Chilled Cast Iron >1400 N/mm² > 400 HBN			230 - 525

Rapide High Performance / High Speed End Mills

Materials Application

SP4035					
P	M	K	N	S	H

PVD



6 - Flute End Mill

STELLRAM

Solid Carbide
Rapide End Mill

HSM HPM

Inch Product		Dimensions (inch)									
EDP	**Item Description**	D	L	l_1	d_1	r	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034082	**CHMR 0125NTN6-C**	0.125 (1/8)	2.000	0.500	0.250	0.010	0.500	6	-	-	0.179
034083	**CHMR 0188NTN6-C**	0.188 (3/16)	2.000	0.563	0.250	0.010	0.563	6	-	-	0.269
034084	**CHMR 0250NN6-C**	0.250 (1/4)	2.500	0.750	0.250	0.010	0.750	6	-	-	0.358
034085	**CHMR 0313NN6-C**	0.313 (5/16)	2.500	0.813	0.313	0.010	0.813	6	-	-	0.448
034086	**CHMR 0375NN6-C**	0.375 (3/8)	3.000	0.875	0.375	0.010	0.875	6	-	-	0.536
034087	**CHMR 0500NN6-C**	0.500 (1/2)	3.000	1.000	0.500	0.010	1.000	6	-	-	0.715
034088	**CHMR 0625NN6-C**	0.625 (5/8)	3.500	1.250	0.625	0.010	1.250	6	-	-	0.894
034089	**CHMR 0750NN6-C**	0.750 (3/4)	4.000	1.500	0.750	0.010	1.500	6	-	-	1.073

Metric Product		Dimensions (mm)									
EDP	**Item Description**	D	L	l_1	d_1	r	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034333	**HMR 030NTN6-C**	3.00	50.00	10.00	6.00	0.25	10.00	6	-	-	4.29
034334	**HMR 040NTN6-C**	4.00	50.00	10.00	6.00	0.25	10.00	6	-	-	5.72
034335	**HMR 050NTN6-C**	5.00	50.00	15.00	6.00	0.25	15.00	6	-	-	7.15
034336	**HMR 060NN6-C**	6.00	50.00	20.00	6.00	0.25	20.00	6	-	-	8.58
034645	**HMR 060NN6-E**	6.00	50.00	20.00	6.00	0.50	20.00	6	-	-	8.58
034337	**HMR 080NN6-C**	8.00	63.00	20.00	8.00	0.25	20.00	6	-	-	11.44
034646	**HMR 080NN6-E**	8.00	63.00	20.00	8.00	0.50	20.00	6	-	-	11.44
034338	**HMR 100NN6-C**	10.00	72.00	25.00	10.00	0.25	25.00	6	-	-	14.30
034339	**HMR 100NN6-E**	10.00	72.00	25.00	10.00	0.50	25.00	6	-	-	14.30
034340	**HMR 120NN6-C**	12.00	75.00	25.00	12.00	0.25	25.00	6	-	-	17.16
034647	**HMR 120NN6-E**	12.00	75.00	25.00	12.00	0.50	25.00	6	-	-	17.16
034341	**HMR 160NN6-C**	16.00	93.00	30.00	16.00	0.25	30.00	6	-	-	22.88
034648	**HMR 160NN6-E**	16.00	93.00	30.00	16.00	0.50	30.00	6	-	-	22.88
034342	**HMR 200NN6-C**	20.00	100.00	44.00	20.00	0.25	44.00	6	-	-	28.60

Technical Information

CHMR / HMR - Radial a_e and Axial a_p depth of cut range

Product	Dimensions						
Grade	Shoulder Milling						Slotting
	Roughing			Finishing			
	a_e%	a_p%	f_z	a_e%	a_p%	f_z	a_p%
SP4035	-	-	-	0.01 - 0.1 D	0.05 - 2 D	-	0.05 D

Slotting - Square Ended

* For a_p max do not exceed 0.05 D (a_e)

Note: For trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

HSM

Solid Carbide
Rapide End Mill

Recommended Feeds

CHMR / HMR Feeds fz (ipt) - Slotting / Pocketing

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.125	0.0003	0.0003	0.0003	0.0003	0.0003	-	-	-	0.0003	0.0003	0.0003	-	-	0.0003	0.0002	0.0002	0.0003	0.0002	0.0002
3.0mm	0.0005	0.0005	0.0005	0.0005	0.0005				0.0005	0.0005	0.0005			0.0005	0.0004	0.0004	0.0005	0.0003	0.0003
-	0.0004	0.0004	0.0004	0.0004	0.0004	-	-	-	0.0004	0.0004	0.0004	-	-	0.0004	0.0003	0.0003	0.0004	0.0003	0.0003
4.0mm	0.0007	0.0007	0.0007	0.0007	0.0006				0.0007	0.0007	0.0006			0.0007	0.0005	0.0005	0.0006	0.0005	0.0004
0.188	0.0005	0.0005	0.0005	0.0005	0.0004	-	-	-	0.0005	0.0005	0.0005	-	-	0.0005	0.0003	0.0003	0.0005	0.0003	0.0004
5.0mm	0.0009	0.0009	0.0009	0.0008	0.0007				0.0009	0.0008	0.0007			0.0009	0.0006	0.0006	0.0009	0.0006	0.0005
0.250	0.0006	0.0006	0.0006	0.0006	0.0005	-	-	-	0.0006	0.0006	0.0006	-	-	0.0006	0.0004	0.0004	0.0006	0.0004	0.0005
6.0mm	0.0013	0.0013	0.0013	0.0011	0.0010				0.0013	0.0011	0.0010			0.0013	0.0009	0.0009	0.0012	0.0008	0.0007
0.313	0.0008	0.0008	0.0008	0.0008	0.0007	-	-	-	0.0008	0.0008	0.0008	-	-	0.0008	0.0006	0.0006	0.0008	0.0005	0.0006
8.0mm	0.0017	0.0017	0.0017	0.0015	0.0013				0.0017	0.0015	0.0013			0.0017	0.0012	0.0011	0.0016	0.0010	0.0008
0.375	0.0009	0.0009	0.0009	0.0009	0.0008	-	-	-	0.0009	0.0009	0.0009	-	-	0.0009	0.0007	0.0007	0.0009	0.0006	0.0008
10.0mm	0.0022	0.0022	0.0022	0.0018	0.0015				0.0022	0.0018	0.0015			0.0022	0.0015	0.0014	0.0021	0.0013	0.0010
0.500	0.0013	0.0013	0.0013	0.0013	0.0010	-	-	-	0.0013	0.0013	0.0013	-	-	0.0013	0.0009	0.0009	0.0013	0.0008	0.0011
12.0mm	0.0031	0.0031	0.0031	0.0026	0.0021				0.0031	0.0026	0.0021			0.0031	0.0022	0.0020	0.0030	0.0018	0.0014
0.625	0.0016	0.0016	0.0016	0.0016	0.0013	-	-	-	0.0016	0.0016	0.0016	-	-	0.0016	0.0012	0.0012	0.0016	0.0010	0.0014
16.0mm	0.0042	0.0042	0.0042	0.0033	0.0027				0.0042	0.0033	0.0027			0.0042	0.0030	0.0027	0.0039	0.0024	0.0017
0.750	0.0019	0.0019	0.0019	0.0019	0.0015	-	-	-	0.0019	0.0019	0.0019	-	-	0.0019	0.0014	0.0014	0.0019	0.0011	0.0017
20.0mm	0.0053	0.0053	0.0053	0.0042	0.0033				0.0053	0.0042	0.0033			0.0053	0.0038	0.0034	0.0049	0.0030	0.0021

Note: HTA = High Temperature Alloys

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	0.01	5.00 x f_z
	0.03	2.90 x f_z
	0.05	2.25 x f_z
	0.08	1.85 x f_z

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

STELLRAM

HSM

Solid Carbide
Rapide End Mill

Recommended Speeds

Speed v_c (SFM)

CHMR / HMR Series

Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

ISO	Materials	Rm and Hardness			PVD Micrograin
			💧		SP4035
P	Unalloyed Steel	<600 N/mm² <180 HBN	●	⦿	328 - 1476
		<950 N/mm² <280 HBN			295 - 1312
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●	⦿	295 - 1312
		950-1200 N/mm² 280-355 HBN			197 - 1148
		1200-1400 N/mm² 355-415 HBN			180 - 656
M	Stainless Steel	Austenitic + Ferritic 300 series			
		Martensitic 400 series			
	PH Stainless	Refractory P.H.			
K	Cast Iron	Grey GG-Ft	●	⦿	394 - 918
		Spheroidal-Ductile GGG-FGS			295 - 623
		Malleable GTS - MN/MP			262 - 525
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN			
		Aluminum + Silicon > 16% Si 92 HBN			
S	High Temperature Alloys	Iron Based	●	⦿	197-459
		Cobalt Based			66-246
		Nickel Based			82-262
		Titanium Based			131-394
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN		⦿	262 - 574
		Chilled Cast Iron >1400 N/mm² > 400 HBN			230 - 525

STELLRAM

HPM

Solid Carbide
Rapide End Mill

Recommended Feeds

CHMR / HMR Feeds fz (ipt) - Slotting / Pocketing

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.125	0.0004	0.0004	0.0004	0.0004	0.0003	0.0004	0.0004	0.0003	0.0004	0.0004	0.0004	-	-	0.0004	0.0003	0.0003	0.0004	0.0003	0.0003
3.0mm	0.0006	0.0006	0.0006	0.0006	0.0005	0.0006	0.0005	0.0005	0.0006	0.0006	0.0005			0.0006	0.0006	0.0006	0.0006	0.0004	0.0004
-	0.0005	0.0005	0.0005	0.0005	0.0004	0.0005	0.0005	0.0004	0.0005	0.0005	0.0005	-	-	0.0005	0.0004	0.0004	0.0005	0.0004	0.0004
4.0mm	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008	0.0007	0.0006	0.0008	0.0008	0.0007			0.0008	0.0008	0.0008	0.0008	0.0006	0.0006
0.188	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	0.0004	0.0004
5.0mm	0.0010	0.0010	0.0010	0.0009	0.0008	0.0009	0.0008	0.0007	0.0010	0.0009	0.0008			0.0010	0.0010	0.0010	0.0010	0.0007	0.0007
0.250	0.0007	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	-	-	0.0007	0.0007	0.0007	0.0007	0.0005	0.0005
6.0mm	0.0015	0.0015	0.0015	0.0013	0.0011	0.0013	0.0011	0.0010	0.0015	0.0013	0.0011			0.0015	0.0015	0.0014	0.0014	0.0010	0.0009
0.313	0.0009	0.0009	0.0009	0.0009	0.0008	0.0009	0.0009	0.0008	0.0009	0.0009	0.0009	-	-	0.0009	0.0008	0.0008	0.0009	0.0006	0.0006
8.0mm	0.0020	0.0020	0.0020	0.0017	0.0014	0.0017	0.0014	0.0013	0.0021	0.0017	0.0014			0.0021	0.0020	0.0019	0.0019	0.0013	0.0012
0.375	0.0011	0.0011	0.0011	0.0011	0.0009	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011	-	-	0.0011	0.0010	0.0010	0.0011	0.0008	0.0008
10.0mm	0.0025	0.0025	0.0025	0.0021	0.0017	0.0021	0.0017	0.0016	0.0026	0.0021	0.0017			0.0026	0.0025	0.0023	0.0024	0.0016	0.0015
0.500	0.0014	0.0014	0.0014	0.0014	0.0012	0.0014	0.0014	0.0013	0.0014	0.0014	0.0014	-	-	0.0014	0.0013	0.0013	0.0014	0.0010	0.0010
12.0mm	0.0036	0.0036	0.0036	0.0030	0.0024	0.0030	0.0024	0.0022	0.0038	0.0030	0.0024			0.0038	0.0036	0.0034	0.0035	0.0023	0.0021
0.625	0.0018	0.0018	0.0018	0.0018	0.0015	0.0018	0.0018	0.0016	0.0018	0.0018	0.0018	-	-	0.0018	0.0016	0.0016	0.0018	0.0012	0.0012
16.0mm	0.0048	0.0048	0.0048	0.0039	0.0030	0.0039	0.0030	0.0028	0.0052	0.0039	0.0030			0.0052	0.0045	0.0045	0.0046	0.0030	0.0027
0.750	0.0022	0.0022	0.0022	0.0022	0.0018	0.0022	0.0022	0.0019	0.0022	0.0022	0.0022	-	-	0.0022	0.0019	0.0019	0.0022	0.0015	0.0015
20.0mm	0.0061	0.0061	0.0061	0.0049	0.0037	0.0049	0.0037	0.0035	0.0066	0.0049	0.0037			0.0066	0.0061	0.0057	0.0058	0.0037	0.0033

Note: HTA = High Temperature Alloys

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	0.01	5.00 x f_z
	0.03	2.90 x f_z
	0.05	2.25 x f_z
	0.08	1.85 x f_z

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

STELLRAM

HPM

Solid Carbide
Rapide End Mill

Recommended Speeds

Speed v_c (SFM)

CHMR / HMR Series

Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

ISO	Materials	Rm and Hardness			PVD Micrograin
			💧	⊘	SP4035
P	Unalloyed Steel	<600 N/mm² <180 HBN	●	⦿	262 - 1181
		<950 N/mm² <280 HBN			230 - 1050
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●	⦿	230 - 1050
		950-1200 N/mm² 280-355 HBN			164 - 918
		1200-1400 N/mm² 355-415 HBN			148 - 525
M	Stainless Steel	Austenitic + Ferritic 300 series	●	⦿	262-525
		Martensitic 400 series			180-394
	PH Stainless	Refractory P.H.		⦿	164-295
K	Cast Iron	Grey GG-Ft	●	⦿	328 - 738
		Spheroidal-Ductile GGG-FGS			230 - 508
		Malleable GTS - MN/MP			213 - 426
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN			
		Aluminum + Silicon > 16% Si 92 HBN			
S	High Temperature Alloys	Iron Based	●	⦿	164-361
		Cobalt Based			49-197
		Nickel Based			66-213
		Titanium Based			98-328
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN		⦿	197 - 459
		Chilled Cast Iron >1400 N/mm² > 400 HBN			164 - 426

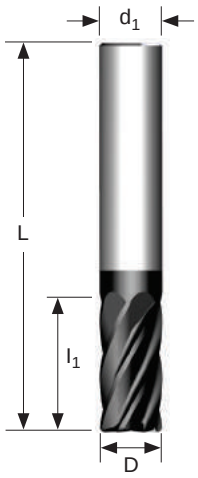
STELLRAM

Materials Application

SP4035

P	M	K	N	S	H

PVD



6 - Flute End Mill

Solid Carbide
Rapide End Mill

HSM

Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034115	**CHMN0250NN6**	0.250 (1/4)	2.000	0.500	0.250	0.500	6	-	-	0.358
034116	**CHMN 0313NN6**	0.313 (5/16)	2.500	0.750	0.313	0.750	6	-	-	0.448
034117	**CHMN 0375NN6**	0.375 (3/8)	3.000	0.875	0.375	0.875	6	-	-	0.536
034118	**CHMN 0500NN6**	0.500 (1/2)	3.000	1.000	0.500	1.000	6	-	-	0.715
034119	**CHMN 0625NN6**	0.625 (5/8)	3.500	1.250	0.625	1.250	6	-	-	0.894
034659	**CHMN 0750NN6**	0.750 (3/4)	4.000	1.500	0.750	1.500	6	-	-	1.073

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034369	**HMN 060NN6**	6.00	50.00	13.00	6.00	13.00	6	-	-	8.58
034370	**HMN 080NN6**	8.00	63.00	20.00	8.00	20.00	6	-	-	11.44
034371	**HMN 100NN6**	10.00	72.00	22.00	10.00	22.00	6	-	-	14.30
034372	**HMN 120NN6**	12.00	75.00	25.00	12.00	25.00	6	-	-	17.16
034373	**HMN 160NN6**	16.00	92.00	32.00	16.00	32.00	6	-	-	22.88
034374	**HMN 200NN6**	20.00	100.00	38.00	20.00	38.00	6	-	-	28.60

Technical Information

CHMN / HMN - Radial a_e and Axial a_p depth of cut range		
Product	Dimensions	
Grade	Shoulder Milling	
	a_e%	a_p%
SP4035	0.01 - 0.05 D	0.05 - 2 D

* For a_p max do not exceed 0.05 D (a_e)

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

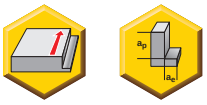
Solid Carbide
Rapide End Mill

Recommended Feeds

CHMN / HMN Feeds fz (ipt) - Shoulder Milling

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.250	-	-	-	-	0.0006	-	-	-	0.0007	0.0007	0.0007	-	-	-	-	-	-	0.0005	0.0005
6.0mm					0.0011				0.0015	0.0013	0.0011							0.0010	0.0009
0.313	-	-	-	-	0.0008	-	-	-	0.0009	0.0009	0.0009	-	-	-	-	-	-	0.0006	0.0006
8.0mm					0.0014				0.0021	0.0017	0.0014							0.0013	0.0012
0.375	-	-	-	-	0.0009	-	-	-	0.0011	0.0011	0.0011	-	-	-	-	-	-	0.0008	0.0008
10.0mm					0.0017				0.0026	0.0021	0.0017							0.0016	0.0015
0.500	-	-	-	-	0.0012	-	-	-	0.0014	0.0014	0.0014	-	-	-	-	-	-	0.0010	0.0010
12.0mm					0.0024				0.0038	0.0030	0.0024							0.0023	0.0021
0.625	-	-	-	-	0.0015	-	-	-	0.0018	0.0018	0.0018	-	-	-	-	-	-	0.0012	0.0012
16.0mm					0.0030				0.0052	0.0039	0.0030							0.0030	0.0027
0.750	-	-	-	-	0.0018	-	-	-	0.0022	0.0022	0.0022	-	-	-	-	-	-	0.0015	0.0015
20.0mm					0.0037				0.0066	0.0049	0.0037							0.0037	0.0033

Note: HTA = High Temperature Alloys

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	0.01 D	5.00 x f_z
	0.02 D	3.55 x f_z
	0.03 D	2.90 x f_z
	0.04 D	2.50 x f_z
	0.05 D	2.25 x f_z

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

STELLRAM

Solid Carbide
Rapide End Mill

Recommended Speeds

Speed v_c (SFM)

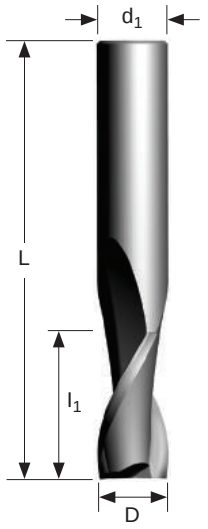
CHMN / HMN Series					
			Speed min. - max.		
Coolant Recommendation Recommended ● Possible ⦿					PVD Micrograin
ISO	Materials	Rm and Hardness	💧	⊘	SP4035
P	Unalloyed Steel	<600 N/mm² <180 HBN			
		<950 N/mm² <280 HBN			
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●	⦿	
		950-1200 N/mm² 280-355 HBN			
		1200-1400 N/mm² 355-415 HBN			180 - 656
M	Stainless Steel	Austenitic + Ferritic 300 series			
		Martensitic 400 series			
	PH Stainless	Refractory P.H.			
K	Cast Iron	Grey GG-Ft			394 - 918
		Spheroidal-Ductile GGG-FGS	●	⦿	295 - 623
		Malleable GTS - MN/MP			262 - 525
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN			
		Aluminum + Silicon > 16% Si 92 HBN			
S	High Temperature Alloys	Iron Based			
		Cobalt Based			
		Nickel Based			
		Titanium Based			
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN		⦿	262 - 574
		Chilled Cast Iron >1400 N/mm² > 400 HBN			230 - 525

STELLRAM

Materials Application

SU0800					
P	M	K	N	S	H
			◆		

Uncoated



2 - Flute End Mill

Solid Carbide
Rapide End Mill

HPM · 30° · 90° · h6 · HA

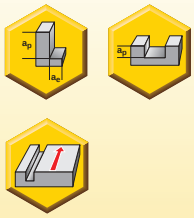
Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034072	**CEA 0063NTN2**	0.063 (1/16)	1.500	0.188	0.125	0.188	2	0.090	0.123	0.090
034073	**CEA 0094NTN2**	0.094 (3/32)	1.500	0.313	0.125	0.313	2	0.134	0.183	0.134
034074	**CEA 0125NN2**	0.125 (1/8)	1.500	0.375	0.125	0.375	2	0.179	0.244	0.179
034075	**CEA 0188NN2**	0.188 (3/16)	2.000	0.563	0.188	0.563	2	0.269	0.367	0.269
034076	**CEA 0250NN2**	0.250 (1/4)	2.500	0.750	0.250	0.750	2	0.358	0.488	0.358
034077	**CEA 0313NN2**	0.313 (5/16)	2.500	0.813	0.313	0.813	2	0.448	0.610	0.448
034078	**CEA 0375NN2**	0.375 (3/8)	2.500	0.875	0.375	0.875	2	0.536	0.731	0.536
034079	**CEA 0500NN2**	0.500 (1/2)	3.000	1.000	0.500	1.000	2	0.715	0.975	0.715
034080	**CEA 0625NN2**	0.625 (5/8)	3.500	1.250	0.625	1.250	2	0.894	1.219	0.894
034081	**CEA 0750NN2**	0.750 (3/4)	4.000	1.500	0.750	1.500	2	1.073	1.463	1.073

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034322	**EA 020NTN2**	2.00	38.00	6.00	3.00	6.00	2	2.86	3.90	2.86
034323	**EA 025NTN2**	2.50	38.00	8.00	3.00	8.00	2	3.58	4.88	3.58
034324	**EA 030NN2**	3.00	38.00	12.00	3.00	12.00	2	4.29	5.85	4.29
034325	**EA 040NN2**	4.00	50.00	14.00	4.00	14.00	2	5.72	7.80	5.72
034326	**EA 050NN2**	5.00	50.00	20.00	5.00	20.00	2	7.15	9.75	7.15
034327	**EA 060NN2**	6.00	63.00	20.00	6.00	20.00	2	8.58	11.70	8.58
034328	**EA 080NN2**	8.00	63.00	20.00	8.00	20.00	2	11.44	15.60	11.44
034329	**EA 100NN2**	10.00	70.00	25.00	10.00	25.00	2	14.30	19.50	14.30
034330	**EA 120NN2**	12.00	75.00	25.00	12.00	25.00	2	17.16	23.40	17.16
034331	**EA 160NN2**	16.00	88.00	30.00	16.00	30.00	2	22.88	31.20	22.88
034332	**EA 200NN2**	20.00	100.00	38.00	20.00	38.00	2	28.60	39.00	28.60

Technical Information

CEA / EA - Radial a_e and Axial a_p depth of cut range

Product	Dimensions						
Grade	Shoulder Milling						Slotting
	Roughing			Finishing			
	a_e%	a_p%	f_z	a_e%	a_p%	f_z	a_p%
SU0800	0.1 - 0.2 D	0.1 - 1.5 D	Mid - High	0.05 - 0.1 D	0.1 - 1.5 D	Low - Mid	0.05 - 0.5 D



Slotting - Square Ended

* For a_p max do not exceed 0.05 D (a_e)

Note: For ramping angle, helical a_p max. and trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

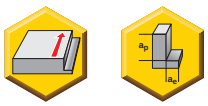
Solid Carbide
Rapide End Mill

Recommended Feeds

CEA / EA Feeds fz (ipt) - Slotting / Pocketing

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.063 1.5mm	-	-	-	-	-	-	-	-	-	-	-	0.0004 0.0006	0.0004 0.0005	-	-	-	-	-	-
0.094 2.5mm	-	-	-	-	-	-	-	-	-	-	-	0.0006 0.0009	0.0006 0.0008	-	-	-	-	-	-
0.125 3.0mm	-	-	-	-	-	-	-	-	-	-	-	0.0007 0.0013	0.0007 0.0011	-	-	-	-	-	-
0.188 5.0mm	-	-	-	-	-	-	-	-	-	-	-	0.0010 0.0022	0.0010 0.0018	-	-	-	-	-	-
0.250 6.0mm	-	-	-	-	-	-	-	-	-	-	-	0.0013 0.0031	0.0013 0.0026	-	-	-	-	-	-
0.313 8.0mm	-	-	-	-	-	-	-	-	-	-	-	0.0016 0.0041	0.0016 0.0034	-	-	-	-	-	-
0.375 10.0mm	-	-	-	-	-	-	-	-	-	-	-	0.0019 0.0052	0.0019 0.0043	-	-	-	-	-	-
0.500 12.0mm	-	-	-	-	-	-	-	-	-	-	-	0.0024 0.0074	0.0024 0.0061	-	-	-	-	-	-
0.625 16.0mm	-	-	-	-	-	-	-	-	-	-	-	0.0030 0.0098	0.0030 0.0080	-	-	-	-	-	-
0.750 20.0mm	-	-	-	-	-	-	-	-	-	-	-	0.0036 0.0123	0.0036 0.0100	-	-	-	-	-	-

Note: HTA = High Temperature Alloys

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	0.05 D	2.30 x f_z
	0.10 D	1.65 x f_z
	0.15 D	1.40 x f_z

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

STELLRAM

Solid Carbide
Rapide End Mill

Recommended Speeds

Speed v_c (SFM)

CEA / EA Series

Speed min. - max.

Coolant Recommendation
Recommended ● Possible ⦿

ISO	Materials	Rm and Hardness			Uncoated Micrograin
			💧	⊘	SU0800
P	Unalloyed Steel	<600 N/mm² <180 HBN			
		<950 N/mm² <280 HBN			
	Alloyed Steel	700-950 N/mm² 200-280 HBN			
		950-1200 N/mm² 280-355 HBN			
		1200-1400 N/mm² 355-415 HBN			
M	Stainless Steel	Austenitic + Ferritic 300 series			
		Martensitic 400 series			
	PH Stainless	Refractory P.H.			
K	Cast Iron	Grey GG-Ft			
		Spheroidal-Ductile GGG-FGS			
		Malleable GTS - MN/MP			
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN	●	⦿	984 - 4592
		Aluminum + Silicon > 16% Si 92 HBN			295 -820
S	High Temperature Alloys	Iron Based			
		Cobalt Based			
		Nickel Based			
		Titanium Based			
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN			
		Chilled Cast Iron >1400 N/mm² > 400 HBN			

STELLRAM

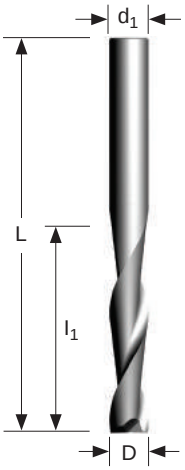
HPM

Solid Carbide
Rapide End Mill

Materials Application

SU0800					
P	M	K	N	S	H
			◆		

Uncoated



2 - Flute End Mill

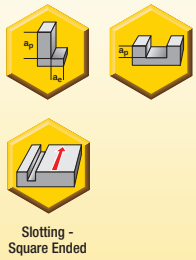
Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034130	**CHPA 0125NN2**	0.125 (1/8)	2.000	0.500	0.125	0.500	2	0.179	0.244	0.179
034131	**CHPA 0188NN2**	0.188 (3/16)	2.000	0.750	0.188	0.750	2	0.269	0.367	0.269
034132	**CHPA 0250NN2**	0.250 (1/4)	2.500	0.750	0.250	0.750	2	0.358	0.488	0.358
034133	**CHPA 0313NN2**	0.313 (5/16)	2.500	0.750	0.313	0.750	2	0.448	0.610	0.448
034134	**CHPA 0375NN2**	0.375 (3/8)	3.000	1.000	0.375	1.000	2	0.536	0.731	0.536
034135	**CHPA 0500NN2**	0.500 (1/2)	3.000	1.000	0.500	1.000	2	0.715	0.975	0.715
034136	**CHPA 0625NN2**	0.625 (5/8)	3.750	1.250	0.625	1.250	2	0.894	1.219	0.894
034137	**CHPA 0750NN2**	0.750 (3/4)	4.000	1.500	0.750	1.500	2	1.073	1.463	1.073

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034381	**HPA 030NN2**	3.00	50.00	12.00	3.00	12.00	2	4.29	5.85	4.29
034382	**HPA 040NN2**	4.00	50.00	14.00	4.00	14.00	2	5.72	7.80	5.72
034383	**HPA 050NN2**	5.00	50.00	20.00	5.00	20.00	2	7.15	9.75	7.15
034384	**HPA 060NN2**	6.00	63.00	20.00	6.00	20.00	2	8.58	11.70	8.58
034385	**HPA 080NN2**	8.00	63.00	20.00	8.00	20.00	2	11.44	15.60	11.44
034386	**HPA 100NN2**	10.00	70.00	25.00	10.00	25.00	2	14.30	19.50	14.30
034387	**HPA 120NN2**	12.00	75.00	25.00	12.00	25.00	2	17.16	23.40	17.16
034388	**HPA 160NN2**	16.00	88.00	32.00	16.00	32.00	2	22.88	31.20	22.88
034389	**HPA 200NN2**	20.00	100.00	38.00	20.00	38.00	2	28.60	39.00	28.60

Technical Information

CHPA / HPA - Radial a_e and Axial a_p depth of cut range

Product	Dimensions						
Grade	Shoulder Milling						Slotting
	Roughing			Finishing			
	a_e%	a_p%	f_z	a_e%	a_p%	f_z	a_p%
SU0800	0.2 - 0.5 D	0.1 - 2 D	Mid - High	0.05 - 0.2 D	0.1 - 2 D	Low - Mid	0.1 - 1 D



Slotting - Square Ended

* For a_p max do not exceed 0.05 D (a_e)

Note: For ramping angle, helical a_p max. and trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

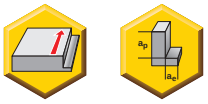
Solid Carbide
Rapide End Mill

Recommended Feeds

CHPA / HPA Feeds fz (ipt) - Slotting / Pocketing

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon > 16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.125 3.0mm	-	-	-	-	-	-	-	-	-	-	-	0.0007 0.0013	0.0007 0.0011	-	-	-	-	-	-
0.188 5.0mm	-	-	-	-	-	-	-	-	-	-	-	0.0010 0.0022	0.0010 0.0018	-	-	-	-	-	-
0.250 6.0mm	-	-	-	-	-	-	-	-	-	-	-	0.0013 0.0031	0.0013 0.0026	-	-	-	-	-	-
0.313 8.0mm	-	-	-	-	-	-	-	-	-	-	-	0.0016 0.0041	0.0016 0.0034	-	-	-	-	-	-
0.375 10.0mm	-	-	-	-	-	-	-	-	-	-	-	0.0019 0.0052	0.0019 0.0043	-	-	-	-	-	-
0.500 12.0mm	-	-	-	-	-	-	-	-	-	-	-	0.0024 0.0074	0.0024 0.0061	-	-	-	-	-	-
0.625 16.0mm	-	-	-	-	-	-	-	-	-	-	-	0.0030 0.0098	0.0030 0.0080	-	-	-	-	-	-
0.750 20.0mm	-	-	-	-	-	-	-	-	-	-	-	0.0036 0.0123	0.0036 0.0100	-	-	-	-	-	-

Note: HTA = High Temperature Alloys

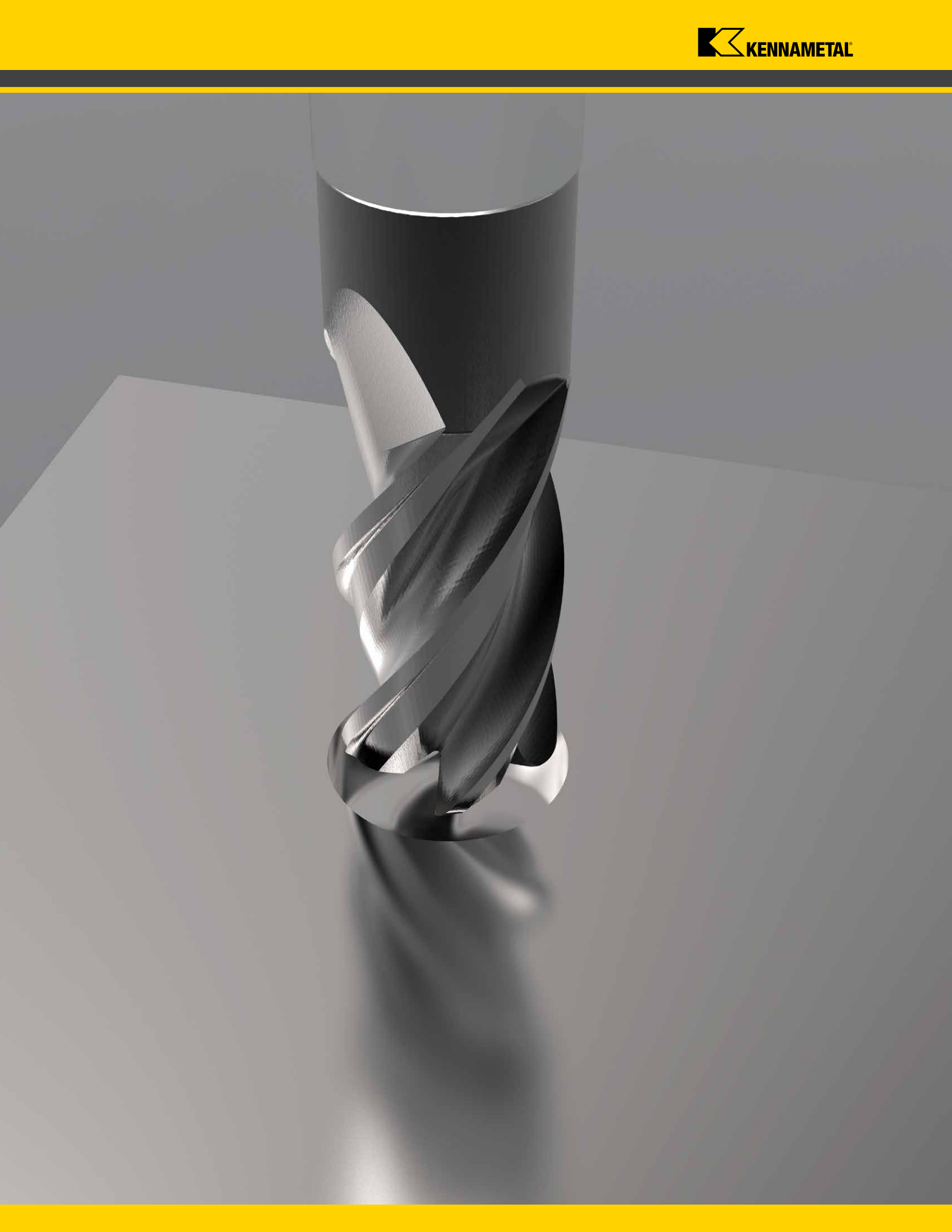
Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	0.05 D	2.30 x f_z
	0.10 D	1.65 x f_z
	0.15 D	1.40 x f_z
	0.20 D	1.25 x f_z
	0.30 D	1.09 x f_z

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

Recommended Speeds

Speed v_c (SFM)

CHPA / HPA Series					
			Speed min. - max.		
Coolant Recommendation Recommended ● Possible ◉					Uncoated Micrograin
ISO	Materials	Rm and Hardness			SU0800
P	Unalloyed Steel	<600 N/mm² <180 HBN			
		<950 N/mm² <280 HBN			
	Alloyed Steel	700-950 N/mm² 200-280 HBN			
		950-1200 N/mm² 280-355 HBN			
		1200-1400 N/mm² 355-415 HBN			
M	Stainless Steel	Austenitic + Ferritic 300 series			
		Martensitic 400 series			
	PH Stainless	Refractory P.H.			
K	Cast Iron	Grey GG-Ft			
		Spheroidal-Ductile GGG-FGS			
		Malleable GTS - MN/MP			
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN	●	◉	984 - 4592
		Aluminum + Silicon > 16% Si 92 HBN			295 - 1312
S	High Temperature Alloys	Iron Based			
		Cobalt Based			
		Nickel Based			
		Titanium Based			
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN			
		Chilled Cast Iron >1400 N/mm² > 400 HBN			





STELLRAM



GENERAL PURPOSE MILLING

Designed to complement the Stellram Premium End mills, the general purpose End Mills offer solutions for a wide range of applications and materials.

Available in:

- a comprehensive range of diameters (including miniatures)
- 2, 3 and 4 flute geometries
- Square End, Square End with Radius, and Ball Nosed styles
- Standard and Extended length
- Uncoated and Coated Premium Carbide grades

General Purpose Milling
B52 - B102

General Purpose, Miniature
B83 - B102

STELLRAM

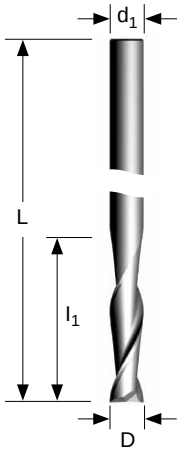
Solid Carbide
General Purpose - End Milling

Materials Application

SU4500

P	M	K	N	S	H
◆◆		◆			

Uncoated



2 - Flute End Mill

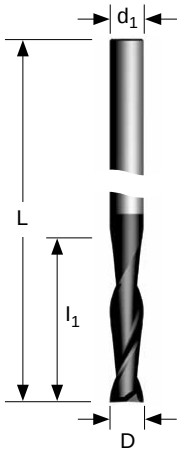
Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
033908	**CE 0125NN2**	0.125 (1/8)	1.500	0.438	0.125	0.438	2	0.179	0.244	0.179
033909	**CE 0156NTN2**	0.156 (5/32)	2.000	0.500	0.188	0.500	2	0.223	0.304	0.223
033910	**CE 0188NN2**	0.188 (3/16)	2.000	0.563	0.188	0.563	2	0.269	0.367	0.269
033911	**CE 0219NTN2**	0.219 (7/32)	2.500	0.625	0.250	0.625	2	0.313	0.427	0.313
033912	**CE 0250NN2**	0.250 (1/4)	2.500	0.750	0.250	0.750	2	0.358	0.488	0.358
033913	**CE 0281NTN2**	0.281 (9/32)	2.500	0.750	0.313	0.750	2	0.402	0.548	0.402
033914	**CE 0313NN2**	0.313 (5/16)	2.500	0.813	0.313	0.813	2	0.448	0.610	0.448
033915	**CE 0375NN2**	0.375 (3/8)	2.500	0.875	0.375	0.875	2	0.536	0.731	0.536
033916	**CE 0438NN2**	0.438 (7/16)	2.750	1.000	0.438	1.000	2	0.626	0.854	0.626
033917	**CE 0500NN2**	0.500 (1/2)	3.000	1.000	0.500	1.000	2	0.715	0.975	0.715
033918	**CE 0563NN2**	0.563 (9/16)	3.500	1.125	0.563	1.125	2	0.805	1.098	0.805
033919	**CE 0625NN2**	0.625 (5/8)	3.500	1.250	0.625	1.250	2	0.894	1.219	0.894
033920	**CE 0750NN2**	0.750 (3/4)	4.000	1.500	0.750	1.500	2	1.073	1.463	1.073

Materials Application

SP4556

P	M	K	N	S	H
◆◆	◆◆	◆		◆	

PVD



2 - Flute End Mill

Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
033923	**CE 0125NN2**	0.125 (1/8)	1.500	0.438	0.125	0.438	2	0.179	0.244	0.179
033924	**CE 0156NTN2**	0.156 (5/32)	2.000	0.500	0.188	0.500	2	0.223	0.304	0.223
033925	**CE 0188NN2**	0.188 (3/16)	2.000	0.563	0.188	0.563	2	0.269	0.367	0.269
033926	**CE 0219NTN2**	0.219 (7/32)	2.500	0.625	0.250	0.625	2	0.313	0.427	0.313
033927	**CE 0250NN2**	0.250 (1/4)	2.500	0.750	0.250	0.750	2	0.358	0.488	0.358
033928	**CE 0281NTN2**	0.281 (9/32)	2.500	0.750	0.313	0.750	2	0.402	0.548	0.402
033929	**CE 0313NN2**	0.313 (5/16)	2.500	0.813	0.313	0.813	2	0.448	0.610	0.448
033930	**CE 0375NN2**	0.375 (3/8)	2.500	0.875	0.375	0.875	2	0.536	0.731	0.536
033931	**CE 0438NN2**	0.438 (7/16)	2.750	1.000	0.438	1.000	2	0.626	0.854	0.626
033932	**CE 0500NN2**	0.500 (1/2)	3.000	1.000	0.500	1.000	2	0.715	0.975	0.715
033933	**CE 0563NN2**	0.563 (9/16)	3.500	1.125	0.563	1.125	2	0.805	1.098	0.805
033934	**CE 0625NN2**	0.625 (5/8)	3.500	1.250	0.625	1.250	2	0.894	1.219	0.894
033935	**CE 0750NN2**	0.750 (3/4)	4.000	1.500	0.750	1.500	2	1.073	1.463	1.073

Technical Information

CE_NN2 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions						
Grade	Shoulder Milling						Slotting
	Roughing			Finishing			
	a_e%	a_p%	f_z	a_e%	a_p%	f_z	a_p%
SU4500	0.1 - 0.2 D	0.5 - 1.5 D	Mid - High	0.05 - 0.1D	0.5 - 1.5 D	Low - Mid	0.1 - 0.5 D
SP4556	0.1 - 0.2 D	0.5 - 1.5 D	Mid - High	0.05 - 0.1D	0.5 - 1.5 D	Low - Mid	0.1 - 0.5 D

Slotting - Square Ended

*** When using a_p max, a_e should not exceed 0.1 D**

Note: For ramping angle, helical a_p max. and trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

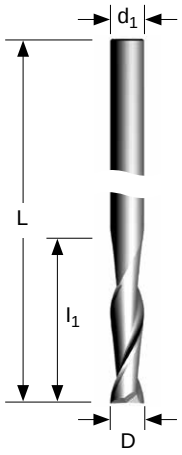
STELLRAM

Materials Application

SU4500

P	M	K	N	S	H

Uncoated



2 - Flute End Mill

Solid Carbide
General Purpose - End Milling

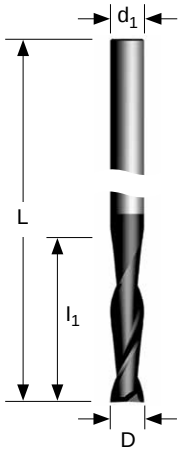
Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034149	**E 030NN2**	3.00	38.00	12.00	3.00	12.00	2	4.29	5.85	4.29
034150	**E 040NN2**	4.00	50.00	14.00	4.00	14.00	2	5.72	7.80	5.72
034151	**E 050NN2**	5.00	50.00	16.00	5.00	16.00	2	7.15	9.75	7.15
034152	**E 060NN2**	6.00	63.00	19.00	6.00	19.00	2	8.58	11.70	8.58
034153	**E 080NN2**	8.00	63.00	19.00	8.00	19.00	2	11.44	15.60	11.44
034154	**E 100NN2**	10.00	70.00	22.00	10.00	22.00	2	14.30	19.50	14.30
034155	**E 120NN2**	12.00	75.00	25.00	12.00	25.00	2	17.16	23.40	17.16
034156	**E 160NN2**	16.00	88.00	32.00	16.00	32.00	2	22.88	31.20	22.88
034157	**E 200NN2**	20.00	100.00	38.00	20.00	38.00	2	28.60	39.00	28.60

Materials Application

SP4556

P	M	K	N	S	H

PVD



2 - Flute End Mill

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034169	**E 030NN2**	3.00	38.00	12.00	3.00	12.00	2	4.29	5.85	4.29
034170	**E 040NN2**	4.00	50.00	14.00	4.00	14.00	2	5.72	7.80	5.72
034171	**E 050NN2**	5.00	50.00	16.00	5.00	16.00	2	7.15	9.75	7.15
034172	**E 060NN2**	6.00	63.00	19.00	6.00	19.00	2	8.58	11.70	8.58
034173	**E 080NN2**	8.00	63.00	19.00	8.00	19.00	2	11.44	15.60	11.44
034174	**E 100NN2**	10.00	70.00	22.00	10.00	22.00	2	14.30	19.50	14.30
034175	**E 120NN2**	12.00	75.00	25.00	12.00	25.00	2	17.16	23.40	17.16
034176	**E 160NN2**	16.00	88.00	32.00	16.00	32.00	2	22.88	31.20	22.88
034177	**E 200NN2**	20.00	100.00	38.00	20.00	38.00	2	28.60	39.00	28.60

Technical Information

E_NN2 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions						
Grade	Shoulder Milling						Slotting
	Roughing			Finishing			
	a_e%	a_p%	f_z	a_e%	a_p%	f_z	a_p%
SU4500	0.1 - 0.2 D	0.5 - 1.5 D	Mid - High	0.05 - 0.1D	0.5 - 1.5 D	Low - Mid	0.1 - 0.5 D
SP4556	0.1 - 0.2 D	0.5 - 1.5 D	Mid - High	0.05 - 0.1D	0.5 - 1.5 D	Low - Mid	0.1 - 0.5 D

Slotting - Square Ended

*** When using a_p max, a_e should not exceed 0.1 D**

Note: For ramping angle, helical a_p max. and trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

Solid Carbide

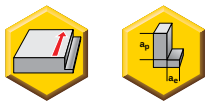
General Purpose - Eng Milling

Recommended Feeds

CE_NN2 / E_NN2 Feeds fz (ipt) - Slotting / Pocketing

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.125	0.0004	0.0004	0.0004	0.0004	0.0003	0.0004	0.0004	0.0003	0.0004	0.0004	0.0004	-	-	0.0004	0.0003	0.0003	0.0004	-	-
3.0mm	0.0006	0.0006	0.0006	0.0006	0.0005	0.0006	0.0005	0.0005	0.0006	0.0006	0.0005			0.0006	0.0006	0.0006	0.0006		
0.156	0.0005	0.0005	0.0004	0.0005	0.0004	0.0004	0.0005	0.0004	0.0005	0.0005	0.0005	-	-	0.0005	0.0004	0.0004	0.0004	-	-
4.0mm	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008	0.0007	0.0006	0.0008	0.0008	0.0008			0.0008	0.0008	0.0008	0.0008		
0.188	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	-	-
5.0mm	0.0010	0.0010	0.0010	0.0009	0.0008	0.0009	0.0008	0.0007	0.0010	0.0009	0.0008			0.0010	0.0010	0.0010	0.0010		
0.219	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	-	-	0.0006	0.0006	0.0006	0.0006	-	-
-	0.0013	0.0013	0.0013	0.0011	0.0010	0.0011	0.0010	0.0009	0.0013	0.0011	0.0010			0.0013	0.0013	0.0012	0.0012		
0.250	0.0007	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	-	-	0.0007	0.0007	0.0007	0.0007	-	-
6.0mm	0.0015	0.0015	0.0015	0.0013	0.0011	0.0013	0.0011	0.0010	0.0015	0.0013	0.0011			0.0015	0.0015	0.0014	0.0014		
0.281	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008	0.0008	0.0007	0.0008	0.0008	0.0008	-	-	0.0008	0.0008	0.0008	0.0008	-	-
-	0.0018	0.0018	0.0018	0.0015	0.0013	0.0015	0.0013	0.0012	0.0018	0.0015	0.0013			0.0018	0.0018	0.0017	0.0017		
0.313	0.0009	0.0009	0.0009	0.0009	0.0008	0.0009	0.0009	0.0008	0.0009	0.0009	0.0009	-	-	0.0009	0.0008	0.0008	0.0009	-	-
8.0mm	0.0020	0.0020	0.0020	0.0017	0.0014	0.0017	0.0014	0.0013	0.0021	0.0017	0.0014			0.0021	0.0020	0.0019	0.0019		
0.375	0.0011	0.0011	0.0011	0.0011	0.0009	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011	-	-	0.0011	0.0010	0.0010	0.0011	-	-
10.0mm	0.0025	0.0025	0.0025	0.0021	0.0017	0.0021	0.0017	0.0016	0.0026	0.0021	0.0017			0.0026	0.0025	0.0023	0.0024		
0.438	0.0013	0.0013	0.0013	0.0011	0.0011	0.0013	0.0013	0.0011	0.0013	0.0013	0.0013	-	-	0.0013	0.0012	0.0012	0.0013	-	-
-	0.0031	0.0031	0.0031	0.0026	0.0021	0.0025	0.0021	0.0019	0.0032	0.0026	0.0021			0.0032	0.0031	0.0029	0.0030		
0.500	0.0014	0.0014	0.0014	0.0014	0.0012	0.0014	0.0014	0.0013	0.0014	0.0014	0.0014	-	-	0.0014	0.0013	0.0013	0.0014	-	-
12.0mm	0.0036	0.0036	0.0036	0.0030	0.0024	0.0030	0.0024	0.0022	0.0038	0.0030	0.0024			0.0038	0.0036	0.0034	0.0035		
0.563	0.0016	0.0016	0.0016	0.0016	0.0014	0.0016	0.0016	0.0014	0.0016	0.0016	0.0016	-	-	0.0016	0.0014	0.0014	0.0016	-	-
-	0.0042	0.0042	0.0042	0.0034	0.0027	0.0034	0.0027	0.0025	0.0045	0.0034	0.0027			0.0045	0.0042	0.0039	0.0040		
0.625	0.0018	0.0018	0.0018	0.0018	0.0015	0.0018	0.0018	0.0016	0.0018	0.0018	0.0018	-	-	0.0018	0.0016	0.0016	0.0018	-	-
16.0mm	0.0048	0.0048	0.0048	0.0039	0.0030	0.0039	0.0030	0.0028	0.0052	0.0039	0.0030			0.0052	0.0048	0.0045	0.0046		
0.750	0.0022	0.0022	0.0022	0.0022	0.0018	0.0022	0.0022	0.0019	0.0022	0.0022	0.0022	-	-	0.0022	0.0019	0.0019	0.0022	-	-
20.0mm	0.0061	0.0061	0.0061	0.0049	0.0037	0.0049	0.0037	0.0035	0.0066	0.0049	0.0037			0.0066	0.0061	0.0057	0.0058		

Note: HTA = High Temperature Alloys

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	0.05 D	2.30 x f_z
	0.10 D	1.65 x f_z
	0.15 D	1.40 x f_z
	0.20 D	1.25 x f_z

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

STELLRAM

Solid Carbide
General Purpose - End Milling

Recommended Speeds

Speed v_c (SFM)

CE_NN2 / E_NN2 Series			Wear Resistance – → +					
			Speed min. - max.					
Coolant Recommendation: Recommended ● Possible ⦿					Uncoated Micrograin			PVD Micrograin
ISO	Materials	Rm and Hardness	💧	🚫	SU4500	💧	🚫	SP4556
P	Unalloyed Steel	<600 N/mm² <180 HBN	●		246 - 361	●	⦿	410 - 590
		<950 N/mm² <280 HBN			197 - 328			328 - 558
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●		197 - 328	●	⦿	328 - 558
		950-1200 N/mm² 280-355 HBN			131 - 230			295 - 460
		1200-1400 N/mm² 355-415 HBN			66 - 148			262 - 394
M	Stainless Steel	Austenitic + Ferritic 300 series				●	⦿	279 - 394
		Martensitic 400 series						213 - 295
	PH Stainless	Refractory P.H.				●		164 - 262
K	Cast Iron	Grey GG-Ft	●		180 - 295	●	⦿	295 - 492
		Spheroidal-Ductile GGG-FGS			115 - 230			197 - 394
		Malleable GTS - MN/MP			98 - 197			164 - 328
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN						
		Aluminum + Silicon > 16% Si 92 HBN						
S	High Temperature Alloys	Iron Based				●	⦿	131 - 295
		Cobalt Based						66 - 131
		Nickel Based						82 - 148
		Titanium Based						98 - 197
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN						
		Chilled Cast Iron >1400 N/mm² > 400 HBN						

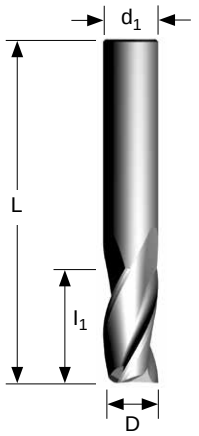
STELLRAM

Materials Application

SU4500

P	M	K	N	S	H
◆◆		◆			

Uncoated



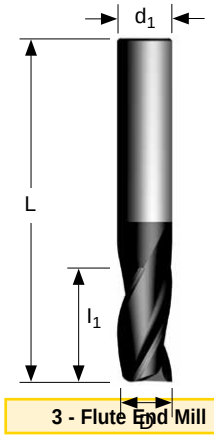
3 - Flute End Mill

Materials Application

SP4556

P	M	K	N	S	H
◆◆	◆◆	◆		◆	

PVD



3 - Flute End Mill

Solid Carbide

General Purpose - End Milling

Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
033938	**CE 0125NN3**	0.125_(1/8)	1.500	0.438	0.125	0.438	3	0.179	0.244	0.179
033939	**CE 0156NTN3**	0.156_(5/32)	2.000	0.500	0.188	0.500	3	0.223	0.304	0.223
033940	**CE 0188NN3**	0.188_(3/16)	2.000	0.563	0.188	0.563	3	0.269	0.367	0.269
033941	**CE 0219NTN3**	0.219_(7/32)	2.500	0.625	0.250	0.625	3	0.313	0.427	0.313
033942	**CE 0250NN3**	0.250_(1/4)	2.500	0.750	0.250	0.750	3	0.358	0.488	0.358
033943	**CE 0281NTN3**	0.281_(9/32)	2.500	0.750	0.313	0.750	3	0.402	0.548	0.402
033944	**CE 0313NN3**	0.313_(5/16)	2.500	0.813	0.313	0.813	3	0.448	0.610	0.448
033945	**CE 0375NN3**	0.375_(3/8)	2.500	0.875	0.375	0.875	3	0.536	0.731	0.536
033946	**CE 0438NN3**	0.438_(7/16)	2.750	1.000	0.438	1.000	3	0.626	0.854	0.626
033947	**CE 0500NN3**	0.500_(1/2)	3.000	1.000	0.500	1.000	3	0.715	0.975	0.715
033948	**CE 0563NN3**	0.563_(9/16)	3.500	1.125	0.563	1.125	3	0.805	1.098	0.805
033949	**CE 0625NN3**	0.625_(5/8)	3.500	1.250	0.625	1.250	3	0.894	1.219	0.894
033950	**CE 0750NN3**	0.750_(3/4)	4.000	1.500	0.750	1.500	3	1.073	1.463	1.073

Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
033953	**CE 0125NN3**	0.125_(1/8)	1.500	0.438	0.125	0.438	3	0.179	0.244	0.179
033954	**CE 0156NTN3**	0.156_(5/32)	2.000	0.500	0.188	0.500	3	0.223	0.304	0.223
033955	**CE 0188NN3**	0.188_(3/16)	2.000	0.563	0.188	0.563	3	0.269	0.367	0.269
033956	**CE 0219NTN3**	0.219_(7/32)	2.500	0.625	0.250	0.625	3	0.313	0.427	0.313
033957	**CE 0250NN3**	0.250_(1/4)	2.500	0.750	0.250	0.750	3	0.358	0.488	0.358
033958	**CE 0281NTN3**	0.281_(9/32)	2.500	0.750	0.313	0.750	3	0.402	0.548	0.402
033959	**CE 0313NN3**	0.313_(5/16)	2.500	0.813	0.313	0.813	3	0.448	0.610	0.448
033960	**CE 0375NN3**	0.375_(3/8)	2.500	0.875	0.375	0.875	3	0.536	0.731	0.536
033961	**CE 0438NN3**	0.438_(7/16)	2.750	1.000	0.438	1.000	3	0.626	0.854	0.626
033962	**CE 0500NN3**	0.500_(1/2)	3.000	1.000	0.500	1.000	3	0.715	0.975	0.715
033963	**CE 0563NN3**	0.563_(9/16)	3.500	1.125	0.563	1.125	3	0.805	1.098	0.805
033964	**CE 0625NN3**	0.625_(5/8)	3.500	1.250	0.625	1.250	3	0.894	1.219	0.894
033965	**CE 0750NN3**	0.750_(3/4)	4.000	1.500	0.750	1.500	3	1.073	1.463	1.073

Technical Information

CE_NN3 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions						
Grade	Shoulder Milling						Slotting
	Roughing			Finishing			
	a_e%	a_p%	f_z	a_e%	a_p%	f_z	a_p%
SU4500	0.1 - 0.5 D	0.5 - 2 D	Mid - High	0.05 - 0.1 D	0.5 - 2 D	Low - Mid	0.1 - 0.5 D
SP4556	0.1 - 0.5 D	0.5 - 2 D	Mid - High	0.05 - 0.1 D	0.5 - 2 D	Low - Mid	0.1 - 0.5 D

Slotting - Square Ended

*** When using a_p max, a_e should not exceed 0.1 D**

Note: For ramping angle, helical a_p max. and trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

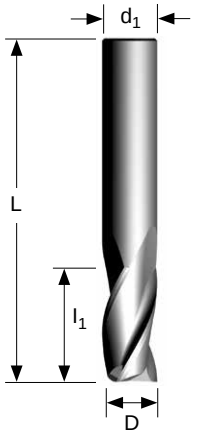
STELLRAM

Materials Application

SU4500

P	M	K	N	S	H

Uncoated



3 - Flute End Mill

Solid Carbide

General Purpose - End Milling

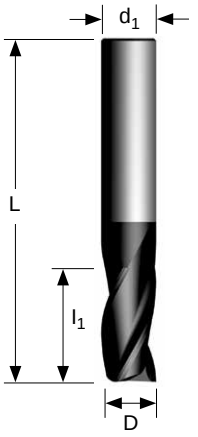
Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034182	**E 030NN3**	3.00	38.00	12.00	3.00	12.00	3	4.29	5.85	4.29
034183	**E 040NN3**	4.00	50.00	14.00	4.00	14.00	3	5.72	7.80	5.72
034184	**E 050NN3**	5.00	50.00	16.00	5.00	16.00	3	7.15	9.75	7.15
034185	**E 060NN3**	6.00	63.00	19.00	6.00	19.00	3	8.58	11.70	8.58
034186	**E 080NN3**	8.00	63.00	19.00	8.00	19.00	3	11.44	15.60	11.44
034187	**E 100NN3**	10.00	70.00	22.00	10.00	22.00	3	14.30	19.50	14.30
034188	**E 120NN3**	12.00	75.00	25.00	12.00	25.00	3	17.16	23.40	17.16
034189	**E 160NN3**	16.00	88.00	32.00	16.00	32.00	3	22.88	31.20	22.88
034190	**E 200NN3**	20.00	100.00	38.00	20.00	38.00	3	28.60	39.00	28.60

Materials Application

SP4556

P	M	K	N	S	H

PVD



3 - Flute End Mill

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034195	**E 030NN3**	3.00	38.00	12.00	3.00	12.00	3	4.29	5.85	4.29
034196	**E 040NN3**	4.00	50.00	14.00	4.00	14.00	3	5.72	7.80	5.72
034197	**E 050NN3**	5.00	50.00	16.00	5.00	16.00	3	7.15	9.75	7.15
034198	**E 060NN3**	6.00	63.00	19.00	6.00	19.00	3	8.58	11.70	8.58
034199	**E 080NN3**	8.00	63.00	19.00	8.00	19.00	3	11.44	15.60	11.44
034200	**E 100NN3**	10.00	70.00	22.00	10.00	22.00	3	14.30	19.50	14.30
034201	**E 120NN3**	12.00	75.00	25.00	12.00	25.00	3	17.16	23.40	17.16
034202	**E 160NN3**	16.00	88.00	32.00	16.00	32.00	3	22.88	31.20	22.88
034203	**E 200NN3**	20.00	100.00	38.00	20.00	38.00	3	28.60	39.00	28.60

Technical Information

E_NN3 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions						
Grade	Shoulder Milling						Slotting
	Roughing			Finishing			
	ae%	ap%	fz	ae%	ap%	fz	ap%
SU4500	0.1 - 0.5 D	0.5 - 2 D	Mid - High	0.05 - 0.1 D	0.5 - 2 D	Low - Mid	0.1 - 0.5 D
SP4556	0.1 - 0.5 D	0.5 - 2 D	Mid - High	0.05 - 0.1 D	0.5 - 2 D	Low - Mid	0.1 - 0.5 D

Slotting - Square Ended

*** When using a_p max, a_e should not exceed 0.1 D**

Note: For ramping angle, helical a_p max. and trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

Solid Carbide

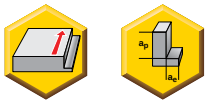
General Purpose - End Milling

Recommended Feeds

CE_NN3 / E_NN3 Feeds fz (ipt) - Slotting / Pocketing

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.125	0.0004	0.0004	0.0004	0.0004	0.0003	0.0004	0.0004	0.0003	0.0004	0.0004	0.0004	-	-	0.0004	0.0003	0.0003	0.0004	-	-
3.0mm	0.0006	0.0006	0.0006	0.0006	0.0005	0.0006	0.0005	0.0005	0.0006	0.0006	0.0005			0.0006	0.0006	0.0006	0.0006		
0.156	0.0005	0.0005	0.0004	0.0005	0.0004	0.0004	0.0005	0.0004	0.0005	0.0005	0.0005	-	-	0.0005	0.0004	0.0004	0.0004	-	-
4.0mm	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008	0.0007	0.0006	0.0008	0.0008	0.0008			0.0008	0.0008	0.0008	0.0008		
0.188	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	-	-
5.0mm	0.0010	0.0010	0.0010	0.0009	0.0008	0.0009	0.0008	0.0007	0.0010	0.0009	0.0008			0.0010	0.0010	0.0010	0.0010		
0.219	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	-	-	0.0006	0.0006	0.0006	0.0006	-	-
-	0.0013	0.0013	0.0013	0.0011	0.0010	0.0011	0.0010	0.0009	0.0013	0.0011	0.0010			0.0013	0.0013	0.0012	0.0012		
0.250	0.0007	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	-	-	0.0007	0.0007	0.0007	0.0007	-	-
6.0mm	0.0015	0.0015	0.0015	0.0013	0.0011	0.0013	0.0011	0.0010	0.0015	0.0013	0.0011			0.0015	0.0015	0.0014	0.0014		
0.281	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008	0.0008	0.0007	0.0008	0.0008	0.0008	-	-	0.0008	0.0008	0.0008	0.0008	-	-
-	0.0018	0.0018	0.0018	0.0015	0.0013	0.0015	0.0013	0.0012	0.0018	0.0015	0.0013			0.0018	0.0018	0.0017	0.0017		
0.313	0.0009	0.0009	0.0009	0.0009	0.0008	0.0009	0.0009	0.0008	0.0009	0.0009	0.0009	-	-	0.0009	0.0008	0.0008	0.0009	-	-
8.0mm	0.0020	0.0020	0.0020	0.0017	0.0014	0.0017	0.0014	0.0013	0.0021	0.0017	0.0014			0.0021	0.0020	0.0019	0.0019		
0.375	0.0011	0.0011	0.0011	0.0011	0.0009	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011	-	-	0.0011	0.0010	0.0010	0.0011	-	-
10.0mm	0.0025	0.0025	0.0025	0.0021	0.0017	0.0021	0.0017	0.0016	0.0026	0.0021	0.0017			0.0026	0.0025	0.0023	0.0024		
0.438	0.0013	0.0013	0.0013	0.0011	0.0011	0.0013	0.0013	0.0011	0.0013	0.0013	0.0013	-	-	0.0013	0.0012	0.0012	0.0013	-	-
-	0.0031	0.0031	0.0031	0.0026	0.0021	0.0025	0.0021	0.0019	0.0032	0.0026	0.0021			0.0032	0.0031	0.0029	0.0030		
0.500	0.0014	0.0014	0.0014	0.0014	0.0012	0.0014	0.0014	0.0013	0.0014	0.0014	0.0014	-	-	0.0014	0.0013	0.0013	0.0014	-	-
12.0mm	0.0036	0.0036	0.0036	0.0030	0.0024	0.0030	0.0024	0.0022	0.0038	0.0030	0.0024			0.0038	0.0036	0.0034	0.0035		
0.563	0.0016	0.0016	0.0016	0.0016	0.0014	0.0016	0.0016	0.0014	0.0016	0.0016	0.0016	-	-	0.0016	0.0014	0.0014	0.0016	-	-
-	0.0042	0.0042	0.0042	0.0034	0.0027	0.0034	0.0027	0.0025	0.0045	0.0034	0.0027			0.0045	0.0042	0.0039	0.0040		
0.625	0.0018	0.0018	0.0018	0.0018	0.0015	0.0018	0.0018	0.0016	0.0018	0.0018	0.0018	-	-	0.0018	0.0016	0.0016	0.0018	-	-
16.0mm	0.0048	0.0048	0.0048	0.0039	0.0030	0.0039	0.0030	0.0028	0.0052	0.0039	0.0030			0.0052	0.0048	0.0045	0.0046		
0.750	0.0022	0.0022	0.0022	0.0022	0.0018	0.0022	0.0022	0.0019	0.0022	0.0022	0.0022	-	-	0.0022	0.0019	0.0019	0.0022	-	-
20.0mm	0.0061	0.0061	0.0061	0.0049	0.0037	0.0049	0.0037	0.0035	0.0066	0.0049	0.0037			0.0066	0.0061	0.0057	0.0058		

Note: HTA = High Temperature Alloys

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	0.05 D	2.30 x f_z
	0.10 D	1.65 x f_z
	0.15 D	1.40 x f_z
	0.20 D	1.25 x f_z
	0.30 D	1.09 x f_z

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

STELLRAM

Solid Carbide
General Purpose - End Milling

Recommended Speeds

Speed v_c (SFM)

CE_NN3 / E_NN3 Series			Wear Resistance – +					
			Speed min. - max.					
Coolant Recommendation Recommended ● Possible ⦿					Uncoated Micrograin			PVD Micrograin
ISO	**Materials**	**Rm and Hardness**	💧	🚫	SU4500	💧	🚫	SP4556
P	**Unalloyed Steel**	<600 N/mm² <180 HBN	●		246 - 361	●	⦿	410 - 590
		<950 N/mm² <280 HBN			197 - 328			328 - 558
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●		197 - 328	●	⦿	328 - 558
		950-1200 N/mm² 280-355 HBN			131 - 230			295 - 460
		1200-1400 N/mm² 355-415 HBN			66 - 148			262 - 394
M	**Stainless Steel**	Austenitic + Ferritic 300 series				●	⦿	279 - 394
		Martensitic 400 series						213 - 295
	PH Stainless	Refractory P.H.				●		164 - 262
K	**Cast Iron**	Grey GG-Ft	●		180 - 295	●	⦿	295 - 492
		Spheroidal-Ductile GGG-FGS			115 - 230			197 - 394
		Malleable GTS - MN/MP			98 - 197			164 - 328
N	**Aluminum & Alloys**	Aluminum & Alloys < 16% Si 116 HBN						
		Aluminum + Silicon > 16% Si 92 HBN						
S	**High Temperature Alloys**	Iron Based				●	⦿	131 - 295
		Cobalt Based						66 - 131
		Nickel Based						82 - 148
		Titanium Based						98 - 197
H	**Hard Materials**	Hard Steel >1400 N/mm² >415 HBN						
		Chilled Cast Iron >1400 N/mm² > 400 HBN						

STELLRAM

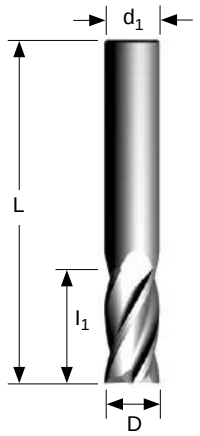
Solid Carbide
General Purpose - End Milling

Materials Application

SU4500

P	M	K	N	S	H
◆◆		◆			

Uncoated



4 - Flute End Mill

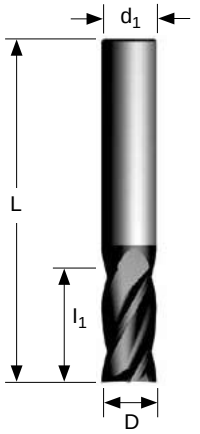
Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
033968	**CE 0125NN4**	0.125_(1/8)	1.500	0.438	0.125	0.438	4	-	-	0.179
033969	**CE 0156NTN4**	0.156_(5/32)	2.000	0.500	0.188	0.500	4	-	-	0.223
033970	**CE 0188NN4**	0.188_(3/16)	2.000	0.563	0.188	0.563	4	-	-	0.269
033971	**CE 0219NTN4**	0.219_(7/32)	2.500	0.625	0.250	0.625	4	-	-	0.313
033972	**CE 0250NN4**	0.250_(1/4)	2.500	0.750	0.250	0.750	4	-	-	0.358
033973	**CE 0281NTN4**	0.281_(9/32)	2.500	0.750	0.313	0.750	4	-	-	0.402
033974	**CE 0313NN4**	0.313_(5/16)	2.500	0.813	0.313	0.813	4	-	-	0.448
033975	**CE 0375NN4**	0.375_(3/8)	2.500	0.875	0.375	0.875	4	-	-	0.536
033976	**CE 0438NN4**	0.438_(7/16)	2.750	1.000	0.438	1.000	4	-	-	0.626
033977	**CE 0500NN4**	0.500_(1/2)	3.000	1.000	0.500	1.000	4	-	-	0.715
033978	**CE 0563NN4**	0.563_(9/16)	3.500	1.125	0.563	1.125	4	-	-	0.805
033979	**CE 0625NN4**	0.625_(5/8)	3.500	1.250	0.625	1.250	4	-	-	0.894
033980	**CE 0750NN4**	0.750_(3/4)	4.000	1.500	0.750	1.500	4	-	-	1.073

Materials Application

SP4556

P	M	K	N	S	H
◆◆	◆◆	◆		◆	

PVD



4 - Flute End Mill

Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
033983	**CE 0125NN4**	0.125_(1/8)	1.500	0.438	0.125	0.438	4	-	-	0.179
033984	**CE 0156NTN4**	0.156_(5/32)	2.000	0.500	0.188	0.500	4	-	-	0.223
033985	**CE 0188NN4**	0.188_(3/16)	2.000	0.563	0.188	0.563	4	-	-	0.269
033986	**CE 0219NTN4**	0.219_(7/32)	2.500	0.625	0.250	0.625	4	-	-	0.313
033987	**CE 0250NN4**	0.250_(1/4)	2.500	0.750	0.250	0.750	4	-	-	0.358
033988	**CE 0281NTN4**	0.281_(9/32)	2.500	0.750	0.313	0.750	4	-	-	0.402
033989	**CE 0313NN4**	0.313_(5/16)	2.500	0.813	0.313	0.813	4	-	-	0.448
033990	**CE 0375NN4**	0.375_(3/8)	2.500	0.875	0.375	0.875	4	-	-	0.536
033991	**CE 0438NN4**	0.438_(7/16)	2.750	1.000	0.438	1.000	4	-	-	0.626
033992	**CE 0500NN4**	0.500_(1/2)	3.000	1.000	0.500	1.000	4	-	-	0.715
033993	**CE 0563NN4**	0.563_(9/16)	3.500	1.125	0.563	1.125	4	-	-	0.805
033994	**CE 0625NN4**	0.625_(5/8)	3.500	1.250	0.625	1.250	4	-	-	0.894
033995	**CE 0750NN4**	0.750_(3/4)	4.000	1.500	0.750	1.500	4	-	-	1.073

Technical Information

CE_NN4 - Radial a_e and Axial a_p depth of cut rangee

Product	Dimensions					
Grade	Shoulder Milling					
	Roughing			Finishing		
	ae%	ap%	f_z	ae%	ap%	f_z
SU4500	0.1 - 0.5 D	0.5 - 2 D	Mid - High	0.05 - 0.1 D	0.5 - 2 D	Low - Mid
SP4556	0.1 - 0.5 D	0.5 - 2 D	Mid - High	0.05 - 0.1 D	0.5 - 2 D	Low - Mid

*** When using a_p max, a_e should not exceed 0.1 D**

Note: For trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

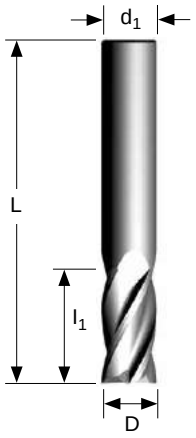
Solid Carbide
General Purpose - End Milling

Materials Application

SU4500

P	M	K	N	S	H

Uncoated



4 - Flute End Mill

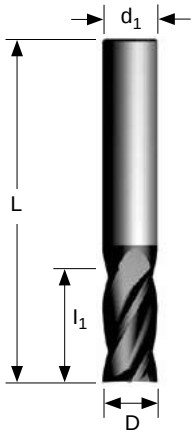
Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034207	**E 030NN4**	3.00	38.00	12.00	3.00	12.00	4	-	-	4.29
034208	**E 040NN4**	4.00	50.00	14.00	4.00	14.00	4	-	-	5.72
034209	**E 050NN4**	5.00	50.00	16.00	5.00	16.00	4	-	-	7.15
034210	**E 060NN4**	6.00	63.00	19.00	6.00	19.00	4	-	-	8.58
034211	**E 080NN4**	8.00	63.00	19.00	8.00	19.00	4	-	-	11.44
034212	**E 100NN4**	10.00	70.00	22.00	10.00	22.00	4	-	-	14.30
034213	**E 120NN4**	12.00	75.00	25.00	12.00	25.00	4	-	-	17.16
034214	**E 160NN4**	16.00	88.00	32.00	16.00	32.00	4	-	-	22.88
034215	**E 200NN4**	20.00	100.00	38.00	20.00	38.00	4	-	-	28.60

Materials Application

SP4556

P	M	K	N	S	H

PVD



4 - Flute End Mill

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034219	**E 030NN4**	3.00	38.00	12.00	3.00	12.00	4	-	-	4.29
034220	**E 040NN4**	4.00	50.00	14.00	4.00	14.00	4	-	-	5.72
034221	**E 050NN4**	5.00	50.00	16.00	5.00	16.00	4	-	-	7.15
034222	**E 060NN4**	6.00	63.00	19.00	6.00	19.00	4	-	-	8.58
034223	**E 080NN4**	8.00	63.00	19.00	8.00	19.00	4	-	-	11.44
034224	**E 100NN4**	10.00	70.00	22.00	10.00	22.00	4	-	-	14.30
034225	**E 120NN4**	12.00	75.00	25.00	12.00	25.00	4	-	-	17.16
034226	**E 160NN4**	16.00	88.00	32.00	16.00	32.00	4	-	-	22.88
034227	**E 200NN4**	20.00	100.00	38.00	20.00	38.00	4	-	-	28.60

Technical Information

E_NN4 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions					
Grade	Shoulder Milling					
	Roughing			Finishing		
	a_e%	a_p%	f_z	a_e%	a_p%	f_z
SU4500	0.1 - 0.5 D	0.5 - 2 D	Mid - High	0.05 - 0.1 D	0.5 - 2 D	Low - Mid
SP4556	0.1 - 0.5 D	0.5 - 2 D	Mid - High	0.05 - 0.1 D	0.5 - 2 D	Low - Mid

*** When using a_p max, a_e should not exceed 0.1 D**

Note: For trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

Solid Carbide

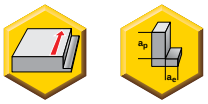
General Purpose - End Milling

Recommended Feeds

CE_NN4 / E_NN4 Feeds fz (ipt) - Shoulder Milling (a_e Max)

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.125	0.0004	0.0004	0.0004	0.0004	0.0003	0.0004	0.0004	0.0003	0.0004	0.0004	0.0004	-	-	0.0004	0.0003	0.0003	0.0004	-	-
3.0mm	0.0006	0.0006	0.0006	0.0006	0.0005	0.0006	0.0005	0.0005	0.0006	0.0006	0.0005			0.0006	0.0006	0.0006	0.0006		
0.156	0.0005	0.0005	0.0004	0.0005	0.0004	0.0004	0.0005	0.0004	0.0005	0.0005	0.0005	-	-	0.0005	0.0004	0.0004	0.0004	-	-
4.0mm	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008	0.0007	0.0006	0.0008	0.0008	0.0008			0.0008	0.0008	0.0008	0.0008		
0.188	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	-	-
5.0mm	0.0010	0.0010	0.0010	0.0009	0.0008	0.0009	0.0008	0.0007	0.0010	0.0009	0.0008			0.0010	0.0010	0.0010	0.0010		
0.219	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	-	-	0.0006	0.0006	0.0006	0.0006	-	-
-	0.0013	0.0013	0.0013	0.0011	0.0010	0.0011	0.0010	0.0009	0.0013	0.0011	0.0010			0.0013	0.0012	0.0012	0.0012		
0.250	0.0007	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	-	-	0.0007	0.0007	0.0007	0.0007	-	-
6.0mm	0.0015	0.0015	0.0015	0.0013	0.0011	0.0013	0.0011	0.0010	0.0015	0.0013	0.0011			0.0015	0.0015	0.0014	0.0014		
0.281	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008	0.0008	0.0007	0.0008	0.0008	0.0008	-	-	0.0008	0.0008	0.0008	0.0008	-	-
-	0.0018	0.0018	0.0018	0.0015	0.0013	0.0015	0.0013	0.0012	0.0018	0.0015	0.0013			0.0018	0.0018	0.0017	0.0017		
0.313	0.0009	0.0009	0.0009	0.0009	0.0008	0.0009	0.0009	0.0008	0.0009	0.0009	0.0009	-	-	0.0009	0.0008	0.0008	0.0009	-	-
8.0mm	0.0020	0.0020	0.0020	0.0017	0.0014	0.0017	0.0014	0.0013	0.0021	0.0017	0.0014			0.0021	0.0020	0.0019	0.0019		
0.375	0.0011	0.0011	0.0011	0.0011	0.0009	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011	-	-	0.0011	0.0010	0.0010	0.0011	-	-
10.0mm	0.0025	0.0025	0.0025	0.0021	0.0017	0.0021	0.0017	0.0016	0.0026	0.0021	0.0017			0.0026	0.0025	0.0023	0.0024		
0.438	0.0013	0.0013	0.0013	0.0011	0.0011	0.0013	0.0013	0.0011	0.0013	0.0013	0.0013	-	-	0.0013	0.0012	0.0012	0.0013	-	-
-	0.0031	0.0031	0.0031	0.0026	0.0021	0.0025	0.0021	0.0019	0.0032	0.0026	0.0021			0.0032	0.0031	0.0029	0.0030		
0.500	0.0014	0.0014	0.0014	0.0014	0.0012	0.0014	0.0014	0.0013	0.0014	0.0014	0.0014	-	-	0.0014	0.0013	0.0013	0.0014	-	-
12.0mm	0.0036	0.0036	0.0036	0.0030	0.0024	0.0030	0.0024	0.0022	0.0038	0.0030	0.0024			0.0038	0.0036	0.0034	0.0035		
0.563	0.0016	0.0016	0.0016	0.0016	0.0014	0.0016	0.0016	0.0014	0.0016	0.0016	0.0016	-	-	0.0016	0.0014	0.0014	0.0016	-	-
-	0.0042	0.0042	0.0042	0.0034	0.0027	0.0034	0.0027	0.0025	0.0045	0.0034	0.0027			0.0045	0.0042	0.0039	0.0040		
0.625	0.0018	0.0018	0.0018	0.0018	0.0015	0.0018	0.0018	0.0016	0.0018	0.0018	0.0018	-	-	0.0018	0.0016	0.0016	0.0018	-	-
16.0mm	0.0048	0.0048	0.0048	0.0039	0.0030	0.0039	0.0030	0.0028	0.0052	0.0039	0.0030			0.0052	0.0048	0.0045	0.0046		
0.750	0.0022	0.0022	0.0022	0.0022	0.0018	0.0022	0.0022	0.0019	0.0022	0.0022	0.0022	-	-	0.0022	0.0019	0.0019	0.0022	-	-
20.0mm	0.0061	0.0061	0.0061	0.0049	0.0037	0.0049	0.0037	0.0035	0.0066	0.0049	0.0037			0.0066	0.0061	0.0057	0.0058		

Note: HTA = High Temperature Alloys

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	0.05 D	2.30 x f_z
	0.10 D	1.65 x f_z
	0.15 D	1.40 x f_z
	0.20 D	1.25 x f_z
	0.30 D	1.09 x f_z

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

STELLRAM

Solid Carbide
General Purpose - End Milling

Recommended Speeds

Speed v_c (SFM)

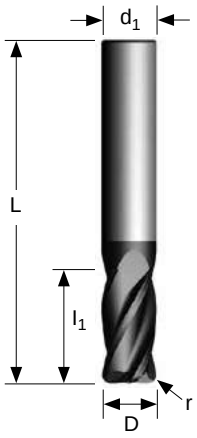
CE_NN4 / E_NN4 Series			Wear Resistance – +					
			Speed min. - max.					
Coolant Recommendation Recommended ● Possible ⦿					Uncoated Micrograin			PVD Micrograin
ISO	**Materials**	**Rm and Hardness**	💧	🚫	SU4500	💧	🚫	SP4556
P	**Unalloyed Steel**	<600 N/mm² <180 HBN	●		246 - 361	●	⦿	410 - 590
		<950 N/mm² <280 HBN			197 - 328			328 - 558
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●		197 - 328	●	⦿	328 - 558
		950-1200 N/mm² 280-355 HBN			131 - 230			295 - 460
		1200-1400 N/mm² 355-415 HBN			66 - 148			262 - 394
M	**Stainless Steel**	Austenitic + Ferritic 300 series				●	⦿	279 - 394
		Martensitic 400 series						213 - 295
	PH Stainless	Refractory P.H.				●		164 - 262
K	**Cast Iron**	Grey GG-Ft	●		180 - 295	●	⦿	295 - 492
		Spheroidal-Ductile GGG-FGS			115 - 230			197 - 394
		Malleable GTS - MN/MP			98 - 197			164 - 328
N	**Aluminum & Alloys**	Aluminum & Alloys < 16% Si 116 HBN						
		Aluminum + Silicon > 16% Si 92 HBN						
S	**High Temperature Alloys**	Iron Based				●	⦿	131 - 295
		Cobalt Based						66 - 131
		Nickel Based						82 - 148
		Titanium Based						98 - 197
H	**Hard Materials**	Hard Steel >1400 N/mm² >415 HBN						
		Chilled Cast Iron >1400 N/mm² > 400 HBN						

Materials Application

SP4556

P	M	K	N	S	H

PVD



4 - Flute End Mill

STELLRAM

Solid Carbide

General Purpose - End Milling

Metric Product		Dimensions (mm)									
EDP	**Item Description**	D	L	l_1	d_1	r	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034228	**ER 030NN4-E**	3.00	38.00	12.00	3.00	0.50	12.00	4	-	-	4.29
034229	**ER 040NN4-E**	4.00	50.00	14.00	4.00	0.50	14.00	4	-	-	5.72
034230	**ER 050NN4-E**	5.00	50.00	16.00	5.00	0.50	16.00	4	-	-	7.15
034231	**ER 060NN4-E**	6.00	63.00	19.00	6.00	0.50	19.00	4	-	-	8.58
034232	**ER 060NN4-G**	6.00	63.00	19.00	6.00	1.00	19.00	4	-	-	8.58
034233	**ER 080NN4-E**	8.00	63.00	19.00	8.00	0.50	19.00	4	-	-	11.44
034234	**ER 080NN4-G**	8.00	63.00	19.00	8.00	1.00	19.00	4	-	-	11.44
034235	**ER 100NN4-E**	10.00	70.00	22.00	10.00	0.50	22.00	4	-	-	14.30
034236	**ER 100NN4-G**	10.00	70.00	22.00	10.00	1.00	22.00	4	-	-	14.30
034237	**ER 100NN4-J**	10.00	70.00	22.00	10.00	1.50	22.00	4	-	-	14.30
034238	**ER 120NN4-E**	12.00	75.00	25.00	12.00	0.50	25.00	4	-	-	17.16
034239	**ER 120NN4-G**	12.00	75.00	25.00	12.00	1.00	25.00	4	-	-	17.16
034240	**ER 120NN4-J**	12.00	75.00	25.00	12.00	1.50	25.00	4	-	-	17.16
034241	**ER 120NN4-K**	12.00	75.00	25.00	12.00	2.00	25.00	4	-	-	17.16
034242	**ER 160NN4-G**	16.00	92.00	32.00	16.00	1.00	32.00	4	-	-	22.88
034243	**ER 160NN4-J**	16.00	92.00	32.00	16.00	1.50	32.00	4	-	-	22.88
034244	**ER 160NN4-K**	16.00	92.00	32.00	16.00	2.00	32.00	4	-	-	22.88

Technical Information

E_NN4-(r) Radial a_e and Axial a_p depth of cut range

Product	Dimensions					
	Shoulder Milling					
Grade	Roughing			Finishing		
	a_e%	a_p%	f_z	a_e%	a_p%	f_z
SP4556	0.1 - 0.5 D	0.5 - 2 D	Mid - High	0.05 -0.1 D	0.5 - 2 D	Low - Mid

*** When using a_p max, a_e should not exceed 0.1 D**

Note: For trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

Recommended Feeds

ER_NN4-(r) Feeds fz (ipt) - Shoulder Milling

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
3.0	0.0004	0.0004	0.0004	0.0004	0.0003	0.0004	0.0004	0.0003	0.0004	0.0004	0.0004	-	-	0.0004	0.0003	0.0003	0.0004	-	-
-	0.0006	0.0006	0.0006	0.0006	0.0005	0.0006	0.0005	0.0005	0.0006	0.0006	0.0005			0.0006	0.0006	0.0006	0.0006		
4.0	0.0005	0.0005	0.0004	0.0005	0.0004	0.0004	0.0005	0.0004	0.0005	0.0005	0.0005	-	-	0.0005	0.0004	0.0004	0.0004	-	-
-	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008	0.0007	0.0006	0.0008	0.0008	0.0008			0.0008	0.0008	0.0008	0.0008		
5.0	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	-	-
-	0.0010	0.0010	0.0010	0.0009	0.0008	0.0009	0.0008	0.0007	0.0010	0.0009	0.0008			0.0010	0.0010	0.0010	0.0010		
6.0	0.0007	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	-	-	0.0007	0.0007	0.0007	0.0007	-	-
-	0.0015	0.0015	0.0015	0.0013	0.0011	0.0013	0.0011	0.0010	0.0015	0.0013	0.0011			0.0015	0.0015	0.0014	0.0014		
8.0	0.0009	0.0009	0.0009	0.0009	0.0008	0.0009	0.0009	0.0008	0.0009	0.0009	0.0009	-	-	0.0009	0.0008	0.0008	0.0009	-	-
-	0.0020	0.0020	0.0020	0.0017	0.0014	0.0017	0.0014	0.0013	0.0021	0.0017	0.0014			0.0021	0.0020	0.0019	0.0019		
10.0	0.0011	0.0011	0.0011	0.0011	0.0009	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011	-	-	0.0011	0.0010	0.0010	0.0011	-	-
-	0.0025	0.0025	0.0025	0.0021	0.0017	0.0021	0.0017	0.0016	0.0026	0.0021	0.0017			0.0026	0.0025	0.0023	0.0024		
12.0	0.0014	0.0014	0.0014	0.0014	0.0012	0.0014	0.0014	0.0013	0.0014	0.0014	0.0014	-	-	0.0014	0.0013	0.0013	0.0014	-	-
-	0.0036	0.0036	0.0036	0.0030	0.0024	0.0030	0.0024	0.0022	0.0038	0.0030	0.0024			0.0038	0.0036	0.0034	0.0035		
16.0	0.0018	0.0018	0.0018	0.0018	0.0015	0.0018	0.0018	0.0016	0.0018	0.0018	0.0018	-	-	0.0018	0.0016	0.0016	0.0018	-	-
-	0.0048	0.0048	0.0048	0.0039	0.0030	0.0039	0.0030	0.0028	0.0052	0.0039	0.0030			0.0052	0.0048	0.0045	0.0046		

Note: HTA = High Temperature Alloys

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	0.05 D	2.30 x f_z
	0.10 D	1.65 x f_z
	0.15 D	1.40 x f_z
	0.20 D	1.25 x f_z
	0.30 D	1.09 x f_z

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

STELLRAM

Solid Carbide

General Purpose - End Milling

Recommended Speeds

Speed v_c (SFM)

ER_NN4 - with Radius Series					
			Speed min. - max.		
Coolant Recommendation Recommended ● Possible ⦿					PVD Micrograin
ISO	**Materials**	**Rm and Hardness**	💧	🚫	SP4556
P	**Unalloyed Steel**	<600 N/mm² <180 HBN	●	⦿	410 - 590
		<950 N/mm² <280 HBN			328 - 558
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●	⦿	328 - 558
		950-1200 N/mm² 280-355 HBN			295 - 460
		1200-1400 N/mm² 355-415 HBN			262 - 394
M	**Stainless Steel**	Austenitic + Ferritic 300 series	●	⦿	279 - 394
		Martensitic 400 series			213 - 295
	PH Stainless	Refractory P.H.	●		164 - 262
K	**Cast Iron**	Grey GG-Ft	●	⦿	295 - 492
		Spheroidal-Ductile GGG-FGS			197 - 394
		Malleable GTS - MN/MP			164 - 328
N	**Aluminum & Alloys**	Aluminum & Alloys < 16% Si 116 HBN			
		Aluminum + Silicon > 16% Si 92 HBN			
S	**High Temperature Alloys**	Iron Based	●	⦿	131 - 295
		Cobalt Based			66 -131
		Nickel Based			82 - 148
		Titanium Based			98 - 197
H	**Hard Materials**	Hard Steel >1400 N/mm² >415 HBN			
		Chilled Cast Iron >1400 N/mm² > 400 HBN			

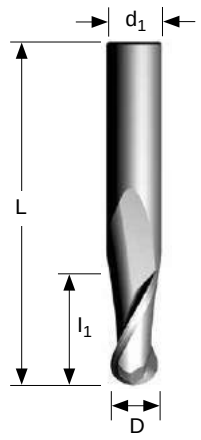
STELLRAM

Materials Application

SU4500

P	M	K	N	S	H
◆◆		◆			

Uncoated



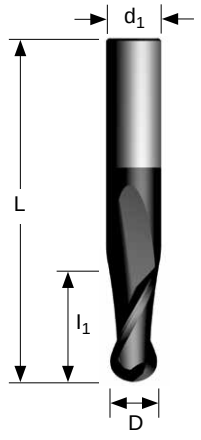
2 - Flute Ball Nose End Mill

Materials Application

SP4556

P	M	K	N	S	H
◆◆	◆◆	◆		◆	

PVD



2 - Flute Ball Nose End Mill

Solid Carbide

General Purpose - End Milling



Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
033998	**CB 0125NN2**	0.125_(1/8)	1.500	0.438	0.125	0.438	2	-	-	-
033999	**CB 0156NTN2**	0.156_(5/32)	2.000	0.500	0.188	0.500	2	-	-	-
034000	**CB 0188NN2**	0.188_(3/16)	2.000	0.563	0.188	0.563	2	-	-	-
034001	**CB 0219NTN2**	0.219_(7/32)	2.500	0.625	0.250	0.625	2	-	-	-
034002	**CB 0250NN2**	0.250_(1/4)	2.500	0.750	0.250	0.750	2	-	-	-
034003	**CB 0281NTN2**	0.281_(9/32)	2.500	0.750	0.313	0.750	2	-	-	-
034004	**CB 0313NN2**	0.313_(5/16)	2.500	0.813	0.313	0.813	2	-	-	-
034005	**CB 0375NN2**	0.375_(3/8)	2.500	0.875	0.375	0.875	2	-	-	-
034006	**CB 0438NN2**	0.438_(7/16)	2.750	1.000	0.438	1.000	2	-	-	-
034007	**CB 0500NN2**	0.500_(1/2)	3.000	1.000	0.500	1.000	2	-	-	-
034008	**CB 0563NN2**	0.563_(9/16)	3.500	1.125	0.563	1.125	2	-	-	-
034009	**CB 0625NN2**	0.625_(5/8)	3.500	1.250	0.625	1.250	2	-	-	-
034010	**CB 0750NN2**	0.750_(3/4)	4.000	1.500	0.750	1.500	2	-	-	-

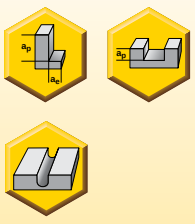
Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034013	**CB 0125NN2**	0.125_(1/8)	1.500	0.438	0.125	0.438	2	-	-	-
034014	**CB 0156NTN2**	0.156_(5/32)	2.000	0.500	0.188	0.500	2	-	-	-
034015	**CB 0188NN2**	0.188_(3/16)	2.000	0.563	0.188	0.563	2	-	-	-
034016	**CB 0219NTN2**	0.219_(7/32)	2.500	0.625	0.250	0.625	2	-	-	-
034017	**CB 0250NN2**	0.250_(1/4)	2.500	0.750	0.250	0.750	2	-	-	-
034018	**CB 0281NTN2**	0.281_(9/32)	2.500	0.750	0.313	0.750	2	-	-	-
034019	**CB 0313NN2**	0.313_(5/16)	2.500	0.813	0.313	0.813	2	-	-	-
034020	**CB 0375NN2**	0.375_(3/8)	2.500	0.875	0.375	0.875	2	-	-	-
034021	**CB 0438NN2**	0.438_(7/16)	2.750	1.000	0.438	1.000	2	-	-	-
034022	**CB 0500NN2**	0.500_(1/2)	3.000	1.000	0.500	1.000	2	-	-	-
034023	**CB 0563NN2**	0.563_(9/16)	3.500	1.125	0.563	1.125	2	-	-	-
034024	**CB 0625NN2**	0.625_(5/8)	3.500	1.250	0.625	1.250	2	-	-	-
034025	**CB 0750NN2**	0.750_(3/4)	4.000	1.500	0.750	1.500	2	-	-	-

Technical Information

CB_NN2 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions						
Grade	Shoulder Milling						Slotting
	Roughing			Finishing			
	a_e%	a_p%	f_z	a_e%	a_p%	f_z	a_p%
SU4500	0.1 - 0.2 D	0.5 - 1.4 D	Mid - High	0.05 - 0.1 D	0.5 - 1.4 D	Low - Mid	0.1 - 0.4 D
SP4556	0.1 - 0.2 D	0.5 - 1.4 D	Mid - High	0.05 - 0.1 D	0.5 - 1.4 D	Low - Mid	0.1 - 0.4 D

*** When using a_p max, a_e should not exceed 0.1 D**



Slotting - Ball Nosed

Note: For copy milling & shoulder milling applications, refer to page B107.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

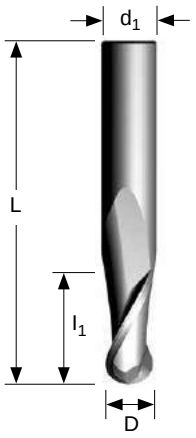
STELLRAM

Materials Application

SU4500

P	M	K	N	S	H
◆◆		◆			

Uncoated



2 - Flute Ball Nose End Mill

Solid Carbide
General Purpose - End Milling

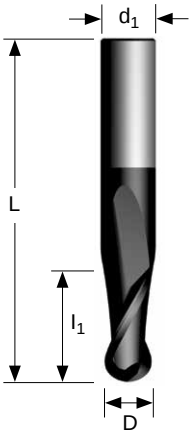
Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034256	**B 030NN2**	3.00	38.00	12.00	3.00	12.00	2	-	-	-
034257	**B 040NN2**	4.00	50.00	14.00	4.00	14.00	2	-	-	-
034258	**B 050NN2**	5.00	50.00	16.00	5.00	16.00	2	-	-	-
034259	**B 060NN2**	6.00	63.00	19.00	6.00	19.00	2	-	-	-
034260	**B 080NN2**	8.00	63.00	19.00	8.00	19.00	2	-	-	-
034261	**B 100NN2**	10.00	70.00	22.00	10.00	22.00	2	-	-	-
034262	**B 120NN2**	12.00	75.00	25.00	12.00	25.00	2	-	-	-
034263	**B 160NN2**	16.00	88.00	32.00	16.00	32.00	2	-	-	-
034264	**B 200NN2**	20.00	100.00	38.00	20.00	38.00	2	-	-	-

Materials Application

SP4556

P	M	K	N	S	H
◆◆	◆◆	◆		◆	

PVD



2 - Flute Ball Nose End Mill

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034276	**B 030NN2**	3.00	38.00	12.00	3.00	12.00	2	-	-	-
034277	**B 040NN2**	4.00	50.00	14.00	4.00	14.00	2	-	-	-
034278	**B 050NN2**	5.00	50.00	16.00	5.00	16.00	2	-	-	-
034279	**B 060NN2**	6.00	63.00	19.00	6.00	19.00	2	-	-	-
034280	**B 080NN2**	8.00	63.00	19.00	8.00	19.00	2	-	-	-
034281	**B 100NN2**	10.00	70.00	22.00	10.00	22.00	2	-	-	-
034282	**B 120NN2**	12.00	75.00	25.00	12.00	25.00	2	-	-	-
034283	**B 160NN2**	16.00	88.00	32.00	16.00	32.00	2	-	-	-
034284	**B 200NN2**	20.00	100.00	38.00	20.00	38.00	2	-	-	-

Technical Information

B_NN2 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions						
Grade	Shoulder Milling						Slotting
	Roughing			Finishing			
	a_e%	a_p%	f_z	a_e%	a_p%	f_z	a_p%
SU4500	0.1 - 0.2 D	0.5 - 1.4 D	Mid - High	0.05 - 0.1 D	0.5 - 1.4 D	Low - Mid	0.1 - 0.4 D
SP4556	0.1 - 0.2 D	0.5 - 1.4 D	Mid - High	0.05 - 0.1 D	0.5 - 1.4 D	Low - Mid	0.1 - 0.4 D

*** When using a_p max, a_e should not exceed 0.1 D**

Slotting - Ball Nosed

Note: For copy milling & shoulder milling applications, refer to page B107.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

Solid Carbide
General Purpose - End Milling

Recommended Feeds

CB_NN2 / B_NN2 Feeds fz (ipt) - Slotting / Pocketing

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.125	0.0004	0.0004	0.0004	0.0004	0.0003	0.0004	0.0004	0.0003	0.0004	0.0004	0.0004	-	-	0.0004	0.0003	0.0003	0.0004	-	-
3.0mm	0.0006	0.0006	0.0006	0.0006	0.0005	0.0006	0.0005	0.0005	0.0006	0.0006	0.0005			0.0006	0.0006	0.0006	0.0006		
0.156	0.0005	0.0005	0.0004	0.0005	0.0004	0.0004	0.0005	0.0004	0.0005	0.0005	0.0005	-	-	0.0005	0.0004	0.0004	0.0004	-	-
4.0mm	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008	0.0007	0.0006	0.0008	0.0008	0.0008			0.0008	0.0008	0.0008	0.0008		
0.188	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	-	-
5.0mm	0.0010	0.0010	0.0010	0.0009	0.0008	0.0009	0.0008	0.0007	0.0010	0.0009	0.0008			0.0010	0.0010	0.0010	0.0010		
0.219	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	-	-	0.0006	0.0006	0.0006	0.0006	-	-
-	0.0013	0.0013	0.0013	0.0011	0.0010	0.0011	0.0010	0.0009	0.0013	0.0011	0.0010			0.0013	0.0012	0.0012	0.0012		
0.250	0.0007	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	-	-	0.0007	0.0007	0.0007	0.0007	-	-
6.0mm	0.0015	0.0015	0.0015	0.0013	0.0011	0.0013	0.0011	0.0010	0.0015	0.0013	0.0011			0.0015	0.0015	0.0014	0.0014		
0.281	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008	0.0008	0.0007	0.0008	0.0008	0.0008	-	-	0.0008	0.0008	0.0008	0.0008	-	-
-	0.0018	0.0018	0.0018	0.0015	0.0013	0.0015	0.0013	0.0012	0.0018	0.0015	0.0013			0.0018	0.0018	0.0017	0.0017		
0.313	0.0009	0.0009	0.0009	0.0009	0.0008	0.0009	0.0009	0.0008	0.0009	0.0009	0.0009	-	-	0.0009	0.0008	0.0008	0.0009	-	-
8.0mm	0.0020	0.0020	0.0020	0.0017	0.0014	0.0017	0.0014	0.0013	0.0021	0.0017	0.0014			0.0021	0.0020	0.0019	0.0019		
0.375	0.0011	0.0011	0.0011	0.0011	0.0009	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011	-	-	0.0011	0.0010	0.0010	0.0011	-	-
10.0mm	0.0025	0.0025	0.0025	0.0021	0.0017	0.0021	0.0017	0.0016	0.0026	0.0021	0.0017			0.0026	0.0025	0.0023	0.0024		
0.438	0.0013	0.0013	0.0013	0.0011	0.0011	0.0013	0.0013	0.0011	0.0013	0.0013	0.0013	-	-	0.0013	0.0012	0.0012	0.0013	-	-
-	0.0031	0.0031	0.0031	0.0026	0.0021	0.0025	0.0021	0.0019	0.0032	0.0026	0.0021			0.0032	0.0031	0.0029	0.0030		
0.500	0.0014	0.0014	0.0014	0.0014	0.0012	0.0014	0.0014	0.0013	0.0014	0.0014	0.0014	-	-	0.0014	0.0013	0.0013	0.0014	-	-
12.0mm	0.0036	0.0036	0.0036	0.0030	0.0024	0.0030	0.0024	0.0022	0.0038	0.0030	0.0024			0.0038	0.0036	0.0034	0.0035		
0.563	0.0016	0.0016	0.0016	0.0016	0.0014	0.0016	0.0016	0.0014	0.0016	0.0016	0.0016	-	-	0.0016	0.0014	0.0014	0.0016	-	-
-	0.0042	0.0042	0.0042	0.0034	0.0027	0.0034	0.0027	0.0025	0.0045	0.0034	0.0027			0.0045	0.0042	0.0039	0.0040		
0.625	0.0018	0.0018	0.0018	0.0018	0.0015	0.0018	0.0018	0.0016	0.0018	0.0018	0.0018	-	-	0.0018	0.0016	0.0016	0.0018	-	-
16.0mm	0.0048	0.0048	0.0048	0.0039	0.0030	0.0039	0.0030	0.0028	0.0052	0.0039	0.0030			0.0052	0.0048	0.0045	0.0046		
0.750	0.0022	0.0022	0.0022	0.0022	0.0018	0.0022	0.0022	0.0019	0.0022	0.0022	0.0022	-	-	0.0022	0.0019	0.0019	0.0022	-	-
20.0mm	0.0061	0.0061	0.0061	0.0049	0.0037	0.0049	0.0037	0.0035	0.0066	0.0049	0.0037			0.0066	0.0061	0.0057	0.0058		

Note: HTA = High Temperature Alloys

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	Note: For copy milling & shoulder milling applications, refer to page B107.	

STELLRAM

Solid Carbide

General Purpose - End Milling

Recommended Speeds

Speed v_c (SFM)

CB_NN2 / B_NN2 Series			Wear Resistance – → +					
			Speed min. - max.					
Coolant Recommendation Recommended ● Possible ⦿					Uncoated Micrograin			PVD Micrograin
ISO	**Materials**	**Rm and Hardness**	💧	🚫	SU4500	💧	🚫	SP4556
P	**Unalloyed Steel**	<600 N/mm² <180 HBN	●		148 - 230	●	⦿	410 - 590
		<950 N/mm² <280 HBN			131 - 197			328 - 558
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●		1131 - 197	●	⦿	328 - 558
		950-1200 N/mm² 280-355 HBN			82 - 131			295 - 460
		1200-1400 N/mm² 355-415 HBN			49 - 98			262 - 394
M	**Stainless Steel**	Austenitic + Ferritic 300 series				●	⦿	279 - 394
		Martensitic 400 series						213 - 295
	PH Stainless	Refractory P.H.				●		164 - 262
K	**Cast Iron**	Grey GG-Ft	●		115 - 180	●	⦿	295 - 492
		Spheroidal-Ductile GGG-FGS			66 - 147			197 - 394
		Malleable GTS - MN/MP			66 - 131			164 - 328
N	**Aluminum & Alloys**	Aluminum & Alloys < 16% Si 116 HBN						
		Aluminum + Silicon > 16% Si 92 HBN						
S	**High Temperature Alloys**	Iron Based				●	⦿	131 - 295
		Cobalt Based						66 - 131
		Nickel Based						82 - 148
		Titanium Based						98 - 197
H	**Hard Materials**	Hard Steel >1400 N/mm² >415 HBN						
		Chilled Cast Iron >1400 N/mm² > 400 HBN						

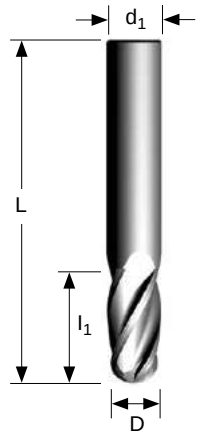
STELLRAM

Materials Application

SU4500

P	M	K	N	S	H
◆◆		◆			

Uncoated



4 - Flute Ball Nose End Mill

Solid Carbide
General Purpose - End Milling

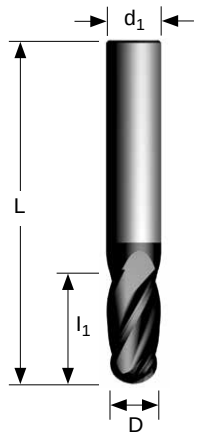
Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034028	**CB 0125NN4**	0.125_(1/8)	1.500	0.438	0.125	0.438	4	-	-	-
034029	**CB 0156NTN4**	0.156_(5/32)	2.000	0.500	0.188	0.500	4	-	-	-
034030	**CB 0188NN4**	0.188_(3/16)	2.000	0.563	0.188	0.563	4	-	-	-
034031	**CB 0219NTN4**	0.219_(7/32)	2.500	0.625	0.250	0.625	4	-	-	-
034032	**CB 0250NN4**	0.250_(1/4)	2.500	0.750	0.250	0.750	4	-	-	-
034033	**CB 0281NTN4**	0.281_(9/32)	2.500	0.750	0.313	0.750	4	-	-	-
034034	**CB 0313NN4**	0.313_(5/16)	2.500	0.813	0.313	0.813	4	-	-	-
034035	**CB 0375NN4**	0.375_(3/8)	2.500	0.875	0.375	0.875	4	-	-	-
034036	**CB 0438NN4**	0.438_(7/16)	2.750	1.000	0.438	1.000	4	-	-	-
034037	**CB 0500NN4**	0.500_(1/2)	3.000	1.000	0.500	1.000	4	-	-	-
034038	**CB 0563NN4**	0.563_(9/16)	3.500	1.125	0.563	1.125	4	-	-	-
034039	**CB 0625NN4**	0.625_(5/8)	3.500	1.250	0.625	1.250	4	-	-	-
034040	**CB 0750NN4**	0.750_(3/4)	4.000	1.500	0.750	1.500	4	-	-	-

Materials Application

SP4556

P	M	K	N	S	H
◆◆	◆◆	◆		◆	

PVD



4 - Flute Ball Nose End Mill

Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034707	**CB 0125NN4**	0.125_(1/8)	1.500	0.438	0.125	0.438	4	-	-	-
034708	**CB 0156NTN4**	0.156_(5/32)	2.000	0.500	0.188	0.500	4	-	-	-
034709	**CB 0188NN4**	0.188_(3/16)	2.000	0.563	0.188	0.563	4	-	-	-
034710	**CB 0219NTN4**	0.219_(7/32)	2.500	0.625	0.250	0.625	4	-	-	-
034711	**CB 0250NN4**	0.250_(1/4)	2.500	0.750	0.250	0.750	4	-	-	-
034712	**CB 0281NTN4**	0.281_(9/32)	2.500	0.750	0.313	0.750	4	-	-	-
034713	**CB 0313NN4**	0.313_(5/16)	2.500	0.813	0.313	0.813	4	-	-	-
034714	**CB 0375NN4**	0.375_(3/8)	2.500	0.875	0.375	0.875	4	-	-	-
034715	**CB 0438NN4**	0.438_(7/16)	2.750	1.000	0.438	1.000	4	-	-	-
034716	**CB 0500NN4**	0.500_(1/2)	3.000	1.000	0.500	1.000	4	-	-	-
034717	**CB 0563NN4**	0.563_(9/16)	3.500	1.125	0.563	1.125	4	-	-	-
034718	**CB 0625NN4**	0.625_(5/8)	3.500	1.250	0.625	1.250	4	-	-	-
034719	**CB 0750NN4**	0.750_(3/4)	4.000	1.500	0.750	1.500	4	-	-	-

Technical Information

CB_NN4 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions					
Grade	Shoulder Milling					
	Roughing			Finishing		
	a_e%	a_p%	f_z	a_e%	a_p%	f_z
SU4500	0.1 - 0.5 D	0.5 - 1.9 D	Mid - High	0.05 - 0.1 D	0.5 - 1.9 D	Low - Mid
SP4556	0.1 - 0.5 D	0.5 - 1.9 D	Mid - High	0.05 - 0.1 D	0.5 - 1.9 D	Low - Mid

*** When using a_p max, a_e should not exceed 0.1 D**

Note: For copy milling & shoulder milling applications, refer to page B107.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

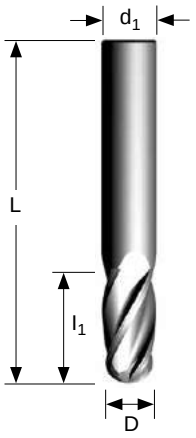
Solid Carbide
General Purpose - End Milling

Materials Application

SU4500

P	M	K	N	S	H
◆◆		◆			

Uncoated



4 - Flute Ball Nose End Mill

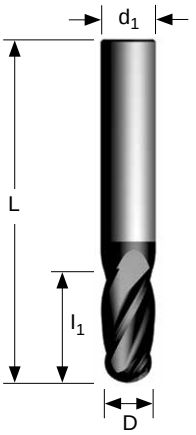
Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034289	**B 030NN4**	3.00	38.00	12.00	3.00	12.00	4	-	-	-
034290	**B 040NN4**	4.00	50.00	14.00	4.00	14.00	4	-	-	-
034291	**B 050NN4**	5.00	50.00	16.00	5.00	16.00	4	-	-	-
034292	**B 060NN4**	6.00	63.00	19.00	6.00	19.00	4	-	-	-
034293	**B 080NN4**	8.00	63.00	19.00	8.00	19.00	4	-	-	-
034294	**B 100NN4**	10.00	70.00	22.00	10.00	22.00	4	-	-	-
034295	**B 120NN4**	12.00	75.00	25.00	12.00	25.00	4	-	-	-

Materials Application

SP4556

P	M	K	N	S	H
◆◆	◆◆	◆		◆	

PVD



4 - Flute Ball Nose End Mill

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034724	**B 030NN4**	3.00	38.00	12.00	3.00	12.00	4	-	-	-
034725	**B 040NN4**	4.00	50.00	14.00	4.00	14.00	4	-	-	-
034726	**B 050NN4**	5.00	50.00	16.00	5.00	16.00	4	-	-	-
034727	**B 060NN4**	6.00	63.00	19.00	6.00	19.00	4	-	-	-
034728	**B 080NN4**	8.00	63.00	19.00	8.00	19.00	4	-	-	-
034729	**B 100NN4**	10.00	70.00	22.00	10.00	22.00	4	-	-	-
034730	**B 120NN4**	12.00	75.00	25.00	12.00	25.00	4	-	-	-

Technical Information

B_NN4 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions					
Grade	Shoulder Milling					
	Roughing			Finishing		
	a_e%	a_p%	f_z	a_e%	a_p%	f_z
SU4500	0.1 - 0.5 D	0.5 - 1.9 D	Mid - High	0.05 - 0.1 D	0.5 - 1.9 D	Low - Mid
SP4556	0.1 - 0.5 D	0.5 - 1.9 D	Mid - High	0.05 - 0.1 D	0.5 - 1.9 D	Low - Mid

*** When using a_p max, a_e should not exceed 0.1 D**

Note: For copy milling & shoulder milling applications, refer to page B107.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

Solid Carbide
General Purpose - End Milling

Recommended Feeds

CB_NN4 / B_NN4 Feeds fz (ipt) - Slotting / Pocketing

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.125	0.0004	0.0004	0.0004	0.0004	0.0003	0.0004	0.0004	0.0003	0.0004	0.0004	0.0004	-	-	0.0004	0.0003	0.0003	0.0004	-	-
3.0mm	0.0006	0.0006	0.0006	0.0006	0.0005	0.0006	0.0005	0.0005	0.0006	0.0006	0.0005			0.0006	0.0006	0.0006	0.0006		
0.156	0.0005	0.0005	0.0004	0.0005	0.0004	0.0004	0.0005	0.0004	0.0005	0.0005	0.0005	-	-	0.0005	0.0004	0.0004	0.0004	-	-
4.0mm	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008	0.0007	0.0006	0.0008	0.0008	0.0008			0.0008	0.0008	0.0008	0.0008		
0.188	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	-	-
5.0mm	0.0010	0.0010	0.0010	0.0009	0.0008	0.0009	0.0008	0.0007	0.0010	0.0009	0.0008			0.0010	0.0010	0.0010	0.0010		
0.219	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	-	-	0.0006	0.0006	0.0006	0.0006	-	-
-	0.0013	0.0013	0.0013	0.0011	0.0010	0.0011	0.0010	0.0009	0.0013	0.0011	0.0010			0.0013	0.0012	0.0012	0.0012		
0.250	0.0007	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	-	-	0.0007	0.0007	0.0007	0.0007	-	-
6.0mm	0.0015	0.0015	0.0015	0.0013	0.0011	0.0013	0.0011	0.0010	0.0015	0.0013	0.0011			0.0015	0.0015	0.0014	0.0014		
0.281	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008	0.0008	0.0007	0.0008	0.0008	0.0008	-	-	0.0008	0.0008	0.0008	0.0008	-	-
-	0.0018	0.0018	0.0018	0.0015	0.0013	0.0015	0.0013	0.0012	0.0018	0.0015	0.0013			0.0018	0.0018	0.0017	0.0017		
0.313	0.0009	0.0009	0.0009	0.0009	0.0008	0.0009	0.0009	0.0008	0.0009	0.0009	0.0009	-	-	0.0009	0.0008	0.0008	0.0009	-	-
8.0mm	0.0020	0.0020	0.0020	0.0017	0.0014	0.0017	0.0014	0.0013	0.0021	0.0017	0.0014			0.0021	0.0020	0.0019	0.0019		
0.375	0.0011	0.0011	0.0011	0.0011	0.0009	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011	-	-	0.0011	0.0010	0.0010	0.0011	-	-
10.0mm	0.0025	0.0025	0.0025	0.0021	0.0017	0.0021	0.0017	0.0016	0.0026	0.0021	0.0017			0.0026	0.0025	0.0023	0.0024		
0.438	0.0013	0.0013	0.0013	0.0011	0.0011	0.0013	0.0013	0.0011	0.0013	0.0013	0.0013	-	-	0.0013	0.0012	0.0012	0.0013	-	-
-	0.0031	0.0031	0.0031	0.0026	0.0021	0.0025	0.0021	0.0019	0.0032	0.0026	0.0021			0.0032	0.0031	0.0029	0.0030		
0.500	0.0014	0.0014	0.0014	0.0014	0.0012	0.0014	0.0014	0.0013	0.0014	0.0014	0.0014	-	-	0.0014	0.0013	0.0013	0.0014	-	-
12.0mm	0.0036	0.0036	0.0036	0.0030	0.0024	0.0030	0.0024	0.0022	0.0038	0.0030	0.0024			0.0038	0.0036	0.0034	0.0035		
0.563	0.0016	0.0016	0.0016	0.0016	0.0014	0.0016	0.0016	0.0014	0.0016	0.0016	0.0016	-	-	0.0016	0.0014	0.0014	0.0016	-	-
-	0.0042	0.0042	0.0042	0.0034	0.0027	0.0034	0.0027	0.0025	0.0045	0.0034	0.0027			0.0045	0.0042	0.0039	0.0040		
0.625	0.0018	0.0018	0.0018	0.0018	0.0015	0.0018	0.0018	0.0016	0.0018	0.0018	0.0018	-	-	0.0018	0.0016	0.0016	0.0018	-	-
16.0mm	0.0048	0.0048	0.0048	0.0039	0.0030	0.0039	0.0030	0.0028	0.0052	0.0039	0.0030			0.0052	0.0048	0.0045	0.0046		
0.750	0.0022	0.0022	0.0022	0.0022	0.0018	0.0022	0.0022	0.0019	0.0022	0.0022	0.0022	-	-	0.0022	0.0019	0.0019	0.0022	-	-
20.0mm	0.0061	0.0061	0.0061	0.0049	0.0037	0.0049	0.0037	0.0035	0.0066	0.0049	0.0037			0.0066	0.0061	0.0057	0.0058		

Note: HTA = High Temperature Alloys

Shoulder Milling / Profiling	Feed Correction Parameters	
	ae	Correction Factor
	Note: For copy milling & shoulder milling applications, refer to page B107.	

Solid Carbide

General Purpose - End Milling

Recommended Speeds

Speed v_c (SFM)

CB_NN4 / B_NN4 Series			Wear Resistance – +					
			Speed min. - max.					
Coolant Recommendation Recommended ● Possible ⦿					Uncoated Micrograin			PVD Micrograin
ISO	**Materials**	**Rm and Hardness**	💧	🚫	SU4500	💧	🚫	SP4556
P	**Unalloyed Steel**	<600 N/mm² <180 HBN	●		148 - 230	●	⦿	410 - 590
		<950 N/mm² <280 HBN			131 - 197			328 - 558
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●		1131 - 197	●	⦿	328 - 558
		950-1200 N/mm² 280-355 HBN			82 - 131			295 - 460
		1200-1400 N/mm² 355-415 HBN			49 - 98			262 - 394
M	**Stainless Steel**	Austenitic + Ferritic 300 series				●	⦿	279 - 394
		Martensitic 400 series						213 - 295
	PH Stainless	Refractory P.H.				●		164 - 262
K	**Cast Iron**	Grey GG-Ft	●		115 - 180	●	⦿	295 - 492
		Spheroidal-Ductile GGG-FGS			66 - 147			197 - 394
		Malleable GTS - MN/MP			66 - 131			164 - 328
N	**Aluminum & Alloys**	Aluminum & Alloys < 16% Si 116 HBN						
		Aluminum + Silicon > 16% Si 92 HBN						
S	**High Temperature Alloys**	Iron Based				●	⦿	131 - 295
		Cobalt Based						66 - 131
		Nickel Based						82 - 148
		Titanium Based						98 - 197
H	**Hard Materials**	Hard Steel >1400 N/mm² >415 HBN						
		Chilled Cast Iron >1400 N/mm² > 400 HBN						

STELLRAM

Solid Carbide

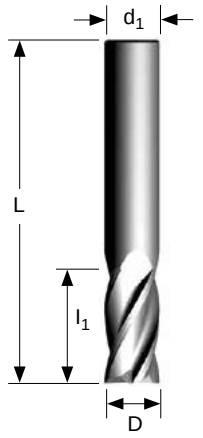
General Purpose - End Milling

Materials Application

SU4500

P	M	K	N	S	H

Uncoated



4 - Flute End Mill

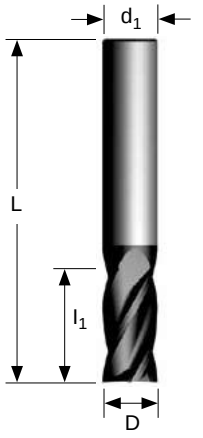
Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034063	**CE 0125LL4**	0.125_(1/8)	2.500	1.000	0.125	1.000	4	-	-	0.179
034064	**CE 0188LL4**	0.188_(3/16)	3.000	1.125	0.188	1.125	4	-	-	0.269
034065	**CE 0250LL4**	0.250_(1/4)	3.000	1.125	0.250	1.125	4	-	-	0.358
034066	**CE 0313LL4**	0.313_(5/16)	3.000	1.125	0.313	1.125	4	-	-	0.448
034067	**CE 0375LL4**	0.375_(3/8)	4.000	1.750	0.375	1.750	4	-	-	0.536
034068	**CE 0438LL4**	0.438_(7/16)	4.500	2.000	0.438	2.000	4	-	-	0.626
034069	**CE 0500LL4**	0.500_(1/2)	4.500	2.000	0.500	2.000	4	-	-	0.715
034070	**CE 0625LL4**	0.625_(5/8)	5.000	2.250	0.625	2.250	4	-	-	0.894
034071	**CE 0750LL4**	0.750_(3/4)	5.000	2.250	0.750	2.250	4	-	-	1.073

Materials Application

SP4556

P	M	K	N	S	H

PVD



4 - Flute End Mill

Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034649	**CE 0125LL4**	0.125_(1/8)	2.500	1.000	0.125	1.000	4	-	-	0.179
034650	**CE 0188LL4**	0.188_(3/16)	3.000	1.125	0.188	1.125	4	-	-	0.269
034651	**CE 0250LL4**	0.250_(1/4)	3.000	1.125	0.250	1.125	4	-	-	0.358
034652	**CE 0313LL4**	0.313_(5/16)	3.000	1.125	0.313	1.125	4	-	-	0.448
034653	**CE 0375LL4**	0.375_(3/8)	4.000	1.750	0.375	1.750	4	-	-	0.536
034654	**CE 0438LL4**	0.438_(7/16)	4.500	2.000	0.438	2.000	4	-	-	0.626
034655	**CE 0500LL4**	0.500_(1/2)	4.500	2.000	0.500	2.000	4	-	-	0.715
034656	**CE 0625LL4**	0.625_(5/8)	5.000	2.250	0.625	2.250	4	-	-	0.894
034657	**CE 0750LL4**	0.750_(3/4)	5.000	2.250	0.750	2.250	4	-	-	1.073

Technical Information

CE_LL4 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions					
Grade	Shoulder Milling					
	Roughing			Finishing		
	a_e%	a_p%	f_z	a_e%	a_p%	f_z
SU4500	0.1 - 0.3 D	0.5 - 3 D	Mid - High	0.05 - 0.1 D	0.5 - 3 D	Low - Mid
SP4556	0.1 - 0.3 D	0.5 - 3 D	Mid - High	0.05 - 0.1 D	0.5 - 3 D	Low - Mid

*** When using a_p max, a_e should not exceed 0.1 D**

Note: For trochoidal application details, refer to page B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

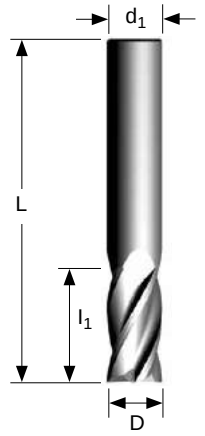
STELLRAM

Materials Application

SU4500

P	M	K	N	S	H

Uncoated



4 - Flute End Mill

Solid Carbide
General Purpose - End Milling

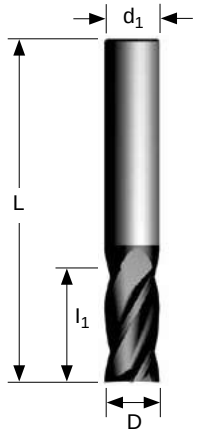
Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034305	**E 040LL4**	4.00	65.00	25.00	4.00	25.00	4	-	-	5.720
034306	**E 050LL4**	5.00	75.00	25.00	5.00	25.00	4	-	-	7.150
034307	**E 060LL4**	6.00	75.00	25.00	6.00	25.00	4	-	-	8.580
034313	**E 060XLXL4**	6.00	100.00	38.00	6.00	38.00	4	-	-	8.580
034308	**E 080LL4**	8.00	75.00	25.00	8.00	25.00	4	-	-	11.440
034314	**E 080XLXL4**	8.00	100.00	38.00	8.00	38.00	4	-	-	11.440
034309	**E 100LL4**	10.00	100.00	38.00	10.00	38.00	4	-	-	14.300
034315	**E 100XLXL4**	10.00	125.00	63.00	10.00	63.00	4	-	-	14.300
034310	**E 120LL4**	12.00	100.00	50.00	12.00	50.00	4	-	-	17.160
034316	**E 120XLXL4**	12.00	150.00	75.00	12.00	75.00	4	-	-	17.160
034311	**E 160LL4**	16.00	150.00	75.00	16.00	75.00	4	-	-	22.880
034312	**E 200LL4**	20.00	150.00	75.00	20.00	75.00	4	-	-	28.600

Materials Application

SP4556

P	M	K	N	S	H

PVD



4 - Flute End Mill

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034317	**E 060LL4**	6.00	75.00	25.00	6.00	25.00	4	-	-	8.580
034318	**E 080LL4**	8.00	75.00	25.00	8.00	25.00	4	-	-	11.440
034319	**E 100LL4**	10.00	100.00	38.00	10.00	38.00	4	-	-	14.300
034320	**E 120LL4**	12.00	100.00	50.00	12.00	50.00	4	-	-	17.160
034321	**E 160LL4**	16.00	150.00	75.00	16.00	75.00	4	-	-	22.880

Technical Information

Radial a_e and Axial a_p depth of cut range

Product	Dimensions (mm)					
Grade	Shoulder Milling					
	Roughing			Finishing		
	a_e%	a_p%	f_z	a_e%	a_p%	f_z
E_LL4						
SU4500	0.1 - 0.3 D	0.5 - 3 D	Mid - High	0.05 - 0.1 D	0.5 - 3 D	Low - Mid
SP4556	0.1 - 0.3 D	0.5 - 3 D	Mid - High	0.05 - 0.1 D	0.5 - 3 D	Low - Mid
E_XLXL4						
SU4500	0.1 - 0.3 D	1.0 - 4 D	Mid - High	0.05 - 0.1 D	1.0 - 4 D	Low - Mid
SP4556	0.1 - 0.3 D	1.0 - 4 D	Mid - High	0.05 - 0.1 D	1.0 - 4 D	Low - Mid

*** When using a_p max, a_e should not exceed 0.1 D**

Note: For trochoidal application details, refer to page B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

Solid Carbide
General Purpose - End Milling

Recommended Feeds

CE_LL4 / E_LL4 Feeds fz (ipt) - Slotting / Pocketing

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.125	0.0004	0.0004	0.0004	0.0004	0.0003	0.0004	0.0004	0.0003	0.0004	0.0004	0.0004	-	-	0.0004	0.0003	0.0003	0.0004	-	-
3.0mm	0.0006	0.0006	0.0006	0.0006	0.0005	0.0006	0.0005	0.0005	0.0006	0.0006	0.0005			0.0006	0.0006	0.0006	0.0006		
0.188	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	-	-
5.0mm	0.0010	0.0010	0.0010	0.0009	0.0008	0.0009	0.0008	0.0007	0.0010	0.0009	0.0008			0.0010	0.0010	0.0010	0.0010		
0.250	0.0007	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	-	-	0.0007	0.0007	0.0007	0.0007	-	-
6.0mm	0.0015	0.0015	0.0015	0.0013	0.0011	0.0013	0.0011	0.0010	0.0015	0.0013	0.0011			0.0015	0.0015	0.0014	0.0014		
0.313	0.0009	0.0009	0.0009	0.0009	0.0008	0.0009	0.0009	0.0008	0.0009	0.0009	0.0009	-	-	0.0009	0.0008	0.0008	0.0009	-	-
8.0mm	0.0020	0.0020	0.0020	0.0017	0.0014	0.0017	0.0014	0.0013	0.0021	0.0017	0.0014			0.0021	0.0020	0.0019	0.0019		
0.375	0.0011	0.0011	0.0011	0.0011	0.0009	0.0011	0.0011	0.0009	0.0011	0.0011	0.0009	-	-	0.0011	0.0010	0.0010	0.0011	-	-
10.0mm	0.0025	0.0025	0.0025	0.0021	0.0017	0.0021	0.0017	0.0016	0.0026	0.0021	0.0017			0.0026	0.0025	0.0023	0.0024		
0.438	0.0013	0.0013	0.0013	0.0013	0.0011	0.0013	0.0012	0.0011	0.0013	0.0013	0.0012	-	-	0.0013	0.0012	0.0012	0.0013	-	-
-	0.0031	0.0031	0.0031	0.0026	0.0021	0.0021	0.0021	0.0019	0.0032	0.0026	0.0021			0.0032	0.0031	0.0029	0.0030		
0.500	0.0014	0.0014	0.0014	0.0014	0.0012	0.0014	0.0014	0.0013	0.0014	0.0014	0.0014	-	-	0.0014	0.0013	0.0013	0.0014	-	-
12.0mm	0.0036	0.0036	0.0036	0.0030	0.0024	0.0030	0.0024	0.0022	0.0038	0.0030	0.0024			0.0038	0.0036	0.0034	0.0035		
0.625	0.0018	0.0018	0.0018	0.0018	0.0015	0.0018	0.0018	0.0016	0.0018	0.0018	0.0018	-	-	0.0018	0.0016	0.0016	0.0018	-	-
16.0mm	0.0048	0.0048	0.0048	0.0039	0.0030	0.0039	0.0030	0.0028	0.0052	0.0039	0.0030			0.0052	0.0048	0.0045	0.0046		
0.750	0.0022	0.0022	0.0022	0.0022	0.0018	0.0022	0.0022	0.0019	0.0022	0.0022	0.0022	-	-	0.0022	0.0019	0.0019	0.0022	-	-
20.0mm	0.0061	0.0061	0.0061	0.0049	0.0037	0.0049	0.0037	0.0035	0.0066	0.0049	0.0037			0.0066	0.0061	0.0057	0.0058		

Note: HTA = High Temperature Alloys

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	0.05 D	2.30 x f_z
	0.10 D	1.65 x f_z
	0.15 D	1.40 x f_z
	0.20 D	1.25 x f_z
	0.30 D	1.09 x f_z

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

STELLRAM

Solid Carbide

General Purpose - End Milling

Recommended Speeds

Speed v_c (SFM)

CE_LL4 / E_LL4 Series			Wear Resistance –					
			Speed min. - max.					
Coolant Recommendation Recommended ● Possible ⦿					Uncoated Micrograin			PVD Micrograin
ISO	**Materials**	**Rm and Hardness**	💧	🚫	SU4500	💧	🚫	SP4556
P	**Unalloyed Steel**	<600 N/mm² <180 HBN	●		148 - 230	●	⦿	246 - 361
		<950 N/mm² <280 HBN			131 - 197			197 - 328
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●		131 - 197	●	⦿	197 - 328
		950-1200 N/mm² 280-355 HBN			82 - 131			180 - 279
		1200-1400 N/mm² 355-415 HBN			49 - 98			164 - 230
M	**Stainless Steel**	Austenitic + Ferritic 300 series				●	⦿	164 - 230
		Martensitic 400 series						131 - 180
	PH Stainless	Refractory P.H.				●		98 - 148
K	**Cast Iron**	Grey GG-Ft	●		115 - 180	●	⦿	180 - 295
		Spheroidal-Ductile GGG-FGS			66 - 147			115 - 230
		Malleable GTS - MN/MP			66 - 131			98 - 197
N	**Aluminum & Alloys**	Aluminum & Alloys < 16% Si 116 HBN						
		Aluminum + Silicon > 16% Si 92 HBN						
S	**High Temperature Alloys**	Iron Based				●	⦿	98 - 230
		Cobalt Based						49 - 115
		Nickel Based						66 - 115
		Titanium Based						82 - 164
H	**Hard Materials**	Hard Steel >1400 N/mm² >415 HBN						
		Chilled Cast Iron >1400 N/mm² > 400 HBN						

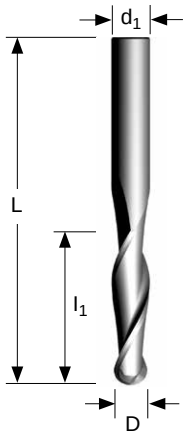
STELLRAM

Materials Application

SU4500

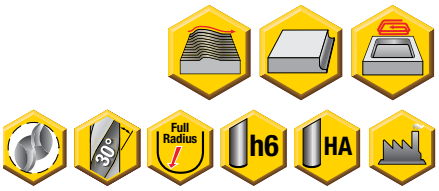
P	M	K	N	S	H

Uncoated



2 - Flute Ball Nose End Mill

Solid Carbide
General Purpose - End Milling



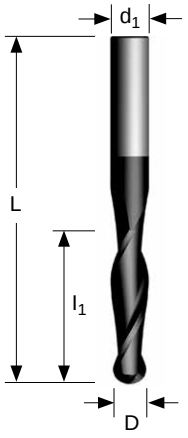
Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034056	**CB 0250LL2**	0.250_(1/4)	3.000	1.125	0.250	1.125	2	-	-	-
034057	**CB 0313LL2**	0.313_(5/16)	3.000	1.125	0.313	1.125	2	-	-	-
034058	**CB 0375LL2**	0.375_(3/8)	4.000	1.750	0.375	1.750	2	-	-	-
034059	**CB 0438LL2**	0.438_(7/16)	4.500	2.000	0.438	2.000	2	-	-	-
034060	**CB 0500LL2**	0.500_(1/2)	4.500	2.000	0.500	2.000	2	-	-	-
034061	**CB 0625LL2**	0.625_(5/8)	5.000	2.250	0.625	2.250	2	-	-	-
034062	**CB 0750LL2**	0.750_(3/4)	5.000	2.250	0.750	2.250	2	-	-	-

Materials Application

SP4556

P	M	K	N	S	H

PVD



2 - Flute Ball Nose End Mill

Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034731	**CB 0250LL2**	0.250_(1/4)	3.000	1.125	0.250	1.125	2	-	-	-
034732	**CB 0313LL2**	0.313_(5/16)	3.000	1.125	0.313	1.125	2	-	-	-
034733	**CB 0375LL2**	0.375_(3/8)	4.000	1.750	0.375	1.750	2	-	-	-
034734	**CB 0438LL2**	0.438_(7/16)	4.500	2.000	0.438	2.000	2	-	-	-
034735	**CB 0500LL2**	0.500_(1/2)	4.500	2.000	0.500	2.000	2	-	-	-
034736	**CB 0625LL2**	0.625_(5/8)	5.000	2.250	0.625	2.250	2	-	-	-
034737	**CB 0750LL2**	0.750_(3/4)	5.000	2.250	0.750	2.250	2	-	-	-

Technical Information

CB_LL2 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions (mm)					
Grade	Shoulder Milling					
	Roughing			Finishing		
	a_e%	a_p%	f_z	a_e%	a_p%	f_z
SU4500	0.05 - 0.1 D	0.5 - 2.8 D	Mid - High	0.01 - 0.05 D	0.5 - 2.8 D	Low - Mid
SP4556	0.05 - 0.1 D	0.5 - 2.8 D	Mid - High	1.0 - 3.5 D	0.5 - 2.8 D	Low - Mid

*** When using a_p max, a_e should not exceed 0.1 D**

Note: For copy milling & shoulder milling applications, refer to page B107.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

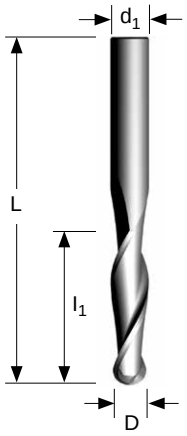
STELLRAM

Materials Application

SU4500

P	M	K	N	S	H
◆◆		◆			

Uncoated



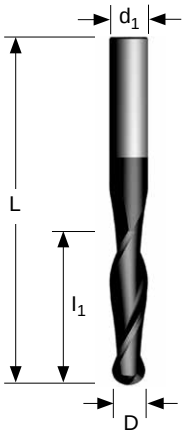
2 - Flute Ball Nose End Mill

Materials Application

SP4556

P	M	K	N	S	H
◆◆	◆◆	◆		◆	

PVD



2 - Flute Ball Nose End Mill

Solid Carbide

General Purpose - End Milling

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034296	**B 040LL2**	4.00	65.00	25.00	4.00	25.00	2	-	-	-
034297	**B 060LL2**	6.00	75.00	25.00	6.00	25.00	2	-	-	-
034301	**B 060XLXL2**	6.00	100.00	38.00	6.00	38.00	2	-	-	-
034298	**B 080LL2**	8.00	75.00	25.00	8.00	25.00	2	-	-	-
034302	**B 080XLXL2**	8.00	100.00	38.00	8.00	38.00	2	-	-	-
034299	**B 100LL2**	10.00	100.00	38.00	10.00	38.00	2	-	-	-
034303	**B 100XLXL2**	10.00	125.00	63.00	10.00	63.00	2	-	-	-
034300	**B 120LL2**	12.00	100.00	50.00	12.00	50.00	2	-	-	-
034304	**B 120XLXL2**	12.00	150.00	75.00	12.00	75.00	2	-	-	-

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034738	**B 040LL2**	4.00	65.00	25.00	4.00	25.00	2	-	-	-
034739	**B 060LL2**	6.00	75.00	25.00	6.00	25.00	2	-	-	-
034740	**B 060XLXL2**	6.00	100.00	38.00	6.00	38.00	2	-	-	-
034741	**B 080LL2**	8.00	75.00	25.00	8.00	25.00	2	-	-	-
034742	**B 080XLXL2**	8.00	100.00	38.00	8.00	38.00	2	-	-	-
034743	**B 100LL2**	10.00	100.00	38.00	10.00	38.00	2	-	-	-
034744	**B 100XLXL2**	10.00	125.00	63.00	10.00	63.00	2	-	-	-
034745	**B 120LL2**	12.00	100.00	50.00	12.00	50.00	2	-	-	-
034746	**B 120XLXL2**	12.00	150.00	75.00	12.00	75.00	2	-	-	-

Technical Information

Radial a_e and Axial a_p depth of cut range

Product	Dimensions (mm)					
Grade	Shoulder Milling					
	Roughing			Finishing		
	ae%	ap%	fz	ae%	ap%	fz
B_LL2						
SU4500	0.05 - 0.1 D	0.5 - 2.8 D	Mid - High	0.01 - 0.05 D	0.5 - 2.8 D	Low - Mid
SP4556	0.05 - 0.1 D	0.5 - 2.8 D	Mid - High	1.0 - 3.5 D	0.5 - 2.8 D	Low - Mid
B_XLXL2						
SU4500	0.05 - 0.1 D	0.5 - 2.8 D	Mid - High	0.01 - 0.05 D	0.5 - 2.8 D	Low - Mid
SP4556	0.05 - 0.1 D	0.5 - 2.8 D	Mid - High	1.0 - 3.5 D	0.5 - 2.8 D	Low - Mid

*** When using a_p max, a_e should not exceed 0.1 D**

Note: For copy milling & shoulder milling applications, refer to page B107.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

Solid Carbide
General Purpose - End Milling

Recommended Feeds

CB_LL2 / B_LL2 / B_XLXL2 Feeds fz (ipt) - Slotting / Pocketing

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
0.156	0.0005	0.0005	0.0004	0.0005	0.0004	0.0004	0.0005	0.0004	0.0005	0.0005	0.0005	-	-	0.0005	0.0004	0.0004	0.0004	-	-
4.0mm	0.0008	0.0008	0.0008	0.0008	0.0007	0.0008	0.0007	0.0006	0.0008	0.0008	0.0008			0.0008	0.0008	0.0008	0.0008		
0.250	0.0007	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	-	-	0.0007	0.0007	0.0007	0.0007	-	-
6.0mm	0.0015	0.0015	0.0015	0.0013	0.0011	0.0013	0.0011	0.0010	0.0015	0.0013	0.0011			0.0015	0.0014	0.0014	0.0014		
0.313	0.0009	0.0009	0.0009	0.0009	0.0008	0.0009	0.0009	0.0008	0.0009	0.0009	0.0009	-	-	0.0009	0.0008	0.0008	0.0008	-	-
8.0mm	0.0020	0.0020	0.0020	0.0017	0.0014	0.0017	0.0014	0.0013	0.0021	0.0017	0.0014			0.0021	0.0019	0.0019	0.0019		
0.375	0.0011	0.0011	0.0011	0.0011	0.0009	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011	-	-	0.0011	0.0010	0.0010	0.0011	-	-
10.0mm	0.0025	0.0025	0.0025	0.0021	0.0017	0.0021	0.0017	0.0016	0.0026	0.0021	0.0017			0.0026	0.0023	0.0023	0.0024		
0.438	0.0013	0.0013	0.0013	0.0011	0.0011	0.0013	0.0013	0.0011	0.0013	0.0013	0.0013	-	-	0.0013	0.0012	0.0012	0.0013	-	-
-	0.0031	0.0031	0.0031	0.0026	0.0021	0.0025	0.0021	0.0019	0.0032	0.0026	0.0021			0.0032	0.0029	0.0029	0.0030		
0.500	0.0014	0.0014	0.0014	0.0014	0.0012	0.0014	0.0014	0.0013	0.0018	0.0014	0.0014	-	-	0.0018	0.0013	0.0013	0.0014	-	-
12.0mm	0.0036	0.0036	0.0036	0.0030	0.0024	0.0030	0.0024	0.0022	0.0038	0.0030	0.0024			0.0038	0.0034	0.0034	0.0035		
0.625	0.0018	0.0018	0.0018	0.0018	0.0015	0.0018	0.0018	0.0016	0.0018	0.0018	0.0018	-	-	0.0018	0.0016	0.0016	0.0018	-	-
16.0mm	0.0048	0.0048	0.0048	0.0039	0.0030	0.0039	0.0030	0.0028	0.0052	0.0039	0.0030			0.0052	0.0045	0.0045	0.0046		
0.750	0.0022	0.0022	0.0022	0.0022	0.0018	0.0022	0.0022	0.0019	0.0022	0.0022	0.0022	-	-	0.0022	0.0019	0.0019	0.0022	-	-
20.0mm	0.0061	0.0061	0.0061	0.0049	0.0037	0.0049	0.0037	0.0035	0.0066	0.0049	0.0037			0.0066	0.0057	0.0057	0.0058		

Note: HTA = High Temperature Alloys

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	Note: For copy milling & shoulder milling applications, refer to page B107.	

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

STELLRAM

Solid Carbide

General Purpose - End Milling

Recommended Speeds

Speed v_c (SFM)

CB_LL2 / B_LL2 / B_XLXL2 Series			Wear Resistance →					
			Speed min. - max.					
Coolant Recommendation Recommended ● Possible ⦿					Uncoated Micrograin			PVD Micrograin
ISO	Materials	Rm and Hardness	💧	🚫	SU4500	💧	🚫	SP4556
P	Unalloyed Steel	<600 N/mm² <180 HBN	●		148 - 230	●	⦿	246 - 361
		<950 N/mm² <280 HBN			131 - 197			197 - 328
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●		131 - 197	●	⦿	197 - 328
		950-1200 N/mm² 280-355 HBN			82 - 131			180 - 279
		1200-1400 N/mm² 355-415 HBN			49 - 98			164 - 230
M	Stainless Steel	Austenitic + Ferritic 300 series				●	⦿	164 - 230
		Martensitic 400 series						131 - 180
	PH Stainless	Refractory P.H.				●		98 - 148
K	Cast Iron	Grey GG-Ft	●		115 - 180	●	⦿	180 - 295
		Spheroidal-Ductile GGG-FGS			66 - 147			115 - 230
		Malleable GTS - MN/MP			66 - 131			98 - 197
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN						
		Aluminum + Silicon > 16% Si 92 HBN						
S	High Temperature Alloys	Iron Based				●	⦿	98 - 230
		Cobalt Based						49 - 115
		Nickel Based						66 - 115
		Titanium Based						82 - 164
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN						
		Chilled Cast Iron >1400 N/mm² > 400 HBN						

STELLRAM

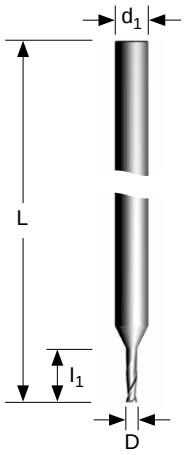
Solid Carbide
General Purpose - Miniature

Materials Application

SU4500

P	M	K	N	S	H

Uncoated



2 - Flute End Mill

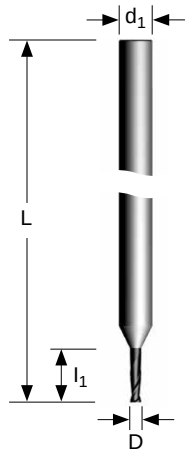
Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
033906	**CE 0063NTN2**	0.063 (1/16)	1.500	0.188	0.125	0.188	2	0.090	0.123	0.090
033907	**CE 0094NTN2**	0.094 (3/32)	1.500	0.281	0.125	0.281	2	0.134	0.183	0.134

Materials Application

SP4556

P	M	K	N	S	H

PVD



2 - Flute End Mill

Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
033921	**CE 0063NTN2**	0.063 (1/16)	1.500	0.188	0.125	0.125	2	0.090	0.123	0.090
033922	**CE 0094NTN2**	0.094 (3/32)	1.500	0.281	0.125	0.281	2	0.134	0.183	0.134

Technical Information

CE_NTN2 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions		
Grade	Shoulder Milling		Slotting
	a_e%	a_p%	a_p%
SU4500	0.05 - 0.2 D	0.05 - 0.2 D	0.1 - 0.3 D
SP4556	0.05 - 0.2 D	0.05 - 0.2 D	0.1 - 0.3 D

Slotting - Square Ended

*** When using a_p max, a_e should not exceed 0.05 D**

Note: For ramping angle, helical a_p max. and trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

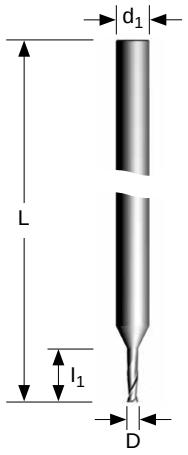
Solid Carbide
General Purpose - Miniature

Materials Application

SU4500

P	M	K	N	S	H
◆◆		◆			

Uncoated



2 - Flute End Mill

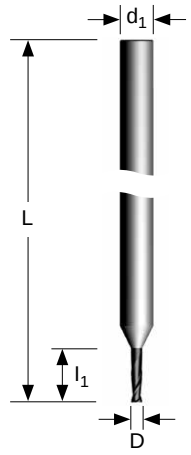
Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min	Helical Hole max	Trochoidal min
034138	**E 004NTN2**	0.40	38.00	1.20	3.00	1.20	2	0.57	0.78	0.57
034139	**E 005NTN2**	0.50	38.00	1.50	3.00	1.50	2	0.72	0.98	0.72
034140	**E 006NTN2**	0.60	38.00	1.80	3.00	1.80	2	0.86	1.17	0.86
034141	**E 007NTN2**	0.70	38.00	2.10	3.00	2.10	2	1.00	1.37	1.00
034142	**E 008NTN2**	0.80	38.00	2.40	3.00	2.40	2	1.14	1.56	1.14
034143	**E 009NTN2**	0.90	38.00	2.70	3.00	2.70	2	1.29	1.76	1.29
034144	**E 010NTN2**	1.00	38.00	3.00	3.00	3.00	2	1.43	1.95	1.43
034145	**E 012NTN2**	1.20	38.00	3.60	3.00	3.60	2	1.72	2.34	1.72
034146	**E 015NTN2**	1.50	38.00	5.00	3.00	5.00	2	2.15	2.93	2.15
034147	**E 020NTN2**	2.00	38.00	6.00	3.00	6.00	2	2.86	3.90	2.86
034148	**E 025NTN2**	2.50	38.00	7.00	3.00	7.00	2	3.58	4.88	3.58

Materials Application

SP4556

P	M	K	N	S	H
◆◆	◆◆	◆		◆	

PVD



2 - Flute End Mill

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min	Helical Hole max	Trochoidal min
034158	**E 004NTN2**	0.40	38.00	1.20	3.00	1.20	2	0.57	0.78	0.57
034159	**E 005NTN2**	0.50	38.00	1.50	3.00	1.50	2	0.72	0.98	0.72
034160	**E 006NTN2**	0.60	38.00	1.80	3.00	1.80	2	0.86	1.17	0.86
034161	**E 007NTN2**	0.70	38.00	2.10	3.00	2.10	2	1.00	1.37	1.00
034162	**E 008NTN2**	0.80	38.00	2.40	3.00	2.40	2	1.14	1.56	1.14
034163	**E 009NTN2**	0.90	38.00	2.70	3.00	2.70	2	1.29	1.76	1.29
034164	**E 010NTN2**	1.00	38.00	3.00	3.00	3.00	2	1.43	1.95	1.43
034165	**E 012NTN2**	1.20	38.00	3.60	3.00	3.60	2	1.72	2.34	1.72
034166	**E 015NTN2**	1.50	38.00	5.00	3.00	5.00	2	2.15	2.93	2.15
034167	**E 020NTN2**	2.00	38.00	6.00	3.00	6.00	2	2.86	3.90	2.86
034168	**E 025NTN2**	2.50	38.00	7.00	3.00	7.00	2	3.58	4.88	3.58

Technical Information

E_NTN2 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions		
Grade	Shoulder Milling		Slotting
	a_e%	a_p%	a_p%
SU4500	0.05 - 0.2 D	0.05 - 0.2 D	0.1 - 0.3 D
SP4556	0.05 - 0.2 D	0.05 - 0.2 D	0.1 - 0.3 D

*** When using a_p max, a_e should not exceed 0.05 D**

Slotting - Square Ended

Note: For ramping angle, helical a_p max. and trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

Solid Carbide
General Purpose - Miniature

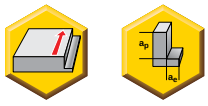
Recommended Feeds

CE_NTN2 / E_NTN2 Feeds fz (ipt) - Slotting / Pocketing

D Inch / Metric / Range	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
- 0.40	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	-	-	0.0001	0.0001	0.0001	0.0001	-	-
- 0.50	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	-	-	0.0002	0.0002	0.0002	0.0002	-	-
- 0.60	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	-	-	0.0002	0.0002	0.0002	0.0002	-	-
- 0.70	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	-	-	0.0002	0.0002	0.0002	0.0002	-	-
- 0.80	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	-	-	0.0003	0.0003	0.0003	0.0003	-	-
- 0.90	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	-	-	0.0003	0.0003	0.0003	0.0003	-	-
- 1.00	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	-	-	0.0004	0.0004	0.0004	0.0004	-	-
- 1.20	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	-	-	0.0004	0.0004	0.0004	0.0004	-	-
0.063 1.50	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	-	-
- 2.00	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	-	-
0.093 2.50	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	-	-

Note: HTA = High Temperature Alloys

Note: Due to the small diameter of the miniature end mill line, the feed rate has been reduced to a starting value only.

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	0.10 D	1.65 x f_z
	0.20 D	1.25 x f_z

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

STELLRAM

Solid Carbide
General Purpose - Miniature

Recommended Speeds

Speed v_c (SFM)

CE_NTN2 / E_NTN2 Series			Wear Resistance – +					
			Speed min. - max.					
Coolant Recommendation Recommended ● Possible ⦿					Uncoated Micrograin			PVD Micrograin
ISO	**Materials**	**Rm and Hardness**	💧	🚫	SU4500	💧	🚫	SP4556
P	**Unalloyed Steel**	<600 N/mm² <180 HBN	●		240 - 360	●	⦿	410 - 590
		<950 N/mm² <280 HBN			197 - 328			328 - 558
	Alloyed Steel	700-950 N/mm² 200-280 HBN			197 - 328			328 - 558
		950-1200 N/mm² 280-355 HBN	●		131 - 230	●	⦿	295 - 460
		1200-1400 N/mm² 355-415 HBN			66 - 148			262 - 394
M	**Stainless Steel**	Austenitic + Ferritic 300 series				●	⦿	279 - 394
		Martensitic 400 series						213 - 295
	PH Stainless	Refractory P.H.				●		164 - 262
K	**Cast Iron**	Grey GG-Ft	●		180 - 295	●	⦿	295 - 492
		Spheroidal-Ductile GGG-FGS			115 - 230			197 - 394
		Malleable GTS - MN/MP			98 - 197			164 - 328
N	**Aluminum & Alloys**	Aluminum & Alloys < 16% Si 116 HBN						
		Aluminum + Silicon > 16% Si 92 HBN						
S	**High Temperature Alloys**	Iron Based				●	⦿	131 - 295
		Cobalt Based						66 - 131
		Nickel Based						82 - 148
		Titanium Based						98 - 197
H	**Hard Materials**	Hard Steel >1400 N/mm² >415 HBN						
		Chilled Cast Iron >1400 N/mm² > 400 HBN						

When calculating rotation speed (RPM), use V_C recommendations above.
If the calculated RPM exceeds spindle capacity, use maximum spindle speed available.
When using rotation speeds above 25,000 RPM, ensure a balanced work holding assembly is utilized.

STELLRAM

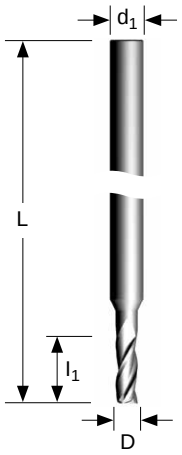
Solid Carbide
General Purpose - Miniature

Materials Application

SU4500

P	M	K	N	S	H

Uncoated



3 - Flute End Mill

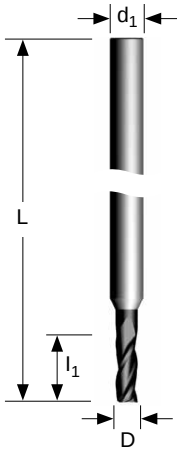
Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
033936	**CE 0063NTN3**	0.063 (1/16)	1.500	0.188	0.125	0.188	3	0.090	0.123	0.090
033937	**CE 0094NTN3**	0.094 (3/32)	1.500	0.281	0.125	0.281	3	0.134	0.183	0.134

Materials Application

SP4556

P	M	K	N	S	H

PVD



3 - Flute End Mill

Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
033951	**CE 0063NTN3**	0.063 (1/16)	1.500	0.188	0.125	0.188	3	0.090	0.123	0.090
033952	**CE 0094NTN3**	0.094 (3/32)	1.500	0.281	0.125	0.281	3	0.134	0.183	0.134

Technical Information

CE_NTN3 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions		
Grade	Shoulder Milling		Slotting
	ae%	ap%	ap%
SU4500	0.05 - 0.2 D	0.05 - 0.2 D	0.1 - 0.3 D
SP4556	0.05 - 0.2 D	0.05 - 0.2 D	0.1 - 0.3 D

Slotting - Square Ended

*** When using a_p max, a_e should not exceed 0.05 D**

Note: For ramping angle, helical a_p max. and trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

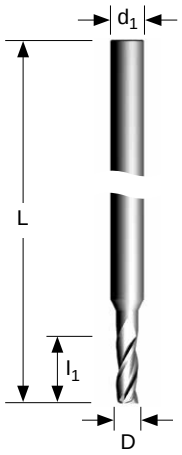
Solid Carbide
General Purpose - Miniature

Materials Application

SU4500

P	M	K	N	S	H
◆◆		◆			

Uncoated



3 - Flute End Mill

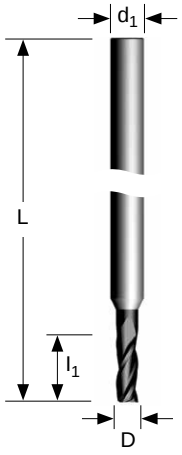
Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034178	**E 010NTN3**	1.00	38.00	3.00	3.00	3.00	3	1.43	1.95	1.43
034179	**E 015NTN3**	1.50	38.00	5.00	3.00	5.00	3	2.15	2.93	2.15
034180	**E 020NTN3**	2.00	38.00	6.00	3.00	6.00	3	2.86	3.90	2.86
034181	**E 025NTN3**	2.50	38.00	7.00	3.00	7.00	3	3.58	4.88	3.58

Materials Application

SP4556

P	M	K	N	S	H
◆◆	◆◆	◆		◆	

PVD



3 - Flute End Mill

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034191	**E 010NTN3**	1.00	38.00	3.00	3.00	3.00	3	1.43	1.95	1.43
034192	**E 015NTN3**	1.50	38.00	5.00	3.00	5.00	3	2.15	2.93	2.15
034193	**E 020NTN3**	2.00	38.00	6.00	3.00	6.00	3	2.86	3.90	2.86
034194	**E 025NTN3**	2.50	38.00	7.00	3.00	7.00	3	3.58	4.88	3.58

Technical Information

E_NTN3 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions		
Grade	Shoulder Milling		Slotting
	a_e%	a_p%	a_p%
SU4500	0.05 - 0.2 D	0.05 - 0.2 D	0.1 - 0.3 D
SP4556	0.05 - 0.2 D	0.05 - 0.2 D	0.1 - 0.3 D

Slotting - Square Ended

*** When using a_p max, a_e should not exceed 0.05 D**

Note: For ramping angle, helical a_p max. and trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

Solid Carbide
General Purpose - Miniature

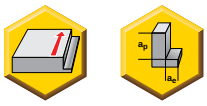
Recommended Feeds

CE_NTN3 / E_NTN3 Feeds fz (ipt) - Slotting / Pocketing

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
- 1.00	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	-	-	0.0004	0.0004	0.0004	0.0004	-	-
0.063 1.50	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	-	-
- 2.00	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	-	-
0.093 2.50	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	-	-

Note: HTA = High Temperature Alloys

Note: Due to the small diameter of the miniature end mill line, the feed rate has been reduced to a starting value only.

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	0.10 D	1.65 x f_z
	0.20 D	1.25 x f_z

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

STELLRAM

Solid Carbide
General Purpose - Miniature

Recommended Speeds

Speed v_c (SFM)

CE_NTN3 / E_NTN3 Series			Wear Resistance – +					
			Speed min. - max.					
Coolant Recommendation Recommended ● Possible ⦿					Uncoated Micrograin			PVD Micrograin
ISO	Materials	Rm and Hardness	💧	🚫	SU4500	💧	🚫	SP4556
P	Unalloyed Steel	<600 N/mm² <180 HBN	●		240 - 360	●	⦿	410 - 590
		<950 N/mm² <280 HBN			197 - 328			328 - 558
	Alloyed Steel	700-950 N/mm² 200-280 HBN			197 - 328			328 - 558
		950-1200 N/mm² 280-355 HBN	●		131 - 230	●	⦿	295 - 460
		1200-1400 N/mm² 355-415 HBN			66 - 148			262 - 394
M	Stainless Steel	Austenitic + Ferritic 300 series				●	⦿	279 - 394
		Martensitic 400 series						213 - 295
	PH Stainless	Refractory P.H.				●		164 - 262
K	Cast Iron	Grey GG-Ft	●		180 - 295	●	⦿	295 - 492
		Spheroidal-Ductile GGG-FGS			115 - 230			197 - 394
		Malleable GTS - MN/MP			98 - 197			164 - 328
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN						
		Aluminum + Silicon > 16% Si 92 HBN						
S	High Temperature Alloys	Iron Based				●	⦿	131 - 295
		Cobalt Based						66 - 131
		Nickel Based						82 - 148
		Titanium Based						98 - 197
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN						
		Chilled Cast Iron >1400 N/mm² > 400 HBN						

When calculating rotation speed (RPM), use V_C recommendations above.
If the calculated RPM exceeds spindle capacity, use maximum spindle speed available.
When using rotation speeds above 25,000 RPM, ensure a balanced work holding assembly is utilized.

STELLRAM

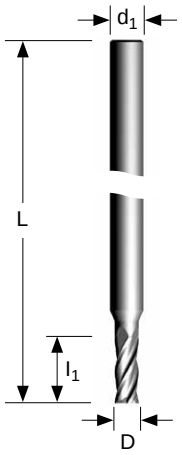
Solid Carbide
General Purpose - Miniature

Materials Application

SU4500

P	M	K	N	S	H

Uncoated



4 - Flute End Mill

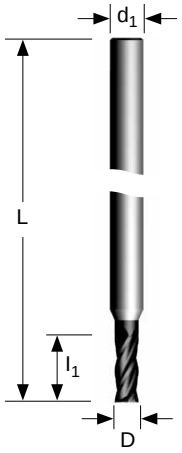
Inch Product		Dimensions (inch)							
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max	Trochoidal min
033966	**CE 0063NTN4**	0.063 (1/16)	1.500	0.188	0.125	0.188	4	- -	0.090
033967	**CE 0094NTN4**	0.094 (3/32)	1.500	0.281	0.125	0.281	4	- -	0.134

Materials Application

SP4556

P	M	K	N	S	H

PVD



4 - Flute End Mill

Inch Product		Dimensions (inch)							
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max	Trochoidal min
033981	**CE 0063NTN4**	0.063 (1/16)	1.500	0.188	0.125	0.188	4	- -	0.090
033982	**CE 0094NTN4**	0.094 (3/32)	1.500	0.281	0.125	0.281	4	- -	0.134

Technical Information

CE_NTN4 - Radial a_e and Axial a_p depth of cut range		
Product	Dimensions	
Grade	Shoulder Milling	
	a_e%	a_p%
SU4500	0.05 - 0.2 D	0.05 - 0.2 D
SP4556	0.05 - 0.2 D	0.05 - 0.2 D

*** When using a_p max, a_e should not exceed 0.05 D**

Note: For ramping angle, helical a_p max. and trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

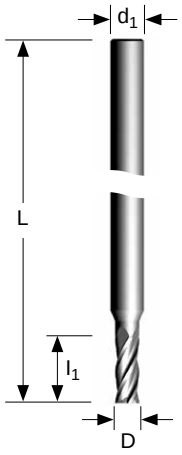
Solid Carbide
General Purpose - Miniature

Materials Application

SU4500

P	M	K	N	S	H
◆◆		◆			

Uncoated



4 - Flute End Mill

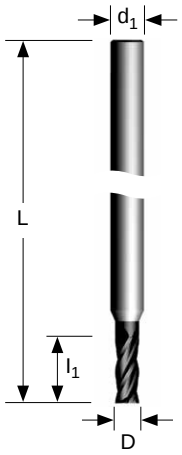
Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034204	**E 010NTN4**	1.00	38.00	3.00	3.00	3.00	4	-	-	1.43
034205	**E 015NTN4**	1.50	38.00	5.00	3.00	5.00	4	-	-	2.15
034206	**E 020NTN4**	2.00	38.00	6.00	3.00	6.00	4	-	-	2.86

Materials Application

SP4556

P	M	K	N	S	H
◆◆	◆◆	◆		◆	

PVD



4 - Flute End Mill

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034216	**E 010NTN4**	1.00	38.00	3.00	3.00	3.00	4	-	-	1.43
034217	**E 015NTN4**	1.50	38.00	5.00	3.00	5.00	4	-	-	2.15
034218	**E 020NTN4**	2.00	38.00	6.00	3.00	6.00	4	-	-	2.86

Technical Information

E_NTN4 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions	
Grade	Shoulder Milling	
	a_e%	a_p%
SU4500	0.05 - 0.2 D	0.05 - 0.2 D
SP4556	0.05 - 0.2 D	0.05 - 0.2 D

*** When using a_p max, a_e should not exceed 0.05 D**

Note: For ramping angle, helical a_p max. and trochoidal application details, refer to pages B105 - B106.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

Solid Carbide
General Purpose - Miniature

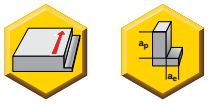
Recommended Feeds

CE_NTN4 / E_NTN4 Feeds fz (ipt) - Shoulder Milling

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
- 1.00	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	-	-	0.0004	0.0004	0.0004	0.0004	-	-
0.063 1.50	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	-	-	0.0006	0.0006	0.0006	0.0006	-	-
- 2.00	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	-	-	0.0006	0.0006	0.0006	0.0006	-	-
0.093 2.50	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	-	-	0.0006	0.0006	0.0006	0.0006	-	-

Note: HTA = High Temperature Alloys

Note: Due to the small diameter of the miniature end mill line, the feed rate has been reduced to a starting value only.

Shoulder Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	0.10 D	1.65 x f_z
	0.20 D	1.25 x f_z

For a_e less than a_e max, use correction factors stated above.
For a_e max, use feeds stated above.

STELLRAM

Solid Carbide
General Purpose - Miniature

Recommended Speeds

Speed v_c (SFM)

CE_NTN4 / E_NTN4 Series			Wear Resistance – +					
			Speed min. - max.					
Coolant Recommendation Recommended ● Possible ⦿					Uncoated Micrograin			PVD Micrograin
ISO	**Materials**	**Rm and Hardness**	💧	🚫	SU4500	💧	🚫	SP4556
P	**Unalloyed Steel**	<600 N/mm² <180 HBN	●		240 - 360	●	⦿	410 - 590
		<950 N/mm² <280 HBN			197 - 328			328 - 558
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●		197 - 328	●	⦿	328 - 558
		950-1200 N/mm² 280-355 HBN			131 - 230			295 - 460
		1200-1400 N/mm² 355-415 HBN			66 - 148			262 - 394
M	**Stainless Steel**	Austenitic + Ferritic 300 series				●	⦿	279 - 394
		Martensitic 400 series						213 - 295
	PH Stainless	Refractory P.H.				●		164 - 262
K	**Cast Iron**	Grey GG-Ft	●		180 - 295	●	⦿	295 - 492
		Spheroidal-Ductile GGG-FGS			115 - 230			197 - 394
		Malleable GTS - MN/MP			98 - 197			164 - 328
N	**Aluminum & Alloys**	Aluminum & Alloys < 16% Si 116 HBN						
		Aluminum + Silicon > 16% Si 92 HBN						
S	**High Temperature Alloys**	Iron Based				●	⦿	131 - 295
		Cobalt Based						66 - 131
		Nickel Based						82 - 148
		Titanium Based						98 - 197
H	**Hard Materials**	Hard Steel >1400 N/mm² >415 HBN						
		Chilled Cast Iron >1400 N/mm² > 400 HBN						

When calculating rotation speed (RPM), use V_C recommendations above.
If the calculated RPM exceeds spindle capacity, use maximum spindle speed available.
When using rotation speeds above 25,000 RPM, ensure a balanced work holding assembly is utilized.

STELLRAM

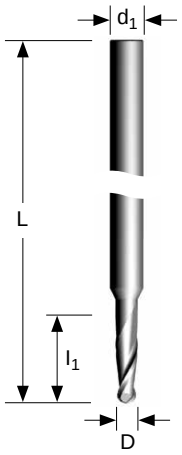
Solid Carbide
General Purpose - Miniature

Materials Application

SU4500

P	M	K	N	S	H

Uncoated



2 - Flute Ball Nose End Mill

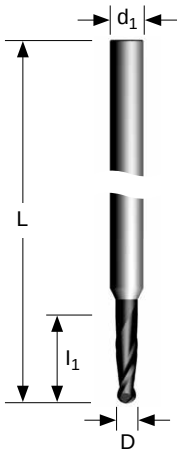
Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
033996	**CB 0063NTN2**	0.063 (1/16)	1.500	0.188	0.125	0.188	2	-	-	-
033997	**CB 0094NTN2**	0.094 (3/32)	1.500	0.281	0.125	0.281	2	-	-	-

Materials Application

SP4556

P	M	K	N	S	H

PVD



2 - Flute Ball Nose End Mill

Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034011	**CB 0063NTN2**	0.063 (1/16)	1.500	0.188	0.125	0.188	2	-	-	-
034012	**CB 0094NTN2**	0.094 (3/32)	1.500	0.281	0.125	0.281	2	-	-	-

Technical Information

CB_NTN2 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions		
Grade	Shoulder Milling		Slotting
	a_e%	a_p%	a_p%
SU4500	0.05 - 0.2 D	0.05 - 0.2 D	0.1 - 0.3 D
SP4556	0.05 - 0.2 D	0.05 - 0.2 D	0.1 - 0.3 D

*** When using a_p max, a_e should not exceed 0.05 D**

Slotting - Ball Nosed

Note: For copy milling & shoulder milling applications, refer to page B107.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

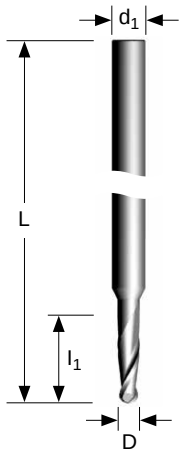
Solid Carbide
General Purpose - Miniature

Materials Application

SU4500

P	M	K	N	S	H
◆◆		◆			

Uncoated



2 - Flute Ball Nose End Mill

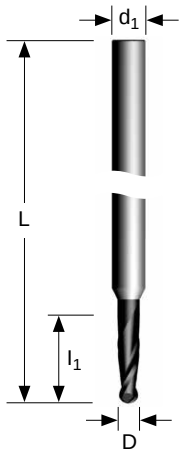
Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034245	**B 004NTN2**	0.40	38.00	1.20	3.00	1.20	2	-	-	-
034246	**B 005NTN2**	0.50	38.00	1.50	3.00	1.50	2	-	-	-
034247	**B 006NTN2**	0.60	38.00	1.80	3.00	1.80	2	-	-	-
034248	**B 007NTN2**	0.70	38.00	2.10	3.00	2.10	2	-	-	-
034249	**B 008NTN2**	0.80	38.00	2.40	3.00	2.40	2	-	-	-
034250	**B 009NTN2**	0.90	38.00	2.70	3.00	2.70	2	-	-	-
034251	**B 010NTN2**	1.00	38.00	3.00	3.00	3.00	2	-	-	-
034252	**B 012NTN2**	1.20	38.00	3.60	3.00	3.60	2	-	-	-
034253	**B 015NTN2**	1.50	38.00	5.00	3.00	5.00	2	-	-	-
034254	**B 020NTN2**	2.00	38.00	6.00	3.00	6.00	2	-	-	-
034255	**B 025NTN2**	2.50	38.00	7.00	3.00	7.00	2	-	-	-

Materials Application

SP4556

P	M	K	N	S	H
◆◆	◆◆	◆		◆	

PVD



2 - Flute Ball Nose End Mill

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034265	**B 004NTN2**	0.40	38.00	1.20	3.00	1.20	2	-	-	-
034266	**B 005NTN2**	0.50	38.00	1.50	3.00	1.50	2	-	-	-
034267	**B 006NTN2**	0.60	38.00	1.80	3.00	1.80	2	-	-	-
034268	**B 007NTN2**	0.70	38.00	2.10	3.00	2.10	2	-	-	-
034269	**B 008NTN2**	0.80	38.00	2.40	3.00	2.40	2	-	-	-
034270	**B 009NTN2**	0.90	38.00	2.70	3.00	2.70	2	-	-	-
034271	**B 010NTN2**	1.00	38.00	3.00	3.00	3.00	2	-	-	-
034272	**B 012NTN2**	1.20	38.00	3.60	3.00	3.60	2	-	-	-
034273	**B 015NTN2**	1.50	38.00	5.00	3.00	5.00	2	-	-	-
034274	**B 020NTN2**	2.00	38.00	6.00	3.00	6.00	2	-	-	-
034275	**B 025NTN2**	2.50	38.00	7.00	3.00	7.00	2	-	-	-

Technical Information

B_NTN2 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions		
Grade	Shoulder Milling		Slotting
	a_e%	a_p%	a_p%
SU4500	0.05 - 0.2 D	0.05 - 0.2 D	0.1 - 0.3 D
SP4556	0.05 - 0.2 D	0.05 - 0.2 D	0.1 - 0.3 D

Slotting - Ball Nosed

*** When using a_p max, a_e should not exceed 0.05 D**

Note: For copy milling & shoulder milling applications, refer to page B107.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

Solid Carbide
General Purpose - Miniature

Recommended Feeds

CB_NTN2 / B_NTN2 Feeds fz (ipt) - Slotting / Profiling

D Inch / Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
- 0.40	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	-	-	0.0001	0.0001	0.0001	0.0001	-	-
- 0.50	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	-	-	0.0002	0.0002	0.0002	0.0002	-	-
- 0.60	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	-	-	0.0002	0.0002	0.0002	0.0002	-	-
- 0.70	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	-	-	0.0002	0.0002	0.0002	0.0002	-	-
- 0.80	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	-	-	0.0003	0.0003	0.0003	0.0003	-	-
- 0.90	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	-	-	0.0003	0.0003	0.0003	0.0003	-	-
- 1.00	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	-	-	0.0004	0.0004	0.0004	0.0004	-	-
- 1.20	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	-	-	0.0004	0.0004	0.0004	0.0004	-	-
0.063 1.50	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	-	-
- 2.00	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	-	-
0.093 2.50	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	-	-	0.0005	0.0005	0.0005	0.0005	-	-

Note: HTA = High Temperature Alloys

Note: Due to the small diameter of the miniature end mill line, the feed rate has been reduced to a starting value only.

Copy Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
	Note: For copy milling & shoulder milling applications, refer to page B107.	

STELLRAM

Solid Carbide
General Purpose - Miniature

Recommended Speeds

Speed v_c (SFM)

CB_NTN2 / B_NTN2 Series			Wear Resistance – +					
			Speed min. - max.					
Coolant Recommendation Recommended ● Possible ⦿					Uncoated Micrograin			PVD Micrograin
ISO	**Materials**	**Rm and Hardness**	💧	🚫	SU4500	💧	🚫	SP4556
P	**Unalloyed Steel**	<600 N/mm² <180 HBN	●		240 - 360	●	⦿	410 - 590
		<950 N/mm² <280 HBN			197 - 328			328 - 558
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●		197 - 328	●	⦿	328 - 558
		950-1200 N/mm² 280-355 HBN			131 - 230			295 - 460
		1200-1400 N/mm² 355-415 HBN			66 - 148			262 - 394
M	**Stainless Steel**	Austenitic + Ferritic 300 series				●	⦿	279 - 394
		Martensitic 400 series						213 - 295
	PH Stainless	Refractory P.H.				●		164 - 262
K	**Cast Iron**	Grey GG-Ft	●		180 - 295	●	⦿	295 - 492
		Spheroidal-Ductile GGG-FGS			115 - 230			197 - 394
		Malleable GTS - MN/MP			98 - 197			164 - 328
N	**Aluminum & Alloys**	Aluminum & Alloys < 16% Si 116 HBN						
		Aluminum + Silicon > 16% Si 92 HBN						
S	**High Temperature Alloys**	Iron Based				●	⦿	131 - 295
		Cobalt Based						66 - 131
		Nickel Based						82 - 148
		Titanium Based						98 - 197
H	**Hard Materials**	Hard Steel >1400 N/mm² >415 HBN						
		Chilled Cast Iron >1400 N/mm² > 400 HBN						

When calculating rotation speed (RPM), use V_C recommendations above.
If the calculated RPM exceeds spindle capacity, use maximum spindle speed available.
When using rotation speeds above 25,000 RPM, ensure a balanced work holding assembly is utilized.

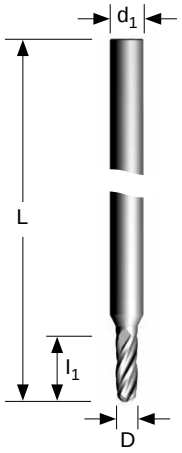
STELLRAM

Materials Application

SU4500

P	M	K	N	S	H

Uncoated



4 - Flute Ball Nose End Mill

Solid Carbide
General Purpose - Miniature

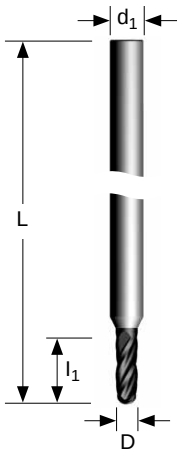
Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034026	**CB 0063NTN4**	0.063 (1/16)	1.500	0.188	0.125	0.188	4	-	-	-
034027	**CB 0094NTN4**	0.094 (3/32)	1.500	0.281	0.125	0.281	4	-	-	-

Materials Application

SP4556

P	M	K	N	S	H

PVD



4 - Flute Ball Nose End Mill

Inch Product		Dimensions (inch)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034705	**CB 0063NTN4**	0.063 (1/16)	1.500	0.188	0.125	0.188	4	-	-	-
034706	**CB 0094NTN4**	0.094 (3/32)	1.500	0.281	0.125	0.281	4	-	-	-

Technical Information

CB_NTN4 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions	
Grade	Shoulder Milling	
	ae%	ap%
SU4500	0.05 - 0.2 D	0.05 - 0.2 D
SP4556	0.05 - 0.2 D	0.05 - 0.2 D

*** When using ap max, ae should not exceed 0.05 D**

Note: For copy milling & shoulder milling applications, refer to page B107.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

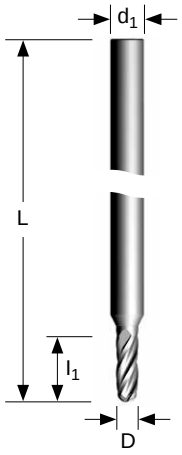
STELLRAM

Materials Application

SU4500

P	M	K	N	S	H
◆◆		◆			

Uncoated



4 - Flute Ball Nose End Mill

Solid Carbide
General Purpose - Miniature

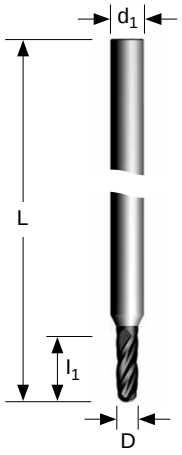
Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034285	**B 010NTN4**	1.00	38.00	3.00	3.00	3.00	4	-	-	-
034286	**B 015NTN4**	1.50	38.00	5.00	3.00	5.00	4	-	-	-
034287	**B 020NTN4**	2.00	38.00	6.00	3.00	6.00	4	-	-	-
034288	**B 025NTN4**	2.50	38.00	7.00	3.00	7.00	4	-	-	-

Materials Application

SP4556

P	M	K	N	S	H
◆◆	◆◆	◆		◆	

PVD



4 - Flute Ball Nose End Mill

Metric Product		Dimensions (mm)								
EDP	**Item Description**	D	L	l_1	d_1	a_p max*	No. of Teeth	Helical Hole min - max		Trochoidal min
034720	**B 010NTN4**	1.00	38.00	3.00	3.00	3.00	4	-	-	-
034721	**B 015NTN4**	1.50	38.00	5.00	3.00	5.00	4	-	-	-
034722	**B 020NTN4**	2.00	38.00	6.00	3.00	6.00	4	-	-	-
034723	**B 025NTN4**	2.50	38.00	7.00	3.00	7.00	4	-	-	-

Technical Information

B_NTN4 - Radial a_e and Axial a_p depth of cut range

Product	Dimensions	
Grade	Shoulder Milling	
	a_e%	a_p%
SU4500	0.05 - 0.2 D	0.05 - 0.2 D
SP4556	0.05 - 0.2 D	0.05 - 0.2 D

*** When using ap max, ae should not exceed 0.05 D**

Note: For copy milling & shoulder milling applications, refer to page B107.

See pages B110 - B122 for EDP - Description - Previous Part Number Cross Reference charts.

STELLRAM

Solid Carbide
General Purpose - Miniature

Recommended Feeds

CE_NTN4 / E_NTN4 Feeds fz (ipt) - Shoulder Milling

D Inch Metric	Unalloyed Steel <600 N/mm² <180 HBN	Unalloyed Steel 700-950N/mm² 200-280 HBN	Alloyed Steel <600 N/mm² <180 HBN	Alloyed Steel 950-1200N/mm² 280-355 HBN	Alloyed Steel 1200-1400N/mm² 355-415 HBN	Stainless Steel Austenitic + Ferretic 300 Series	Stainless Steel Martensitic 400 Series	Stainless Steel Refractory PH	Cast Irons Grey GG-FT	Cast Irons Spheroidal- Ductile GGG-FGS	Cast Irons Malleable GTS -MN/MP	Aluminum & Alloys <16% Si 116 HBN	Aluminum & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm² >415 HBN	Chilled Cast Iron >1400 N/mm² >400 HBN
Range	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
- 1.00	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	-	-	0.0004	0.0004	0.0004	0.0004	-	-
0.063 1.50	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	-	-	0.0006	0.0006	0.0006	0.0006	-	-
- 2.00	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	-	-	0.0006	0.0006	0.0006	0.0006	-	-
0.093 2.50	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	-	-	0.0006	0.0006	0.0006	0.0006	-	-

Note: HTA = High Temperature Alloys

Note: Due to the small diameter of the miniature end mill line, the feed rate has been reduced to a starting value only.

Copy Milling / Profiling	Feed Correction Parameters	
	a_e	Correction Factor
		Note: For copy milling & shoulder milling applications, refer to page B107.

STELLRAM

Solid Carbide
General Purpose - Miniature

Recommended Speeds

Speed v_c (SFM)

CB_NTN4 / B_NTN4 Series			Wear Resistance – → +					
			Speed min. - max.					
Coolant Recommendation Recommended ● Possible ⦿					Uncoated Micrograin			PVD Micrograin
ISO	Materials	Rm and Hardness	💧	🚫	SU4500	💧	🚫	SP4556
P	Unalloyed Steel	<600 N/mm² <180 HBN	●		240 - 360	●	⦿	410 - 590
		<950 N/mm² <280 HBN			197 - 328			328 - 558
	Alloyed Steel	700-950 N/mm² 200-280 HBN	●		197 - 328	●	⦿	328 - 558
		950-1200 N/mm² 280-355 HBN			131 - 230			295 - 460
		1200-1400 N/mm² 355-415 HBN			66 - 148			262 - 394
M	Stainless Steel	Austenitic + Ferritic 300 series				●	⦿	279 - 394
		Martensitic 400 series						213 - 295
	PH Stainless	Refractory P.H.				●		164 - 262
K	Cast Iron	Grey GG-Ft	●		180 - 295	●	⦿	295 - 492
		Spheroidal-Ductile GGG-FGS			115 - 230			197 - 394
		Malleable GTS - MN/MP			98 - 197			164 - 328
N	Aluminum & Alloys	Aluminum & Alloys < 16% Si 116 HBN						
		Aluminum + Silicon > 16% Si 92 HBN						
S	High Temperature Alloys	Iron Based				●	⦿	131 - 295
		Cobalt Based						66 - 131
		Nickel Based						82 - 148
		Titanium Based						98 - 197
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN						
		Chilled Cast Iron >1400 N/mm² > 400 HBN						

When calculating rotation speed (RPM), use V_C recommendations above.
If the calculated RPM exceeds spindle capacity, use maximum spindle speed available.
When using rotation speeds above 25,000 RPM, ensure a balanced work holding assembly is utilized.

CRSM Technical Information (inch)

Product			Dimensions (inch)																	
			Profiling					Facing					Chip Thickness		Profiling (ipt)				Facing (ipt)	
Family Description	Diameter	Z	a_e min	a_e max	a_p min	a_p max	a_d max in²	a_e min	a_e max	a_p min	a_p max	a_d max in²	h_m min	h_m max	For a_e min f_z min	For a_e min f_z max	For a_e max f_z min	For a_e max f_z max	f_z min	f_z max
CRSM0375	0.375	6	0.006	0.025	0.380	0.490	0.010	Radius +0.020	0.281	0.0079	Radius +0.020	0.002	0.0008	0.0020	0.0031	0.0077	0.0016	0.0040	0.0008	0.0022
CRSM0500	0.500	6	0.008	0.033	0.540	0.650	0.018		0.375			0.003			0.0031	0.0077	0.0016	0.0040		
CRSM0625	0.625	6	0.010	0.042	0.700	0.810	0.029		0.469			0.005			0.0031	0.0077	0.0016	0.0040		
CRSM0625	0.625	8	0.008	0.031	0.480	0.810	0.015		0.469			0.005			0.0035	0.0089	0.0018	0.0045		
CRSM0750	0.750	6	0.013	0.050	0.860	0.980	0.043		0.563			0.007			0.0031	0.0077	0.0016	0.0040		
CRSM0750	0.750	8	0.009	0.038	0.600	0.980	0.023		0.563			0.007			0.0035	0.0089	0.0018	0.0045		
CRSM1000	1.000	8	0.013	0.050	0.840	1.300	0.042		0.750			0.013			0.0035	0.0089	0.0018	0.0045		
CRSM1000	1.000	10	0.010	0.040	0.600	1.300	0.024		0.750			0.013			0.0040	0.0099	0.0020	0.0050		

CRSM Technical Information (inch)

In the application of RSM end mills, it is vital that ad max in² is not exceeded, for this, adjust a_e & a_p accordingly.

Example:

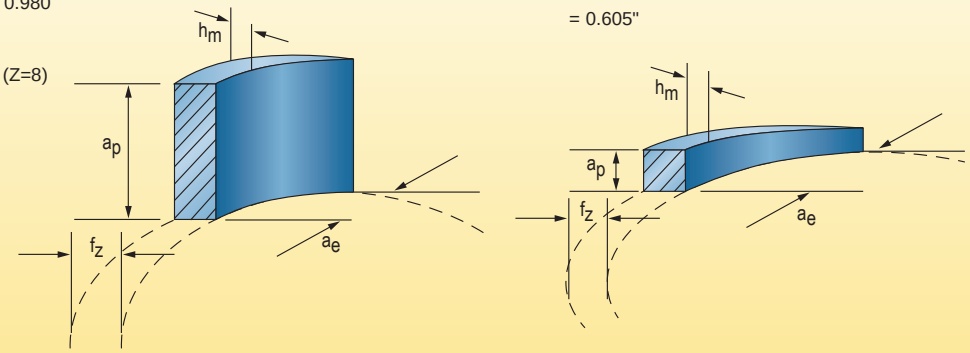
When using a_p max, then a_e = ad max in² / a_p max
= 0.023 / 0.980
= 0.023"

When using a_e max, Then a_p = ad max in² / a_e max
= 0.023 / 0.038
= 0.605"

Example based on values for RSM0750 (Z=8)

Key:

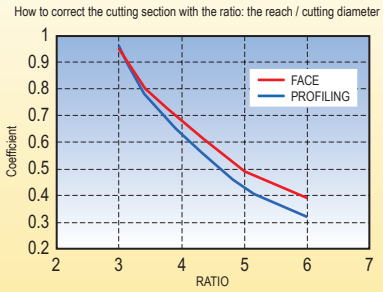
- a_e Radial depth of cut (in)
- a_p Axial depth of cut (in)
- a_d Cutting section (in²)
- f_z Feed per tooth (in/z)
- h_m Effective chip thickness (in)



Cutting Section (a_d) and Speed (V_c) Correction Coefficients

When the length to diameter (Lu:D) exceeds 3:1 the cutting section (a_d) should be reduced as per the following graph.

How to correct the cutting section with the ratio: the reach / cutting diameter

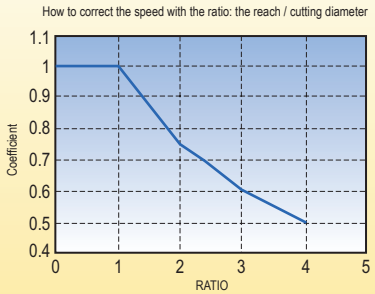


Example 1

Operation	*Profile milling*	a_d:	*0.024 in²*
Cutter	*CRSM1000LM10*	Correction coefficient	*0.64*
L:D	*4:1*	Compensated a_d:	*0.015 in²*

When the length to diameter (Lu:D) exceeds 3:1 the speed (V_c) should be reduced as per the following graph.

How to correct the speed with the ratio: the reach / cutting diameter



Example 2

Material	*ATI 6-4™*	Correction coefficient	*0.50*
L:D	*4:1*	Compensated V_c:	*100sfm*
V_c	*200sfm*		

RSM Technical Information

Product			Dimensions (mm)																	
			Profiling					Facing					Chip Thickness		Profiling (mm/z)				Facing (mm/z)	
Family Description	Diameter	Z	a_e min	a_e max	a_p min	a_p max	a_d max mm²	a_e min	a_e max	a_p min	a_p max	a_d max mm²	h_m min	h_m max	for a_e min f_z min	for a_e min f_z max	for a_e max f_z min	for a_e max f_z max	f_z min	f_z max
RSM100	10.00	6	0.17	0.67	10.30	13.00	6.87	Radius +0.50	7.5	0.20	Radius +0.50	1.25	0.02	0.05	0.078	0.195	0.040	0.100	0.020	0.057
RSM120	12.00	6	0.20	0.80	12.80	15.60	10.24		9			1.80			0.078	0.195	0.040	0.100		
RSM160	16.00	6	0.27	1.07	17.80	20.80	18.99		12			3.20			0.078	0.195	0.040	0.100		
RSM160	16.00	8	0.20	0.80	12.00	20.80	9.60		12			3.20			0.090	0.225	0.046	0.115		
RSM200	20.00	6	0.33	1.33	23.00	26.00	30.67		15			5.00			0.078	0.195	0.040	0.100		
RSM200	20.00	8	0.25	1.00	16.00	26.00	16.00		15			5.00			0.090	0.225	0.046	0.115		
RSM250	25.00	8	0.31	1.25	20.50	32.50	25.63		18.75			7.81			0.090	0.225	0.046	0.115		
RSM250	25.00	10	0.25	1.00	15.50	32.50	15.50		18.75			7.81			0.101	0.251	0.051	0.128		

RSM Technical Information (mm)

In the application of RSM end mills, it is vital that ad max mm² is not exceeded, for this, adjust a_e & a_p accordingly.

Example:

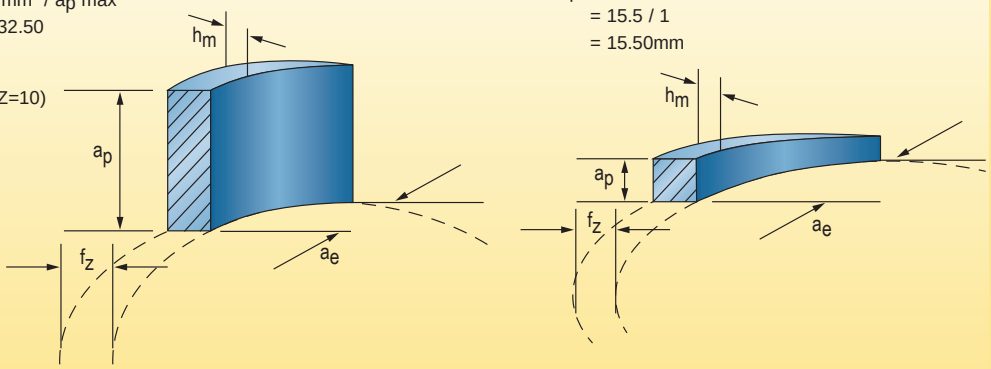
When using a_p max, then a_e = ad max mm² / a_p max
= 15.50 / 32.50
= 0.47mm

Example based on values for RSM250 (Z=10)

When using a_e (max), Then a_p = ad max mm² / a_e max
= 15.5 / 1
= 15.50mm

Key:

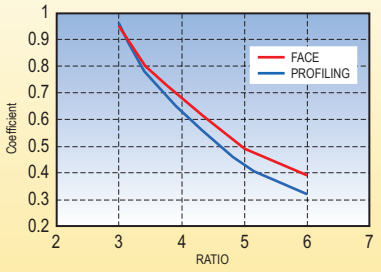
- a_e Radial depth of cut (mm)
- a_p Axial depth of cut (mm)
- a_d Cutting section (mm²)
- f_z Feed per tooth (mm/z)
- h_m Effective chip thickness (mm)



Cutting Section (a_d) and Speed (V_c) Correction Coefficients

When the length to diameter (Lu:D) exceeds 3:1 the cutting section (a_d) should be reduced as per the following graph.

How to correct the cutting section with the ratio: the reach / cutting diameter

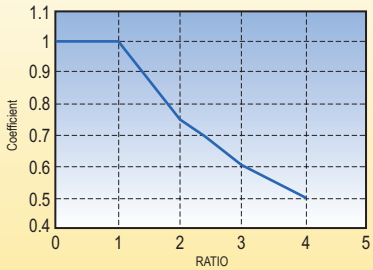


Example 1

Operation	*Profile milling*	a_d:	*15.50mm²*
Cutter	*RSM250LM10*	Correction coefficient	*0.64*
L:D	*4:1*	Compensated a_d:	*9.92mm²*

When the length to diameter (Lu:D) exceeds 3:1 the speed (V_c) should be reduced as per the following graph.

How to correct the speed with the ratio: the reach / cutting diameter

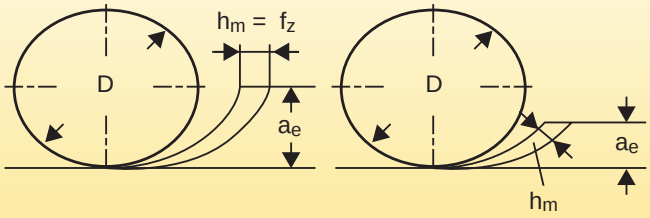


Example 2

Material	*ATI 6-4™*	Correction coefficient	*0.50*
L:D	*4:1*	Compensated V_c:	*35 m/min*
V_c	*70 m/min*		

Feed Correction

When using a_e, less than a_e (max), use calculation, in combination with the given feed rate to correct feed.



$$h_m = 2 \times f_z \times \sqrt{(a_e / D) \times (1 - (a_e / D))} \text{ inch}$$

$$f_z = \frac{h_m}{2 \times \sqrt{(a_e / D) \times (1 - (a_e / D))}} \text{ (ipt)}$$

Linear Ramping

For linear ramping, use the feed correction factors in the table below, in conjunction with the specified feeds for each family.

Ramping Angle Capacity

Cutter family	Number of flutes	Effective center cut: Zu for ramping	Max Ramping angle °	Feed Correction Calculation			
				45°	30°	10°	5°
CE_NN2 / E_NN2 CEA / EA CHPA / HPA	2	2	45	0.6 x f_z	0.7 x f_z	0.85 x f_z	0.9 x f_z
CE_NN3 / E_NN3 CERC / ERC	3	1	45	0.3 x f_z	0.5 x f_z	0.75 x f_z	0.85 x f_z
CXE / XE CXER / XER	4	2	10	-	-	0.5 x f_z	0.75 x f_z

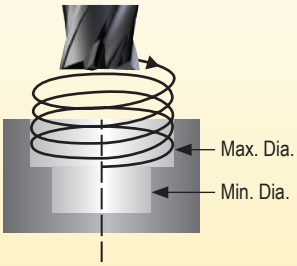
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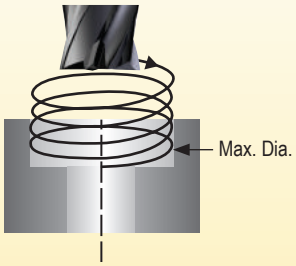
Helical Interpolation

Min. Hole Diameter from solid =
1.43 x Dia. cutter

Max. Hole Diameter from solid =
1.95 x (Dia. cutter - radius)

Max. Enlargement Diameter =
Hole size + ((Dia. cutter - radius) x 2)





Helical Ramping Angle Calculation:
The ramping angle is dependent on size of hole, and the material being machined.

Example: CXER 0375NN4-C, machining a hole 0.462" on Titanium Alloy.

Max depth of cut = 0.07 X 0.375
= 0.026"

$$\text{Ramping angle} = \tan^{-1}\left(\frac{0.026}{0.462 \times \pi}\right)$$

$$= \tan^{-1}(0.018)$$
$$= 1.03°$$

Maximum Depth of Cut Calculation

Material		ap (doc), max		
P	Unalloyed Steel / Alloyed Steel	0.05	0.1	x Dia.
M	Stainless Steel	0.05	0.08	x Dia.
K	Cast Iron	0.08	0.10	x Dia.
N	Aluminum	0.20		x Dia.
S	Inconel	0.03		x Dia.
	Titanium	0.07		x Dia.

Drilling



Feed Correction	
Number of Flutes	Drilling
2	0.5 x f_z
3	0.1 x f_z
4	N/A

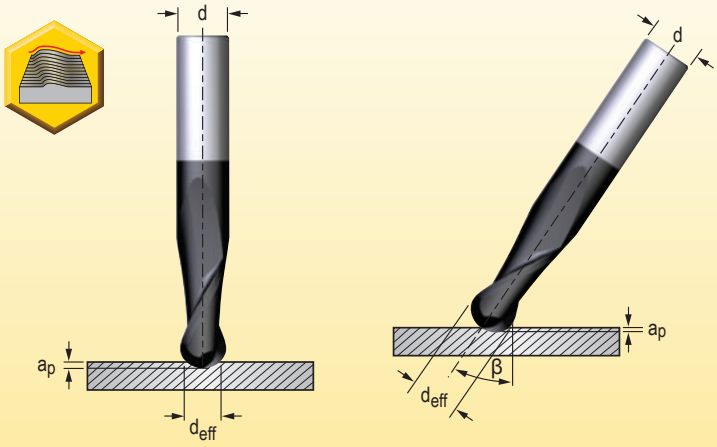
Trochoidal Milling



Capacity	
End Mill Diameter (D)	Slot Width Min
0.039 - 0.281	1.43 D
0.313 - 0.438	1.43 D
0.500 - 0.750	1.43 D

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Copy / 3D Milling



$$hm = f_z \times \sqrt{((R^2 - (R - a_e)^2))} / R \times \sqrt{((R^2 - (R - a_p)^2))} / R$$

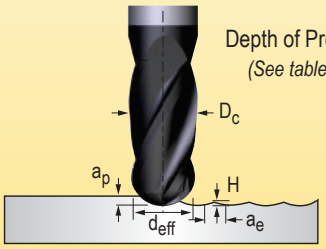
$$f_z = \frac{h_m}{\sqrt{((R^2 - (R - a_e)^2))} / R \times \sqrt{((R^2 - (R - ap)^2))} / R} \quad \text{(ipt)}$$

$$\beta <> 0 \quad d_{eff} \text{ (in.)} = D \times \sin\left[\beta \pm \arccos\left(\frac{d - 2 \times a_p}{d}\right)\right]$$

$$\beta = 0 \quad d_{eff} = 2 \times \sqrt{R^2 - (R - a_p)^2}$$

$$R = D / 2 \text{ (mm)}$$

Depth of profile / Diameter pitch correlation



$$\text{Depth of Profile (H)} = \frac{D_c}{2} - \sqrt{\left(\frac{D_c}{2}\right)^2 - a_e^2}$$

(See table below)

Application Parameters / Depth of Profile (H) (in)

a_e \ diameter	0.750	0.625	0.563	0.500	0.438	0.375	0.313	0.218	0.250	0.219	0.188	0.156	0.125	0.094	0.063
0.375	0.375														
0.313	0.168	0.313													
0.282	0.127	0.177	0.282												
0.250	0.095	0.125	0.152	0.250											
0.219	0.071	0.090	0.105	0.129	0.219										
0.188	0.050	0.063	0.072	0.085	0.106	0.188									
0.157	0.034	0.042	0.048	0.055	0.066	0.084	0.157								
0.141	0.027	0.033	0.038	0.043	0.051	0.063	0.088	0.141							
0.125	0.021	0.026	0.029	0.033	0.039	0.048	0.062	0.076	0.125						
0.110	0.016	0.020	0.022	0.025	0.029	0.035	0.045	0.052	0.065	0.110					
0.094	0.012	0.014	0.016	0.018	0.021	0.025	0.031	0.036	0.043	0.053	0.094				
0.078	0.008	0.010	0.011	0.012	0.014	0.017	0.021	0.024	0.027	0.033	0.042	0.078			
0.063	0.005	0.006	0.007	0.008	0.009	0.011	0.013	0.015	0.017	0.020	0.024	0.031	0.063		
0.047	0.003	0.004	0.004	0.004	0.005	0.006	0.007	0.008	0.009	0.011	0.013	0.016	0.021	0.047	
0.032	0.001	0.002	0.002	0.002	0.002	0.003	0.003	0.004	0.004	0.005	0.005	0.007	0.009	0.012	0.032
0.016	0.0003	0.0004	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0013	0.0016	0.0020	0.0027	0.0042

Read across top row and down first column for chosen parameters to find resultant Depth of profile (H)

Application Parameters / Depth of Profile (H) (mm)

a_e \ diameter	20.00	16.00	12.00	10.00	8.00	6.00	5.00	4.00	3.00
10.00	10.00								
8.00	4.00	8.00							
6.00	2.00	2.71	6.00						
5.00	1.34	1.76	2.68	5.00					
4.00	0.83	1.07	1.53	2.00	4.00				
3.00	0.46	0.58	0.80	1.00	1.35	3.00			
2.50	0.32	0.40	0.55	0.67	0.88	1.34	2.50		
2.00	0.20	0.25	0.34	0.42	0.54	0.76	1.00	2.00	
1.50	0.11	0.14	0.19	0.23	0.29	0.40	0.50	0.68	1.50
0.75	0.03	0.04	0.05	0.06	0.07	0.10	0.12	0.15	0.20

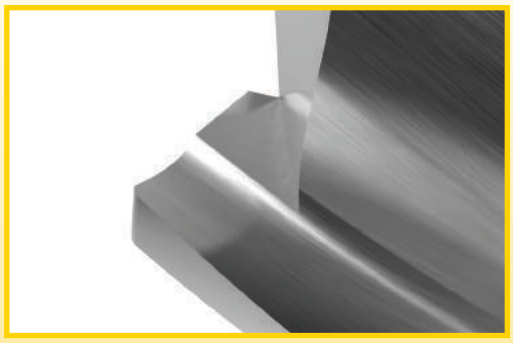
Read across top row and down first column for chosen parameters to find resultant Depth of profile (H)

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SU4500

Coating Type: Uncoated Micrograin

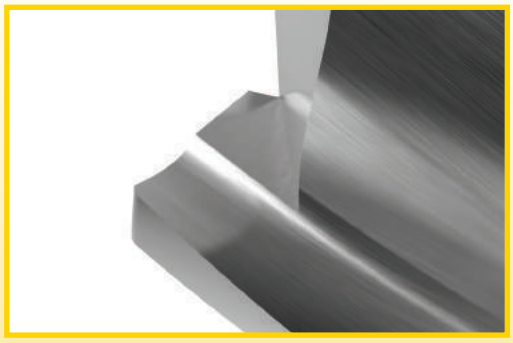
A versatile uncoated micrograin substrate suitable for a variety of applications. Primary use in Unalloyed Steels, Alloyed Steels and Cast Irons.



SU4000

Coating Type: Uncoated Submicron

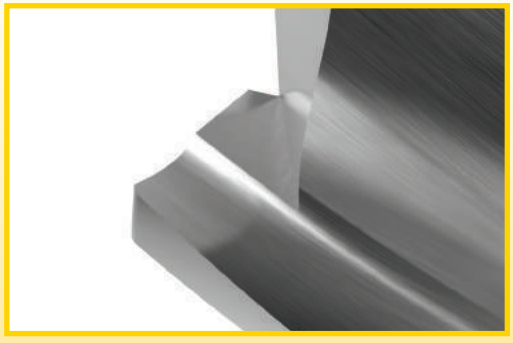
Our toughest and most wear resistant submicron substrate. Developed for machining Titanium and Titanium Alloys, whilst overcoming the problems associated with such materials.



SU0800

Coating Type: Uncoated Submicron

A tough and wear resistant Submicron Grade, developed for Aluminum and Aluminum Alloys.

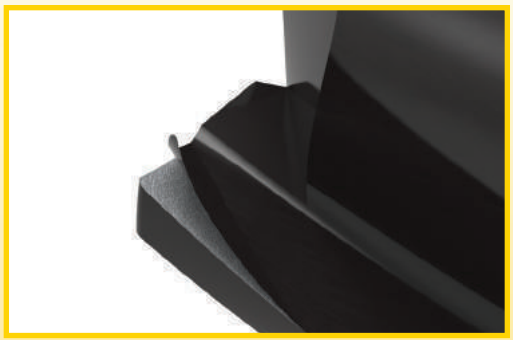


STELLRAM

SP4556

Coating Type: PVD, TiAlN

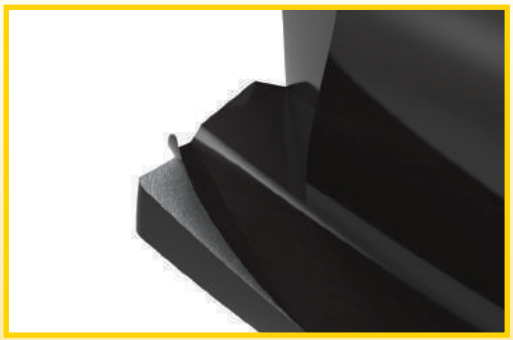
A versatile PVD TiAlN coated micrograin substrate suitable for a variety of applications. Primary use in Unalloyed Steels, Alloyed Steels, Stainless Steel and Cast Irons.



SP4035

Coating Type: PVD, TiAlN

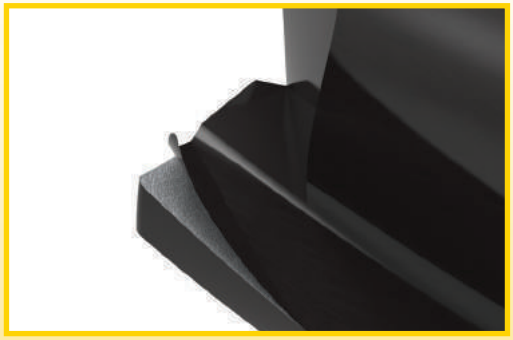
A TiAlN PVD coated grade with a micrograin substrate offering high temperature stability and a low coefficient of friction, allowing the possibility of higher speeds and feeds, as well as dry machining. Primarily used in Steels, Stainless Steels, High Temperature Alloys, Cast Irons and Hard Materials.



SP4060

Coating Type: Advanced Nano PVD, TiAlN

Our toughest and most wear resistant submicron substrate, combined with an advanced nano composite TiAlN PVD coating, allowing tools to be used at elevated surface speeds. Primarily used in High Temperature Alloys and Stainless Steels. Also suitable for Alloyed Steels.



STELLRAM

Part numbers for General Purpose milling & Rapide® milling ranges have now been allocated new EDP Numbers and Descriptions, to fit in line with existing Stellram products and nomenclature.

Please use the following tables to cross reference the new EDP Numbers / Desciptions with the previous part numbers.

Part Number & Descriptions

Uncoated CE / E

Definition	EDP	Description	Grade	Previous Part No	Page No.
	033906	**CE 0063NTN2**		G11206250T	B83
	033907	**CE 0094NTN2**		G11209370T	
	033908	**CE 0125NN2**		G11212500T	
	033909	**CE 0156NTN2**		G11215620T	
	033910	**CE 0188NN2**		G11218750T	
30°	*033911*	**CE 0219NTN2**		G11221870T	
	033912	**CE 0250NN2**		G11225000T	
	033913	**CE 0281NTN2**	SU4500	G11228120T	
	033914	**CE 0313NN2**		G11231250T	B52
90°	*033915*	**CE 0375NN2**		G11237500T	
	033916	**CE 0438NN2**		G11243750T	
	033917	**CE 0500NN2**		G11250000T	
	033918	**CE 0563NN2**		G11256250T	
h6	*033919*	**CE 0625NN2**		G11262500T	
	033920	**CE 0750NN2**		G11275000T	
	034138	**E 004NTN2**		G11201570	
	034139	**E 005NTN2**		G11201960	
HA	*034140*	**E 006NTN2**		G11202360	
	034141	**E 007NTN2**		G11202750	
	034142	**E 008NTN2**		G11203150	
	034143	**E 009NTN2**		G11203540	B84
	034144	**E 010NTN2**		G11203940T	
	034145	**E 012NTN2**		G11204720	
	034146	**E 015NTN2**		G11205910T	
	034147	**E 020NTN2**	SU4500	G11207870T	
	034148	**E 025NTN2**		G11209840T	
	034149	**E 030NN2**		G11211810T	
	034150	**E 040NN2**		G11215750T	
	034151	**E 050NN2**		G11219680T	
	034152	**E 060NN2**		G11223620T	
	034153	**E 080NN2**		G11231500T	B53
	034154	**E 100NN2**		G11239370T	
	034155	**E 120NN2**		G11247240T	
	034156	**E 160NN2**		G11262990T	
	034157	**E 200NN2**		G11278740T	

PVD CE / E

Definition	EDP	Description	Grade	Previous Part No	Page No.
	033921	**CE 0063NTN2**		G11206250TE	B83
	033922	**CE 0094NTN2**		G11209370TE	
	033923	**CE 0125NN2**		G11212500TE	
	033924	**CE 0156NTN2**		G11215620TE	
	033925	**CE 0188NN2**		G11218750TE	
30°	*033926*	**CE 0219NTN2**		G11221870TE	
	033927	**CE 0250NN2**		G11225000TE	
	033928	**CE 0281NTN2**	SP4556	G11228120TE	
	033929	**CE 0313NN2**		G11231250TE	B52
90°	*033930*	**CE 0375NN2**		G11237500TE	
	033931	**CE 0438NN2**		G11243750TE	
	033932	**CE 0500NN2**		G11250000TE	
	033933	**CE 0563NN2**		G11256250TE	
h6	*033934*	**CE 0625NN2**		G11262500TE	
	033935	**CE 0750NN2**		G11275000TE	
	034158	**E 004NTN2**		G11201570E	
	034159	**E 005NTN2**		G11201960E	
HA	*034160*	**E 006NTN2**		G11202360E	
	034161	**E 007NTN2**		G11202750E	
	034162	**E 008NTN2**		G11203150E	
	034163	**E 009NTN2**		G11203540E	B84
	034164	**E 010NTN2**		G11203940TE	
	034165	**E 012NTN2**		G11204720E	
	034166	**E 015NTN2**		G11205910TE	
	034167	**E 020NTN2**	SP4556	G11207870TE	
	034168	**E 025NTN2**		G11209840TE	
	034169	**E 030NN2**		G11211810TE	
	034170	**E 040NN2**		G11215750TE	
	034171	**E 050NN2**		G11219680TE	
	034172	**E 060NN2**		G11223620TE	
	034173	**E 080NN2**		G11231500TE	B53
	034174	**E 100NN2**		G11239370TE	
	034175	**E 120NN2**		G11247240TE	
	034176	**E 160NN2**		G11262990TE	
	034177	**E 200NN2**		G11278740TE	

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Part Number & Descriptions

Uncoated CE / E

Definition	EDP	Description	Grade	Previous Part No	Page No.
	033936	**CE 0063NTN3**		G11306250T	B87
	033937	**CE 0094NTN3**		G11309370T	
	033938	**CE 0125NN3**		G11312500T	
	033939	**CE 0156NTN3**		G11315620T	
	033940	**CE 0188NN3**		G11318750T	
30°	*033941*	**CE 0219NTN3**		G11321870T	
	033942	**CE 0250NN3**		G11325000T	
	033943	**CE 0281NTN3**	SU4500	G11328120T	
	033944	**CE 0313NN3**		G11331250T	B56
90°	*033945*	**CE 0375NN3**		G11337500T	
	033946	**CE 0438NN3**		G11343750T	
	033947	**CE 0500NN3**		G11350000T	
	033948	**CE 0563NN3**		G11356250T	
h6	*033949*	**CE 0625NN3**		G11362500T	
	033950	**CE 0750NN3**		G11375000T	
	034178	**E 010NTN3**		G11303940	
	034179	**E 015NTN3**		G11305910T	B88
	034180	**E 020NTN3**		G11307870T	
HA	*034181*	**E 025NTN3**		G11309840T	
	034182	**E 030NN3**		G11311810T	
	034183	**E 040NN3**		G11315750T	
	034184	**E 050NN3**	SU4500	G11319680T	
	034185	**E 060NN3**		G11323620T	
	034186	**E 080NN3**		G11331500T	B57
	034187	**E 100NN3**		G11339370T	
	034188	**E 120NN3**		G11347240T	
	034189	**E 160NN3**		G11362990T	
	034190	**E 200NN3**		G11378740T	

PVD CE / E

Definition	EDP	Description	Grade	Previous Part No	Page No.
	033951	**CE 0063NTN3**		G11306250TE	B87
	033952	**CE 0094NTN3**		G11309370TE	
	033953	**CE 0125NN3**		G11312500TE	
	033954	**CE 0156NTN3**		G11315620TE	
	033955	**CE 0188NN3**		G11318750TE	
30°	*033956*	**CE 0219NTN3**		G11321870TE	
	033957	**CE 0250NN3**		G11325000TE	
	033958	**CE 0281NTN3**	SP4556	G11328120TE	
	033959	**CE 0313NN3**		G11331250TE	B56
90°	*033960*	**CE 0375NN3**		G11337500TE	
	033961	**CE 0438NN3**		G11343750TE	
	033962	**CE 0500NN3**		G11350000T	
	033963	**CE 0563NN3**		G11356250T	
h6	*033964*	**CE 0625NN3**		G11362500T	
	033965	**CE 0750NN3**		G11375000T	
	034191	**E 010NTN3**		G11303940TE	
	034192	**E 015NTN3**		G11305910TE	B88
	034193	**E 020NTN3**		G11307870TE	
HA	*034194*	**E 025NTN3**		G11309840TE	
	034195	**E 030NN3**		G11311810TE	
	034196	**E 040NN3**		G11315750TE	
	034197	**E 050NN3**	SP4556	G11319680TE	
	034198	**E 060NN3**		G11323620TE	
	034199	**E 080NN3**		G11331500TE	B57
	034200	**E 100NN3**		G11339370TE	
	034201	**E 120NN3**		G11347240TE	
	034202	**E 160NN3**		G11362990TE	
	034203	**E 200NN3**		G11378740TE	

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Part Number & Descriptions

Technical

Uncoated CE / E

Definition	EDP	Description	Grade	Previous Part No	Page No.
	033966	**CE 0063NTN4**		G11406250T	B91
	033967	**CE 0094NTN4**		G11409370T	
	033968	**CE 0125NN4**		G11412500T	
	033969	**CE 0156NTN4**		G11415620T	
	033970	**CE 0188NN4**		G11418750T	
30°	*033971*	**CE 0219NTN4**		G11421870T	
	033972	**CE 0250NN4**		G11425000T	
	033973	**CE 0281NTN4**	SU4500	G11428120T	
	033974	**CE 0313NN4**		G11431250T	B60
90°	*033975*	**CE 0375NN4**		G11437500T	
	033976	**CE 0438NN4**		G11443750T	
	033977	**CE 0500NN4**		G11450000T	
	033978	**CE 0563NN4**		G11456250T	
h6	*033979*	**CE 0625NN4**		G11462500T	
	033980	**CE 0750NN4**		G11475000T	
	034204	**E 010NTN4**		G11403940T	
	034205	**E 015NTN4**		G11405910T	B92
HA	*034206*	**E 020NTN4**		G11407870T	
	034207	**E 030NN4**		G11411810T	
	034208	**E 040NN4**		G11415750T	
	034209	**E 050NN4**	SU4500	G11419680T	
	034210	**E 060NN4**		G11423620T	
	034211	**E 080NN4**		G11431500T	B61
	034212	**E 100NN4**		G11439370T	
	034213	**E 120NN4**		G11447240T	
	034214	**E 160NN4**		G11462990T	
	034215	**E 200NN4**		G11478740T	

PVD CE / E

Definition	EDP	Description	Grade	Previous Part No	Page No.
	033981	**CE 0063NTN4**		G11406250TE	B91
	033982	**CE 0094NTN4**		G11409370TE	
	033983	**CE 0125NN4**		G11412500TE	
	033984	**CE 0156NTN4**		G11415620TE	
	033985	**CE 0188NN4**		G11418750TE	
30°	*033986*	**CE 0219NTN4**		G11421870TE	
	033987	**CE 0250NN4**		G11425000TE	
	033988	**CE 0281NTN4**	SP4556	G11428120TE	
	033989	**CE 0313NN4**		G11431250TE	B60
90°	*033990*	**CE 0375NN4**		G11437500TE	
	033991	**CE 0438NN4**		G11443750TE	
	033992	**CE 0500NN4**		G11450000TE	
	033993	**CE 0563NN4**		G11456250TE	
h6	*033994*	**CE 0625NN4**		G11462500TE	
	033995	**CE 0750NN4**		G11475000TE	
	034216	**E 010NTN4**		G11403940TE	
	034217	**E 015NTN4**		G11405910TE	B92
HA	*034218*	**E 020NTN4**		G11407870TE	
	034219	**E 030NN4**		G11411810TE	
	034220	**E 040NN4**		G11415750TE	
	034221	**E 050NN4**	SP4556	G11419680TE	
	034222	**E 060NN4**		G11423620TE	
	034223	**E 080NN4**		G11431500TE	B61
	034224	**E 100NN4**		G11439370TE	
	034225	**E 120NN4**		G11447240TE	
	034226	**E 160NN4**		G11462990TE	
	034227	**E 200NN4**		G11478740TE	

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ER

Definition	EDP	Description	Grade	Previous Part No	Page No.
	034228	**ER 030NN4-E**		G11411810E050	
	034229	**ER 040NN4-E**		G11415750E050	
	034230	**ER 050NN4-E**		G11419680E050	
	034231	**ER 060NN4-E**		G11423620E050	
	034232	**ER 060NN4-G**		G11423620E100	
	034233	**ER 080NN4-E**		G11431500E050	
	034234	**ER 080NN4-G**		G11431500E100	
	034235	**ER 100NN4-E**		G11439370E050	
	034236	**ER 100NN4-G**	SP4556	G11439370E100	B64
	034237	**ER 100NN4-J**		G11439370E150	
	034238	**ER 120NN4-E**		G11447240E050	
	034239	**ER 120NN4-G**		G11447240E100	
	034240	**ER 120NN4-J**		G11447240E150	
	034241	**ER 120NN4-K**		G11447240E200	
	034242	**ER 160NN4-G**		G11462990E100	
	034243	**ER 160NN4-J**		G11462990E150	
	034244	**ER 160NN4-K**		G11462990E200	



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	033996	**CB 0063NTN2**		G12206250	B95
	033997	**CB 0094NTN2**		G12209370	
	033998	**CB 0125NN2**		G12212500	
	033999	**CB 0156NTN2**		G12215620	
	034000	**CB 0188NN2**		G12218750	
30°	*034001*	**CB 0219NTN2**		G12221870	
	034002	**CB 0250NN2**		G12225000	
	034003	**CB 0281NTN2**	SU4500	G12228120	
	034004	**CB 0313NN2**		G12231250	B67
Full Radius	*034005*	**CB 0375NN2**		G12237500	
	034006	**CB 0438NN2**		G12243750	
	034007	**CB 0500NN2**		G12250000	
	034008	**CB 0563NN2**		G12256250	
h6	*034009*	**CB 0625NN2**		G12262500	
	034010	**CB 0750NN2**		G12275000	
	034245	**B 004NTN2**		G12201570	
	034246	**B 005NTN2**		G12201960	
	034247	**B 006NTN2**		G12202360	
HA	*034248*	**B 007NTN2**		G12202750	
	034249	**B 008NTN2**		G12203150	
	034250	**B 009NTN2**		G12203540	B96
	034251	**B 010NTN2**		G12203940	
	034252	**B 012NTN2**		G12204720	
	034253	**B 015NTN2**		G12205910	
	034254	**B 020NTN2**		G12207870	
	034255	**B 025NTN2**	SU4500	G12209840	
	034256	**B 030NN2**		G12211810	
	034257	**B 040NN2**		G12215750	
	034258	**B 050NN2**		G12219680	
	034259	**B 060NN2**		G12223620	
	034260	**B 080NN2**		G12231500	B68
	034261	**B 100NN2**		G12239370	
	034262	**B 120NN2**		G12247240	
	034263	**B 160NN2**		G12262990	
	034264	**B 200NN2**		G12278740	

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Definition	EDP	Description	Grade	Previous Part No	Page No.
	034011	**CB 0063NTN2**		G12206250E	B95
	034012	**CB 0094NTN2**		G12209370E	
	034013	**CB 0125NN2**		G12212500E	
	034014	**CB 0156NTN2**		G12215620E	
	034015	**CB 0188NN2**		G12218750E	
30°	*034016*	**CB 0219NTN2**		G12221870E	
	034017	**CB 0250NN2**		G12225000E	
	034018	**CB 0281NTN2**	SP4556	G12228120E	
	034019	**CB 0313NN2**		G12231250E	B67
Full Radius	*034020*	**CB 0375NN2**		G12237500E	
	034021	**CB 0438NN2**		G12243750E	
	034022	**CB 0500NN2**		G12250000E	
	034023	**CB 0563NN2**		G12256250E	
h6	*034024*	**CB 0625NN2**		G12262500E	
	034025	**CB 0750NN2**		G12275000E	
	034265	**B 004NTN2**		G12201570E	
	034266	**B 005NTN2**		G12201960E	
	034267	**B 006NTN2**		G12202360E	
HA	*034268*	**B 007NTN2**		G12202750E	
	034269	**B 008NTN2**		G12203150E	
	034270	**B 009NTN2**		G12203540E	B96
	034271	**B 010NTN2**		G12203940E	
	034272	**B 012NTN2**		G12204720E	
	034273	**B 015NTN2**		G12205910E	
	034274	**B 020NTN2**		G12207870E	
	034275	**B 025NTN2**	SP4556	G12209840E	
	034276	**B 030NN2**		G12211810E	
	034277	**B 040NN2**		G12215750E	
	034278	**B 050NN2**		G12219680E	
	034279	**B 060NN2**		G12223620E	
	034280	**B 080NN2**		G12231500E	B68
	034281	**B 100NN2**		G12239370E	
	034282	**B 120NN2**		G12247240E	
	034283	**B 160NN2**		G12262990E	
	034284	**B 200NN2**		G12278740E	

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	034026	**CB 0063NTN4**		G12406250	B99
	034027	**CB 0094NTN4**		G12409370	
	034028	**CB 0125NN4**		G12412500	
	034029	**CB 0156NTN4**		G12415620	
	034030	**CB 0188NN4**		G12418750	
30°	*034031*	**CB 0219NTN4**		G12421870	
	034032	**CB 0250NN4**		G12425000	
	034033	**CB 0281NTN4**	SU4500	G12428120	
	034034	**CB 0313NN4**		G12431250	B71
Full Radius	*034035*	**CB 0375NN4**		G12437500	
	034036	**CB 0438NN4**		G12443750	
	034037	**CB 0500NN4**		G12450000	
	034038	**CB 0563NN4**		G12456250	
	034039	**CB 0625NN4**		G12462500	
h6	*034040*	**CB 0750NN4**		G12475000T	
	034285	**B 010NTN4**		G12403940	
	034286	**B 015NTN4**		G12405910	B100
	034287	**B 020NTN4**		G12407870	
HA	*034288*	**B 025NTN4**		G12409840	
	034289	**B 030NN4**		G12411810	
	034290	**B 040NN4**	SU4500	G12415750	
	034291	**B 050NN4**		G12419680	
	034292	**B 060NN4**		G12423620	B72
	034293	**B 080NN4**		G12431500	
	034294	**B 100NN4**		G12439370	
	034295	**B 120NN4**		G12447240	

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	034705	**CB 0063NTN4**		G12406250E	B99
	034706	**CB 0094NTN4**		G12409370E	
	034707	**CB 0125NN4**		G12412500E	
	034708	**CB 0156NTN4**		G12415620E	
	034709	**CB 0188NN4**		G12418750E	
30°	*034710*	**CB 0219NTN4**		G12421870E	
	034711	**CB 0250NN4**		G12425000E	
	034712	**CB 0281NTN4**	SP4556	G12428120E	
	034713	**CB 0313NN4**		G12431250E	B71
Full Radius	*034714*	**CB 0375NN4**		G12437500E	
	034715	**CB 0438NN4**		G12443750E	
	034716	**CB 0500NN4**		G12450000E	
	034717	**CB 0563NN4**		G12456250E	
	034718	**CB 0625NN4**		G12462500E	
h6	*034719*	**CB 0750NN4**		G12475000E	
	034720	**B 010NTN4**		G12403940E	
	034721	**B 015NTN4**		G12405910E	
	034722	**B 020NTN4**		G12407870E	B100
HA	*034723*	**B 025NTN4**		G12409840E	
	034724	**B 030NN4**		G12411810E	
	034725	**B 040NN4**	SP4556	G12415750E	
	034726	**B 050NN4**		G12419680E	
	034727	**B 060NN4**		G12423620E	B72
	034728	**B 080NN4**		G12431500E	
	034729	**B 100NN4**		G12439370E	
	034730	**B 120NN4**		G12447240E	

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	034056	**CB 0250LL2**		G12625000	
	034057	**CB 0313LL2**		G12631250	
	034058	**CB 0375LL2**		G12637500	
	034059	**CB 0438LL2**	SU4500	G12643750	B79
	034060	**CB 0500LL2**		G12650000	
	034061	**CB 0625LL2**		G12662500	
	034062	**CB 0750LL2**		G12675000	
	034296	**B 040LL2**		G12615750	
	034297	**B 060LL2**		G12623620	
	034301	**B 060XLXL2**		G12623620-XL	
	034298	**B 080LL2**		G12631500	
	034302	**B 080XLXL2**	SU4500	G12631500-XL	B80
	034299	**B 100LL2**		G12639370	
	034303	**B 100XLXL2**		G12639370-XL	
	034300	**B 120LL2**		G12647240	
	034304	**B 120XLXL2**		G12647240-XL	

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	034731	**CB 0250LL2**		G12625000E	
	034732	**CB 0313LL2**		G12631250E	
	034733	**CB 0375LL2**		G12637500E	
	034734	**CB 0438LL2**	SP4556	G12643750E	B79
	034735	**CB 0500LL2**		G12650000E	
	034736	**CB 0625LL2**		G12662500E	
	034737	**CB 0750LL2**		G12675000E	
	034738	**B 040LL2**		G12615750E	
	034739	**B 060LL2**		G12623620E	
	034740	**B 060XLXL2**		G12623620E-XL	
	034741	**B 080LL2**		G12631500E	
	034742	**B 080XLXL2**	SP4556	G12631500E-XL	B80
	034743	**B 100LL2**		G12639370E	
	034744	**B 100XLXL2**		G12639370E-XL	
	034745	**B 120LL2**		G12647240E	
	034746	**B 120XLXL2**		G12647240E-XL	

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Uncoated CE / E

Definition	EDP	Description	Grade	Previous Part No	Page No.
	034063	CE 0125LL4		G14812500	
	034064	CE 0188LL4		G14818750	
	034065	CE 0250LL4		G14825000	
	034066	CE 0313LL4		G14831250	
	034067	CE 0375LL4	SU4500	G14837500	B75
	034068	CE 0438LL4		G14843750	
	034069	CE 0500LL4		G14850000	
	034070	CE 0625LL4		G14862500	
	034071	CE 0750LL4		G14875000	
	034305	E 040LL4		G14815750	
	034306	E 050LL4		G14819680	
	034307	E 060LL4		G14823620	
	034313	E 060XLXL4		G14823620-XL	
	034308	E 080LL4		G14831500	
	034314	E 080XLXL4	SU4500	G14831500-XL	B76
	034309	E 100LL4		G14839370	
	034315	E 100XLXL4		G14839370-XL	
	034310	E 120LL4		G14847240	
	034316	E 120XLXL4		G14847240-XL	
	034311	E 160LL4		G14862990	
	034312	E 200LL4		G148678740	

PVD CE / E

Definition	EDP	Description	Grade	Previous Part No	Page No.
	034649	CE 0125LL4		G14812500E	
	034650	CE 0188LL4		G14818750E	
	034651	CE 0250LL4		G14825000E	
	034652	CE 0313LL4		G14831250E	
	034653	CE 0375LL4	SP4556	G14837500E	B75
	034654	CE 0438LL4		G14843750E	
	034655	CE 0500LL4		G14850000E	
	034656	CE 0625LL4		G14862500E	
	034657	CE 0750LL4		G14875000E	
	034317	E 060LL4		G14823620E	
	034318	E 080LL4		G14831500E	
	034319	E 100LL4	SP4556	G14839370E	B76
	034320	E 120LL4		G14847240E	
	034321	E 160LL4		G14862990E	

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Part Number & Descriptions

PVD CERC / ERC

Definition	EDP	Description	Grade	Previous Part No	Page No.
	034091	**CERC 0125NTN3**		G16312500-LF	
	034093	**CERC 0188NTN3**		G16318750-LF	
	034095	**CERC 0250NN3**		G16325000-LF	
	034097	**CERC 0313NN3**	SP4035	G16331250-LF	B24
	034099	**CERC 0375NN3**		G16337500-LF	
	034101	**CERC 0500NN3**		G1635000-LF	
	034103	**CERC 0625NN3**		G16362500-LF	
	034343	**ERC 030NTN3**		G16311810M6	
	034344	**ERC 040NTN3**		G16315750M6	
	034345	**ERC 050NTN3**		G16319680M6	
	034346	**ERC 060NN3**		G16323620M6	
	034347	**ERC 080NN3**	SP4035	G16331500	B24
	034348	**ERC 100NN3**		G16339370	
	034349	**ERC 120NN3**		G16347240	
	034839	**ERC 160NN3**		G16362990	
	034351	**ERC 200NN3**		G16378740	

PVD CHE / HE

Definition	EDP	Description	Grade	Previous Part No	Page No.
	034104	**CHE 0063NTN4**		G16406250	
	034105	**CHE 0094NTN4**		G16409370	
	034106	**CHE 0125NN4**		G16412500	
	034107	**CHE 0156NTN4**		G16415620	
	034108	**CHE 0188NTN4**		G16418750	
	034109	**CHE 0250NN4**	SP4035	G16425000	B27
	034110	**CHE 0313NN4**		G16431250	
	034111	**CHE 0375NN4**		G16437500	
	034112	**CHE 0500NN4**		G16450000	
	034113	**CHE 0625NN4**		G16462500	
	034114	**CHE 0750NN4**		G16475000	
	034352	**HE 020NTN4**		G16407870	
	034353	**HE 030NTN4**		G16411810	
	034354	**HE 040NTN4**		G16415750	
	034355	**HE 050NTN4**		G16419680	
	034356	**HE 060NN4**	SP4035	G16423620	B27
	034357	**HE 080NN4**		G16431500	
	034358	**HE 100NN4**		G16439370	
	034359	**HE 120NN4**		G16447240	
	034360	**HE 160NN4**		G16462990	

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HER

Definition	EDP	Description	Grade	Previous Part No	Page No.
	034361	**HER 060NN4-E**	SP4035	G16823620-05	B30
	034362	**HER 060NN4-G**		G16823620-10	
	034363	**HER 080NN4-E**		G16831500-05	
	034364	**HER 080NN4-G**		G16831500-10	
	034365	**HER 100NN4-E**		G16839370-05	
	034366	**HER 100NN4-G**		G16839370-10	
	034367	**HER 120NN4-E**		G16847240-05	
	034368	**HER 120NN4-G**		G16847240-10	













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PVD CHB / HB

Definition	EDP	Description	Grade	Previous Part No	Page No.
	034120	**CHB 0063LTL2**	SP4035	G17206250LF	B33
	034121	**CHB 0094LTL2**		G17209370LF	
	034122	**CHB 0125LTL2**		G172012500LF	
	034123	**CHB 0156LTL2**		G17215620LF	
	034124	**CHB 0188LTL2**		G17218750LF	
30°	*034125*	**CHB 0250LL2**		G17225000LF	
	034126	**CHB 03130LL2**		G17231250LF	
	034127	**CHB 03750LL2**		G17237500LF	
	034128	**CHB 0500LL2**		G17250000LF	
Full Radius	*034129*	**CHB 0625LL2**		G17262500LF	
	034375	**HB 030LTL2**	SP4035	G17211810LF	B33
	034376	**HB 040LTL2**		G17215750LF	
	034377	**HB 060LL2**		G17223620LF	
h6	*034378*	**HB 080LL2**		G17231500LF	
	034379	**HB 100LL2**		G17239370LF	
HA	*034380*	**HB 120LL2**		G17247240LF	

PVD CHMR / HMR

Definition	EDP	Description	Grade	Previous Part No	Page No.
	034082	**CHMR 0125NTN6-C**	SP4035	G16012500-010	B36
	034083	**CHMR 0188NTN6-C**		G16018750-010	
	034084	**CHMR 0250NNN6-C**		G16025000-010	
	034085	**CHMR 0313NN6-C**		G16031250-010	
	034086	**CHMR 0375NN6-C**		G16037500-010	
45°	*034087*	**CHMR 0500NN6-C**		G16050000-010	
	034088	**CHMR 0625NN6-C**		G16062500-010	
	034089	**CHMR 0750NN6-C**		G16075000-010	
	034333	**HMR 030NTN6-C**	SP4035	G16011810-025	B36
	034334	**HMR 040NTN6-C**		G16015750-025	
	034335	**HMR 050NTN6-C**		G16019680-025	
r	*034336*	**HMR 060NN6-C**		G16023620-025	
	034645	**HMR 060NN6-E**		G16023620-050	
	034337	**HMR 080NN6-C**		G16031500-025	
h6	*034646*	**HMR 080NN6-E**		G16031500-050	
	034338	**HMR 100NN6-C**		G16039370-025	
	034339	**HMR 100NN6-E**		G16039370-050	
	034340	**HMR 120NN6-C**		G16047240-025	
HA	*034647*	**HMR 120NN6-E**		G16047240-050	
	034341	**HMR 160NN6-C**		G16062990-025	
	034648	**HMR 160NN6-E**		G16062990-050	
	034342	**HMR 200NN6-C**		G16078740-025	

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CHMN / HMN

Definition	EDP	Description	Grade	Previous Part No	Page No.
	*034115*	**CHMN 0250NN6**	SP4035	G16925000	B41
	034116	**CHMN 0313NN6**		G16931250	
	034117	**CHMN 0375NN6**		G16937500	
	034118	**CHMN 0500NN6**		G16950000	
	034119	**CHMN 0625NN6**		G16862500	
	*034659*	**CHMN 0750NN6**		G16975000	
	034369	**HMN 060NN6**	SP4035	G16923620	B41
	034370	**HMN 080NN6**		G16931500	
	034371	**HMN 100NN6**		G16939370	
	*034372*	**HMN 120NN6**		G16947240	
	034373	**HMN 160NN6**		G16862990	
	034374	**HMN 200NN6**		G16978740	







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Part Number & Descriptions

Technical

Uncoated CEA / EA

Definition	EDP	Description	Grade	Previous Part No	Page No.
	034072	**CEA 0063NTN2**		G15206250	
	034073	**CEA 0094NTN2**		G15209370	
	034074	**CEA 0125NN2**		G15212500	
	034075	**CEA 0188NN2**		G15218750	
	034076	**CEA 0250NN2**	SU0800	G15225000	B44
30°	*034077*	**CEA 0313NN2**		G15231250	
	034078	**CEA 0375NN2**		G15237500	
	034079	**CEA 0500NN2**		G15250000	
	034080	**CEA 0625NN2**		G15262500	
90°	*034081*	**CEA 0750NN2**		G15275000	
	034322	**EA 020NTN2**		G15207870	
	034323	**EA 025NTN2**		G15209840	
	034324	**EA 030NN2**		G15211810	
	034325	**EA 040NN2**		G15215750	
h6	*034326*	**EA 050NN2**		G15219680	
	034327	**EA 060NN2**	SU0800	G15223620	B44
	034328	**EA 080NN2**		G15231500	
HA	*034329*	**EA 100NN2**		G15239370	
	034330	**EA 120NN2**		G15247240	
	034331	**EA 160NN2**		G15262990	
	034332	**EA 200NN2**		G15278740	

Uncoated CHPA / HPA

Definition	EDP	Description	Grade	Previous Part No	Page No.
	034130	**CHPA 0125NN2**		G19212500	
	034131	**CHPA 0188NN2**		G19218750	
	034132	**CHPA 0250NN2**		G19225000	
	034133	**CHPA 0313NN2**	SU0800	G19231250	B47
	034134	**CHPA 0375NN2**		G19237500	
55°	*034135*	**CHPA 0500NN2**		G19250000	
	034136	**CHPA 0625NN2**		G19262500	
	034137	**CHPA 0750NN2**		G19275000	
	034381	**HPA 030NN2**		G19211810	
	034382	**HPA 040NN2**		G19215750	
	034383	**HPA 050NN2**		G19219680	
90°	*034384*	**HPA 060NN2**		G19223620	
	034385	**HPA 080NN2**	SU0800	G19231500	B47
	034386	**HPA 100NN2**		G19239370	
h6	*034387*	**HPA 120NN2**		G19247240	
	034388	**HPA 160NN2**		G19262990	
	034389	**HPA 200NN2**		G19278740	
HA					



STELLRAM®

TURNING

Turning

KENNAMETAL®



This product catalog highlights a broad range of tooling solutions ideal for turning, boring, threading, grooving and cutoff applications and features:

- A complete range of PVD and CVD “First Choice” grades that includes the advanced NL range of coatings, fine-tuned to specific materials and applications for optimum results.
- Geometries that also offer a “First Choice” range from finishing to roughing to meet the increasing demands of higher feed rates for greater chip control.
- Comprehensive threading programs available in a wide range of standard and customer licensed thread forms.
- A full line of toolholders and boring bars to support and compliment our elite grade and geometry programs.
- Application and customer service support from our technical sales engineers ready to address your on-site needs and backed by an experienced customer service team.

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STELLRAM

Turning

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- GEOMETRY USER GUIDE C20
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- GRADES SELECTION C32
- GRADE DESCRIPTIONS ..... C33 - C37
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STELLRAM

The following Material Guide pages enable you to select the appropriate geometry and grade along with a suggested start point for speeds and feeds. Simply select the material to be machined and type of machining operation.

1st Choice

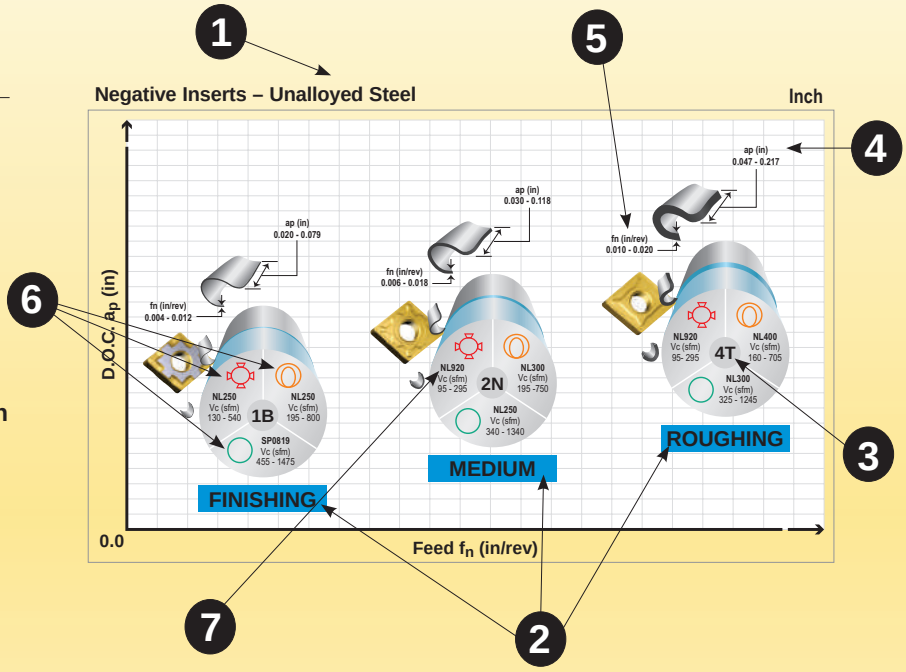
1. **Select your material.**
2. **Select your machining operation from finishing to roughing.**
3. **Recommended geometry for the operation.**
4. **Maximum and minimum depth of cut for this geometry.**
5. **Maximum and minimum feed for this geometry.**
6. **Choose the machining condition as below:**

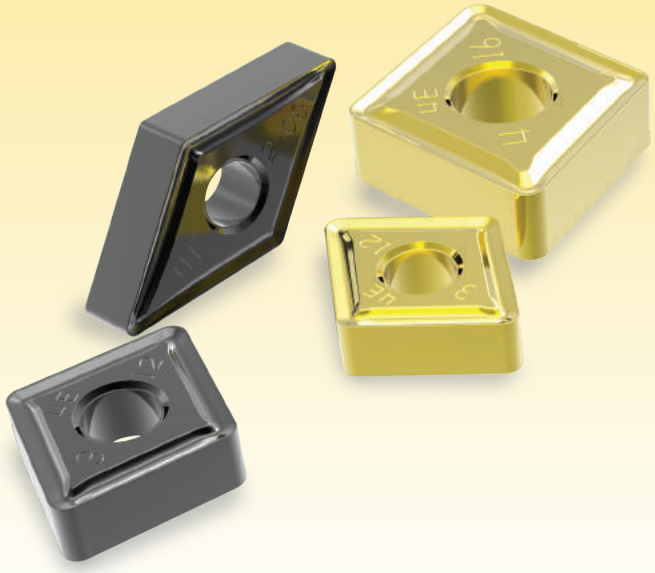
   Interrupted cut

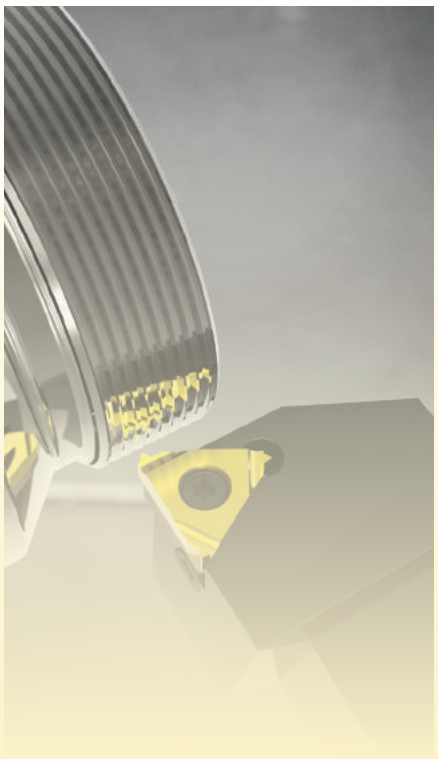
   Varying depth of cut

   Good condition

7. **Recommended grade and cutting speeds for this condition.**







STELLRAM

Unalloyed Steels — P
Alloyed Steels — P

Stainless Steels — M
PH Stainless — M

Cast Irons — K

Aluminum & Alloys — N

High Temperature Alloys — S

Hard Materials (52-56 HRC) — H

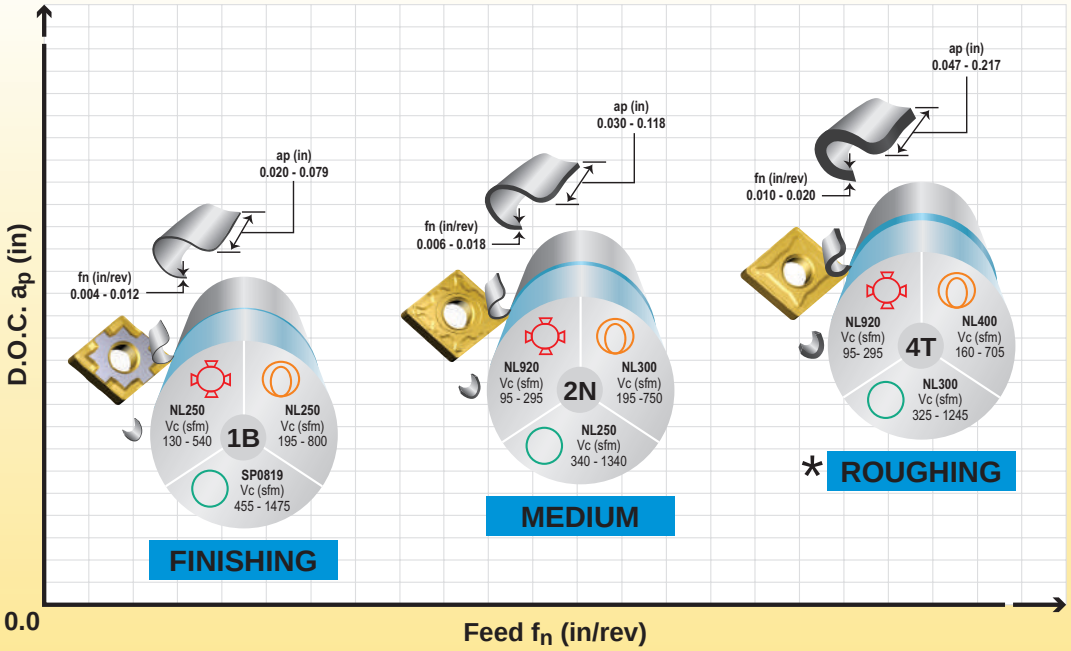
Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

Negative Inserts – Unalloyed Steel

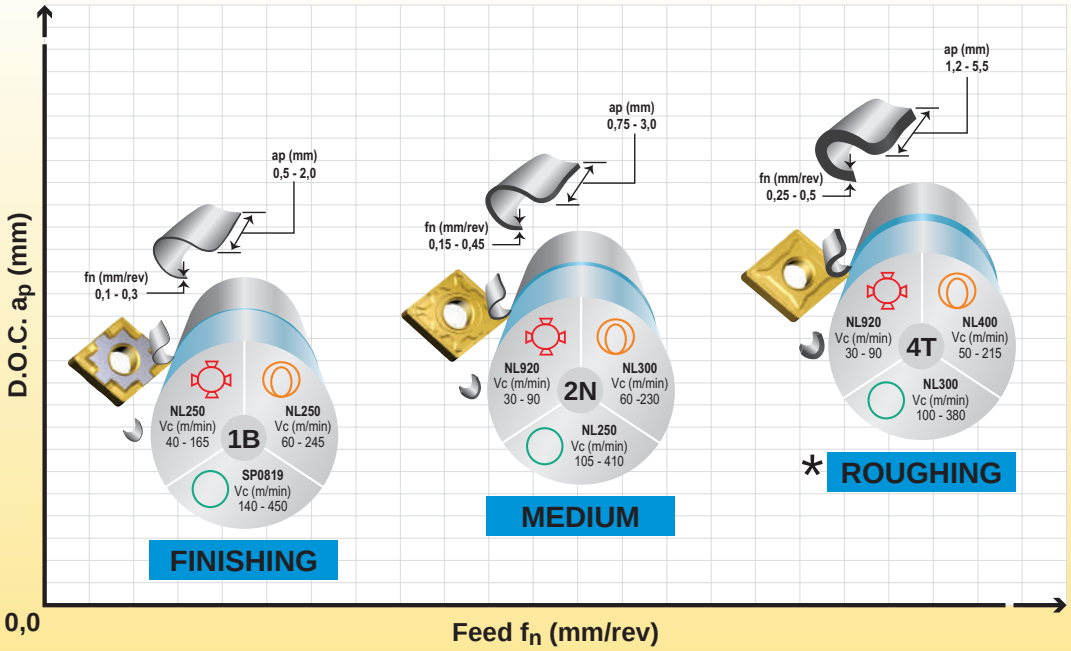
Inch



*Note: For Heavy Roughing applications see 5R geometry, page C25.

Negative Inserts – Unalloyed Steel

Metric

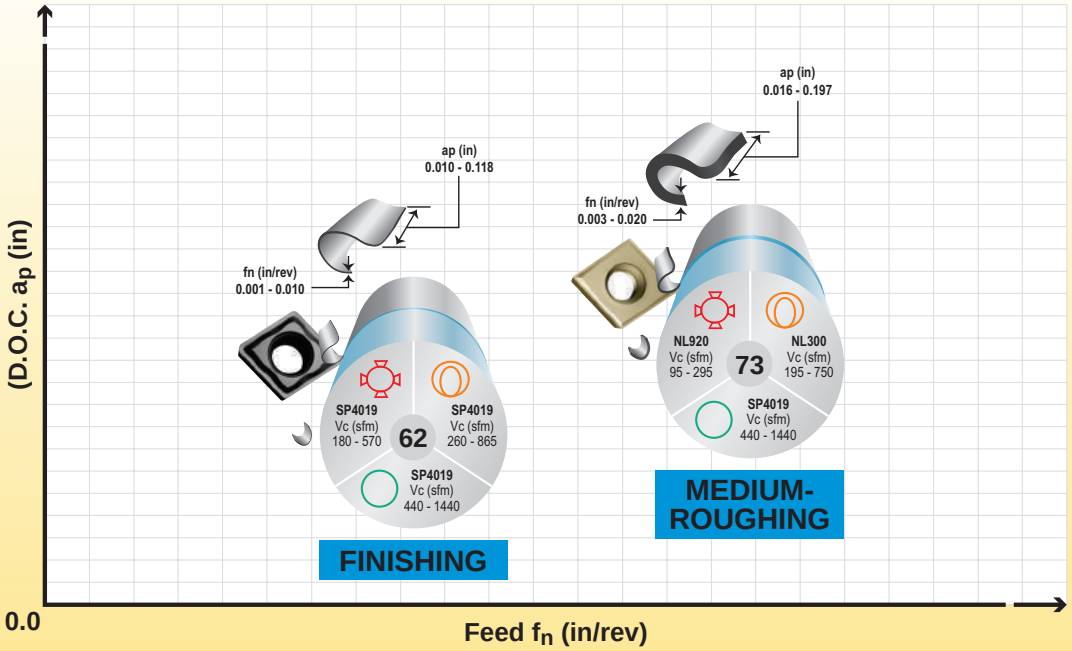


*Note: For Heavy Roughing applications see 5R geometry, page C25.

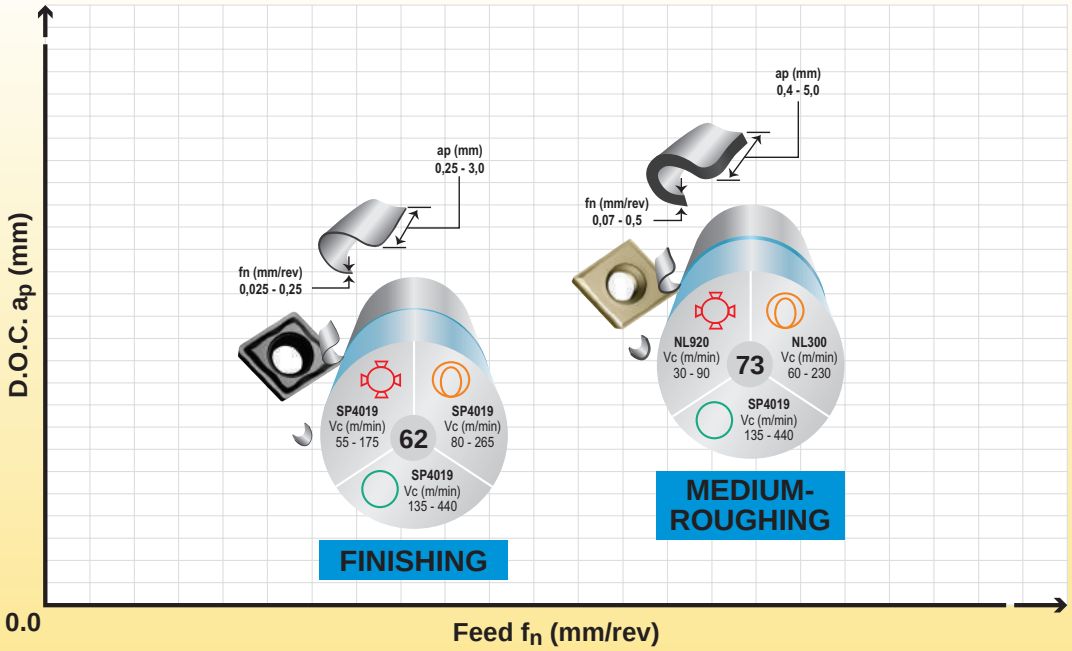
Please note the above recommended cutting speeds, geometries and grades are for guidance only.
For more detailed information, see pages C20 - C31 (geometry technical information & grade technical information).

Key	Interrupted cut	Varying depth of cut	Good condition

Positive Inserts – Unalloyed Steel — Inch



Positive Inserts – Unalloyed Steel — Metric

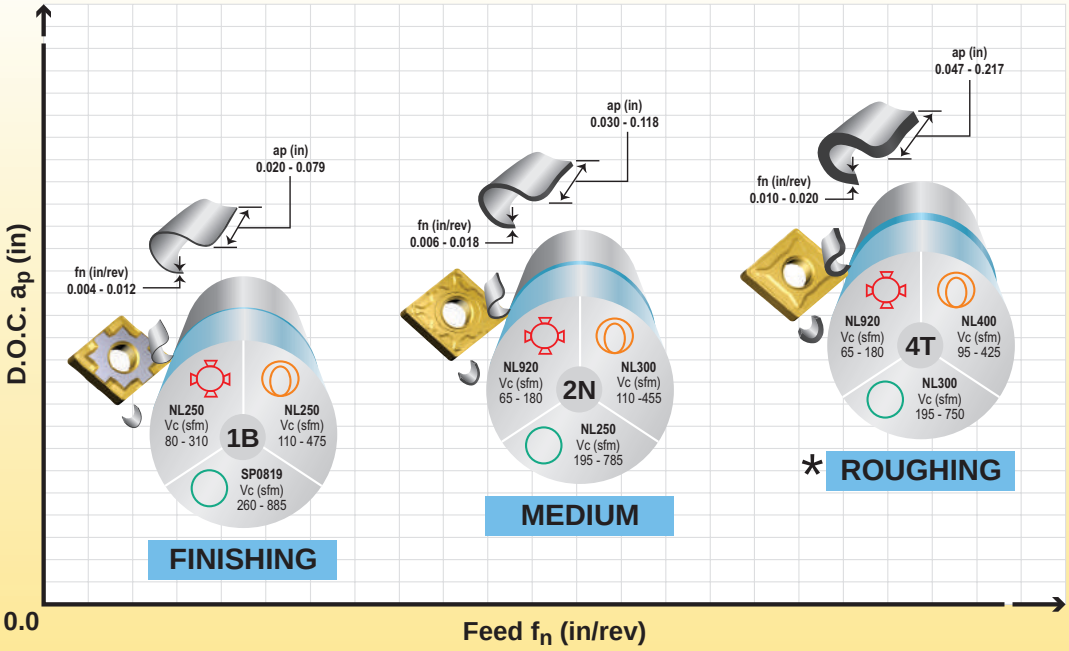


Please note the above recommended cutting speeds, geometries and grades are for guidance only.
For more detailed information, see pages C20 - C31 (geometry technical information & grade technical information).

Key	Interrupted cut	Varying depth of cut	Good condition

Negative Inserts – Alloyed Steel

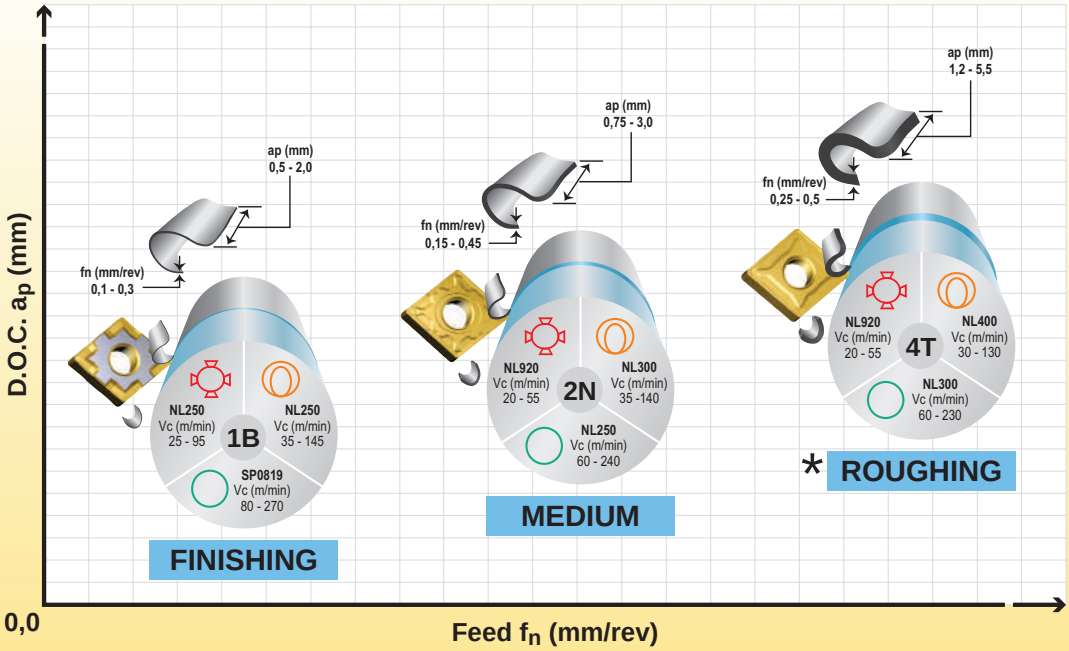
Inch



*Note: For Heavy Roughing applications see 5R geometry, page C25.

Negative Inserts – Alloyed Steel

Metric

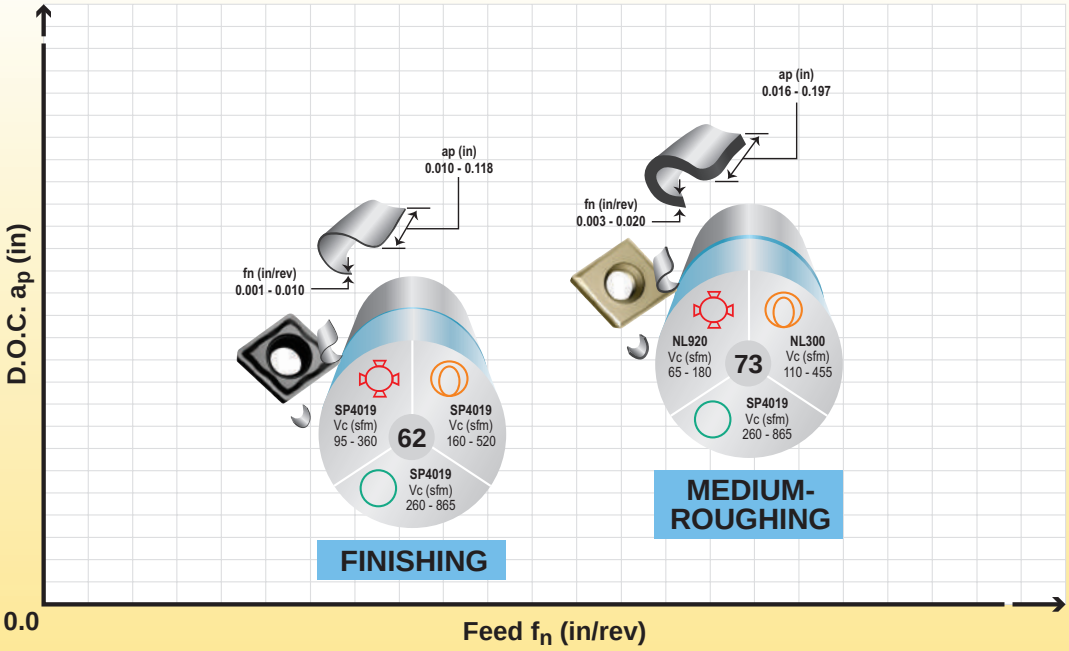


*Note: For Heavy Roughing applications see 5R geometry, page C25.

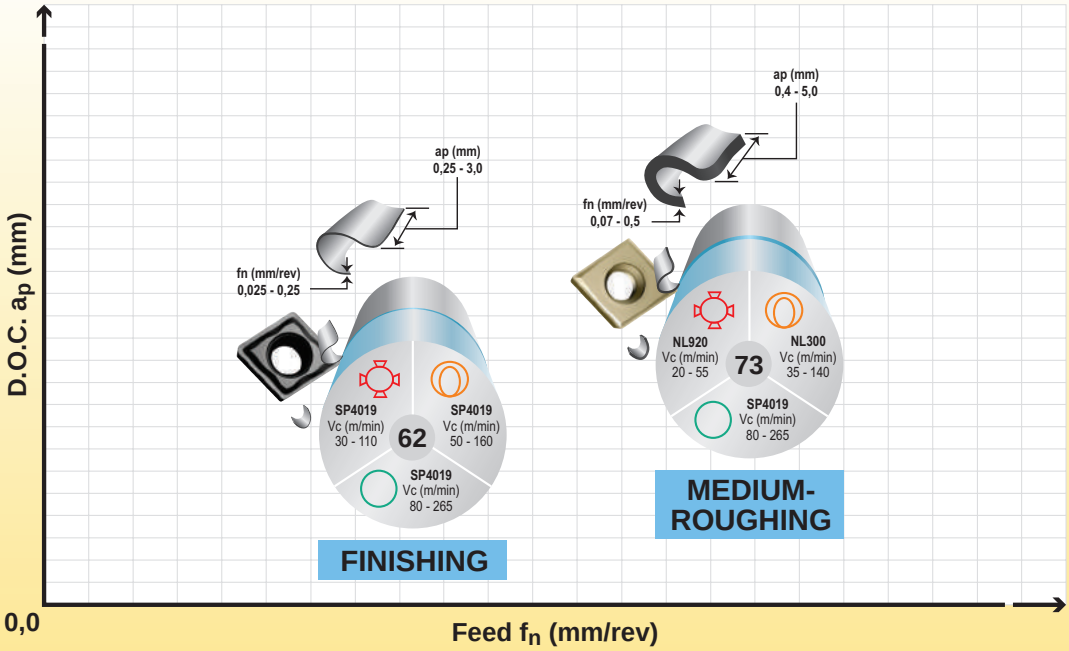
Please note the above recommended cutting speeds, geometries and grades are for guidance only.
For more detailed information, see pages C20 - C31 (geometry technical information & grade technical information).

Key	Interrupted cut	Varying depth of cut	Good condition

Positive Inserts – Alloyed Steel **Inch**



Positive Inserts – Alloyed Steel **Metric**

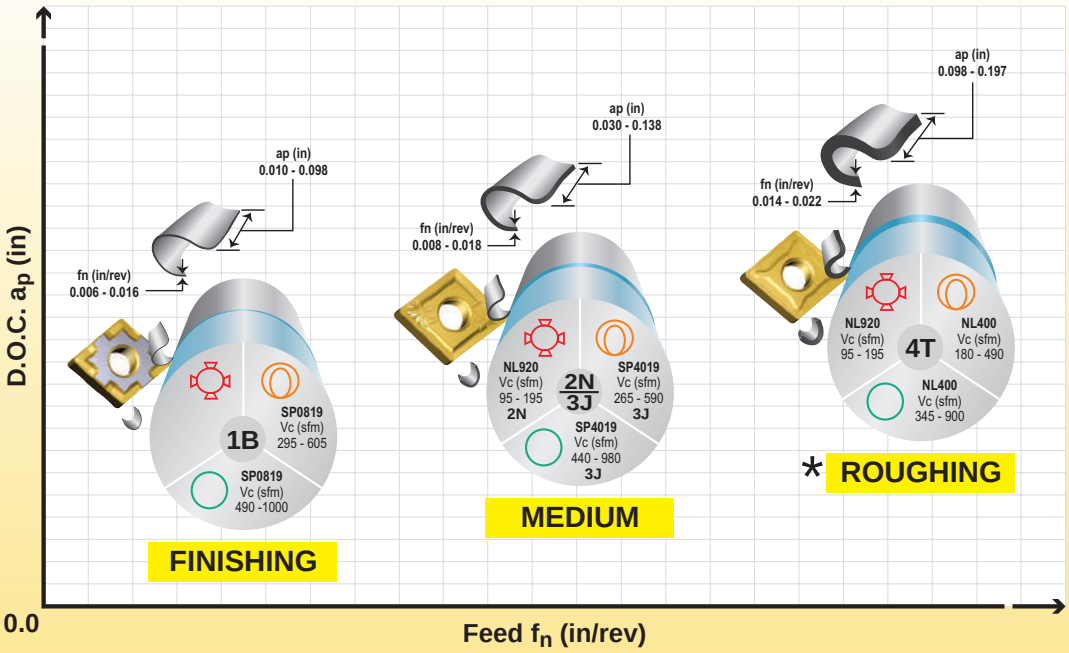


Please note the above recommended cutting speeds, geometries and grades are for guidance only.
For more detailed information, see pages C20 - C31 (geometry technical information & grade technical information).

Key	Interrupted cut	Varying depth of cut	Good condition

Negative Inserts – Stainless Steel

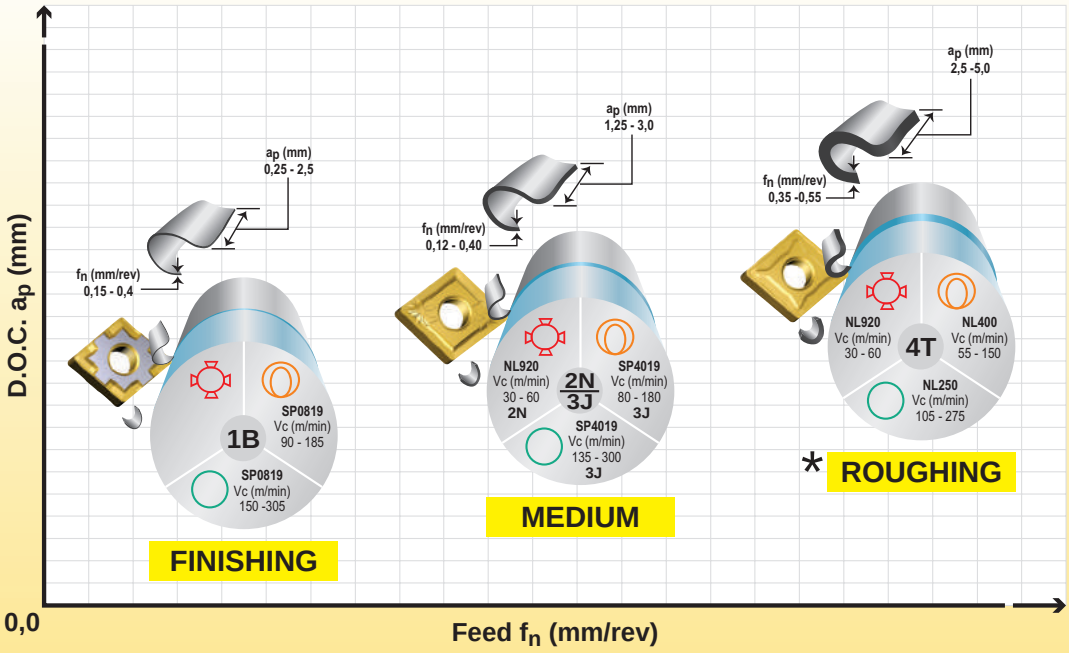
Inch



*Note: For Heavy Roughing applications see 5R geometry, page C25.

Negative Inserts – Stainless Steel

Metric



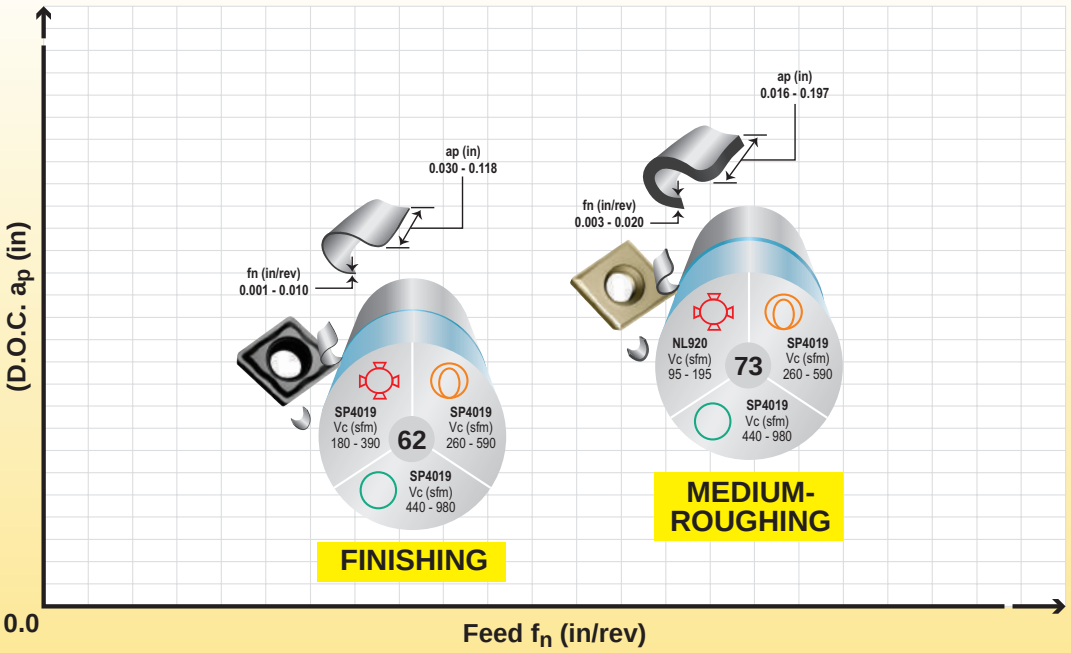
*Note: For Heavy Roughing applications see 5R geometry, page C25.

Please note the above recommended cutting speeds, geometries and grades are for guidance only.
For more detailed information, see pages C20 - C31 (geometry technical information & grade technical information).

Key	Interrupted cut	Varying depth of cut	Good condition

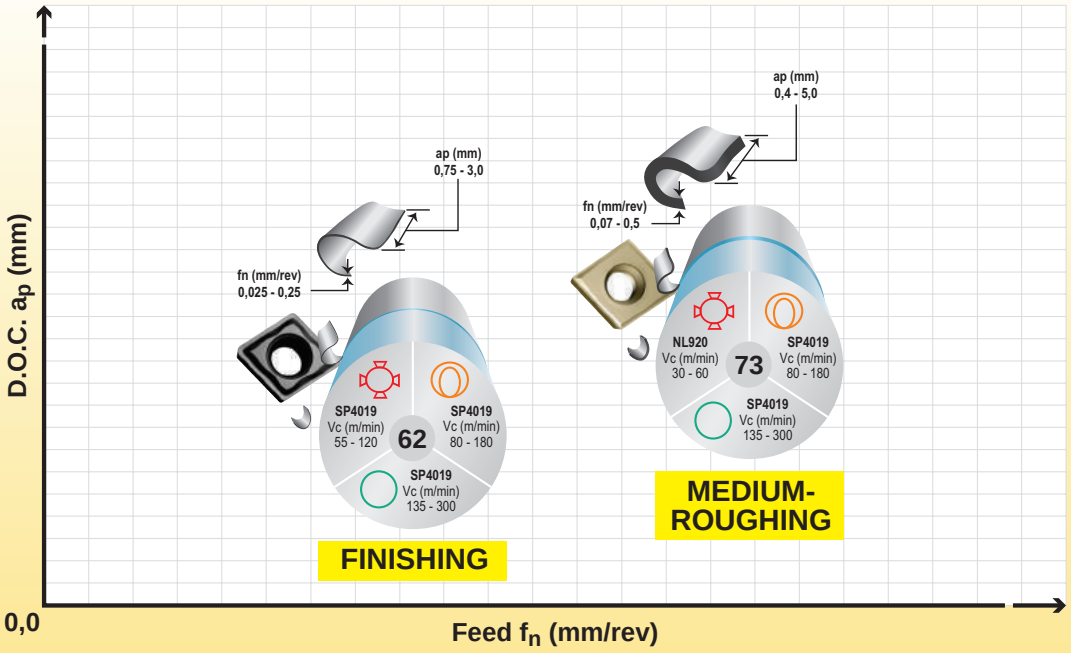
Positive Inserts – Stainless Steel

Inch



Positive Inserts – Stainless Steel

Metric

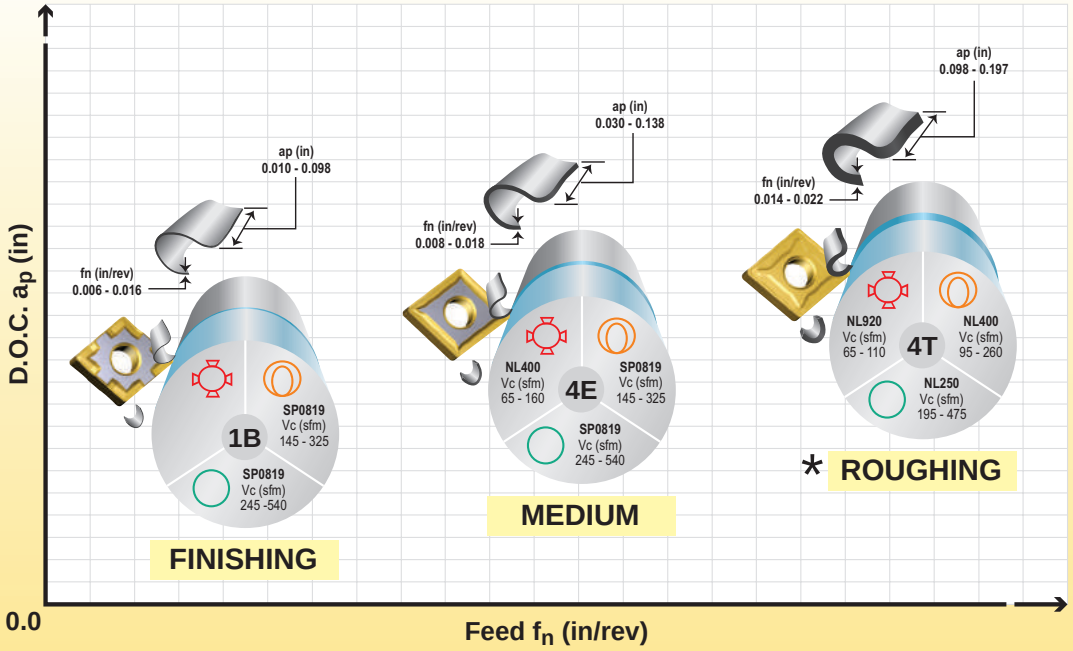


Please note the above recommended cutting speeds, geometries and grades are for guidance only.
For more detailed information, see pages C20 - C31 (geometry technical information & grade technical information).

Key	Interrupted cut	Varying depth of cut	Good condition

Negative Inserts – Stainless Steel PH

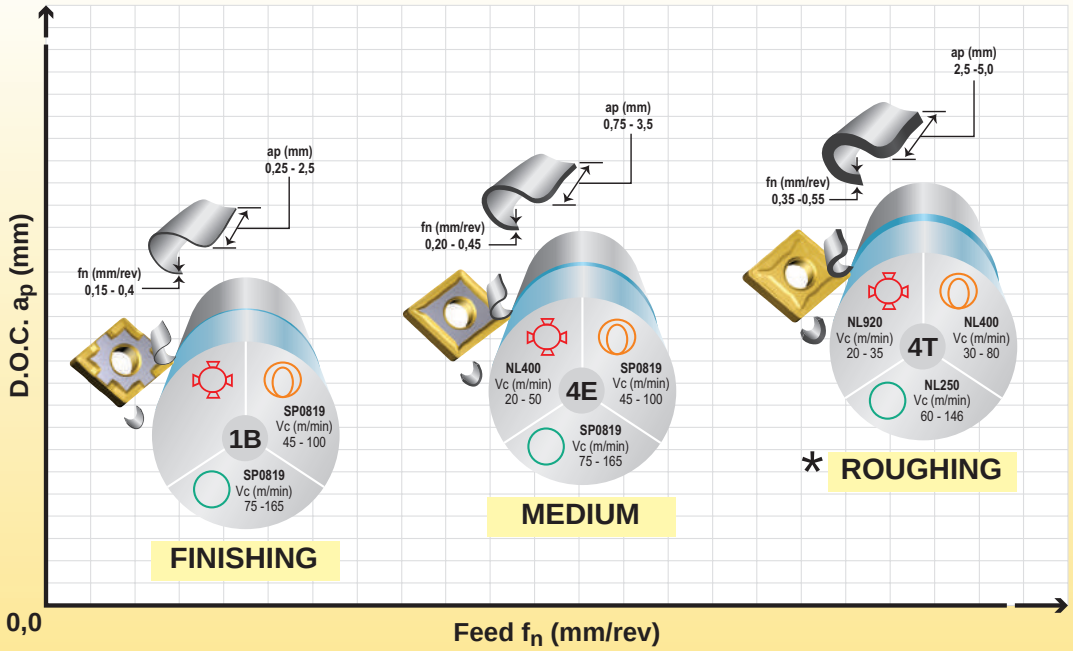
Inch



*Note: For Heavy Roughing applications see 5R geometry, page C25.

Negative Inserts – Stainless Steel PH

Metric



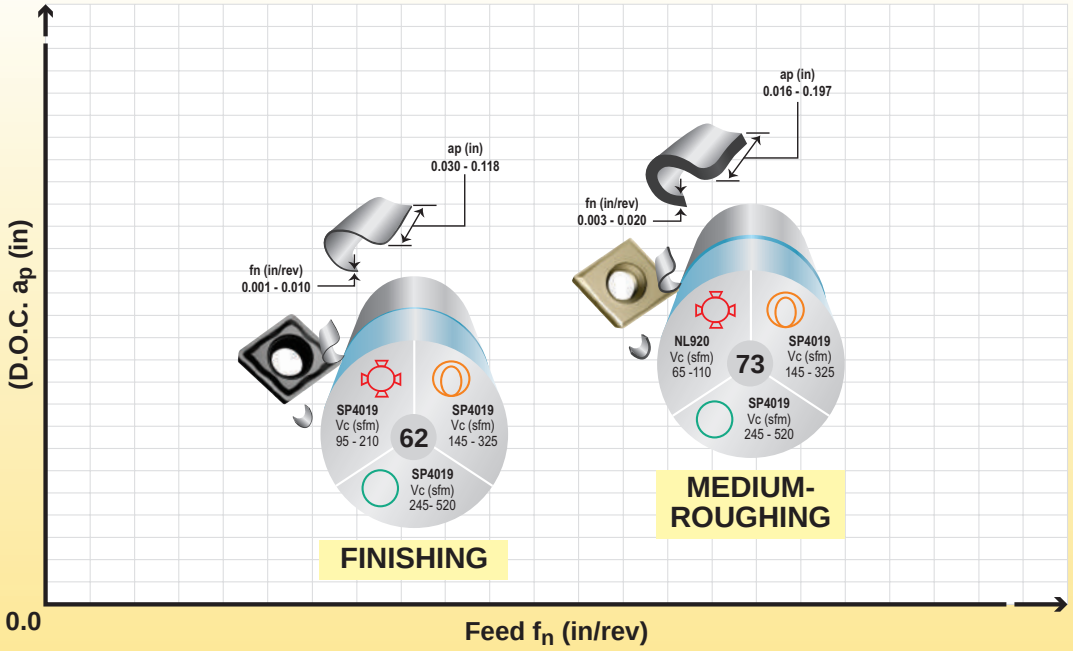
*Note: For Heavy Roughing applications see 5R geometry, page C25.

Please note the above recommended cutting speeds, geometries and grades are for guidance only.
For more detailed information, see pages C20 - C31 (geometry technical information & grade technical information).

Key	Interrupted cut	Varying depth of cut	Good condition

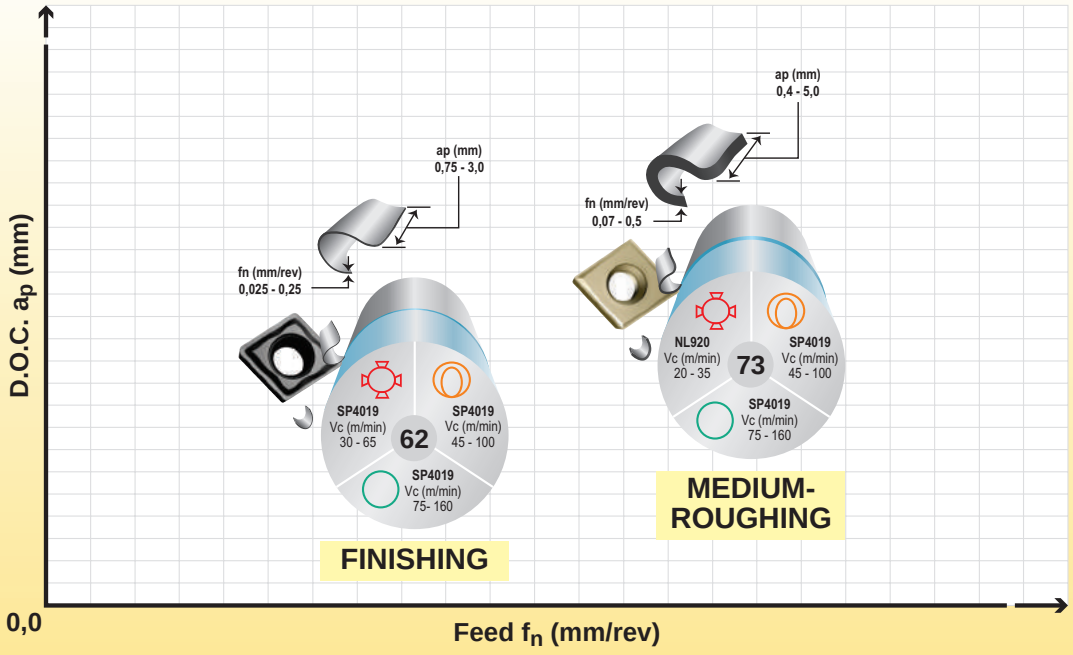
Positive Inserts – Stainless Steel PH

Inch



Positive Inserts – Stainless Steel PH

Metric

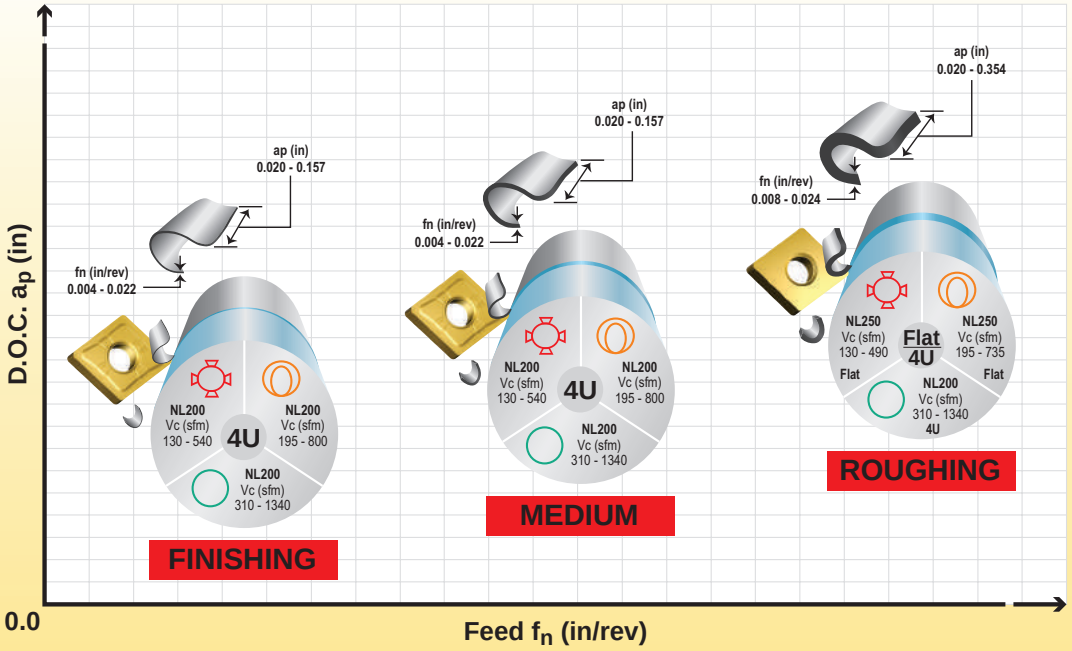


Please note the above recommended cutting speeds, geometries and grades are for guidance only.
For more detailed information, see pages C20 - C31 (geometry technical information & grade technical information).

Key	Interrupted cut	Varying depth of cut	Good condition

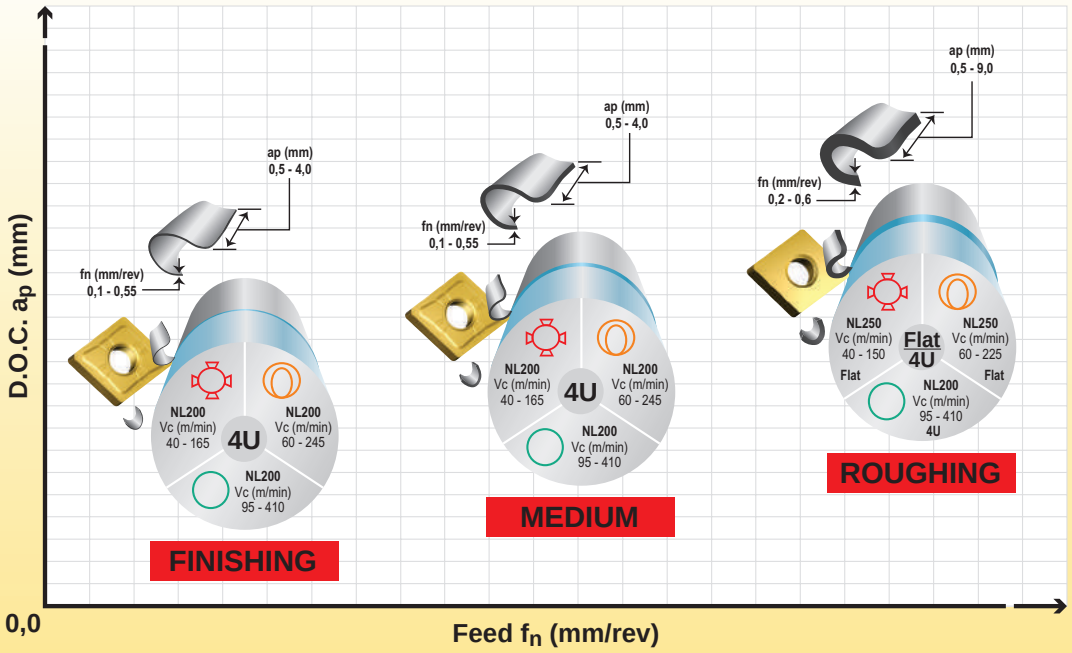
Negative Inserts – Cast Iron

Inch



Negative Inserts – Cast Iron

Metric

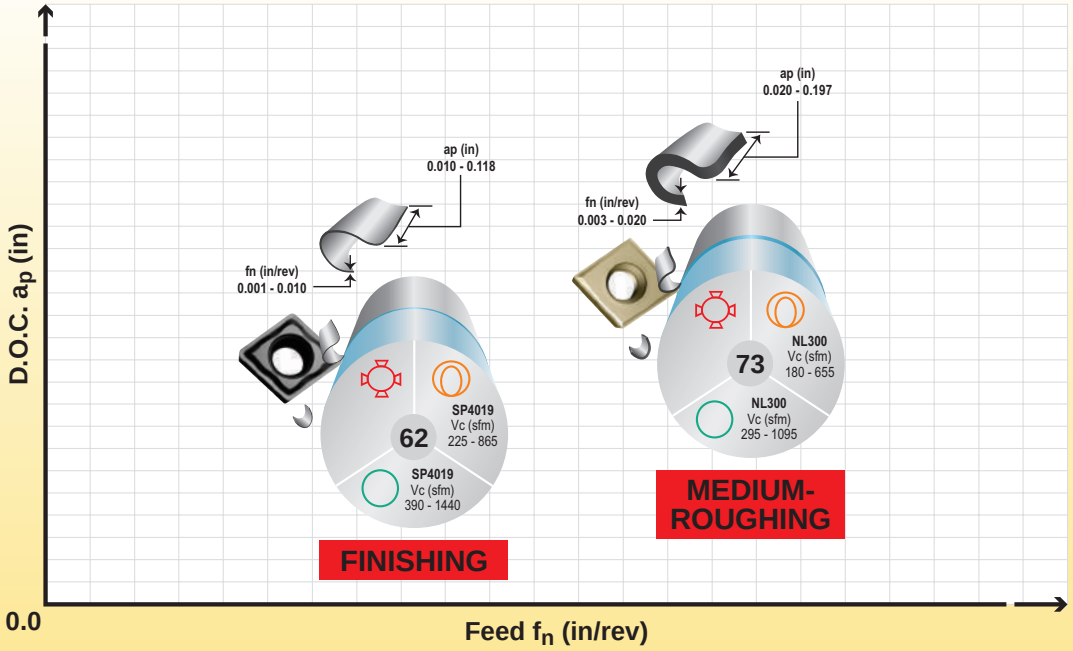


Please note the above recommended cutting speeds, geometries and grades are for guidance only.
For more detailed information, see pages C20 - C31 (geometry technical information & grade technical information).

Key	Interrupted cut	Varying depth of cut	Good condition

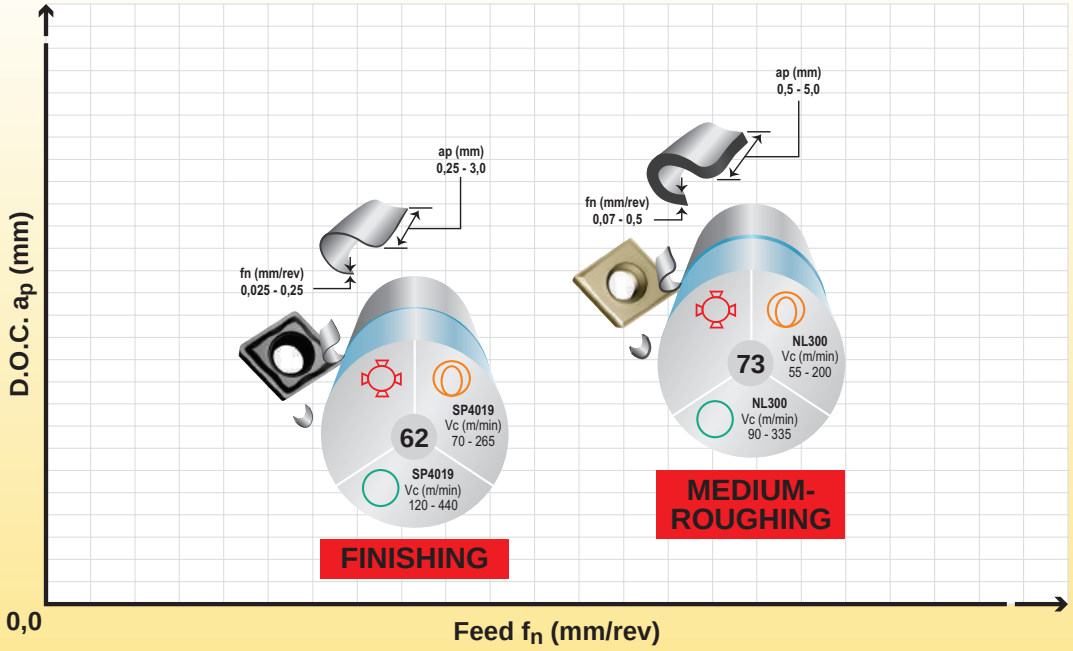
Positive Inserts – Cast Iron

Inch



Positive Inserts – Cast Iron

Metric

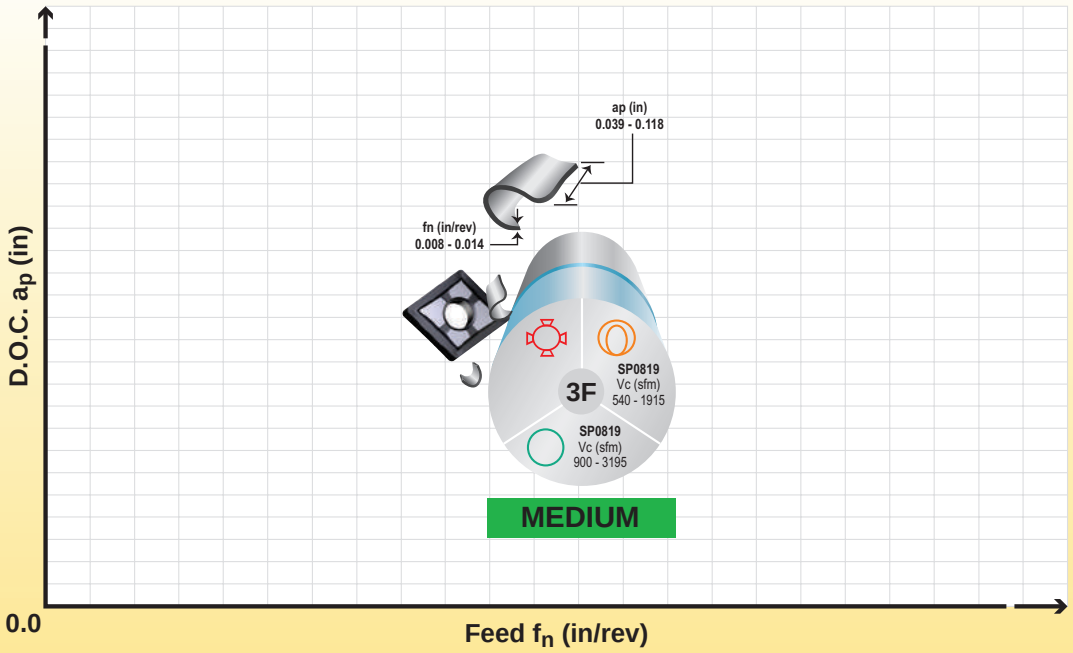


Please note the above recommended cutting speeds, geometries and grades are for guidance only.
For more detailed information, see pages C20 - C31 (geometry technical information & grade technical information).

Key	Interrupted cut	Varying depth of cut	Good condition

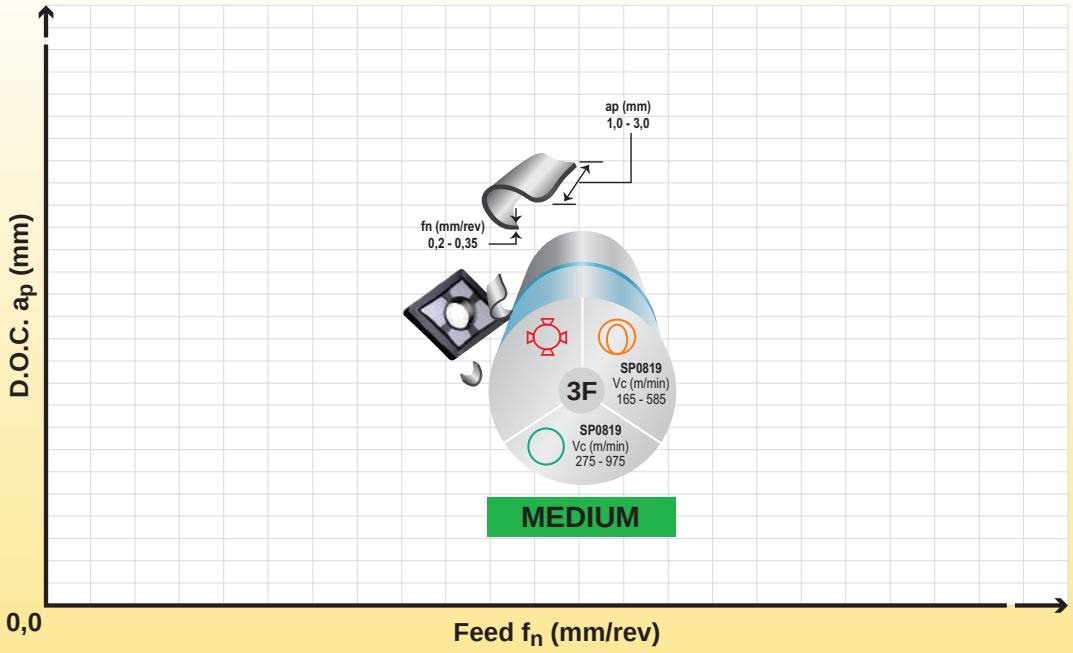
Negative Inserts – Aluminum & Alloys

Inch



Negative Inserts – Aluminum & Alloys

Metric

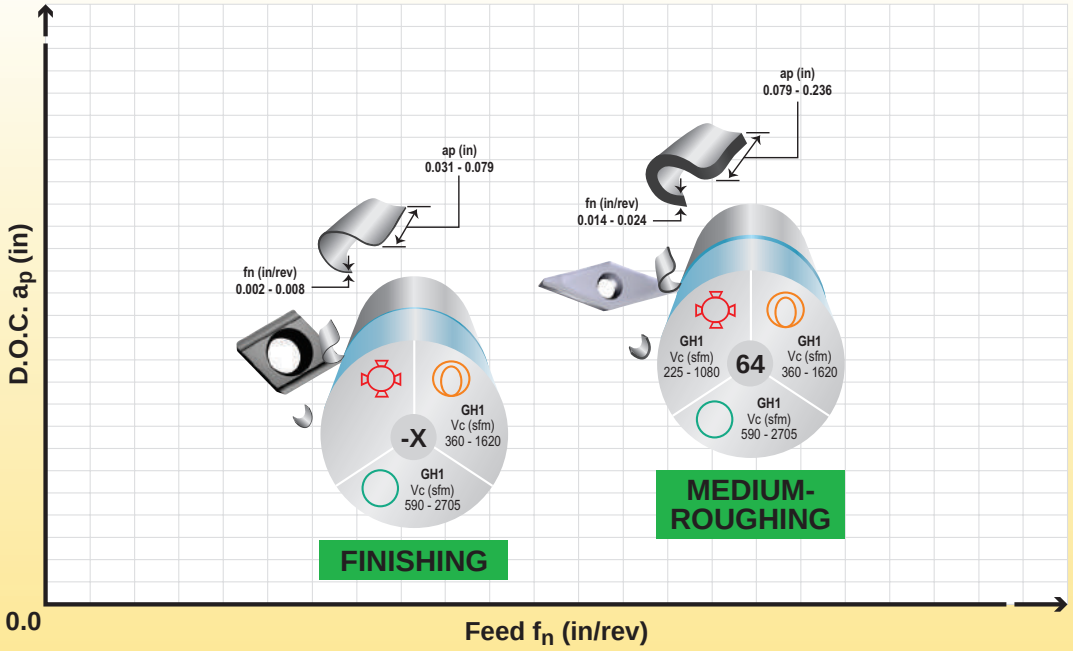


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Key	Interrupted cut	Varying depth of cut	Good condition

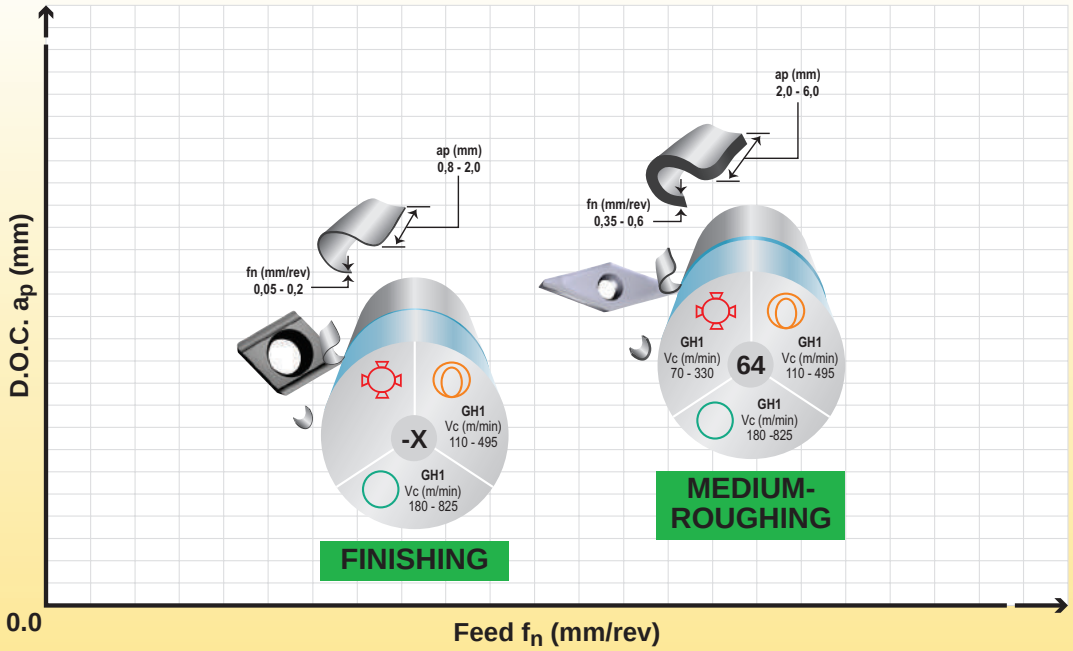
Positive Inserts – Aluminum & Alloys

Inch



Positive Inserts – Aluminum & Alloys

Metric

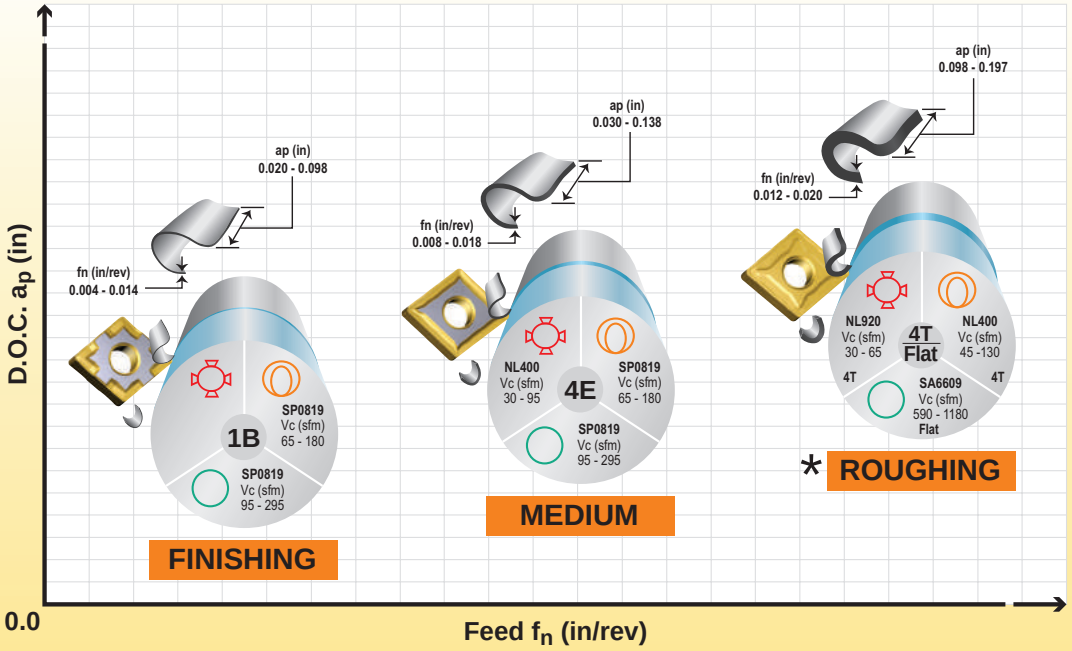


Please note the above recommended cutting speeds, geometries and grades are for guidance only.
For more detailed information, see pages C20 - C31 (geometry technical information & grade technical information).

Key	Interrupted cut	Varying depth of cut	Good condition

Negative Inserts – High Temperature Alloys

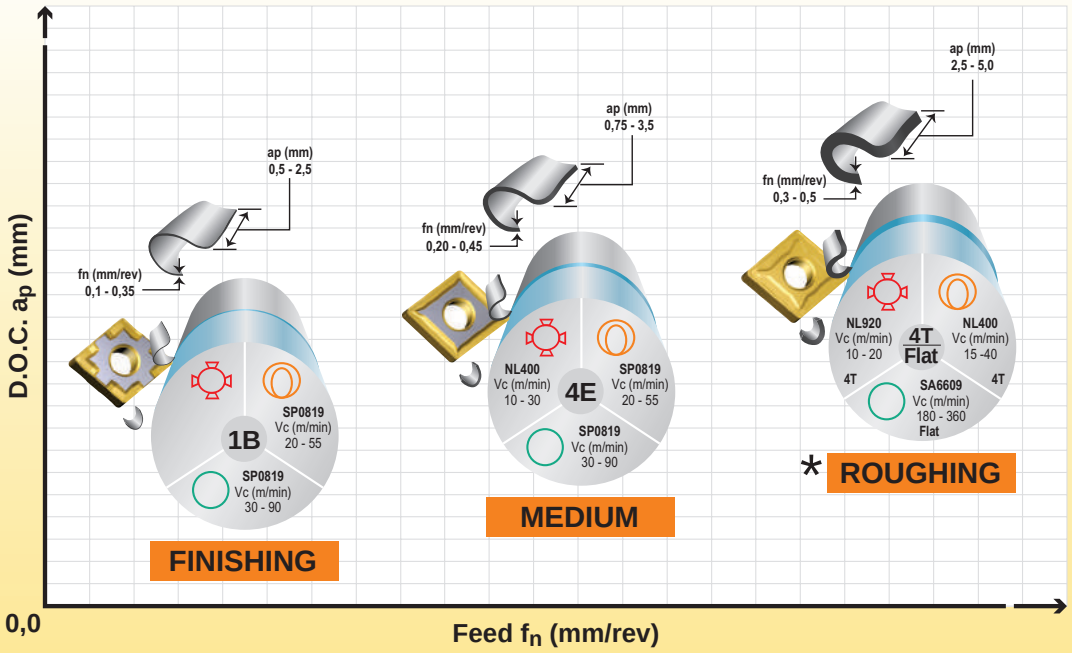
Inch



*Note: For Heavy Roughing applications see 5R geometry, page C25.

Negative Inserts – High Temperature Alloys

Metric



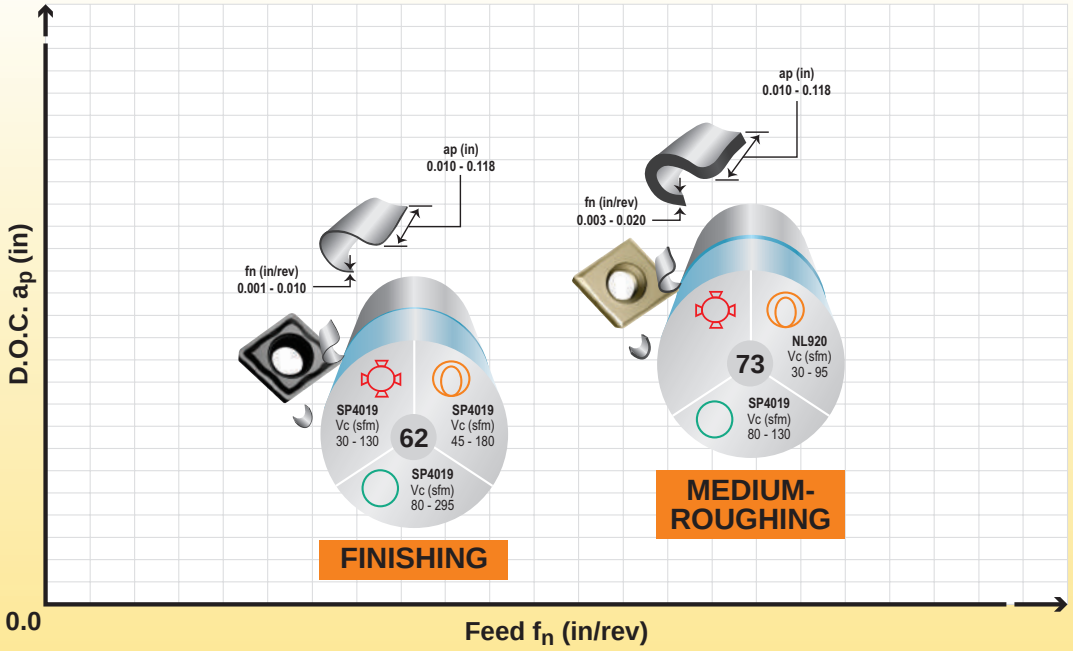
*Note: For Heavy Roughing applications see 5R geometry, page C25.

Please note the above recommended cutting speeds, geometries and grades are for guidance only.
For more detailed information, see pages C20 - C31 (geometry technical information & grade technical information).

Key	Interrupted cut	Varying depth of cut	Good condition

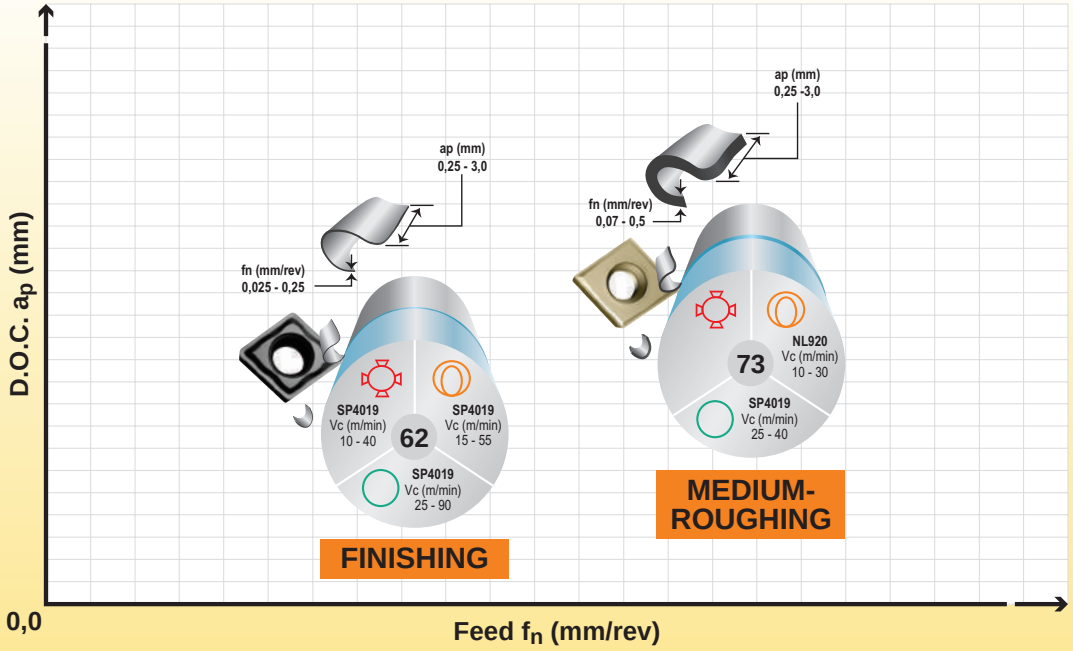
Positive Inserts – High Temperature Alloys

Inch



Positive Inserts – High Temperature Alloys

Metric

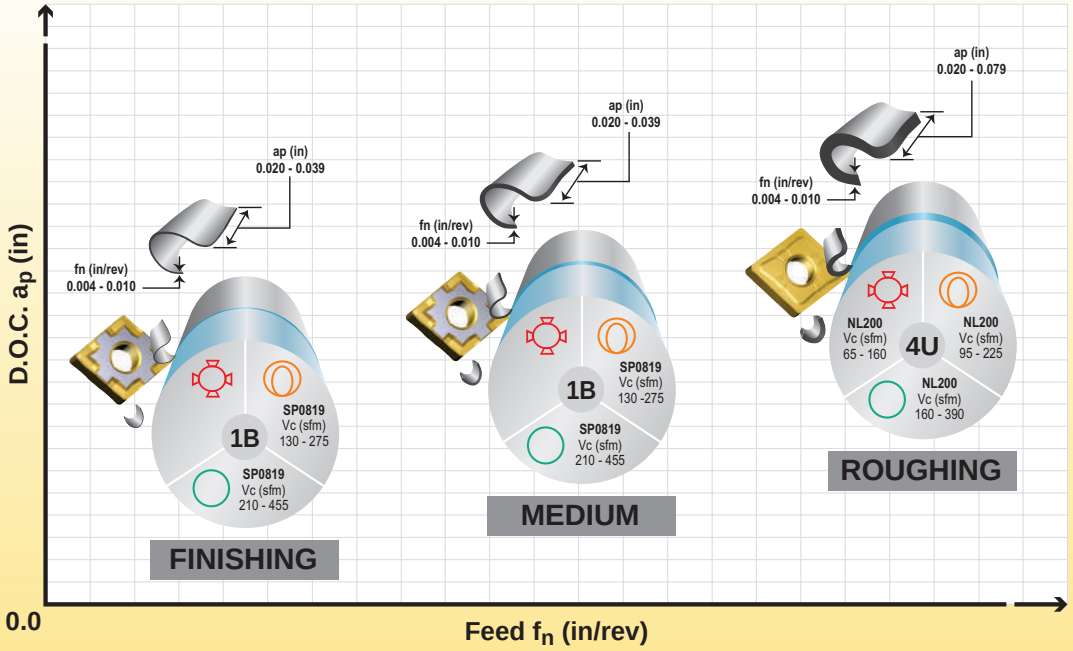


Please note the above recommended cutting speeds, geometries and grades are for guidance only.
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Key	Interrupted cut	Varying depth of cut	Good condition

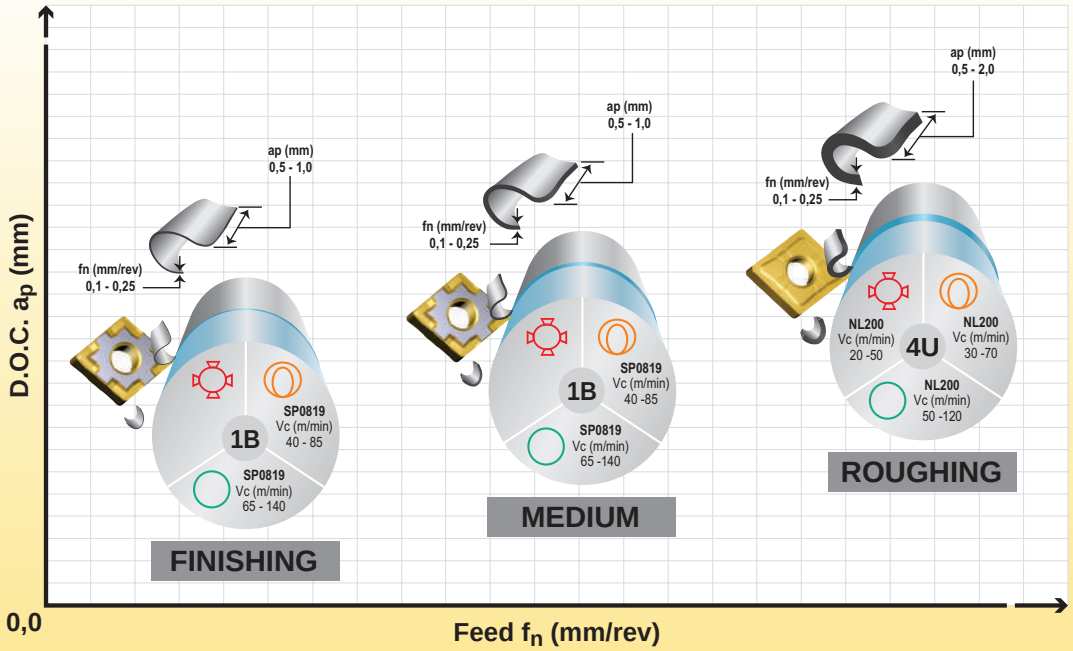
Negative Inserts – Hard Materials

Inch



Negative Inserts – Hard Materials

Metric

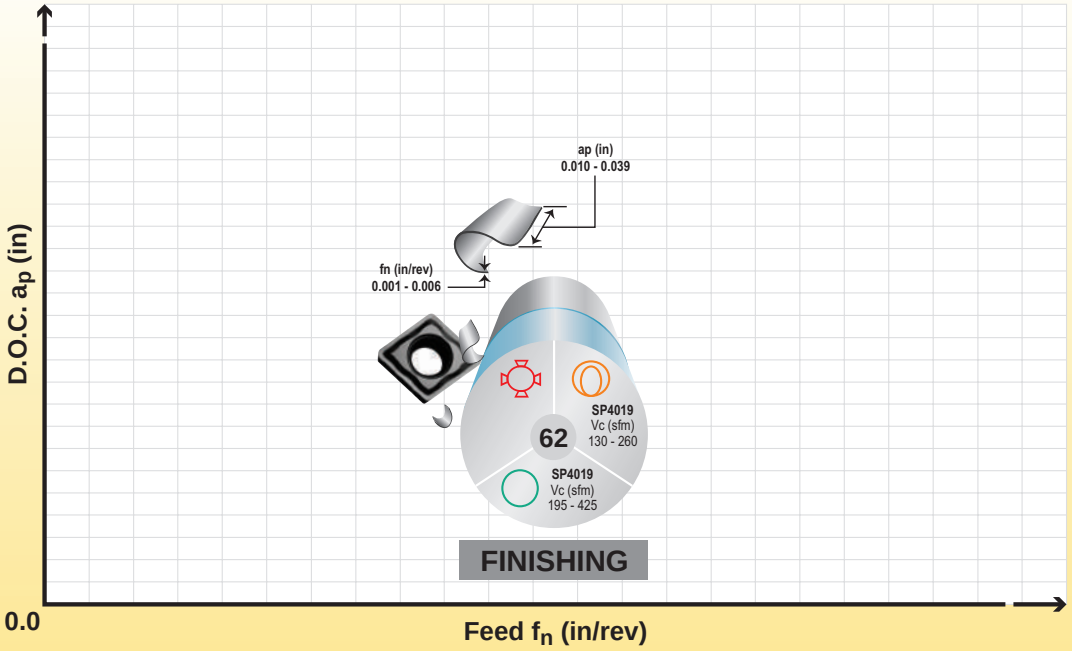


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For more detailed information, see pages C20 - C31 (geometry technical information & grade technical information).

Key	Interrupted cut	Varying depth of cut	Good condition

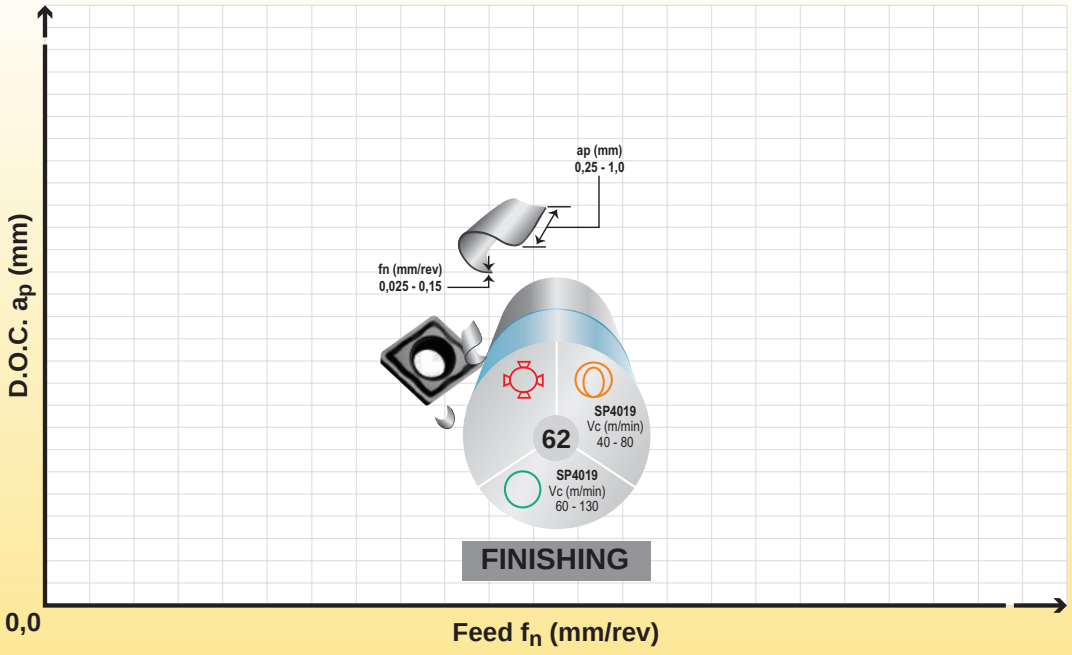
Positive Inserts – Hard Materials

Inch



Positive Inserts – Hard Materials

Metric



Please note the above recommended cutting speeds, geometries and grades are for guidance only.
For more detailed information, see pages C20 - C31 (geometry technical information & grade technical information).

Key	Interrupted cut	Varying depth of cut	Good condition

1st Choice

Diamond will indicate the recommended insert for each material. Stellram's Material Guide enables you to find the right insert for your machining requirements.

1. **Application information**
2. **Material Guide information – diamond indicates the recommended materials related to the geometry.**
3. **Detailed outline of geometry profile.**
4. **Identifies depth of cut (D.O.C) and feed rate range applicable to the geometry.**
5. **Cutting condition applicable to geometry.**

2N Inserts

2N Geometry Technical Information

Light to Medium Roughing:

The 2N Geometry's positive rake angle, provides a positive cutting action with reduced cutting pressure, making it an excellent first choice for a wide range of applications and materials.

Available in Grades: NL250, NL300 & NL920

Materials Application

NL250					
P	M	K	N	S	H
◆	◆				

NL300					
P	M	K	N	S	H
◆	◆				

NL920					
P	M	K	N	S	H
◆	◆				

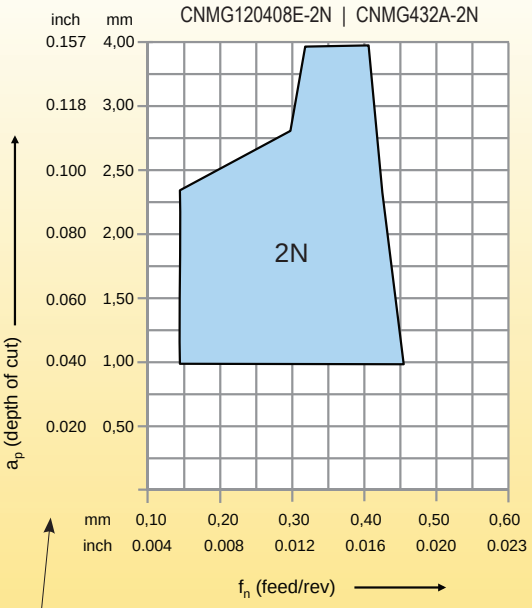
Cutting Condition



Profile



Alloyed Steel: 900 - 1200 N/mm² HBN 260 - 340



1B Geometry Technical Information

Finishing:

The 1B Geometry is ideal for the finish machining of Steels, Stainless Steels, and High Temperature Alloys. The precisely controlled cutting edge and nose profile removes material cleanly and efficiently, leaving a superior surface finish. **Available in Grades: SP0819 & NL250**

Materials Application

SP0819

P	M	K	N	S	H
◆	◆			◆	◆

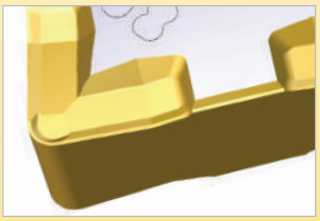
NL400

P	M	K	N	S	H
◆	◆			◆	

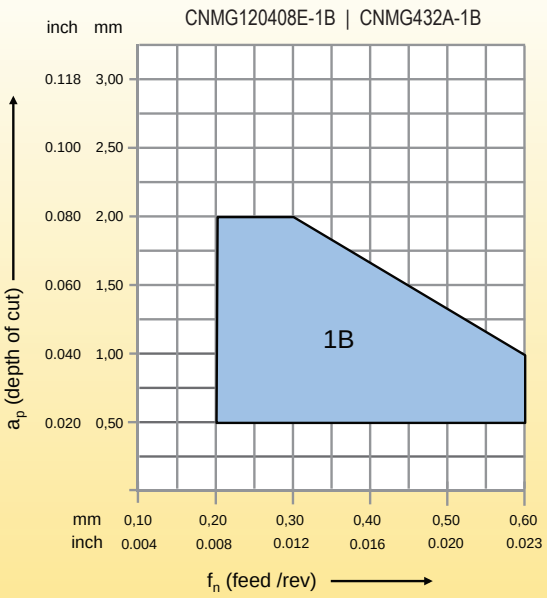
Cutting Condition

✔	✔	✘

Profile



Alloyed Steel: 4140 (41CrMo4)



2N Inserts

2N Geometry Technical Information

Light to Medium Roughing:

The 2N Geometry's positive rake angle, provides a positive cutting action with reduced cutting pressure, making it an excellent first choice for a wide range of applications and materials.
Available in Grades: NL250, NL300 & NL920

Materials Application

NL250

P	M	K	N	S	H
◆	◆				

NL300

P	M	K	N	S	H
◆	◆				

NL920

P	M	K	N	S	H
◆	◆				

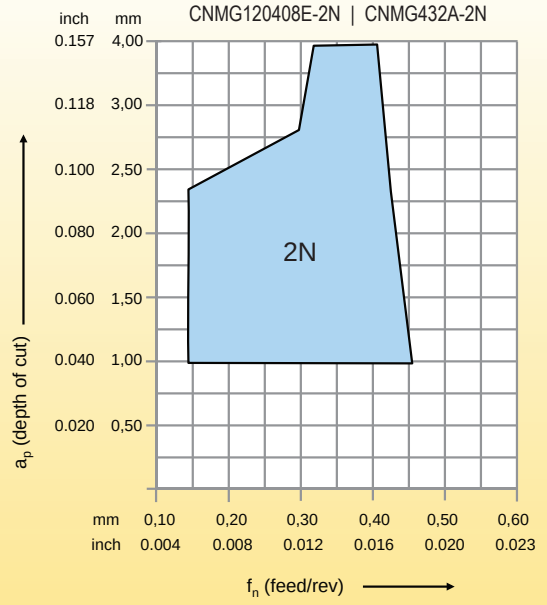
Cutting Condition

✔	✔	✔

Profile



Alloyed Steel: 900 - 1200 N/mm² HBN 260 - 340



Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels	P Alloyed Steels	M Stainless Steels	M PH Stainless	K Cast Irons	N Aluminum & Alloys	S High Temp. Alloys	H Hard Materials

3F Geometry Technical Information

Finishing to Light Roughing:

The 3F Geometry has a precision ground periphery to ensure a precise cutting edge profile, with accurate indexability. The micro edge conditioning reduces the cutting pressure, built-up edge and improves the surface finish in difficult to machine materials. **Available in Grade: SP0819**

Materials Application

SP0819

P	M	K	N	S	H
	◆		◆	◆	

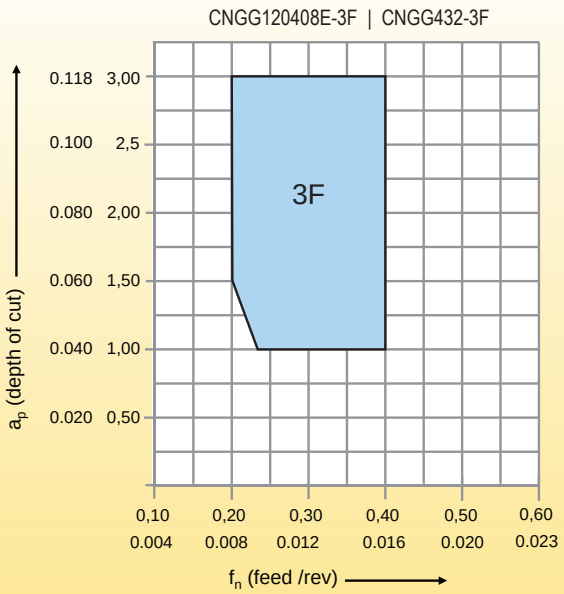
Cutting Condition



Profile



Stainless Steel: ATI 316™



3J Inserts

3J Geometry Technical Information

Medium to Light Roughing:

The 3J Geometry has a smooth cutting action which reduces cutting forces, improves surface finishes and increases the tool life, making it ideal for the machining of Stainless Steels. **Available in Grade: SP4019**

Materials Application

SP4019

P	M	K	N	S	H
	◆			◆	

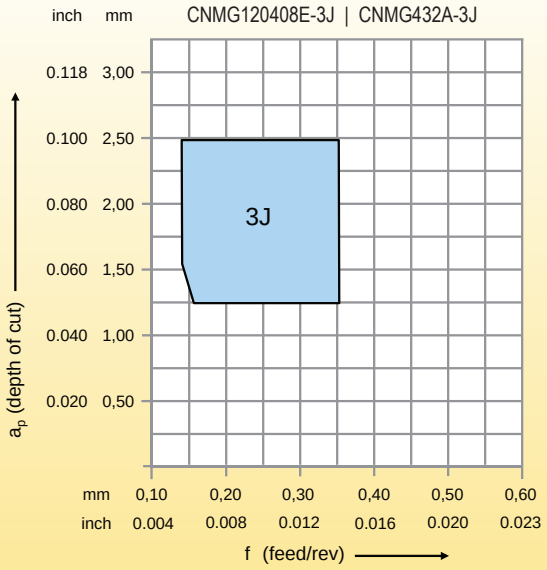
Cutting Condition



Profile



Stainless Steel: ATI 316™



Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels	P Alloyed Steels	M Stainless Steels	M PH Stainless	K Cast Irons	N Aluminum & Alloys	S High Temp. Alloys	H Hard Materials

4E Geometry Technical Information

Semi-Finishing to Light Roughing:
The 4E Geometry was designed specifically for the machining of High Nickel, High Cobalt, and Titanium based alloys. It's reinforced chip-breaker and precision edge condition enhances the performance of this geometry. **Available in Grades: SP0819 & NL400**

Materials Application

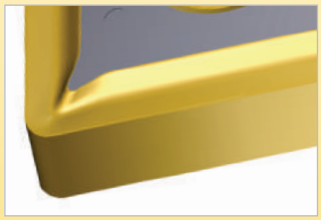
SP0819					
P	M	K	N	S	H
	◆			◆	

NL400					
P	M	K	N	S	H
	◆			◆	

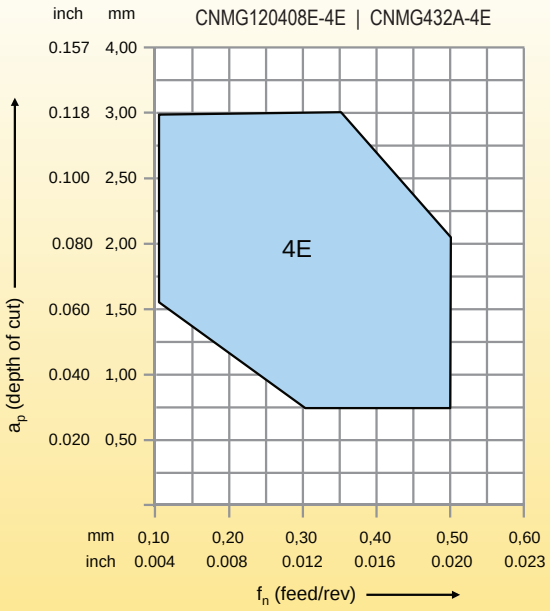
Cutting Condition

✔	✔	Light

Profile



Titanium Alloy: ATI 6-4™



4T Inserts

4T Geometry Technical Information

General Purpose Roughing:
The 4T Geometry is the first choice for general purpose machining of all Steels, Stainless Steels and Cast Irons.
Available in Grades: NL250, NL300, NL400 & NL920

Materials Application

NL250					
P	M	K	N	S	H
◆	◆	◆			

NL300					
P	M	K	N	S	H
◆	◆	◆			

NL400					
P	M	K	N	S	H
◆	◆				

NL920					
P	M	K	N	S	H
◆	◆	◆			

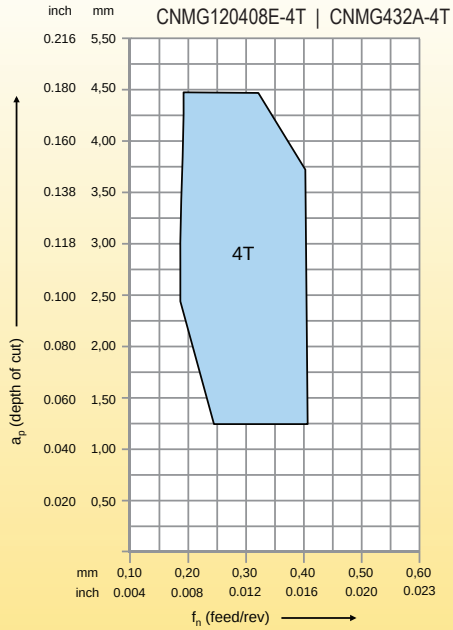
Cutting Condition

✔	✔	✔

Profile



Alloyed Steel: 800 - 1200 N/mm² HBN 230 - 340



Material Guide – Key to Recommended Inserts

Material Designation

P	M	K	N	S	H
Unalloyed Steels, Alloyed Steels	Stainless Steels, PH Stainless	Cast Irons	Aluminum & Alloys	High Temp. Alloys	Hard Materials

4U Geometry Technical Information

Medium to Roughing:

The 4U Geometry was designed specifically for roughing applications in Grey, Ductile and Malleable Irons. The geometry design produces low cutting pressure with excellent chip control, enhancing the tool life.
Available in Grade: NL200

Materials Application

NL200					
P	M	K	N	S	H
◆		◆			◆

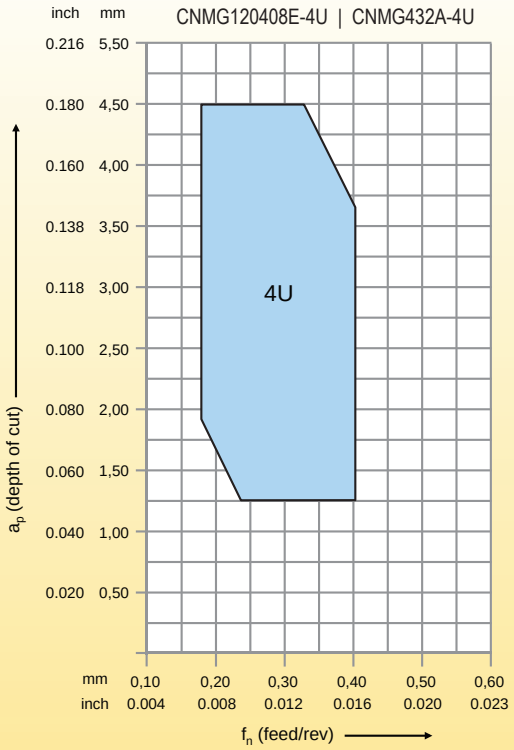
Cutting Condition

✔	✔	Light

Profile



Ductile Iron: HBN 170



Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels	P Alloyed Steels	M Stainless Steels	M PH Stainless	K Cast Irons	N Aluminum & Alloys	S High Temp. Alloys	H Hard Materials

5R Geometry Technical Information

Single Sided Heavy Roughing:

The 5R Geometry was designed specifically for the heavy, rough machining of Steels, Stainless Steels, High Nickel, High Cobalt and Titanium based alloys. It is the first choice when stability, high feed rates and strong edge conditions are required.

Available in Grades: NL300, NL400 & NL920

Materials Application

NL300

P	M	K	N	S	H
◆	◆				

NL400

P	M	K	N	S	H
◆	◆			◆	

NL920

P	M	K	N	S	H
◆	◆			◆	

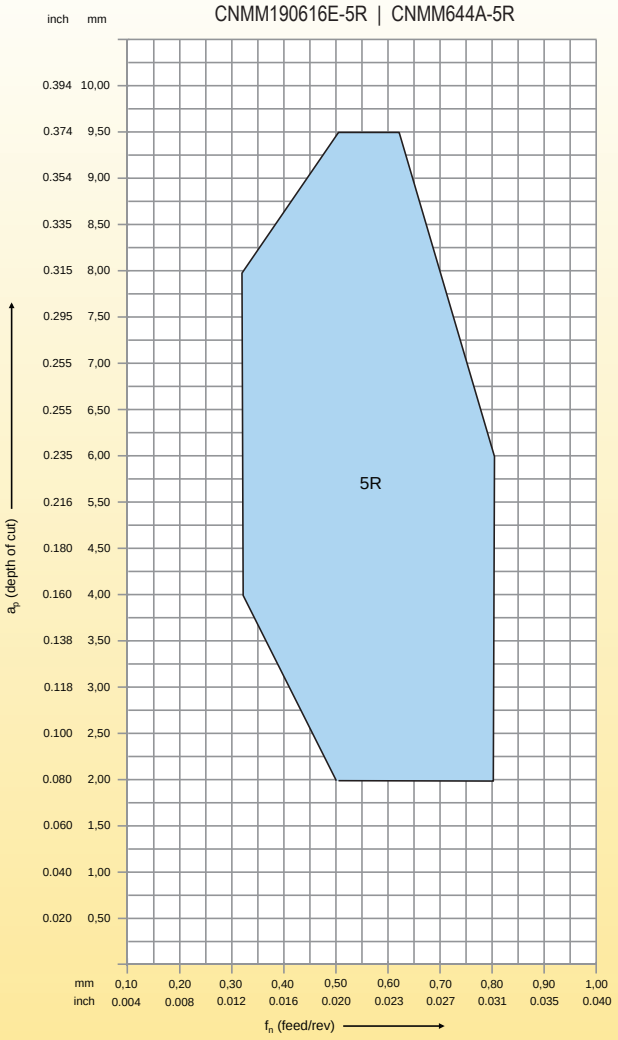
Cutting Condition



Profile



Stainless Steel: ATI 316™



Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

-15 Geometry Technical Information

Medium to Finishing:

The -15 Geometry is ideally suited to applications which require light depths of cut and feeds, and where vibration could be an issue. This geometry is ground and has a sharp edge condition.
Available in Grades: SP4019 & GH1

Materials Application

SP4019

P	M	K	N	S	H
◆	◆			◆	

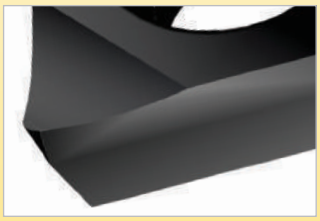
GH1

P	M	K	N	S	H
			◆		

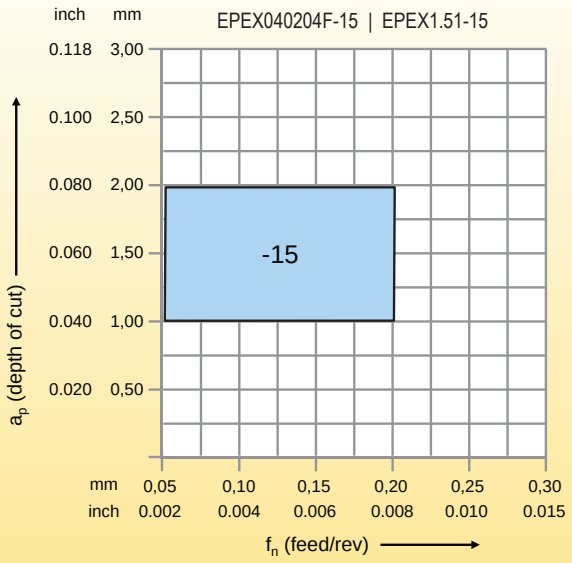
Cutting Condition



Profile



Aluminium: <16% Si HBN 116



-61 Inserts

-61 Geometry Technical Information

Finishing:

The -61 Geometry has 6 cutting edges and is one of the most economical inserts for small part machining. The chip-breaker provides good chip control and surface finish.
Available in Grade: SP4019

Materials Application

SP4019

P	M	K	N	S	H
◆	◆	◆			

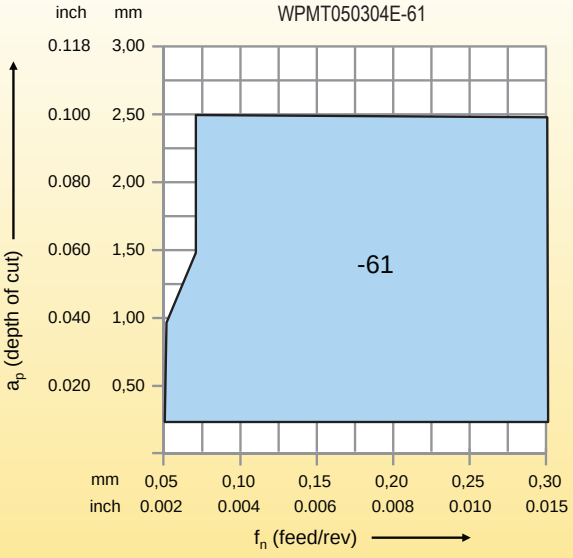
Cutting Condition



Profile



Unalloyed Steel: 750 - 950 N/mm² HBN 220 - 270



Material Guide – Key to Recommended Inserts

Material Designation

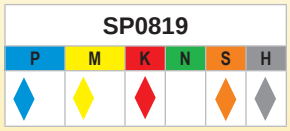
P Unalloyed Steels	P Alloyed Steels	M Stainless Steels	M PH Stainless	K Cast Irons	N Aluminum & Alloys	S High Temp. Alloys	H Hard Materials

-62 Geometry Technical Information

Finishing:

The -62 Geometry is one of the most versatile geometries for the machining of Steels, Stainless Steels, High Nickel, High Cobalt and Titanium based alloys. This positive geometry was designed for a wide variety of finishing applications.
Available in Grade: SP4019

Materials Application



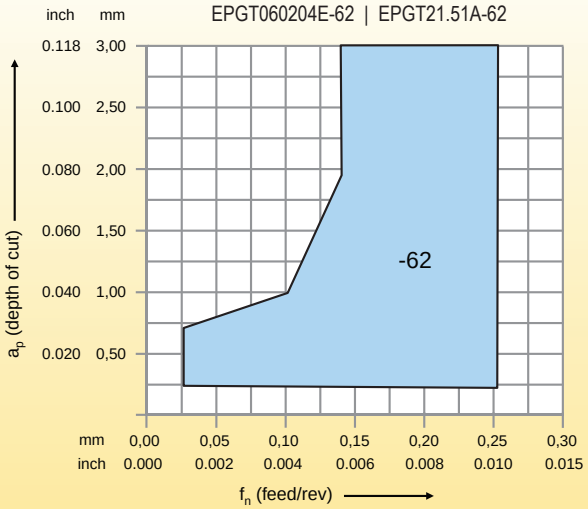
Cutting Condition



Profile



Unalloyed Steel: 750 - 950 N/mm² HBN 220 - 270



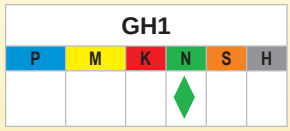
-64 Inserts

-64 Geometry Technical Information

Medium to Roughing:

The -64 Geometry is a very positive geometry, with polished top rake and ground periphery. Specifically designed for the machining of Aluminum, Plastics and Soft Alloys.
Available in Grade: GH1

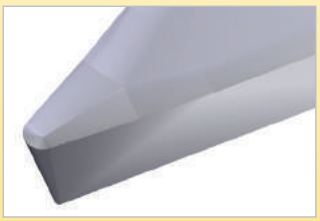
Materials Application



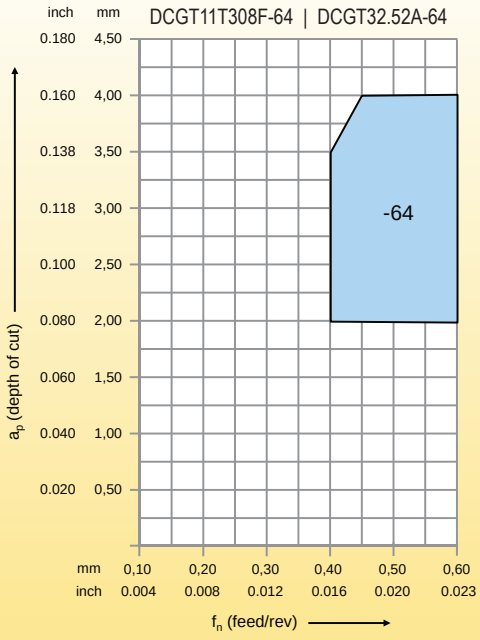
Cutting Condition



Profile



Aluminium: <16% Si HBN 116



Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

-66 Geometry Technical Information

Medium to Finishing:

The -66 Geometry has a precision ground periphery and pressed in chip-breaker, with a sharp edge condition, ideally suited for fine chip control when machining medical and small precision components.
Available in Grade: GH1

Materials Application

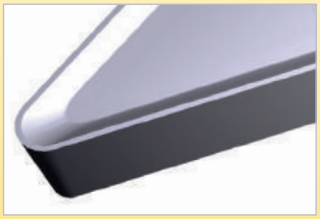
GH1

P	M	K	N	S	H
	◆		◆		

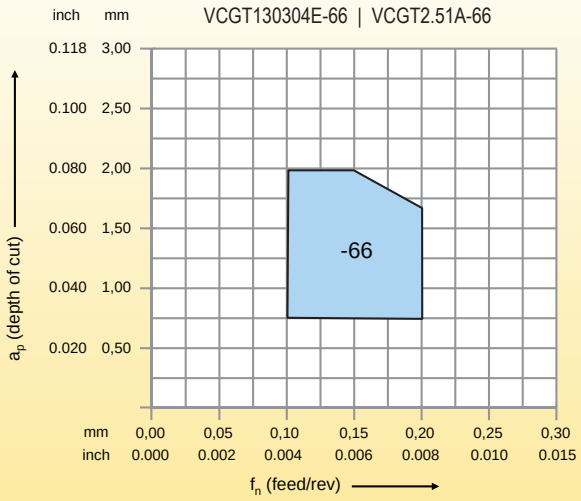
Cutting Condition

✔	✔	✘

Profile



Stainless Steel: 450 - 700 N/mm² HBN 120 - 180



-73 Inserts

-73 Geometry Technical Information

Medium to Roughing:

The -73 Geometry is an as pressed geometry, covering a wide range of applications and materials, making it the ideal first choice for most medium to roughing, machining applications.
Available in Grades: SP4019, NL300 & NL920

Materials Application

SP4019

P	M	K	N	S	H
◆	◆			◆	

NL300

P	M	K	N	S	H
◆	◆				

NL920

P	M	K	N	S	H
◆	◆			◆	

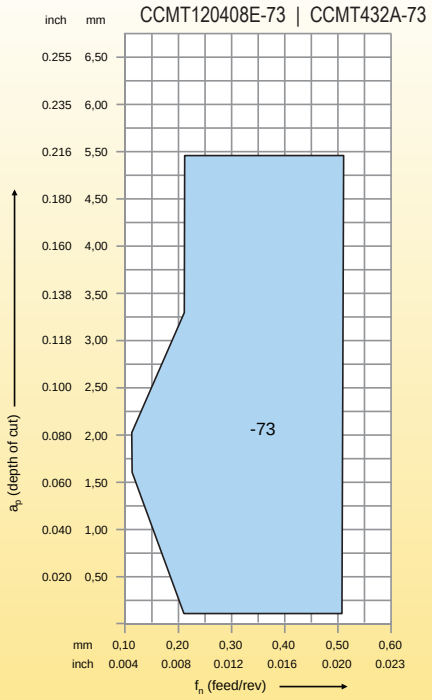
Cutting Condition

✔	✔	✔

Profile



Alloyed Steel: 900 - 1200 N/mm² HBN 260 - 340



Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels	P Alloyed Steels	M Stainless Steels	M PH Stainless	K Cast Irons	N Aluminum & Alloys	S High Temp. Alloys	H Hard Materials

-M Geometry Technical Information

Medium to Finishing:
The -M Geometry has a small, well defined chip-breaker for a soft cutting action, resulting in very little stress being produced, when machining small diameter components.
Available in Grades: SP4019 & GH1

Materials Application

SP4019

P	M	K	N	S	H
◆	◆			◆	

GH1

P	M	K	N	S	H
	◆			◆	

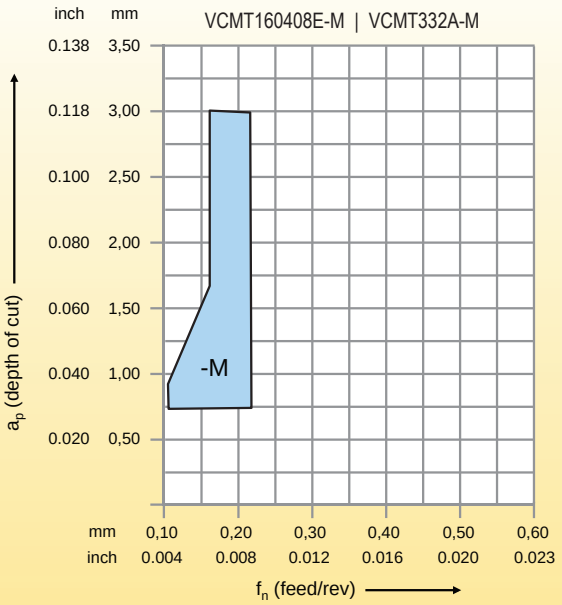
Cutting Condition



Profile



Unalloyed Steel: 750 - 950 N/mm² HBN 220 - 270



Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels	P Alloyed Steels	M Stainless Steels	M PH Stainless	K Cast Irons	N Aluminum & Alloys	S High Temp. Alloys	H Hard Materials

-T Geometry Technical Information

Medium to Roughing:

The -T Geometry is a utility geometry giving a stable cutting action in a wide vareity of demanding applications.
Available in Grades: SP4019, NL250, NL300, NL400 & NL920

Materials Application

SP4019					
P	M	K	N	S	H
◆	◆			◆	

NL250					
P	M	K	N	S	H
◆	◆				

NL300					
P	M	K	N	S	H
◆	◆				

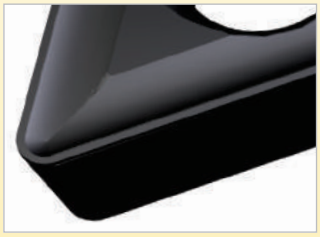
NL400					
P	M	K	N	S	H
◆	◆			◆	

NL920					
P	M	K	N	S	H
◆	◆			◆	

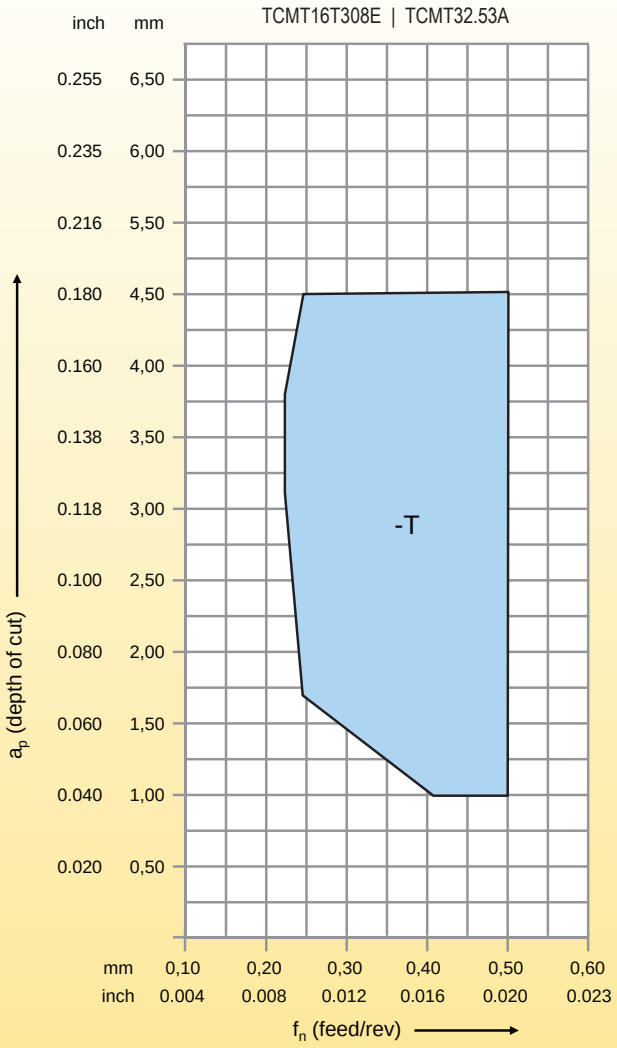
Cutting Condition



Profile



Unalloyed Steel: 750 - 950 N/mm² HBN 220 - 270



Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

-X Geometry Technical Information

Medium to Roughing:

The -X Geometry has a precision ground parallel chip groove, available with a fully ground periphery or as pressed, both with a sharp edge condition. Ideal for the machining of components which have vibration sensitive applications.

Available in Grades: SP4019 & GH1

Materials Application

SP4019

P	M	K	N	S	H
◆				◆	

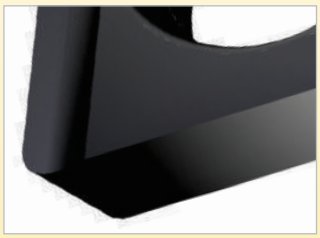
GH1

P	M	K	N	S	H
			◆		

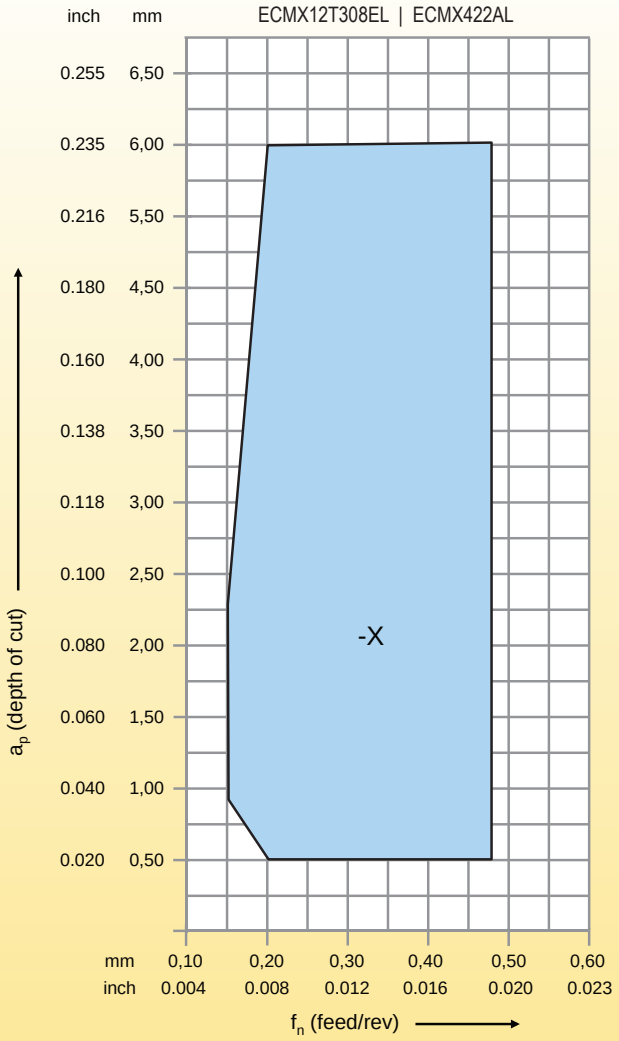
Cutting Condition

✔	✔	✘

Profile



Aluminium: <16% Si HBN 116



Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

Stellram's range of carbide and ceramic grades offer solutions to suit all material groups.

Cutting Material Groups

Uncoated Grade



Stellram's uncoated GH1 grade is a micro-gain carbide offering excellent wear resistance at high cutting speeds, in various materials and applications.

NL = CVD Coated Grades



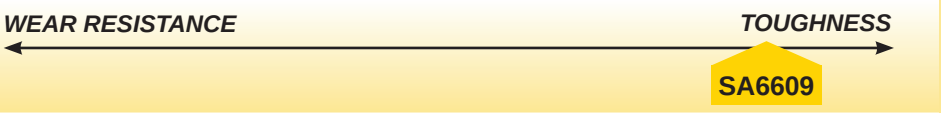
The **NL** range of CVD coated grades with enhanced surface layering have been specifically developed and engineered to machine at elevated cutting conditions, in a broad range of materials.

SP = PVD Coated Grades



These PVD coated grades can be applied to varying applications and materials, but primarily designed to machine stainless steels, and high temperature alloys.

SA = Ceramic Grade

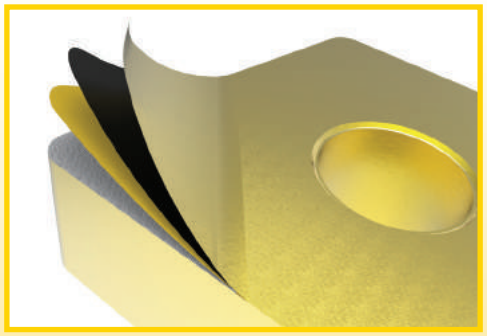


SA6609 is an advanced silicon-carbide whisker reinforced ceramic grade, which makes it very resistant to edge facture and notch wear, especially when machining high nickel, and high cobalt based alloys.

NL200

Coating Type: CVD
First choice to machine Cast Iron, this grade has a very good resistance to wear and deformation, suitable for medium and finishing applications on gray and malleable cast irons.

Available in the following geometries:
Medium – Roughing: 4U



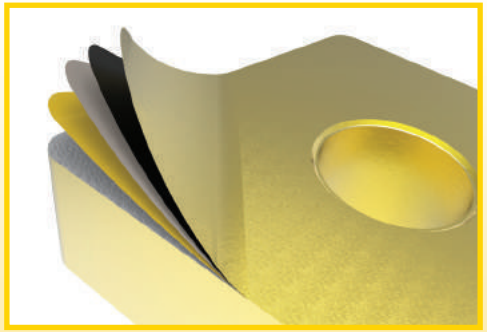
NL200	Application Range											MAX	DRY	Cutting speed			
														SFM		m/min	
	01	05	10	15	20	25	30	35	40	45	50			Vc min	Vc max	Vc min	Vc max
P			■	■	■							●	●	200	1360	60	415
M																	
K		■	■	■								●	●	315	1350	95	410
N																	
S																	
H		■	■									●		150	410	45	125

Recommended ● Acceptable ◉

NL250

Coating Type: CVD
Wear resistant grade for semi-finishing and finishing applications. Suitable for stable conditions with limited interrupted machining.

Available in the following geometries:
Finishing: 1B
Light-Medium Roughing: 2N
Roughing: 4T
Flat Top: Roughing



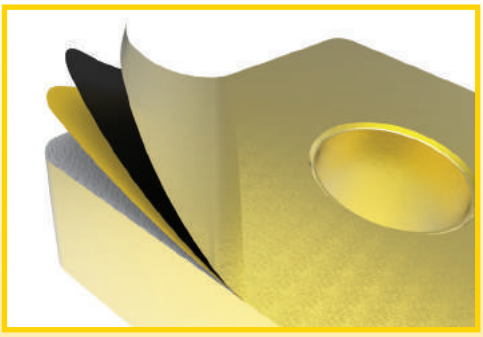
NL250	Application Range											MAX	DRY	Cutting speed			
														SFM		m/min	
	01	05	10	15	20	25	30	35	40	45	50			Vc min	Vc max	Vc min	Vc max
P			■	■	■	■						●	●	200	1330	60	405
M		■	■	■	■							●		190	900	60	275
K		■	■	■	■							●	●	305	1225	95	375
N																	
S		■	■	■								●		60	265	20	80
H																	

Recommended ● Acceptable ◉

NL300

Coating Type: CVD
A tough but wear resistant grade for medium and rough machining with light scale but, no interruption. General purpose for Steels and Cast Iron materials.

Available in the following geometries:
Medium roughing: -73
Light-Medium Roughing: 2N
Roughing: 4T
Single Sided Heavy Roughing: 5R
Medium – Roughing:-T



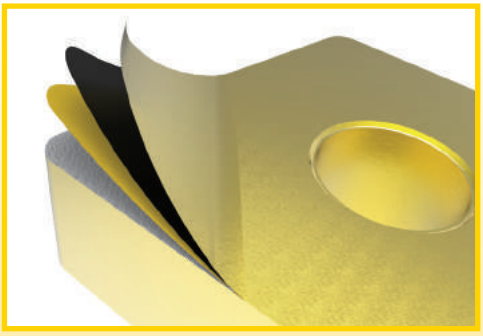
NL300	Application Range											MAX	DRY	Cutting speed			
														SFM		m/min	
	01	05	10	15	20	25	30	35	40	45	50			Vc min	Vc max	Vc min	Vc max
P			■	■	■	■	■					●	●	190	1250	60	380
M				■	■	■						●		190	835	60	255
K			■	■	■	■						●	●	300	1100	90	335
N																	
S																	
H																	

Recommended ● Acceptable ◉

NL400

Coating Type: CVD
A very tough grade for medium and rough machining, primarily on Stainless Steel and Exotic Alloys. Good resistance to thermal diffusion, and accepts light interruption.

Available in the following geometries:
Light Roughing – Semi-Finishing: 4E
Roughing: 4T
Single Sided Heavy Roughing: 5R



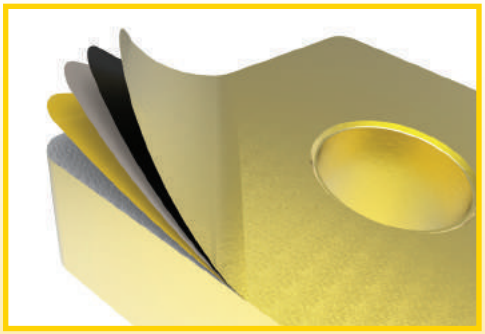
NL400	Application Range											MAX	DRY	Cutting speed			
														SFM		m/min	
	01	05	10	15	20	25	30	35	40	45	50			Vc min	Vc max	Vc min	Vc max
P					■	■	■	■				●	●	165	1185	50	360
M			■	■	■	■	■					●		160	800	50	245
K																	
N																	
S			■	■	■	■						●		50	235	15	70
H																	

Recommended ● Acceptable ◉

NL920

Coating Type: CVD

A fine grain but tough grade, with a high degree of edge security on Steels and Stainless Steels. Performs well on rough and heavy machining applications, including interrupted applications.



Available in the following geometries:
Light-Medium: 2N
Roughing: 4T
Sing Sided Heavy Roughing: 5R
Medium – Roughing: -73
Medium – Roughing: -T

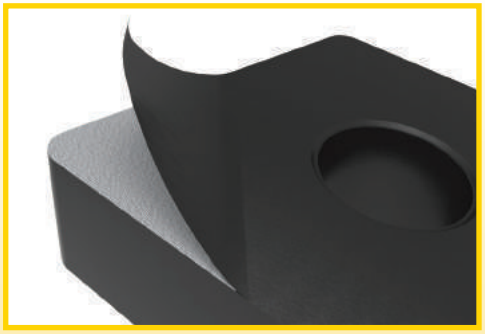
NL920	Application Range											MAX	DRY	Cutting speed			
														SFM		m/min	
	01	05	10	15	20	25	30	35	40	45	50			Vc min	Vc max	Vc min	Vc max
P							■	■	■	■		●	●	140	740	45	225
M							■	■	■			●		140	500	40	155
K							■	■	■			●	●	225	735	70	225
N																	
S					■	■	■					●		45	150	15	45
H																	

Recommended ● Acceptable ◉

SP0819

Coating Type: PVD

A very wear resistant micro grain substrate with a new generation of TiAlN coating. First choice to machine difficult to machine materials, including PH Stainless Steel. Requires higher cutting speeds in finishing and medium operations, with stable conditions and clean material.



Available in the following geometries:
Finishing: 1B
Finishing-Light Roughing: 3F
Semi Finishing – Light Roughing: 4E

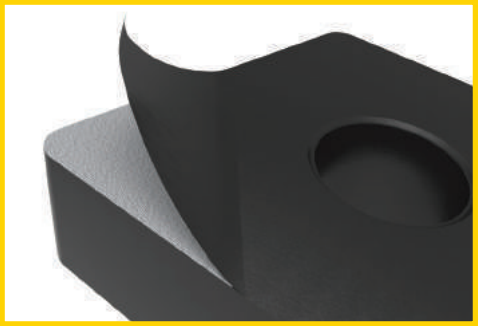
SP0819	Application Range											MAX	DRY	Cutting speed			
														SFM		m/min	
	01	05	10	15	20	25	30	35	40	45	50			Vc min	Vc max	Vc min	Vc max
P	■	■										●	●	260	1480	80	450
M		■	■									●		250	1040	75	315
K																	
N	■	■										●	●	900	3200	275	975
S	■	■										●		80	295	25	90
H	■	■										●		215	460	65	140

Recommended ● Acceptable ◉

SP4019

Coating Type: PVD
A tough micro-grain substrate with new generation TiAlN coating, renders this PVD grade extremely hard for unmatched performance in all materials.

Available in the following geometries:
Finishing: -62 (positive)
Finishing – Light Roughing: 3J
Medium – Roughing: -73 (positive)
Medium – Finishing: -15
Medium – Roughing: -X
Finishing: -61
Medium – Roughing: -T



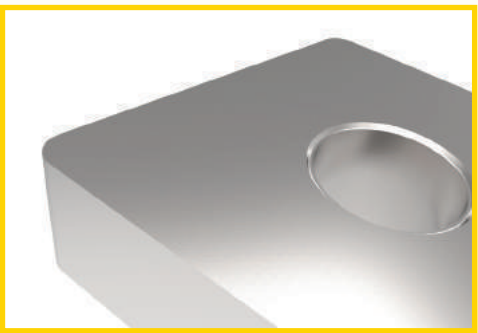
SP4019	Application Range											MAX	DRY	Cutting speed			
														SFM		m/min	
	01	05	10	15	20	25	30	35	40	45	50			Vc min	Vc max	Vc min	Vc max
P			●	●	●	●						●	●	250	1450	80	440
M		●	●	●	●							●		245	980	75	300
K				●	●	●						●	●	395	1435	120	440
N			●	●	●							●	●	1200	3200	365	975
S		●	●									●		80	290	25	90
H			●	●	●	●						●		195	430	60	130

Recommended ● Acceptable ◉

GH1

Coating Type: Uncoated
A very wear resistant uncoated micrograin for Cast Irons, Hardened Steel to 58 HRC and non ferrous alloys. Produces a low cutting pressure at high speed due to sharp cutting edge definition.

Available in the following positive geometries:
Medium – Roughing: X
Medium – Finishing: -64
Medium – Finishing: -66
Medium – Finishing: M



GH1	Application Range											MAX	DRY	Cutting speed			
														SFM		m/min	
	01	05	10	15	20	25	30	35	40	45	50			Vc min	Vc max	Vc min	Vc max
P																	
M																	
K		●	●	●	●	●	●					●	●	225	735	70	225
N	●	●	●									●	●	600	2700	185	825
S																	
H																	

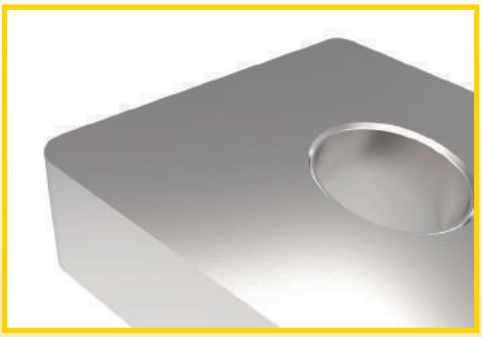
Recommended ● Acceptable ◉

SA6609

Coating Type: Uncoated

A whisker ceramic grade for roughing and medium machining applications, on High Temperature Alloys. Excellent wear resistance with elevated cutting surface speeds.

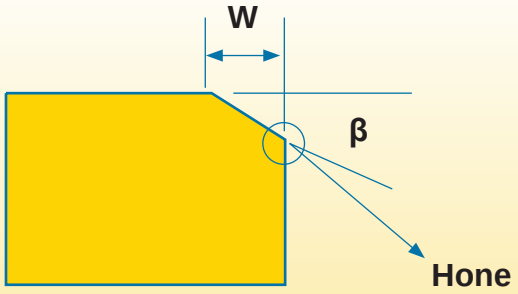
Available in two edge preparation:
Finishing to medium: E010
Medium to roughing: E030



SA6609	Application Range											MAX	DRY	Cutting speed			
														SFM		m/min	
	01	05	10	15	20	25	30	35	40	45	50			Vc min	Vc max	Vc min	Vc max
P																	
M																	
K																	
N																	
S			■	■	■							●		590	1475	180	450
H																	

Recommended ● Acceptable ◉

Edge Condition	W	β	Hone
	mm	mm	mm
	inch	inch	inch
E010	0.05	20°	0
	0.002		
E030	0.15	20°	0
	0.006		



STELLRAM

Negative Turning: Geometry, Grade and Material Selection

Geometry	Grade																					
	SP0819						SP4019						NL200						NL250					
	P	M	K	N	S	H	P	M	K	N	S	H	P	M	K	N	S	H	P	M	K	N	S	H
1B	◆◆	◆◆			◆	◆													◆◆	◆◆			◆	
2N																			◆◆	◆◆				
3F		◆◆		◆	◆																			
3J								◆◆			◆													
4E		◆◆			◆																			
4T																			◆◆	◆◆	◆			
4U													◆◆		◆			◆						
Flat-Top																					◆			
5R																								

Negative Turning: Geometry, Grade and Material Selection

Geometry	Grade																	
	NL300						NL400						NL920					
	P	M	K	N	S	H	P	M	K	N	S	H	P	M	K	N	S	H
1B																		
2N	◆◆	◆◆											◆◆	◆◆				
3F																		
3J																		
4E								◆◆			◆							
4T	◆◆	◆◆	◆				◆◆	◆◆					◆◆	◆◆	◆			
4U																		
Flat-Top																		
5R	◆◆	◆◆					◆◆	◆◆			◆		◆◆	◆◆			◆	

Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

Positive Turning: Geometry, Grade and Material Selection

Geometry	Grade																	
	SP4019						NL250						NL300					
	P	M	K	N	S	H	P	M	K	N	S	H	P	M	K	N	S	H
15	◆◆	◆◆			◆													
X	◆◆				◆													
61	◆◆	◆◆	◆															
62	◆◆	◆◆	◆		◆	◆												
64																		
66																		
73	◆◆	◆◆			◆								◆◆	◆◆				
M	◆◆	◆◆			◆													
T	◆◆	◆◆			◆		◆◆	◆◆					◆◆	◆◆				

Positive Turning: Geometry, Grade and Material Selection

Geometry	Grade																	
	NL400						NL920						GH1					
	P	M	K	N	S	H	P	M	K	N	S	H	P	M	K	N	S	H
15																◆		
X																◆		
61																		
62																		
64																◆		
66														◆◆		◆		
73							◆◆	◆◆			◆							
M														◆◆			◆	
T	◆◆	◆◆			◆		◆◆	◆◆			◆							

Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

Cutting Speed (v_c) SFM

ISO	Materials	Rm and Hardness	CVD Coated				
			NL200	NL250	NL300	NL400	NL920
			min. - max.	min. - max.	min. - max.	min. - max.	min. - max.
P	Unalloyed Steel	<600 N/mm² <180 HBN	548 - 1362	533 - 1332	518 - 1250	444 - 1184	385 - 740
		<950 N/mm² <280 HBN	355 - 883	346 - 864	336 - 800	288 - 768	250 - 480
	Alloyed Steel	700-950 N/mm² 200-280 HBN	326 - 810	317 - 792	308 - 750	264 - 704	229 - 440
		950-1200 N/mm² 280-355 HBN	296 - 736	288 - 720	280 - 660	240 - 640	208 - 400
		1200-1400 N/mm² 355-415 HBN	202 - 503	197 - 492	191 - 440	164 - 437	142 - 273
M	Stainless Steel	Austenitic + Ferritic 300 series		360 - 900	355 - 835	300 - 800	260 - 500
		Martensitic 400 series		346 - 864	340 - 800	288 - 768	250 - 480
	PH Stainless	Refractory P.H.		192 - 480	190 - 445	160 - 427	139 - 267
K	Cast Iron	Grey GG-Ft	543 - 1349	528 - 1225	513 - 1100		381 - 733
		Spheroidal-Ductile GGG-FGS	469 -1165	456 - 1058	443 - 950		329 - 633
		Malleable GTS - MN/MP	316 - 785	307 - 713	299 - 640		222 - 427
N	Aluminium & Alloys	Aluminium & Alloys < 16% 116 HB					
		Aluminium + Silicon > 16% 92 HB					
S	High Temperature Alloys	Iron Based		77 - 92		64 - 171	55 - 107
		Cobalt Based		62 - 156		52 - 139	45 - 87
		Nickel Based		67 - 168		56 - 149	49 - 93
		Titanium Based		106 - 264		88 - 235	76 - 147
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN	150 - 410				
		Chilled Cast Iron >1400 N/mm² >400 HBN	165 - 390				

Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

Cutting Speed (v_c) SFM

ISO	Materials	Rm and Hardness	PVD				Uncoated	Ceramic
			SP0819	SP4019	SP4030 (Grooving)	SP4066 (Threading)	GH1 Micrograin	SA6609
			min. - max.	min. - max.	min. - max.	min. - max.	min. - max.	min. - max.
P	Unalloyed Steel	<600 N/mm² <180 HBN	696 - 1480	681 - 1450	444 - 888	750 - 1595		
		<950 N/mm² <280 HBN	451 - 960	442 -941	288 - 576	492 - 1035		
	Alloyed Steel	700-950 N/mm² 200-280 HBN	414 - 880	405 - 862	264 - 528	445 - 950		
		950-1200 N/mm² 280-355 HBN	376 - 800	368 - 784	240 - 480	405 - 860		
		1200-1400 N/mm² 355-415 HBN	257 - 547	251 - 536	164 - 328	275 - 590		
M	Stainless Steel	Austenitic + Ferritic 300 series	470 - 1000	460 - 980	350 - 750	505 - 1079	260 - 500	
		Martensitic 400 series	489 - 1040	442 - 941	336 - 720	525 - 1122	270 - 520	
	PH Stainless	Refractory P.H.	251 - 533	245 - 523	187 - 400	270 - 574	140 - 265	
K	Cast Iron	Grey GG-Ft		675 - 1437	440 - 880	740 - 1581	381 - 733	
		Spheroidal-Ductile GGG-FGS		583 - 1241	380 - 760	640 - 1364	329 - 633	
		Malleable GTS - MN/MP		393 - 836	256 - 512	430 - 920	222 - 427	
N	Aluminium & Alloys	Aluminium & Alloys < 16% 116 HB	1300 - 3200	1200 - 3200	1200 - 3000		1100 - 2700	
		Aluminium + Silicon > 16% 92 HB	900 - 2200		800 - 2000		600 - 1800	
S	High Temperature Alloys	Iron Based	100 - 213	98 - 209	64 - 128	110 - 230	55 - 150	590 - 1475
		Cobalt Based	81 - 173	80 - 170	52 - 104	90 - 187	45 - 90	590 - 1310
		Nickel Based	88 - 187	86 - 183	56 - 112	95 - 200	50 - 95	590 - 1180
		Titanium Based	138 - 293	135 - 287	88 - 176	150 - 315	75 - 150	
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN	230 - 460	202 - 431				
		Chilled Cast Iron >1400 N/mm² >400 HBN	215 - 440	196 - 418				

Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

Cutting Speed (v_c) m/min

ISO	Materials	Rm and Hardness	CVD Coated				
			NL200	NL250	NL300	NL400	NL920
			min. - max.	min. - max.	min. - max.	min. - max.	min. - max.
P	Unalloyed Steel	<600 N/mm² <180 HBN	167 - 415	162 - 406	158 - 381	135 - 361	117 - 226
		<950 N/mm² <280 HBN	108 - 269	105 - 263	102 - 244	88 - 234	76 - 146
	Alloyed Steel	700-950 N/mm² 200-280 HBN	99 - 247	97 - 241	94 - 229	80 - 215	70 - 134
		950-1200 N/mm² 280-355 HBN	90 - 224	88 - 220	85 - 201	73 - 195	63 - 122
		1200-1400 N/mm² 355-415 HBN	62 - 153	60 - 150	58 - 134	50 - 133	43 - 83
M	Stainless Steel	Austenitic + Ferritic 300 series		110 - 274	110 - 255	91 - 244	79 - 152
		Martensitic 400 series		105 - 263	105 - 245	88 - 234	76 - 146
	PH Stainless	Refractory P.H.		59 - 146	60 - 135	49 - 130	42 - 81
K	Cast Iron	Grey GG-Ft	165 - 411	161 - 373	157- 335		116 - 224
		Spheroidal-Ductile GGG-FGS	143 -355	139 - 322	135 - 290		100 - 193
		Malleable GTS - MN/MP	96 - 239	94 - 217	91 - 195		68 - 130
N	Aluminium & Alloys	Aluminium & Alloys < 16% 116 HB					
		Aluminium + Silicon > 16% 92 HB					
S	High Temperature Alloys	Iron Based		23 - 59		20 - 52	17 - 33
		Cobalt Based		19 - 48		16 - 42	14 - 26
		Nickel Based		20 - 51		17 - 46	15 - 28
		Titanium Based		32 - 80		27 - 72	23 - 45
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN	45 - 125				
		Chilled Cast Iron >1400 N/mm² >400 HBN	50 - 120				

Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

Cutting Speed (v_c) m/min

ISO	Materials	Rm and Hardness	PVD				Uncoated	Ceramic
			SP0819	SP4019	SP4030 (Grooving)	SP4066 (Threading)	GH1 Micrograin	SA6609
			min. - max.	min. - max.	min. - max.	min. - max.	min. - max.	min. - max.
P	Unalloyed Steel	<600 N/mm² <180 HBN	212 - 451	208 - 442	135 - 271	230 - 485		
		<950 N/mm² <280 HBN	138 - 293	135 -287	88 - 176	150 -315		
	Alloyed Steel	700-950 N/mm² 200-280 HBN	126 - 268	123 - 263	80 - 161	135 - 290		
		950-1200 N/mm² 280-355 HBN	115 - 244	112 - 239	73 - 146	125 - 265		
		1200-1400 N/mm² 355-415 HBN	78 - 167	77 - 163	50 - 100	85 - 180		
M	Stainless Steel	Austenitic + Ferritic 300 series	143 - 305	140 - 299	107 - 229	154 -329	80 - 150	
		Martensitic 400 series	149 - 317	135 - 287	102 - 220	160 - 342	80 - 160	
	PH Stainless	Refractory P.H.	76 - 163	75 - 159	57 - 122	82 - 175	40 - 80	
K	Cast Iron	Grey GG-Ft		206 - 438	134 - 268	226 - 482	116 - 224	
		Spheroidal-Ductile GGG-FGS		178 - 378	116 - 232	195 - 416	100 - 193	
		Malleable GTS - MN/MP		120 - 255	78 - 156	132 - 280	60 - 130	
N	Aluminium & Alloys	Aluminium & Alloys < 16% 116 HB	396 - 976	365 - 975	366 - 915		335 - 823	
		Aluminium + Silicon > 16% 92 HB	274 - 671		244 - 610		183 - 549	
S	High Temperature Alloys	Iron Based	31 - 65	30 - 64	20 - 39	33 - 70	15 - 35	180 - 450
		Cobalt Based	25 - 53	24 - 52	16 - 32	27 - 57	15 - 25	180 - 400
		Nickel Based	27 - 57	26 - 56	17 - 34	29 - 61	15 - 30	180 - 360
		Titanium Based	42 - 89	41- 88	27 - 54	45 - 96	25 - 45	
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN	70 - 140	62 - 131				
		Chilled Cast Iron >1400 N/mm² >400 HBN	65 - 135	60 - 127				

Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

Optimum Grade Performance

ISO Grade Classification

Groups	Materials	Code	CVD Grades					PVD Grades		Uncoated Grade	Whisker Ceramic
			NL200	NL250	NL300	NL400	NL920	SP0819	SP4019	GH1	SA6609
P	Unalloyed and Alloyed Steels	P01									
		P05									
		P10									
		P15									
		P20									
		P25									
		P30									
		P35									
		P40									
		P45									
		P50									
M	Stainless Steels	M01									
		M05									
		M10									
		M15									
		M20									
		M25									
		M30									
		M35									
		M40									
K	Cast Irons	K01									
		K05									
		K10									
		K15									
		K20									
		K25									
		K30									
		K35									
		K40									
N	Aluminum & Alloys	N01									
		N05									
		N10									
		N15									
		N20									
		N25									
		N30									
S	High Temperature Alloys	S01									
		S05									
		S10									
		S15									
		S20									
		S25									
		S30									
H	Hard Materials	H01									
		H05									
		H10									
		H15									
		H20									
		H25									
		H30									

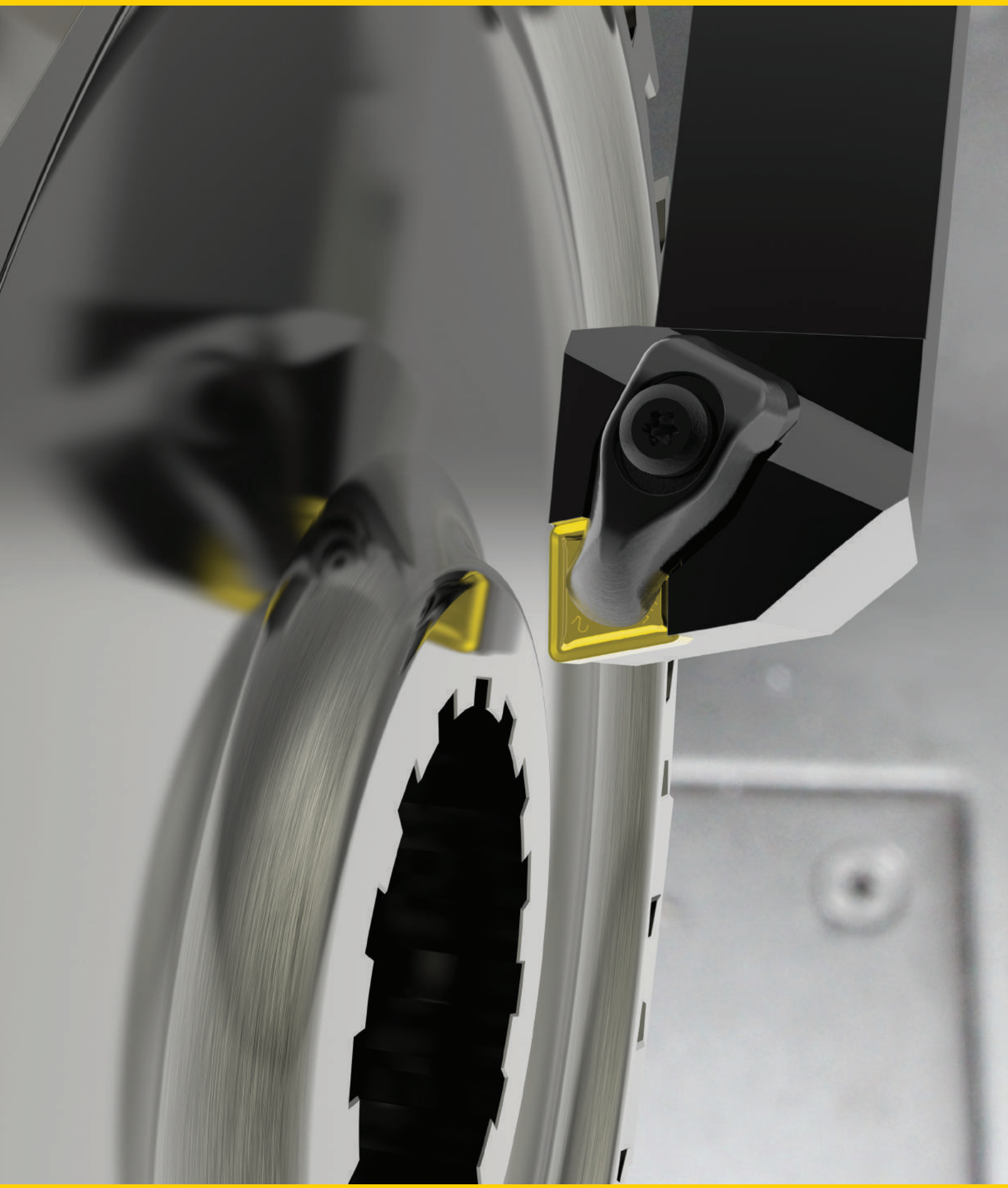
Increasing - wear resistance - Increasing cutting speed

Increasing - shock resistance - Increasing - feed

Material Guide – Key to Recommended Inserts

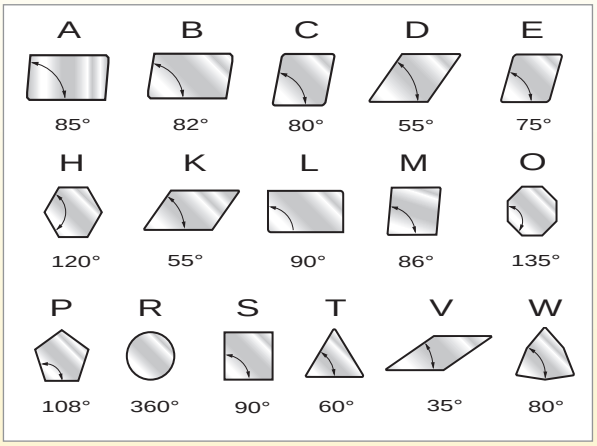
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

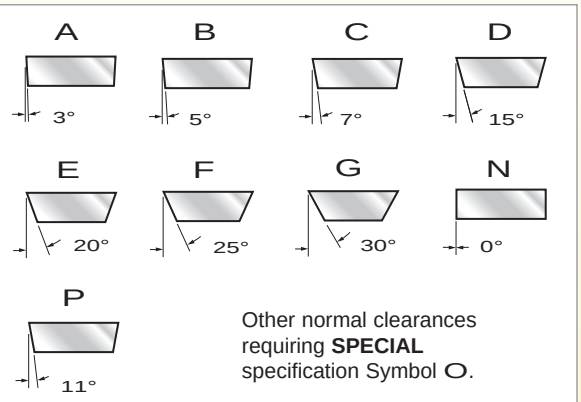


S	N	M	G	4
1	2	3	4	5

1 Shape

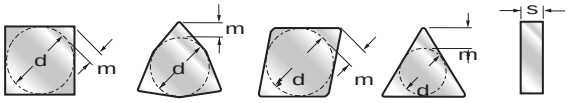


2 Clearance



Other normal clearances requiring **SPECIAL** specification Symbol O.

3 Tolerance



Class		d	m	s
A	inch	±0.0002	±0.0010	±0.001
B	inch	±0.0002	±0.0010	±0.005
C	inch	±0.0005	±0.0010	±0.001
D	inch	±0.0005	±0.0010	±0.005
E	inch	±0.0010	±0.0010	±0.001
F	inch	±0.0002	±0.0005	±0.001
G	inch	±0.0010	±0.0010	±0.005
H	inch	±0.0005	±0.0005	±0.001
J	inch	±0.0002	*	±0.001
K	inch	±0.0005	*	±0.001
L	inch	±0.0010	*	±0.001
M	inch	*	*	±0.005
U	inch	*	*	±0.005
N	inch	*	*	±0.001

* See tables below.

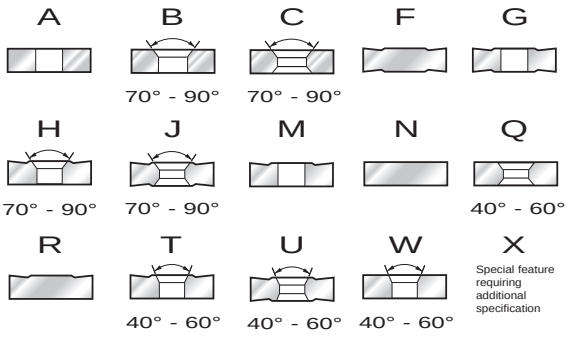
Valid for shape D only

IC	d	m
7/32	±0.002	±0.004
1/4	±0.002	±0.004
5/16	±0.002	±0.004
3/8	±0.002	±0.004
1/2	±0.003	±0.006
5/8	±0.004	±0.007
3/4	±0.004	±0.007

Valid for shapes: C, E, H, M, O, P, S, T, R, W

IC	d		m	
	J, K, L, M, N, U		M, N, U	
3/16	±0.002	±0.003	±0.003	±0.005
7/32	±0.002	±0.003	±0.003	±0.005
1/4	±0.002	±0.003	±0.003	±0.005
5/16	±0.002	±0.003	±0.003	±0.005
3/8	±0.002	±0.003	±0.003	±0.005
1/2	±0.003	±0.005	±0.005	±0.008
5/8	±0.004	±0.007	±0.006	±0.011
3/4	±0.004	±0.007	±0.006	±0.011
1	±0.005	±0.010	±0.007	±0.015
1 1/4	±0.006	±0.010	±0.008	±0.015

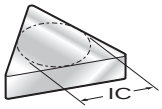
4 Type



3	2	A		
6	7	8	9	10

5 Size

For equal sided inserts, this indicates the inscribed circle (IC) in $^1/_8$".



For rectangles and parallelograms, 2 digits are necessary.

1st digit = Number of $^1/_8$" in width.

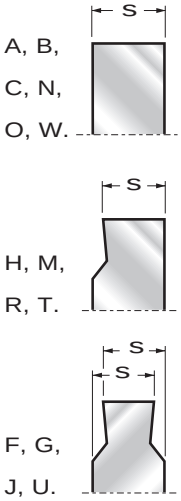
2nd digit = Number of $^1/_4$" in length.

Examples:

1	=	1/8
1-2	=	5/32
1-5	=	3/16
1-8	=	7/32
2	=	1/4
2-5	=	5/16
3	=	3/8
4	=	1/2
5	=	5/8
6	=	3/4
7	=	7/8
8	=	1
10	=	1 1/4

6 Thickness

This indicates the insert thickness in $^1/_{16}$" increments.

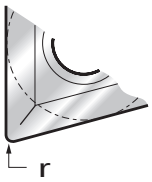


Examples:

1	=	1/16
1-5	=	3/32
2	=	1/8
2-5	=	5/32
3	=	3/16
3-5	=	7/32
4	=	1/4
5	=	5/16
6	=	3/8
7	=	7/16
8	=	1/2
9	=	9/16
10	=	5/8

7 Corner

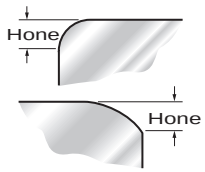
This indicates the form on the corner in $^1/_{64}$" increments for those with a corner radius.



Examples:

0	=	0.002	6	=	3/32
0-2	=	0.004	7	=	7/64
0-5	=	0.008	8	=	1/8
1	=	1/64	10	=	5/32
2	=	1/32	12	=	3/16
3	=	3/64	14	=	7/32
4	=	1/16	16	=	1/4
5	=	5/64	X	=	ANY OTHER

8 Edge Condition



Honed Edge (Rounded Corner):

A	B	C
0·0005 < 0·003	0·003 < 0·005	0·005 < 0·007

E — Rounded edge.

F — Sharp edge.

J — Polished to 4 Microinch AA. rake face only.

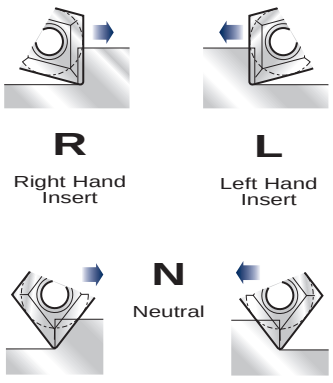
K — Double chamfered cutting edge.

P — Double chamfered and rounded cutting edge.

S — Chamfered and rounded cutting edge.

T — Chamfered cutting edge.

9 Hand

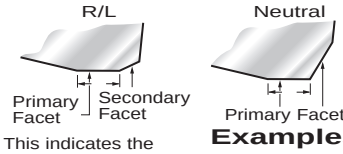


R — Right Hand Insert

L — Left Hand Insert

N — Neutral

10 Facet Size



This indicates the length of the primary facet in increments of approximately $^1/_{64}$".

Used only following a double letter in the 7th position.

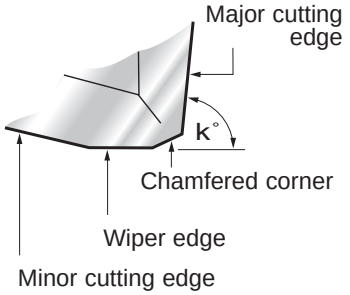
OPTIONAL:
This is not an ISO standard.

Examples:

1	=	1/64
2	=	1/32
3	=	3/64
4	=	1/16
5	=	5/64
6	=	3/32
7	=	7/64
8	=	1/8
9	=	9/64
10	=	5/32

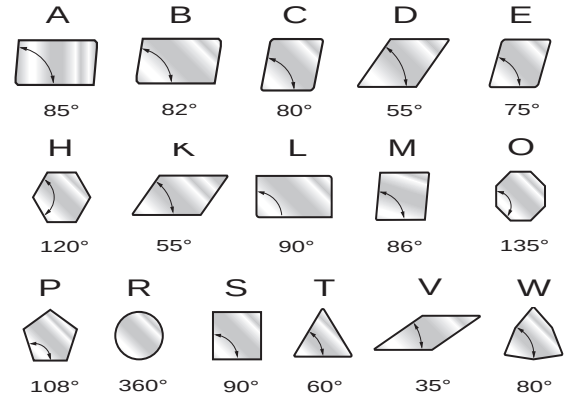
Faceted Inserts (A Style only)

Facet Angle (K) 1st letter:			Facet Clearance (Primary Facet) 2nd letter:		
A	=	45°	A	=	3°
D	=	60°	B	=	5°
E	=	75°	C	=	7°
F	=	85°	D	=	15°
G	=	87°	E	=	20°
P	=	90°	F	=	25°
Z	=	ANY OTHER	G	=	30°
			N	=	0°
			P	=	11°
			Z	=	ANY OTHER

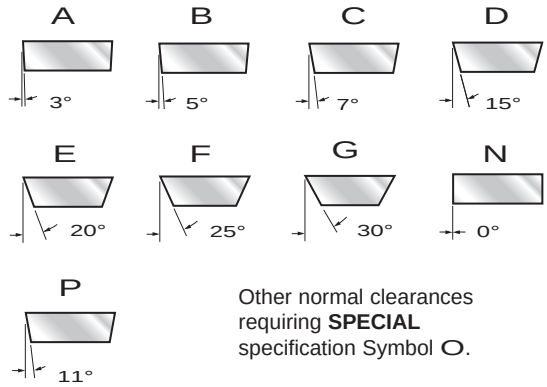


S	N	M	G	12
1	2	3	4	5

1 Shape

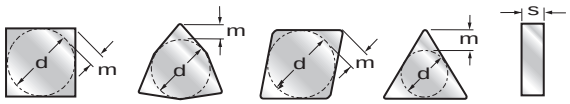


2 Clearance



Other normal clearances requiring **SPECIAL** specification Symbol O.

3 Tolerance



Class		d	m	s
A	mm	±0.025	±0.005	±0.025
C	mm	±0.025	±0.013	±0.025
E	mm	±0.025	±0.025	±0.025
F	mm	±0.013	±0.005	±0.025
G	mm	±0.025	±0.025	±0.13
H	mm	±0.013	±0.013	±0.025
J	mm	*	±0.005	±0.025
K	mm	*	±0.013	±0.025
L	mm	*	±0.025	±0.025
M	mm	*	*	±0.127
U	mm	*	*	±0.127
N	mm	*	*	±0.025

* See tables below.

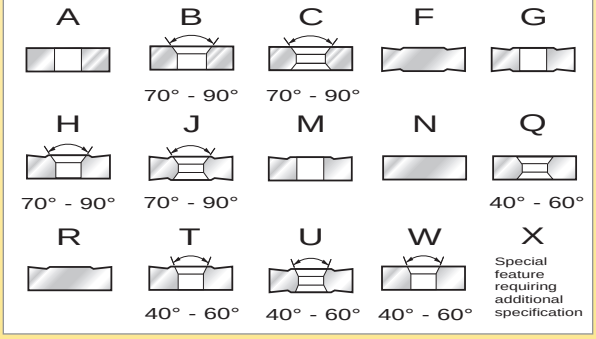
Valid for shape D only (**M** & **N** Tolerance)

IC	d	m
5.56	±0.05	±0.11
6.35	±0.05	±0.11
7.94	±0.05	±0.11
9.525	±0.05	±0.11
12.7	±0.08	±0.15
15.875	±0.10	±0.18
19.05	±0.10	±0.18

Valid for shapes: C, E, H, M, O, P, S, T, R, W

IC	d		m	
	J, K, L, M, N	U	M, N	U
4.76	±0.05	±0.08	±0.08	±0.13
5.56	±0.05	±0.08	±0.08	±0.13
6	±0.05	±0.08	±0.08	±0.13
6.35	±0.05	±0.08	±0.08	±0.13
7.94	±0.05	±0.08	±0.08	±0.13
8	±0.05	±0.08	±0.08	±0.13
9.525	±0.05	±0.08	±0.08	±0.13
10	±0.05	±0.08	±0.08	±0.13
12	±0.08	±0.13	±0.13	±0.2
12.7	±0.08	±0.13	±0.13	±0.2
15.875	±0.1	±0.18	±0.15	±0.27
16	±0.1	±0.18	±0.15	±0.27
19.05	±0.1	±0.18	±0.15	±0.27
20	±0.1	±0.18	±0.15	±0.27
25	±0.13	±0.25	±0.18	±0.38
25.4	±0.13	±0.25	±0.18	±0.38
31.75	±0.15	±0.25	±0.2	±0.38
32	±0.15	±0.25	±0.2	±0.38

4 Type

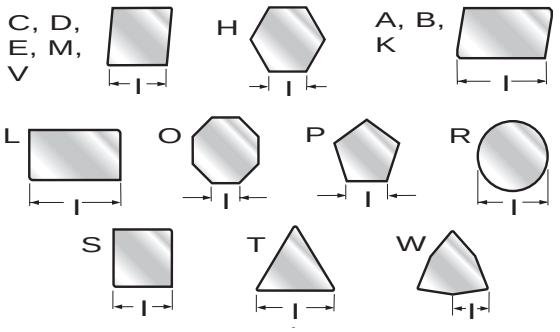


04 08 E

6 7 8

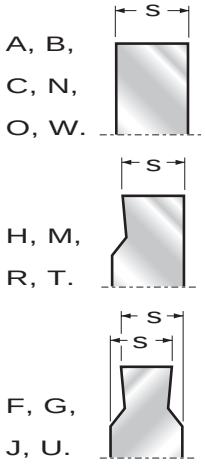
5 Size

Integers to be preceded by a **0** (zero).
Disregard any decimals. e.g. 9.525 = **09**



6 Thickness

Integers to be preceded by a 0 (zero) or the letter T.
Disregard any decimals.



Examples:

01	=	1.588
T1	=	1.984
02	=	2.381
03	=	3.175
T3	=	3.969
04	=	4.763
05	=	5.556
06	=	6.350
07	=	7.938
09	=	9.525
11	=	11.113
12	=	12.700
14	=	14.288
15	=	15.875

7 Corner

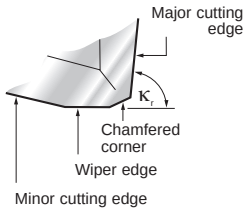
Inserts with wiper edges					
Cutting edge Angle (κ_r) 1st letter:			Wiper edge normal Clearance 2nd letter: (α_n)		
A	=	45°	**A**	=	3°
D	=	60°	**B**	=	5°
E	=	75°	**C**	=	7°
F	=	85°	**D**	=	15°
G	=	87°	**E**	=	20°
P	=	90°	**F**	=	25°
Z	=	ANY OTHER	**G**	=	30°
			N	=	0°
			P	=	11°
			Z	=	ANY OTHER

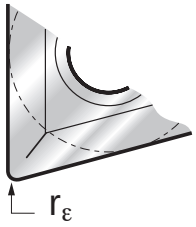
7 Corner *continued*

Inserts with rounded corners. The corner radius is indicated in 0.1mm. Integers to be preceded by a 0 (zero). If the corner is not rounded, use the symbol of designation 00 (zero zero).

Examples:

00	=	SHARP CORNER	**24**	=	2.4
01	=	0.1	**28**	=	2.8
02	=	0.2	**32**	=	3.2
04	=	0.4	**40**	=	4.0
08	=	0.8	**48**	=	4.8
12	=	1.2	**56**	=	5.6
16	=	1.6	**64**	=	6.4
20	=	2.0	**X**	=	ANY OTHER





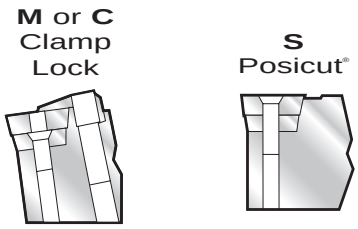
8 Edge Condition

		Symbol
Sharp		**F**
Honed (Rounded)		**E**
Chamfered (Negative Land)		**T**
Chamfered + Honed		**S**

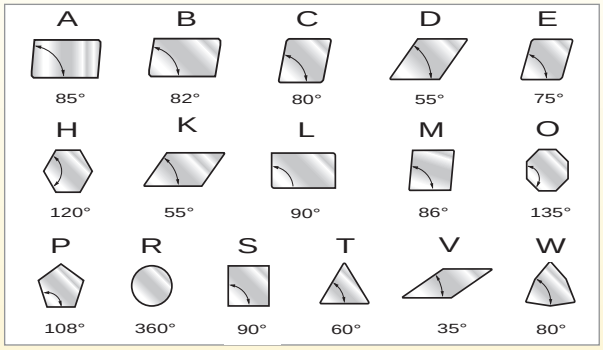
M C L N R

1 2 3 4 5

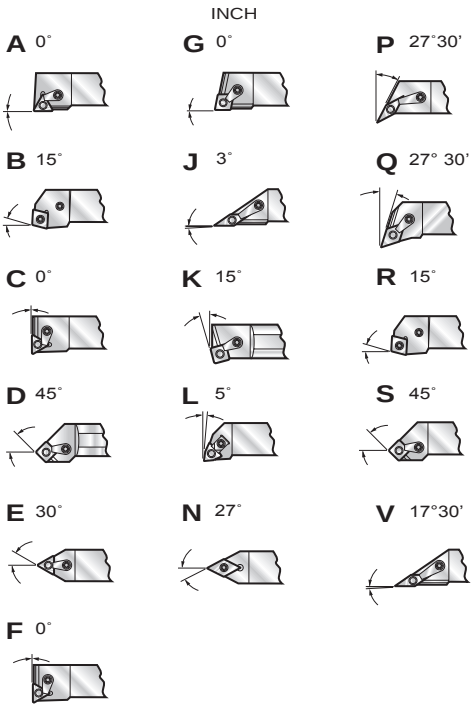
1 Assembly



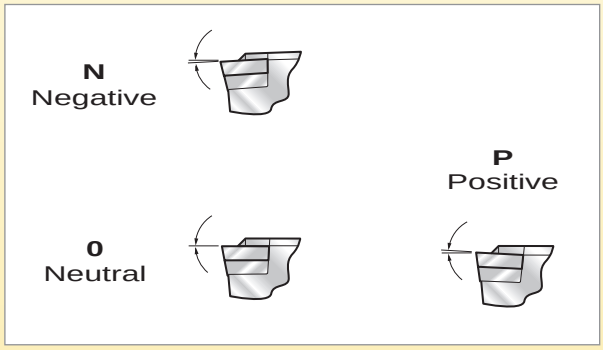
2 Insert Shape



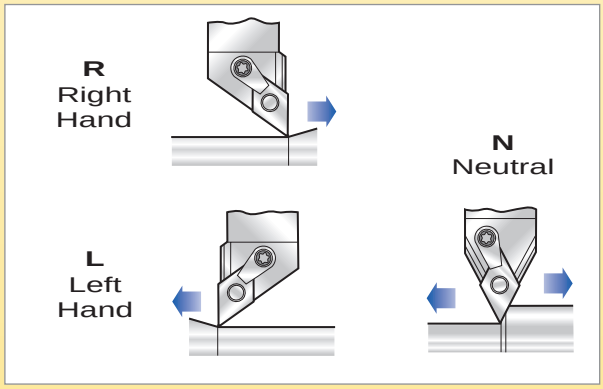
3 Tool Style



4 Rake



5 Hand

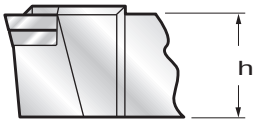


-	16	4	C	-
6	7	8	9	10

6 Pocket Type

- Full Double Wall
S Single Wall

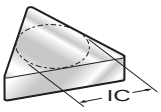
7 Tool Height



INCH	
06	= 0.375
08	= 0.500
10	= 0.625
12	= 0.750
16	= 1.000
20	= 1.250
24	= 1.500
32	= 2.000
44	= 0.500
55	= 0.625
64	= 0.750
66	= 0.750
85	= 1.000
86	= 1.000
88	= 1.000
91	= 1.250

8 Insert Size

For equal sided inserts, this indicates the inscribed circle (IC) in 1/8".



EXAMPLES

1	= 1/8	**4**	= 1/2
1-2	= 5/32	**5**	= 5/8
1-5	= 3/16	**6**	= 3/4
1-8	= 7/32	**7**	= 7/8
2	= 1/4	**8**	= 1
2-5	= 5/16	**10**	= 1 1/4
3	= 3/8		

For rectangles and parallelograms, 2 digits are necessary.

1st digit = Number of 1/8" in width.

2nd digit = Number of 1/4" in length.

9 Qualified Method & Length

INCH			
BACK & END		FRONT & END	
A	= 4.000	**M**	= 4.000
B	= 4.500	**N**	= 4.500
C	= 5.000	**P**	= 5.000
D	= 6.000	**R**	= 6.000
E	= 7.000	**S**	= 7.000
F	= 8.000	**T**	= 8.000
G	= 5.500	**U**	= 5.500
H	= 9.000	**V**	= 9.000
K	= 12.000	**X**	= 12.000
L	= 14.000	**Y**	= 14.000
Z	= Length must be specified. e.g. **MTANR-246Z** (6.500")		

10 Shank Modification (Optional)

A	=	American
B	=	Bullard
G	=	Giddings & Lewis
L	=	LeBlond
M	=	Monarch
N	=	New Britain
S	=	Sheldon

SI M C L N

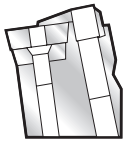
1 2 3 4 5

1 Bar Type

A	Steel shank and coolant hole.	**F**	Cemented carbide shank with steel head and anti-vibration device.
B	Steel shank and anti-vibration device.	**G**	Cemented carbide shank with steel head, coolant hole and anti-vibration device.
C	Cemented carbide shank with steel head.	**H**	Heavy metal shank.
CI	carbide integral shank	**J**	Heavy metal shank and coolant hole.
D	Steel shank, anti-vibration device and coolant hole.	**S**	Steel shank.
E	Cemented carbide shank with steel head and coolant hole.	**SI**	Steel intregal shank.

2 Assembly

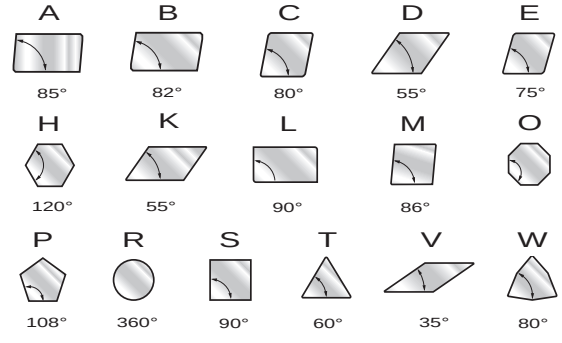
M or C Clamp Lock



S Posicut®



3 Insert Shape



4 Bar Style

INCH

F 0°



INCH

U 3°



K 15°



W 27°70'



L 5°



X 10°



Q 17°30'



Y 5°



S 45°



Z 5°

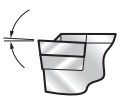


5 Rake

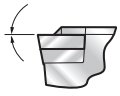
N Negative



P Positive

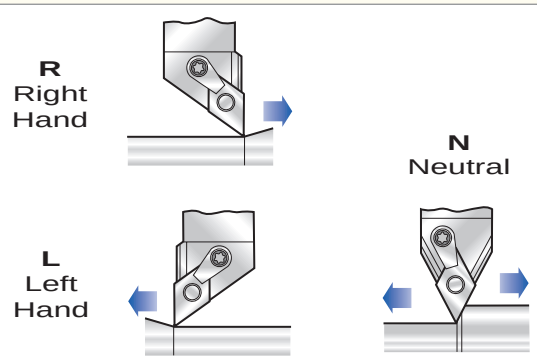


0 Neutral



R	-	20	4	F	-
6	7	8	9	10	11

6 Hand

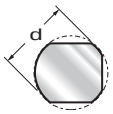


7 Pocket Type

- Full Double Wall

S Single Wall

8 Bar ø

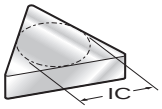


INCH

04	=	0.250	**20**	=	1.250
05	=	0.312	**24**	=	1.500
06	=	0.375	**28**	=	1.750
08	=	0.500	**32**	=	2.000
10	=	0.625	**36**	=	2.250
12	=	0.750	**40**	=	2.500
16	=	1.000			

9 Insert Size

For equal sided inserts, this indicates the inscribed circle (IC) in 1/8".



EXAMPLES

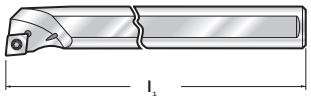
1	=	1/8	**4**	=	1/2
1-2	=	5/32	**5**	=	5/8
1-5	=	3/16	**6**	=	3/4
1-8	=	7/32	**7**	=	7/8
2	=	1/4	**8**	=	1
2-5	=	5/16	**10**	=	1 1/4
3	=	3/8			

For rectangles and parallelograms, 2 digits are necessary.

1st digit = Number of 1/8" in width.

2nd digit = Number of 1/4" in length.

10 Bar Length



INCH

F	=	3.150
H	=	3.937
K	=	4.921
M	=	5.905
P	=	6.693
Q	=	7.087
R	=	7.874
S	=	9.842
T	=	11.811
U	=	13.780
V	=	15.748
W	=	17.716
Y	=	19.685
X	=	SPECIAL

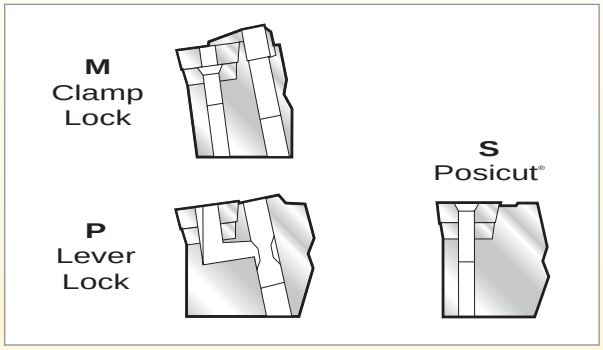
11 Optional

A Adjustable.

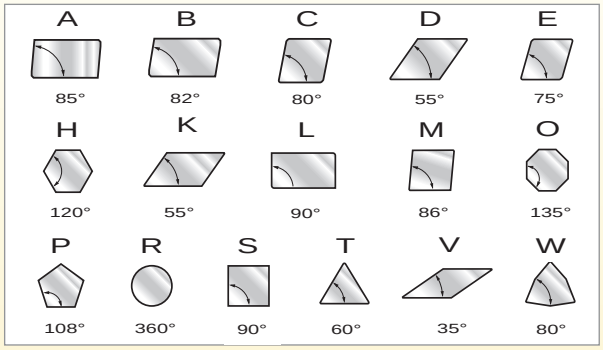
W Internal coolant provision.

P	D	J	N	R
1	2	3	4	5

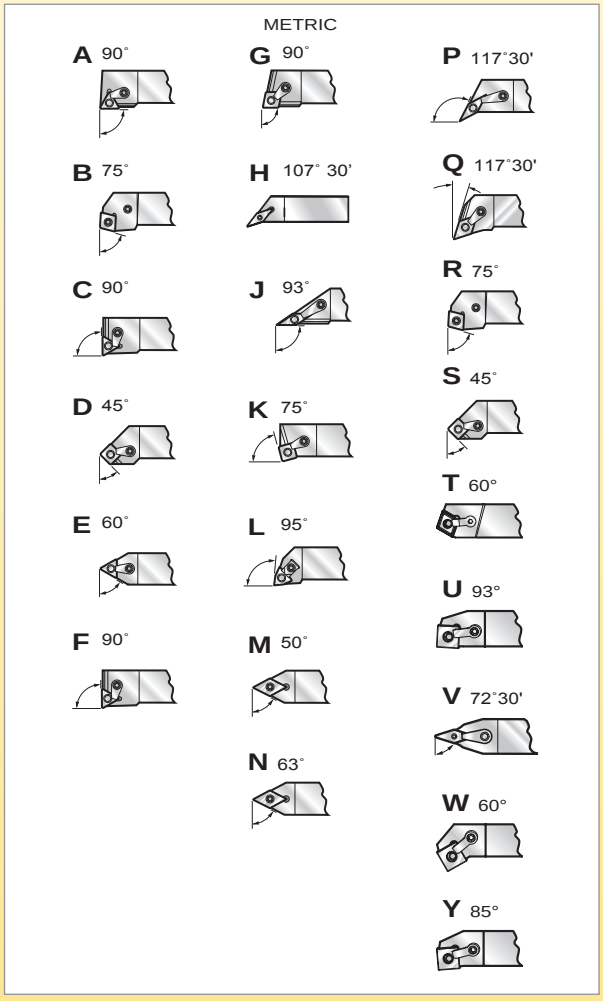
1 Assembly



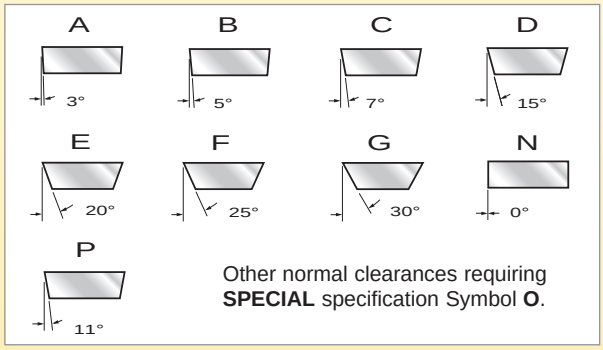
2 Insert Shape



3 Tool Style

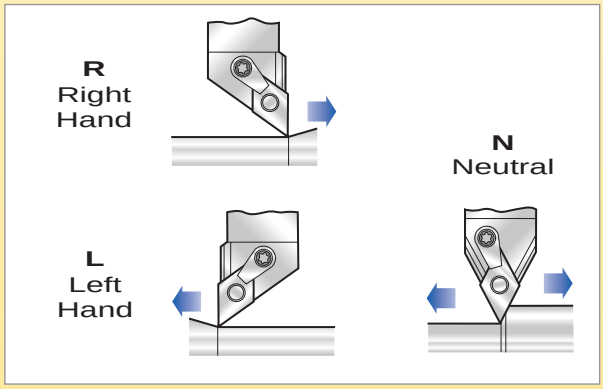


4 Clearance



Other normal clearances requiring **SPECIAL** specification Symbol **O**.

5 Hand



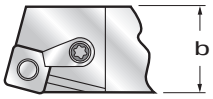
20	20	K	12	-	-
6	7	8	9	10	11

6 Tool Height



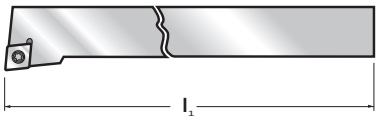
06	= 6
08	= 8
10	= 10
12	= 12
14	= 14
16	= 16
20	= 20
25	= 25
32	= 32
40	= 40
50	= 50

7 Tool Width



06	= 6
08	= 8
10	= 10
12	= 12
14	= 14
16	= 16
20	= 20
25	= 25
32	= 32
40	= 40
50	= 50

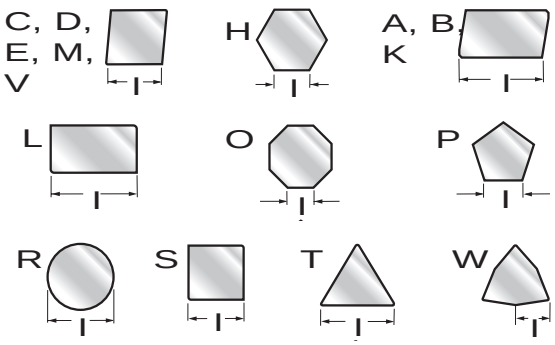
8 Tool Length



A	= 32
B	= 40
C	= 50
D	= 60
E	= 70
F	= 80
G	= 90
H	= 100
J	= 110
K	= 125
L	= 140
M	= 150
N	= 160
P	= 170
Q	= 180
R	= 200
S	= 250
T	= 300
U	= 350
V	= 400
W	= 450
Y	= 500
X	= SPECIAL

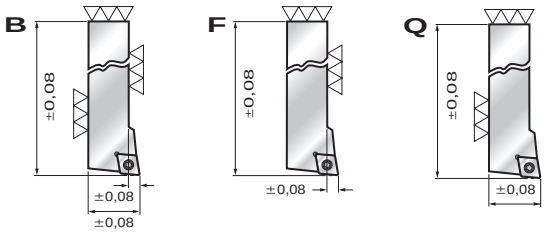
9 Insert Size

Integers to be preceded by a **0** (zero).
Disregard any decimals. e.g. 9,525 = **09**



10 Optional

Qualified tools.



11 Optional

Supplementary optional symbol (numbers or letters) added by the manufacturer.

Must be separated from the standardised designation by a dash (-).

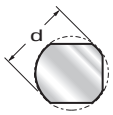
A 25 R - P C

1 2 3 4 5

1 Bar Type

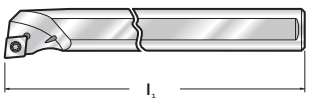
A	Steel shank and coolant hole.	**F**	Cemented carbide shank with steel head and anti-vibration device.
B	Steel shank and anti-vibration device.	**G**	Cemented carbide shank with steel head, coolant hole and anti-vibration device.
C	Cemented carbide shank with steel head.	**H**	Heavy metal shank.
D	Steel shank, anti-vibration device and coolant hole.	**J**	Heavy metal shank and coolant hole.
E	Cemented carbide shank with steel head and coolant hole.	**S**	Steel shank.

2 Bar Ø



METRIC	
06	= 6
08	= 8
10	= 10
12	= 12
16	= 16
20	= 20
25	= 25
32	= 32
40	= 40
50	= 50

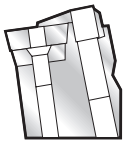
3 Bar Length



METRIC	
F	= 80
H	= 100
K	= 125
M	= 150
P	= 170
Q	= 180
R	= 200
S	= 250
T	= 300
U	= 350
V	= 400
W	= 450
Y	= 500
X	= SPECIAL

4 Assembly

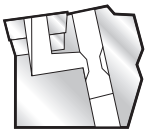
M Clamp Lock



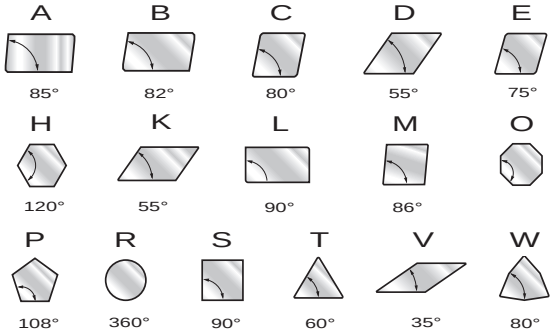
S Posicut®



P Lever Lock

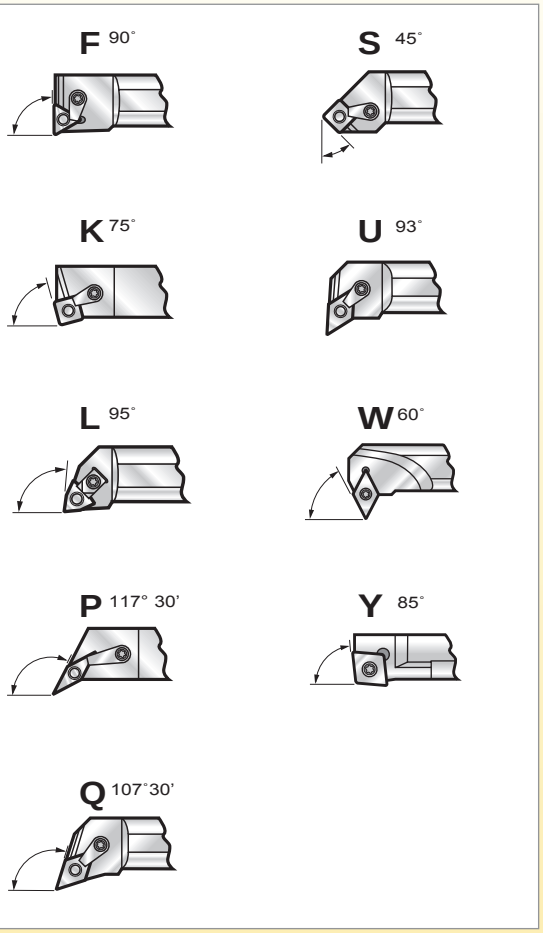


5 Insert Shape



L	N	R	12	-
6	7	8	9	10

6 Tool Style

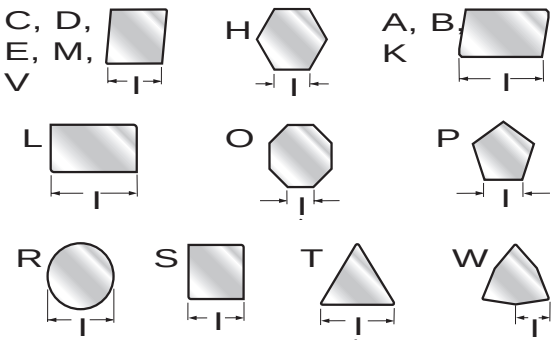


8 Hand



9 Insert Size

Integers to be preceded by a **0** (zero).
Disregard any decimals. e.g. 9,525 = **09**

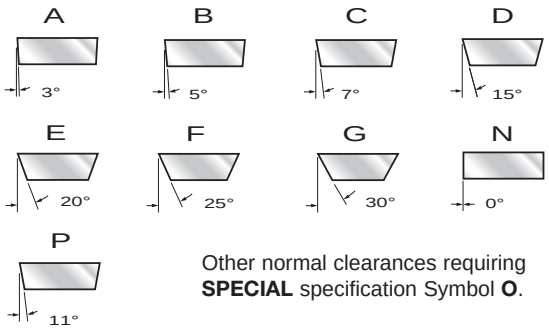


10 Optional

Supplementary optional symbol (numbers or letters) added by the manufacturer.

Must be separated from the standardised designation by a dash (-).

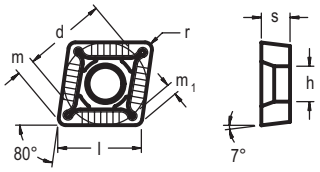
7 Clearance



Other normal clearances requiring **SPECIAL** specification Symbol **O**.

STELLRAM

CCGT
-62 Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	rε mm inch	h mm inch	Material	Application
031243	**CCGT060200E-62** **CCGT21.50A-62**	SP4019	6.35 0.250	6.45 0.254	2.38 0.094	0.00 0.000	2.80 0.110		Finishing
030568	**CCGT060201E-62** **CCGT21.50.025A-62**	SP4019	6.35 0.250	6.45 0.254	2.38 0.094	0.10 0.004	2.80 0.110		Finishing
030569	**CCGT060202E-62** **CCGT21.50.5A-62**	SP4019	6.35 0.250	6.45 0.254	2.38 0.094	0.20 0.008	2.80 0.110		Finishing
030570	**CCGT060204E-62** **CCGT21.51A-62**	SP4019	6.35 0.250	6.45 0.254	2.38 0.094	0.40 0.016	2.80 0.110		Finishing
030571	**CCGT09T300E-62** **CCGT32.50A-62**	SP4019	9.52 0.375	9.57 0.377	3.97 0.156	0.00 0.000	4.40 0.173		Finishing
030572	**CCGT09T301E-62** **CCGT32.50.025A-62**	SP4019	9.52 0.375	9.57 0.377	3.97 0.156	0.10 0.004	4.40 0.173		Finishing
030573	**CCGT09T302E-62** **CCGT32.50.5A-62**	SP4019	9.52 0.375	9.57 0.377	3.97 0.156	0.20 0.008	4.40 0.173		Finishing
030574	**CCGT09T304E-62** **CCGT32.51A-62**	SP4019	9.52 0.375	9.57 0.377	3.97 0.156	0.40 0.016	4.40 0.173		Finishing
030575	**CCGT09T308E-62** **CCGT32.52A-62**	SP4019	9.52 0.375	9.57 0.377	3.97 0.156	0.80 0.031	4.40 0.173		Finishing

For Toolholders External: see pages C60 - C61 | Internal: see pages C62 - C63

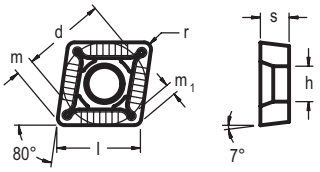
Material Guide – Key to Recommended Inserts

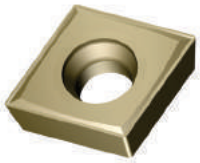
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

CCMT
-73 Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032365	CCMT060202E-73 CCMT21.50.5A-73	SP4019	6.35 0.250	6.45 0.254	2.38 0.094	0.20 0.008	2.80 0.110	PKMNSH	Medium
032366	CCMT060204E-73 CCMT21.51A-73	SP4019	6.35 0.250	6.45 0.254	2.38 0.094	0.40 0.016	2.80 0.110	PKMNSH	Medium
032367	CCMT060204E-73 CCMT21.51A-73	NL300	6.35 0.250	6.45 0.254	2.38 0.094	0.40 0.016	2.80 0.110	PMK	Medium
032368	CCMT060208E-73 CCMT21.52A-73	SP4019	6.35 0.250	6.45 0.254	2.38 0.094	0.80 0.031	2.80 0.110	PKMNSH	Medium
032369	CCMT060208E-73 CCMT21.52A-73	NL300	6.35 0.250	6.45 0.254	2.38 0.094	0.80 0.031	2.80 0.110	PMK	Medium
032370	CCMT09T304E-73 CCMT32.51A-73	SP4019	9.52 0.375	9.57 0.377	3.97 0.156	0.40 0.016	4.40 0.173	PKMNSH	Medium
032371	CCMT09T304E-73 CCMT32.51A-73	NL300	9.52 0.375	9.57 0.377	3.97 0.156	0.40 0.016	4.40 0.173	PMK	Medium
032372	CCMT09T304E-73 CCMT32.51A-73	NL920	9.52 0.375	9.57 0.377	3.97 0.156	0.40 0.016	4.40 0.173	PKMNSH	Medium
032373	CCMT09T308E-73 CCMT32.52A-73	SP4019	9.52 0.375	9.57 0.377	3.97 0.156	0.80 0.031	4.40 0.173	PKMNSH	Medium
032374	CCMT09T308E-73 CCMT32.52A-73	NL300	9.52 0.375	9.57 0.377	3.97 0.156	0.80 0.031	4.40 0.173	PMK	Medium
032375	CCMT09T308E-73 CCMT32.52A-73	NL920	9.52 0.375	9.57 0.377	3.97 0.156	0.80 0.031	4.40 0.173	PKMNSH	Medium
032376	CCMT120404E-73 CCMT431A-73	SP4019	12.70 0.500	12.90 0.508	2.38 0.094	0.40 0.016	5.16 0.203	PKMNSH	Medium
032377	CCMT120404E-73 CCMT431A-73	NL300	12.70 0.500	12.90 0.508	2.38 0.094	0.40 0.016	5.16 0.203	PMK	Medium
032378	CCMT120404E-73 CCMT431A-73	NL920	12.70 0.500	12.90 0.508	2.38 0.094	0.40 0.016	5.16 0.203	PKMNSH	Medium
032379	CCMT120408E-73 CCMT432A-73	SP4019	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203	PKMNSH	Medium
032380	CCMT120408E-73 CCMT432A-73	NL300	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203	PMK	Medium
032381	CCMT120408E-73 CCMT432A-73	NL920	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203	PKMNSH	Medium
032382	CCMT120412E-73 CCMT433A-73	SP4019	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203	PKMNSH	Medium
032383	CCMT120412E-73 CCMT433A-73	NL300	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203	PMK	Medium
032384	CCMT120412E-73 CCMT433A-73	NL920	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203	PKMNSH	Medium

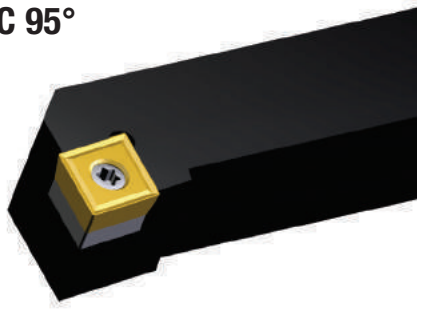
For Toolholders External: see pages C60 - C61 | Internal: see pages C62 - C63

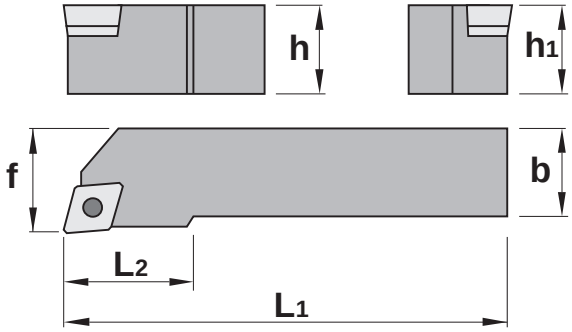
Material Guide – Key to Recommended Inserts

Material Designation

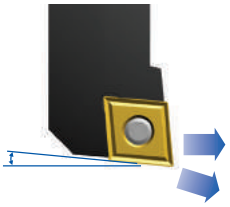
P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

SCLC 95°
(INCH)





SCLC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h1	b	f	L1	L2
011231	**SCLCL 062**	LH	CC_21.5	0.375	0.375	0.5	2.5	0.39
011230	**SCLCR 062**	RH	CC_21.5	0.375	0.375	0.5	2.5	0.39
011233	**SCLCL 083**	LH	CC_32.5	0.500	0.500	0.625	3.500	0.630
033477	**SCLCL 103**	LH	CC_32.5	0.625	0.625	0.750	4.000	0.708
033478	**SCLCL 123B**	LH	CC_32.5	0.750	0.750	1.000	4.500	0.866
011232	**SCLCR 083**	RH	CC_32.5	0.500	0.500	0.625	3.500	0.630
033479	**SCLCR 103**	RH	CC_32.5	0.625	0.625	0.750	4.000	0.708
033480	**SCLCR 123B**	RH	CC_32.5	0.750	0.750	1.000	4.500	0.866
011237	**SCLCL 164D**	LH	CC_43	1.000	1.000	1.250	6.000	1.000
011236	**SCLCR 164D**	RH	CC_43	1.000	1.000	1.250	6.000	1.000

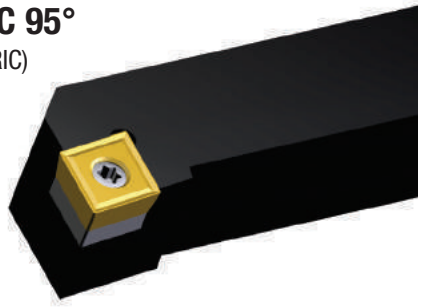


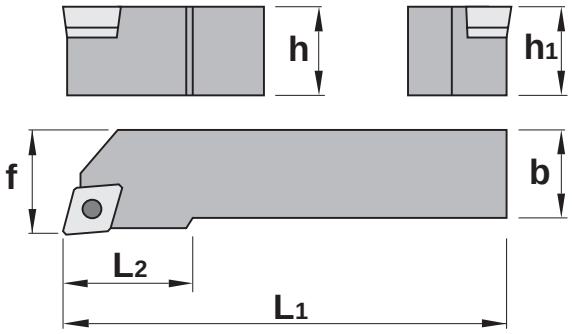
S Style External Toolholder
for Positive Inserts:
CC_21.5, CC_32.5, and CC_43
Application: Face and Turn O/D
Approach 95°
Axial 0°
Radial 0°
Profiling Clearance Angle β = 0°
RH Holder Shown

SCLCR/L Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SCLCL/R 062	*015061*	F2507T	*018488*	T7	-	-	-	-
SCLCL/R 083	*015262*	D4010T	*015240*	T15	-	-	-	-
SCLCL/R 103								
SCLCL/R 123B								
SCLCL/R 164D	*034500*	1540	*034577*	K5517	*028571*	SA3614	*028739*	SAS1760

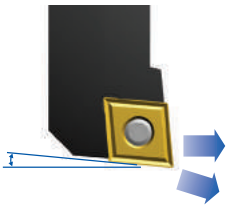
STELLRAM

SCLC 95°
(METRIC)





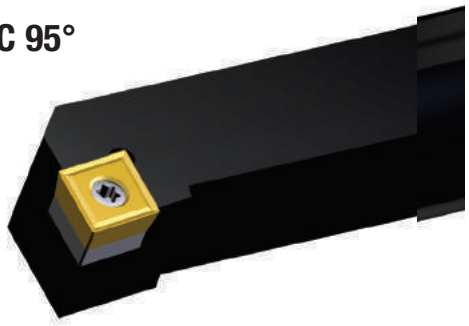
SCLC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
028507	**SCLCL 1010 E06**	LH	CC_0602	10	10	12	70	10
028513	**SCLCR 1010 E06**	RH	CC_0602	10	10	12	70	10
028508	**SCLCL 1212 F09**	LH	CC_09T3	12	12	16	80	16
028509	**SCLCL 1616 H09**	LH	CC_09T3	16	16	20	100	18
028510	**SCLCL 2020 K09**	LH	CC_09T3	20	20	25	125	22
028514	**SCLCR 1212 F09**	RH	CC_09T3	12	12	16	80	16
028515	**SCLCR 1616 H09**	RH	CC_09T3	16	16	20	100	18
028516	**SCLCR 2020 K09**	RH	CC_09T3	20	20	25	125	22
028512	**SCLCL 2525 M12**	LH	CC_1204	25	25	32	150	25
028518	**SCLCR 2525 M12**	RH	CC_1204	25	25	32	150	25

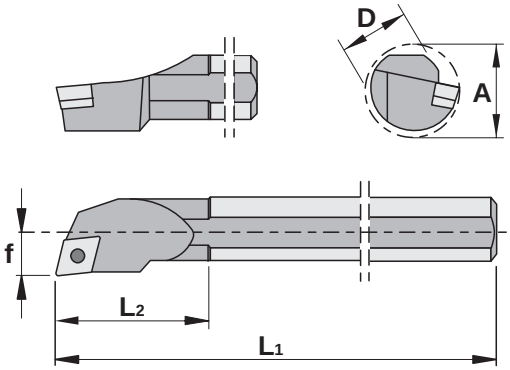


S Style External Toolholder
for Positive Inserts:
CC_06, CC_09, and CC_12
Application: Face and Turn O/D
Approach 95°
Axial 0°
Radial 0°
Profiling Clearance Angle β = 0°
RH Holder Shown

SCLCL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SCLCL/R 1010 E06	*015061*	F2507T	*018488*	T7	-	-	-	-
SCLCL/R 1212 F09	*015262*	D4010T	*015240*	T15	-	-	-	-
SCLCL/R 1616 H09								
SCLCL/R 2020 K09								
SCLCL/R 2525 M12	*034500*	1540	*034577*	K5517	*028571*	SA3614	*028739*	SAS1760

SCLC 95°
(INCH)





SCLC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h1	b	f	L1	L2
011231	**SCLCL 062**	LH	CC_21.5	0.375	0.375	0.5	2.5	0.39
011230	**SCLCR 062**	RH	CC_21.5	0.375	0.375	0.5	2.5	0.39
011233	**SCLCL 083**	LH	CC_32.5	0.500	0.500	0.625	3.500	0.630
033477	**SCLCL 103**	LH	CC_32.5	0.625	0.625	0.750	4.000	0.708
033478	**SCLCL 123B**	LH	CC_32.5	0.750	0.750	1.000	4.500	0.866
011232	**SCLCR 083**	RH	CC_32.5	0.500	0.500	0.625	3.500	0.630
033479	**SCLCR 103**	RH	CC_32.5	0.625	0.625	0.750	4.000	0.708
033480	**SCLCR 123B**	RH	CC_32.5	0.750	0.750	1.000	4.500	0.866
011237	**SCLCL 164D**	LH	CC_43	1.000	1.000	1.250	6.000	1.000
011236	**SCLCR 164D**	RH	CC_43	1.000	1.000	1.250	6.000	1.000

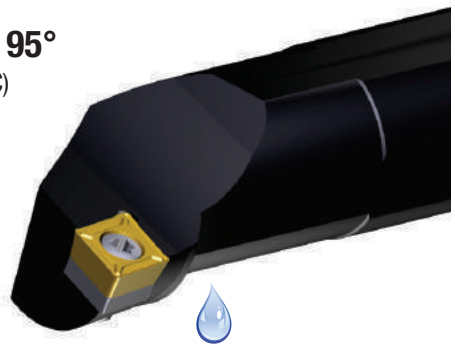


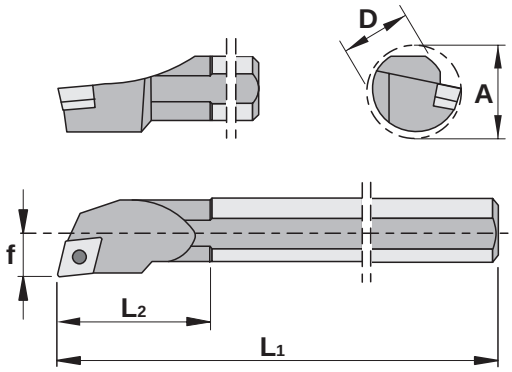
S Style Internal Boring Bar
for Positive Inserts:
CC_21.5, and CC_32.5
Application: I/D Boring
Approach 95°
Axial 0°
Radial -9°
Profiling Clearance Angle β = 0°
RH Bar Shown

SCLCR/L Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SCLCL/R 062	*015061*	F2507T	*018488*	T7	-	-	-	-
SCLCL/R 083	*015262*	D4010T	*015240*	T15	-	-	-	-
SCLCL/R 103								
SCLCL/R 123B								
SCLCL/R 164D	*034500*	1540	*034577*	K5517	*028571*	SA3614	*028739*	SAS1760

STELLRAM

SCLC 95°
(METRIC)





SCLC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
028507	**SCLCL 1010 E06**	LH	CC_0602	10	10	12	70	10
028513	**SCLCR 1010 E06**	RH	CC_0602	10	10	12	70	10
028508	**SCLCL 1212 F09**	LH	CC_09T3	12	12	16	80	16
028509	**SCLCL 1616 H09**	LH	CC_09T3	16	16	20	100	18
028510	**SCLCL 2020 K09**	LH	CC_09T3	20	20	25	125	22
028514	**SCLCR 1212 F09**	RH	CC_09T3	12	12	16	80	16
028515	**SCLCR 1616 H09**	RH	CC_09T3	16	16	20	100	18
028516	**SCLCR 2020 K09**	RH	CC_09T3	20	20	25	125	22
028512	**SCLCL 2525 M12**	LH	CC_1204	25	25	32	150	25
028518	**SCLCR 2525 M12**	RH	CC_1204	25	25	32	150	25

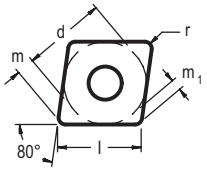


S Style Internal Boring Bar
for Positive Inserts:
CC_06, CC_09 and CC_1204
Application: I/D Boring
Approach 95°
Axial 0°
Radial -6°
Profiling Clearance Angle β = 0°
RH Bar Shown

SCLCL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SCLCL/R 1010 E06	*015061*	F2507T	*018488*	T7	-	-	-	-
SCLCL/R 1212 F09	*015262*	D4010T	*015240*	T15	-	-	-	-
SCLCL/R 1616 H09								
SCLCL/R 2020 K09								
SCLCL/R 2525 M12	*034500*	1540	*034577*	K5517	*028571*	SA3614	*028739*	SAS1760

STELLRAM

CNGG
3F Geometry

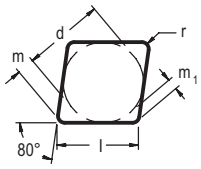


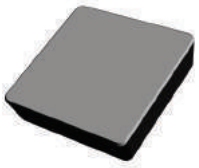


EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	rε mm inch	h mm inch	Material	Application
031580	**CNGG120401F-3F** **CNGG430.2-3F**	SP0819	12.70 0.500	12.90 0.508	4.76 0.187	0.10 0.004	5.16 0.203		Medium
031543	**CNGG120402F-3F** **CNGG430.5-3F**	SP0819	12.70 0.500	12.90 0.508	4.76 0.187	0.20 0.008	5.16 0.203		Medium
031544	**CNGG120404F-3F** **CNGG431-3F**	SP0819	12.70 0.500	12.90 0.508	4.76 0.187	0.40 0.016	5.16 0.203		Medium
031545	**CNGG120408F-3F** **CNGG432-3F**	SP0819	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Medium
031546	**CNGG120412F-3F** **CNGG433-3F**	SP0819	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Medium

For Toolholders External: see pages C77 - C84 | Internal: see pages C85 - C86

CNGN
Ceramics



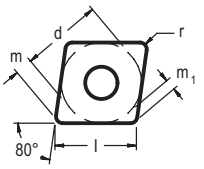


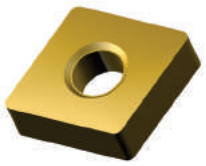
EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	rε mm inch	h mm inch	Material	Application
032314	**CNGN120404 E010** **CNGN431 E010**	SA6609	12.70 0.500	12.90 0.508	4.76 0.187	0.40 0.016	5.16 0.203		Roughing
032315	**CNGN120408 E010** **CNGN432 E010**	SA6609	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032316	**CNGN120408 E030** **CNGN432 E030**	SA6609	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032317	**CNGN120412 E010** **CNGN433 E010**	SA6609	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032318	**CNGN120412 E030** **CNGN433 E030**	SA6609	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032319	**CNGN120416 E030** **CNGN434 E030**	SA6609	12.70 0.500	12.90 0.508	4.76 0.187	1.60 0.063	5.16 0.203		Roughing
032320	**CNGN120708 E010** **CNGN452 E010**	SA6609	12.70 0.500	12.90 0.508	7.94 0.313	0.80 0.031	5.16 0.203		Roughing
032321	**CNGN120712 E010** **CNGN453 E010**	SA6609	12.70 0.500	12.90 0.508	7.94 0.313	1.20 0.047	5.16 0.203		Roughing
032322	**CNGN120716 E030** **CNGN454 E030**	SA6609	12.70 0.500	12.90 0.508	7.94 0.313	1.60 0.063	5.16 0.203		Roughing
032323	**CNGN160612 E010** **CNGN543 E010**	SA6609	15.88 0.625	16.10 0.634	6.35 0.250	1.20 0.047	6.35 0.250		Roughing

Note: For edge condition refer to Grade page C37

STELLRAM

CNMA
Flat Top





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	rε mm inch	h mm inch	Material	Application
032385	**CNMA120404E** **CNMA431A**	NL250	12.70 0.500	12.90 0.508	4.76 0.187	0.40 0.016	5.16 0.203	♦	Heavy Roughing
032386	**CNMA120408E** **CNMA432A**	NL250	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203	♦	Heavy Roughing
032387	**CNMA120412E** **CNMA433A**	NL250	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203	♦	Heavy Roughing
032388	**CNMA120416E** **CNMA434A**	NL250	12.70 0.500	12.90 0.508	4.76 0.187	1.60 0.063	5.16 0.203	♦	Heavy Roughing
032389	**CNMA160612E** **CNMA543A**	NL250	15.88 0.625	16.10 0.634	6.35 0.250	1.20 0.047	6.35 0.250	♦	Heavy Roughing
032390	**CNMA160616E** **CNMA544A**	NL250	15.88 0.625	16.10 0.634	6.35 0.250	1.60 0.063	6.35 0.250	♦	Heavy Roughing
032391	**CNMA160632E** **CNMA548A**	NL250	15.88 0.625	16.10 0.634	6.35 0.250	3.20 0.126	6.35 0.250	♦	Heavy Roughing
032392	**CNMA190612E** **CNMA643A**	NL250	19.05 0.750	19.40 0.764	6.35 0.250	1.20 0.047	7.92 0.312	♦	Heavy Roughing
032393	**CNMA190616E** **CNMA644A**	NL250	19.05 0.750	19.40 0.764	6.35 0.250	1.60 0.063	7.92 0.312	♦	Heavy Roughing
032394	**CNMA190632E** **CNMA648A**	NL250	19.05 0.750	19.40 0.764	6.35 0.250	3.20 0.126	7.92 0.312	♦	Heavy Roughing

For Toolholders External: see pages C77 - C84 | Internal: see pages C85 - C86

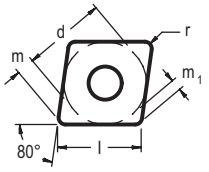
Material Guide – Key to Recommended Inserts

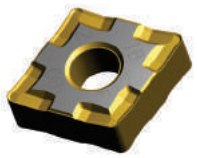
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

CNMG
1B Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032395	**CNMG120404E-1B** **CNMG431A-1B**	NL250	12.70 0.500	12.90 0.508	4.76 0.187	0.40 0.016	5.16 0.203		Finishing
030864	**CNMG120404E-1B** **CNMG431A-1B**	SP0819	12.70 0.500	12.90 0.508	4.76 0.187	0.40 0.016	5.16 0.203		Finishing
030865	**CNMG120408E-1B** **CNMG432A-1B**	SP0819	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Finishing
032396	**CNMG120408E-1B** **CNMG432A-1B**	NL250	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Finishing
032397	**CNMG120412E-1B** **CNMG433A-1B**	NL250	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203		Finishing
030866	**CNMG120412E-1B** **CNMG433A-1B**	SP0819	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203		Finishing

For Toolholders External: see pages C77 - C84 | Internal: see pages C85 - C86

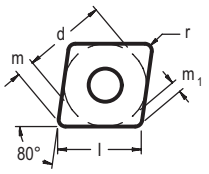
Material Guide – Key to Recommended Inserts

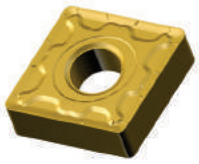
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

CNMG
2N Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032398	**CNMG120404E-2N** **CNMG431A-2N**	NL250	12.70 0.500	12.90 0.508	4.76 0.187	0.40 0.016	5.16 0.203		Medium
032399	**CNMG120404E-2N** **CNMG431A-2N**	NL300	12.70 0.500	12.90 0.508	4.76 0.187	0.40 0.016	5.16 0.203		Medium
032400	**CNMG120404E-2N** **CNMG431A-2N**	NL920	12.70 0.500	12.90 0.508	4.76 0.187	0.40 0.016	5.16 0.203		Medium
032401	**CNMG120408E-2N** **CNMG432A-2N**	NL250	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032402	**CNMG120408E-2N** **CNMG432A-2N**	NL300	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032403	**CNMG120408E-2N** **CNMG432A-2N**	NL920	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032404	**CNMG120412E-2N** **CNMG433A-2N**	NL250	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032405	**CNMG120412E-2N** **CNMG433A-2N**	NL300	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032406	**CNMG120412E-2N** **CNMG433A-2N**	NL920	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032407	**CNMG120416E-2N** **CNMG434A-2N**	NL250	12.70 0.500	12.90 0.508	4.76 0.187	1.60 0.063	5.16 0.203		Medium
032408	**CNMG120416E-2N** **CNMG434A-2N**	NL300	12.70 0.500	12.90 0.508	4.76 0.187	1.60 0.063	5.16 0.203		Medium
032409	**CNMG120416E-2N** **CNMG434A-2N**	NL920	12.70 0.500	12.90 0.508	4.76 0.187	1.60 0.063	5.16 0.203		Medium

For Toolholders External: see pages C77 - C84 | Internal: see pages C85 - C86

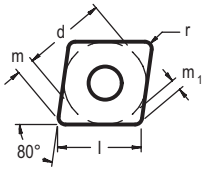
Material Guide – Key to Recommended Inserts

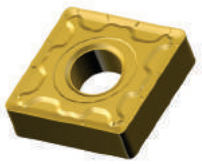
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

CNMG
2N Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032410	**CNMG160608E-2N** **CNMG542A-2N**	NL250	15.88 0.625	16.10 0.634	6.35 0.250	0.80 0.031	6.35 0.250		Medium
032411	**CNMG160608E-2N** **CNMG542A-2N**	NL300	15.88 0.625	16.10 0.634	6.35 0.250	0.80 0.031	6.35 0.250		Medium
032412	**CNMG160608E-2N** **CNMG542A-2N**	NL920	15.88 0.625	16.10 0.634	6.35 0.250	0.80 0.031	6.35 0.250		Medium
032413	**CNMG160612E-2N** **CNMG543A-2N**	NL250	15.88 0.625	16.10 0.634	6.35 0.250	1.20 0.047	6.35 0.250		Medium
032414	**CNMG160612E-2N** **CNMG543A-2N**	NL300	15.88 0.625	16.10 0.634	6.35 0.250	1.20 0.047	6.35 0.250		Medium
032415	**CNMG160612E-2N** **CNMG543A-2N**	NL920	15.88 0.625	16.10 0.634	6.35 0.250	1.20 0.047	6.35 0.250		Medium
032416	**CNMG160616E-2N** **CNMG544A-2N**	NL250	15.88 0.625	16.10 0.634	6.35 0.250	1.60 0.063	6.35 0.250		Medium
032417	**CNMG160616E-2N** **CNMG544A-2N**	NL300	15.88 0.625	16.10 0.634	6.35 0.250	1.60 0.063	6.35 0.250		Medium
032418	**CNMG160616E-2N** **CNMG544A-2N**	NL920	15.88 0.625	16.10 0.634	6.35 0.250	1.60 0.063	6.35 0.250		Medium
032419	**CNMG190612E-2N** **CNMG643A-2N**	NL300	19.05 0.750	19.40 0.764	6.35 0.250	1.20 0.047	7.92 0.312		Medium
032420	**CNMG190612E-2N** **CNMG643A-2N**	NL920	19.05 0.750	19.40 0.764	6.35 0.250	1.20 0.047	7.92 0.312		Medium
032421	**CNMG190616E-2N** **CNMG644A-2N**	NL300	19.05 0.750	19.40 0.764	6.35 0.250	1.60 0.063	7.92 0.312		Medium
032422	**CNMG190616E-2N** **CNMG644A-2N**	NL920	19.05 0.750	19.40 0.764	6.35 0.250	1.60 0.063	7.92 0.312		Medium

For Toolholders External: see pages C77 - C84 | Internal: see pages C85 - C86

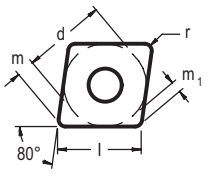
Material Guide – Key to Recommended Inserts

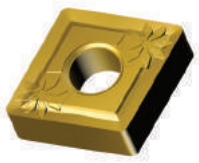
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

CNMG
3J Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032423	**CNMG120404E-3J** **CNMG431A-3J**	SP4019	12.70 0.500	12.90 0.508	4.76 0.187	0.40 0.016	5.16 0.203		Medium
032424	**CNMG120408E-3J** **CNMG432A-3J**	SP4019	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032425	**CNMG120412E-3J** **CNMG433A-3J**	SP4019	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032426	**CNMG120416E-3J** **CNMG434A-3J**	SP4019	12.70 0.500	12.90 0.508	4.76 0.187	1.60 0.063	5.16 0.203		Medium
032427	**CNMG160612E-3J** **CNMG543A-3J**	SP4019	15.88 0.625	16.10 0.634	6.35 0.250	1.20 0.047	6.35 0.250		Medium
032428	**CNMG160616E-3J** **CNMG544A-3J**	SP4019	15.88 0.625	16.10 0.634	6.35 0.250	1.60 0.063	6.35 0.250		Medium
032429	**CNMG190612E-3J** **CNMG643A-3J**	SP4019	19.05 0.750	19.40 0.764	6.35 0.250	1.20 0.047	7.92 0.312		Medium
032430	**CNMG190616E-3J** **CNMG644A-3J**	SP4019	19.05 0.750	19.40 0.764	6.35 0.250	1.60 0.063	7.92 0.312		Medium

For Toolholders External: see pages C77 - C84 | Internal: see pages C85 - C86

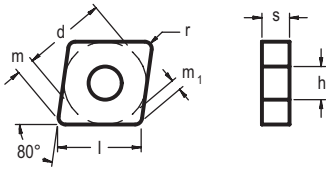
Material Guide – Key to Recommended Inserts

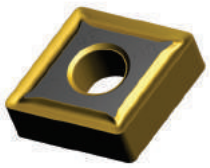
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

CNMG
4E Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
030506	**CNMG120404E-4E** **CNMG431A-4E**	SP0819	12.70 0.500	12.90 0.508	4.76 0.187	0.40 0.016	5.16 0.203		Medium-Roughing
032431	**CNMG120404E-4E** **CNMG431A-4E**	NL400	12.70 0.500	12.90 0.508	4.76 0.187	0.40 0.016	5.16 0.203		Medium-Roughing
030507	**CNMG120408E-4E** **CNMG432A-4E**	SP0819	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Medium-Roughing
032432	**CNMG120408E-4E** **CNMG432A-4E**	NL400	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Medium-Roughing
030507	**CNMG120408E-4E** **CNMG432A-4E**	SP0819	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Medium-Roughing
032433	**CNMG120412E-4E** **CNMG433A-4E**	NL400	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203		Medium-Roughing
030508	**CNMG120412E-4E** **CNMG433A-4E**	SP0819	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203		Medium-Roughing
032434	**CNMG160608E-4E** **CNMG542A-4E**	NL400	15.88 0.625	16.10 0.634	6.35 0.250	0.80 0.031	6.35 0.250		Medium-Roughing
030509	**CNMG160608E-4E** **CNMG542A-4E**	SP0819	15.88 0.625	16.10 0.634	6.35 0.250	0.80 0.031	6.35 0.250		Medium-Roughing
030510	**CNMG160612E-4E** **CNMG543A-4E**	SP0819	15.88 0.625	16.10 0.634	6.35 0.250	1.20 0.047	6.35 0.250		Medium-Roughing
032435	**CNMG160612E-4E** **CNMG543A-4E**	NL400	15.88 0.625	16.10 0.634	6.35 0.250	1.20 0.047	6.35 0.250		Medium-Roughing
032436	**CNMG160616E-4E** **CNMG544A-4E**	NL400	15.88 0.625	16.10 0.634	6.35 0.250	1.60 0.063	6.35 0.250		Medium-Roughing
030511	**CNMG160616E-4E** **CNMG544A-4E**	SP0819	15.88 0.625	16.10 0.634	6.35 0.250	1.60 0.063	6.35 0.250		Medium-Roughing

For Toolholders External: see pages C77 - C84 | Internal: see pages C85 - C86

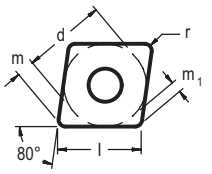
Material Guide – Key to Recommended Inserts

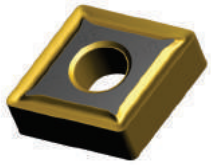
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

CNMG
4E Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032437	**CNMG190608E-4E** **CNMG642A-4E**	NL400	19.05 0.750	19.40 0.764	6.35 0.250	0.80 0.031	7.92 0.312		Medium-Roughing
030512	**CNMG190608E-4E** **CNMG642A-4E**	SP0819	19.05 0.750	19.40 0.764	6.35 0.250	0.80 0.031	7.92 0.312		Medium-Roughing
030513	**CNMG190612E-4E** **CNMG643A-4E**	SP0819	19.05 0.750	19.40 0.764	6.35 0.250	1.20 0.047	7.92 0.312		Medium-Roughing
032438	**CNMG190612E-4E** **CNMG643A-4E**	NL400	19.05 0.750	19.40 0.764	6.35 0.250	1.20 0.047	7.92 0.312		Medium-Roughing
032439	**CNMG190616E-4E** **CNMG644A-4E**	NL400	19.05 0.750	19.40 0.764	6.35 0.250	1.60 0.063	7.92 0.312		Medium-Roughing
030514	**CNMG190616E-4E** **CNMG644A-4E**	SP0819	19.05 0.750	19.40 0.764	6.35 0.250	1.60 0.063	7.92 0.312		Medium-Roughing
032440	**CNMG190624E-4E** **CNMG646A-4E**	NL400	19.05 0.750	19.40 0.764	6.35 0.250	2.40 0.094	7.92 0.312		Medium-Roughing
030515	**CNMG190624E-4E** **CNMG646A-4E**	SP0819	19.05 0.750	19.40 0.764	6.35 0.250	2.40 0.094	7.92 0.312		Medium-Roughing

For Toolholders External: see pages C77 - C84 | Internal: see pages C85 - C86

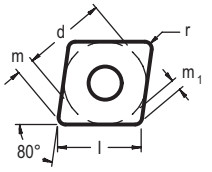
Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

CNMG
4T Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032442	**CNMG120404E-4T** **CNMG431A-4T**	NL250	12.70 0.500	12.90 0.508	4.76 0.187	0.40 0.016	5.16 0.203		Roughing
032443	**CNMG120404E-4T** **CNMG431A-4T**	NL300	12.70 0.500	12.90 0.508	4.76 0.187	0.40 0.016	5.16 0.203		Roughing
032444	**CNMG120404E-4T** **CNMG431A-4T**	NL400	12.70 0.500	12.90 0.508	4.76 0.187	0.40 0.016	5.16 0.203		Roughing
032445	**CNMG120404E-4T** **CNMG431A-4T**	NL920	12.70 0.500	12.90 0.508	4.76 0.187	0.40 0.016	5.16 0.203		Roughing
032446	**CNMG120408E-4T** **CNMG432A-4T**	NL250	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032447	**CNMG120408E-4T** **CNMG432A-4T**	NL300	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032448	**CNMG120408E-4T** **CNMG432A-4T**	NL400	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032449	**CNMG120408E-4T** **CNMG432A-4T**	NL920	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032450	**CNMG120412E-4T** **CNMG433A-4T**	NL250	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032451	**CNMG120412E-4T** **CNMG433A-4T**	NL300	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032452	**CNMG120412E-4T** **CNMG433A-4T**	NL400	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032453	**CNMG120412E-4T** **CNMG433A-4T**	NL920	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032454	**CNMG120416E-4T** **CNMG434A-4T**	NL250	12.70 0.500	12.90 0.508	4.76 0.187	1.60 0.063	5.16 0.203		Roughing
032455	**CNMG120416E-4T** **CNMG434A-4T**	NL300	12.70 0.500	12.90 0.508	4.76 0.187	1.60 0.063	5.16 0.203		Roughing
032456	**CNMG120416E-4T** **CNMG434A-4T**	NL400	12.70 0.500	12.90 0.508	4.76 0.187	1.60 0.063	5.16 0.203		Roughing
032457	**CNMG120416E-4T** **CNMG434A-4T**	NL920	12.70 0.500	12.90 0.508	4.76 0.187	1.60 0.063	5.16 0.203		Roughing

For Toolholders External: see pages C77 - C84 | Internal: see pages C85 - C86

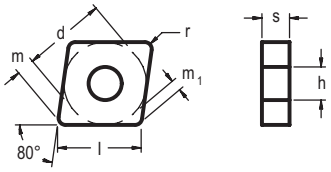
Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

CNMG
4T Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032458	**CNMG160608E-4T** **CNMG542A-4T**	NL250	15.88 0.625	16.10 0.634	6.35 0.250	0.80 0.031	6.35 0.250		Roughing
032459	**CNMG160608E-4T** **CNMG542A-4T**	NL300	15.88 0.625	16.10 0.634	6.35 0.250	0.80 0.031	6.35 0.250		Roughing
032460	**CNMG160608E-4T** **CNMG542A-4T**	NL400	15.88 0.625	16.10 0.634	6.35 0.250	0.80 0.031	6.35 0.250		Roughing
032461	**CNMG160608E-4T** **CNMG542A-4T**	NL920	15.88 0.625	16.10 0.634	6.35 0.250	0.80 0.031	6.35 0.250		Roughing
032462	**CNMG160612E-4T** **CNMG543A-4T**	NL250	15.88 0.625	16.10 0.634	6.35 0.250	1.20 0.047	6.35 0.250		Roughing
032463	**CNMG160612E-4T** **CNMG543A-4T**	NL300	15.88 0.625	16.10 0.634	6.35 0.250	1.20 0.047	6.35 0.250		Roughing
032464	**CNMG160612E-4T** **CNMG543A-4T**	NL400	15.88 0.625	16.10 0.634	6.35 0.250	1.20 0.047	6.35 0.250		Roughing
032465	**CNMG160612E-4T** **CNMG543A-4T**	NL920	15.88 0.625	16.10 0.634	6.35 0.250	1.20 0.047	6.35 0.250		Roughing
032466	**CNMG160616E-4T** **CNMG544A-4T**	NL250	15.88 0.625	16.10 0.634	6.35 0.250	1.60 0.063	6.35 0.250		Roughing
032467	**CNMG160616E-4T** **CNMG544A-4T**	NL300	15.88 0.625	16.10 0.634	6.35 0.250	1.60 0.063	6.35 0.250		Roughing
032468	**CNMG160616E-4T** **CNMG544A-4T**	NL400	15.88 0.625	16.10 0.634	6.35 0.250	1.60 0.063	6.35 0.250		Roughing
032469	**CNMG160616E-4T** **CNMG544A-4T**	NL920	15.88 0.625	16.10 0.634	6.35 0.250	1.60 0.063	6.35 0.250		Roughing

For Toolholders External: see pages C77 - C84 | Internal: see pages C85 - C86

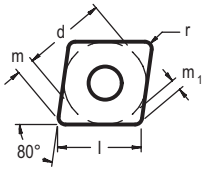
Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

CNMG
4T Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032470	**CNMG190608E-4T** **CNMG642A-4T**	NL250	19.05 0.750	19.40 0.764	6.35 0.250	0.80 0.031	7.92 0.312		Roughing
032471	**CNMG190608E-4T** **CNMG642A-4T**	NL300	19.05 0.750	19.40 0.764	6.35 0.250	0.80 0.031	7.92 0.312		Roughing
032472	**CNMG190608E-4T** **CNMG642A-4T**	NL400	19.05 0.750	19.40 0.764	6.35 0.250	0.80 0.031	7.92 0.312		Roughing
032473	**CNMG190608E-4T** **CNMG642A-4T**	NL920	19.05 0.750	19.40 0.764	6.35 0.250	0.80 0.031	7.92 0.312		Roughing
032474	**CNMG190612E-4T** **CNMG643A-4T**	NL250	19.05 0.750	19.40 0.764	6.35 0.250	1.20 0.047	7.92 0.312		Roughing
032475	**CNMG190612E-4T** **CNMG643A-4T**	NL300	19.05 0.750	19.40 0.764	6.35 0.250	1.20 0.047	7.92 0.312		Roughing
032476	**CNMG190612E-4T** **CNMG643A-4T**	NL400	19.05 0.750	19.40 0.764	6.35 0.250	1.20 0.047	7.92 0.312		Roughing
032477	**CNMG190612E-4T** **CNMG643A-4T**	NL920	19.05 0.750	19.40 0.764	6.35 0.250	1.20 0.047	7.92 0.312		Roughing
032478	**CNMG190616E-4T** **CNMG644A-4T**	NL250	19.05 0.750	19.40 0.764	6.35 0.250	1.60 0.063	7.92 0.312		Roughing
032479	**CNMG190616E-4T** **CNMG644A-4T**	NL300	19.05 0.750	19.40 0.764	6.35 0.250	1.60 0.063	7.92 0.312		Roughing
032480	**CNMG190616E-4T** **CNMG644A-4T**	NL400	19.05 0.750	19.40 0.764	6.35 0.250	1.60 0.063	7.92 0.312		Roughing
032481	**CNMG190616E-4T** **CNMG644A-4T**	NL920	19.05 0.750	19.40 0.764	6.35 0.250	1.60 0.063	7.92 0.312		Roughing
032482	**CNMG250924E-4T** **CNMG866A-4T**	NL300	25.40 1.000	25.79 1.015	9.53 0.375	2.40 0.094	9.12 0.359		Roughing
032483	**CNMG250924E-4T** **CNMG866A-4T**	NL400	25.40 1.000	25.79 1.015	9.53 0.375	2.40 0.094	9.12 0.359		Roughing
032484	**CNMG250924E-4T** **CNMG866A-4T**	NL920	25.40 1.000	25.79 1.015	9.53 0.375	2.40 0.094	9.12 0.359		Roughing

For Toolholders External: see pages C77 - C84 | Internal: see pages C85 - C86

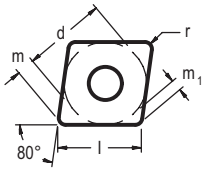
Material Guide – Key to Recommended Inserts

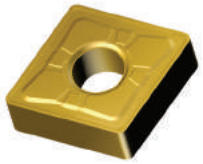
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

CNMG
4U Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032485	**CNMG120404E-4U** **CNMG431A-4U**	NL200	12.70 0.500	12.90 0.508	4.76 0.187	0.40 0.016	5.16 0.203		Roughing
032486	**CNMG120408E-4U** **CNMG432A-4U**	NL200	12.70 0.500	12.90 0.508	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032487	**CNMG120412E-4U** **CNMG433A-4U**	NL200	12.70 0.500	12.90 0.508	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032488	**CNMG120416E-4U** **CNMG434A-4U**	NL200	12.70 0.500	12.90 0.508	4.76 0.187	1.60 0.063	5.16 0.203		Roughing
032489	**CNMG160608E-4U** **CNMG542A-4U**	NL200	15.88 0.625	16.10 0.634	6.35 0.250	0.80 0.031	6.35 0.250		Roughing
032490	**CNMG160612E-4U** **CNMG543A-4U**	NL200	15.88 0.625	16.10 0.634	6.35 0.250	1.20 0.047	6.35 0.250		Roughing
032491	**CNMG160616E-4U** **CNMG544A-4U**	NL200	15.88 0.625	16.10 0.634	6.35 0.250	1.60 0.063	6.35 0.250		Roughing
032492	**CNMG190612E-4U** **CNMG643A-4U**	NL200	19.05 0.750	19.40 0.764	6.35 0.250	1.20 0.047	7.92 0.312		Roughing
032493	**CNMG190616E-4U** **CNMG644A-4U**	NL200	19.05 0.750	19.40 0.764	6.35 0.250	1.60 0.063	7.92 0.312		Roughing
032494	**CNMG190624E-4U** **CNMG646A-4U**	NL200	19.05 0.750	19.40 0.764	6.35 0.250	2.40 0.094	7.92 0.312		Roughing

For Toolholders External: see pages C77 - C84 | Internal: see pages C85 - C86

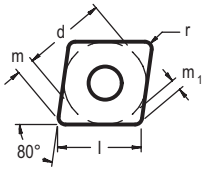
Material Guide – Key to Recommended Inserts

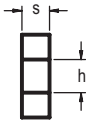
Material Designation

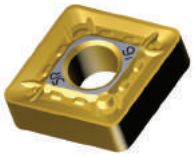
P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

CNMM
5R Geometry







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
031684	**CNMM160612E-5R** **CNMM543A-5R**	NL300	15.88 0.625	16.10 0.634	6.35 0.250	1.20 0.047	6.35 0.250		Heavy Roughing
031668	**CNMM160612E-5R** **CNMM543A-5R**	NL400	15.88 0.625	16.10 0.634	6.35 0.250	1.20 0.047	6.35 0.250		Heavy Roughing
031685	**CNMM160616E-5R** **CNMM544A-5R**	NL300	15.88 0.625	16.10 0.634	6.35 0.250	1.60 0.063	6.35 0.250		Heavy Roughing
031669	**CNMM160616E-5R** **CNMM544A-5R**	NL400	15.88 0.625	16.10 0.634	6.35 0.250	1.60 0.063	6.35 0.250		Heavy Roughing
031686	**CNMM160624E-5R** **CNMM546A-5R**	NL300	15.88 0.625	16.10 0.634	6.35 0.250	2.40 0.094	6.35 0.250		Heavy Roughing
031670	**CNMM160624E-5R** **CNMM546A-5R**	NL400	15.88 0.625	16.10 0.634	6.35 0.250	2.40 0.094	6.35 0.250		Heavy Roughing
031687	**CNMM190612E-5R** **CNMM643A-5R**	NL300	19.05 0.750	19.40 0.764	6.35 0.250	1.20 0.047	7.92 0.312		Heavy Roughing
031671	**CNMM190612E-5R** **CNMM643A-5R**	NL400	19.05 0.750	19.40 0.764	6.35 0.250	1.20 0.047	7.92 0.312		Heavy Roughing
031688	**CNMM190616E-5R** **CNMM644A-5R**	NL300	19.05 0.750	19.40 0.764	6.35 0.250	1.60 0.063	7.92 0.312		Heavy Roughing
031672	**CNMM190616E-5R** **CNMM644A-5R**	NL400	19.05 0.750	19.40 0.764	6.35 0.250	1.60 0.063	7.92 0.312		Heavy Roughing
031689	**CNMM190624E-5R** **CNMM646A-5R**	NL300	19.05 0.750	19.40 0.764	6.35 0.250	2.40 0.094	7.92 0.312		Heavy Roughing
031673	**CNMM190624E-5R** **CNMM646A-5R**	NL400	19.05 0.750	19.40 0.764	6.35 0.250	2.40 0.094	7.92 0.312		Heavy Roughing
031683	**CNMM250924E-5R** **CNMM866A-5R**	NL300	25.40 1.000	25.78 1.015	9.53 0.375	2.40 0.094	9.12 0.359		Heavy Roughing
031682	**CNMM250924E-5R** **CNMM866A-5R**	NL920	25.40 1.000	25.78 1.015	9.53 0.375	2.40 0.094	9.12 0.359		Heavy Roughing

For Toolholders External: see pages C77 - C84 | Internal: see pages C85 - C86

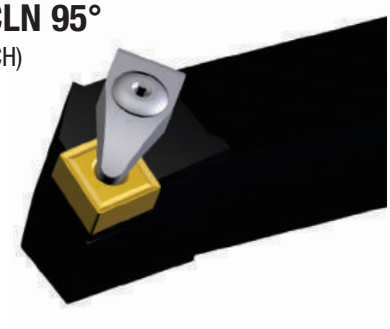
Material Guide – Key to Recommended Inserts

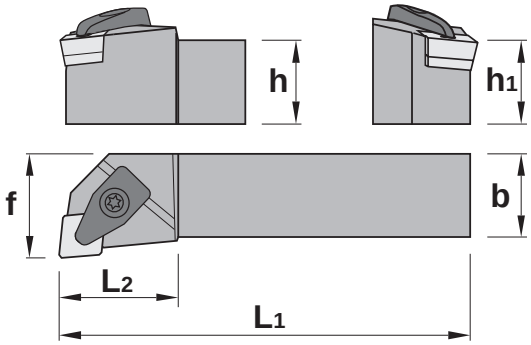
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

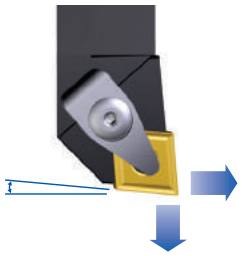
DCLN 95°
(INCH)





DCLN LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (inch)				
				h = h1	b	f	L1	L2
033259	**DCLNL-124B**	LH	CN_43	0.75	0.75	1.00	4.50	1.338
033260	**DCLNL-164D**	LH	CN_43	1.00	1.00	1.25	6.00	1.338
033261	**DCLNL-204D**	LH	CN_43	1.25	1.25	1.50	6.00	1.338
033262	**DCLNR-124B**	RH	CN_43	0.75	0.75	1.00	4.50	1.338
033263	**DCLNR-164D**	RH	CN_43	1.00	1.00	1.25	6.00	1.338
033264	**DCLNR-204D**	RH	CN_43	1.25	1.25	1.50	6.00	1.338
033265	**DCLNL- 205D**	LH	CN_54	1.25	1.25	1.50	6.00	1.375
033266	**DCLNL- 245E**	LH	CN_54	1.50	1.50	2.00	7.00	1.375
033267	**DCLNR- 205D**	RH	CN_54	1.25	1.25	1.50	6.00	1.375
033268	**DCLNR- 245E**	RH	CN_54	1.50	1.50	2.00	7.00	1.375
033269	**DCLNL-206D**	LH	CN_64	1.25	1.25	1.50	6.00	1.650
033270	**DCLNL- 246E**	LH	CN_64	1.50	1.50	2.00	7.00	1.650
033271	**DCLNR-206D**	RH	CN_64	1.25	1,25	1.50	6.00	1.650
033272	**DCLNR- 246E**	RH	CN_64	1.50	1.50	2.00	7.00	1.650



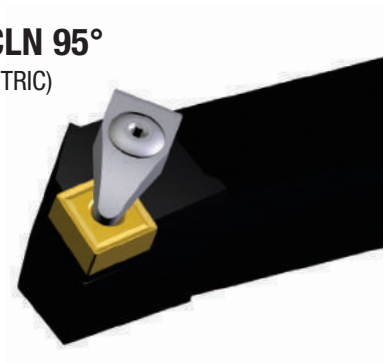
D style External Toolholder
for Negative Inserts:
CN_43, CN_54 & CN_64
Application: Face and Turn O/D
Approach 95°
Axial -5.5°
Radial -6.5°
Profiling Clearance Angle β = 0°
RH Holder Shown

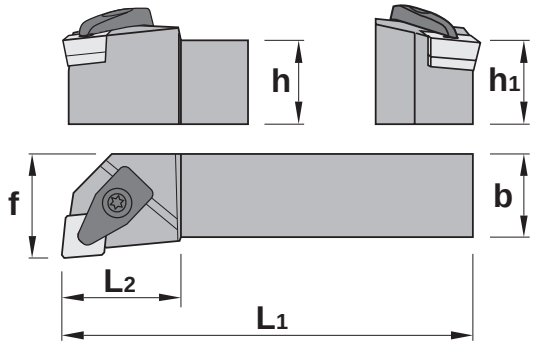
DCLNR/L Spare Parts (INCH)

Item Description	Clamp Screw EDP		Clamp EDP		Clamp Spring EDP		Anvil EDP		Anvil Screw EDP		Clamp & Anvil Screw Key	
DCLNL/R-124B	033710	1696	033707	DC2712	033719	4295	033712	ICSN442	033716	1766	018287	KH5004
DCLNL/R-164D												
DCLNL/R-204D												
DCLNL/R- 205D			034495	DC2716			001685	ICSN533	034509	1768		
DCLNL/R 245E												
DCLNL/R-206D			033708	DC2719			001686	ICSN633	033717	1770		
DCLNL/R- 246E												

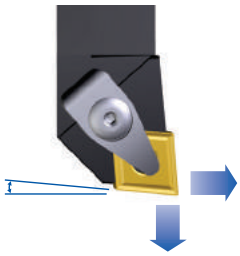
STELLRAM

DCLN 95°
(METRIC)





DCLN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
033245	**DCLNL 2020 K12**	LH	CN_1204	20	20	25	125	34
033246	**DCLNL 2525 M12**	LH	CN_1204	25	25	32	150	34
033247	**DCLNL 3232 P12**	LH	CN_1204	32	32	40	170	34
033248	**DCLNR 2020 K12**	RH	CN_1204	20	20	25	125	34
033249	**DCLNR 2525 M12**	RH	CN_1204	25	25	32	150	34
033250	**DCLNR 3232 P12**	RH	CN_1204	32	32	40	170	34
033251	**DCLNL 2525 M16**	LH	CN_1606	25	25	32	150	36
033252	**DCLNL 3232 P16**	LH	CN_1606	32	32	40	170	40
033253	**DCLNR 2525 M16**	RH	CN_1606	25	25	32	150	36
033254	**DCLNR 3232 P16**	RH	CN_1606	32	32	40	170	40
033255	**DCLNL 3232 P19**	LH	CN_1906	32	32	40	170	42
033256	**DCLNL 4040 S19**	LH	CN_1906	40	40	50	250	42
033257	**DCLNR 3232 P19**	RH	CN_1906	32	32	40	170	42
033258	**DCLNR 4040 S19**	RH	CN_1906	40	40	50	250	42

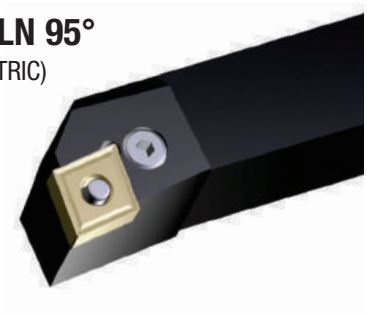


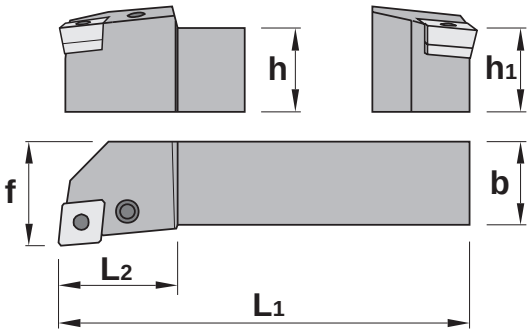
D style External Toolholder
for Negative Inserts:
CN_1204, CN_1606 & CN_1906
Application: Face and Turn O/D
Approach 95°
Axial -6°
Radial -6°
Profiling Clearance Angle β = 0°
RH Holder Shown

DCLNL/R Spare Parts (METRIC)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Spring EDP*		*Anvil EDP*		*Anvil Screw EDP*		*Clamp & Anvil Screw Key*	
DCLNL/R 2020 K12	*033710*	1696	*033707*	DC2712	*033719*	4295	*033712*	ICSN442	*033716*	1766	*018287*	KH5004
DCLNL/R 2525 M12												
DCLNL/R 3232 P12												
DCLNL/R 2525 M16			*034495*	DC2716			*001685*	ICSN533	*034509*	1768		
DCLNL/R 3232 P16												
DCLNL/R 3232 P19			*033708*	DC2719			*001686*	ICSN633	*033717*	1770		
DCLNL/R 4040 S19												

STELLRAM

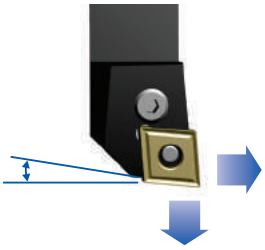
PCLN 95°
(METRIC)





PCLN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
033273	***PCLNL 4040 S25**	LH	CN_2509	40	40	50	250	45
033274	***PCLNL 5050 T25**	LH	CN_2509	50	50	60	300	50
033275	***PCLNR 4040 S25**	RH	CN_2509	40	40	50	250	45
033276	***PCLNR 5050 T25**	RH	CN_2509	50	50	60	300	50

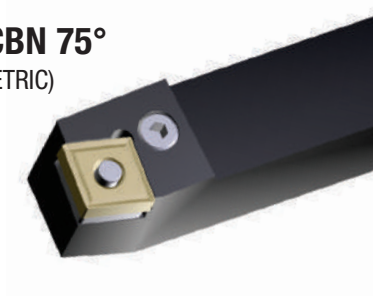
* Non Stock Items, subject to extended delivery time

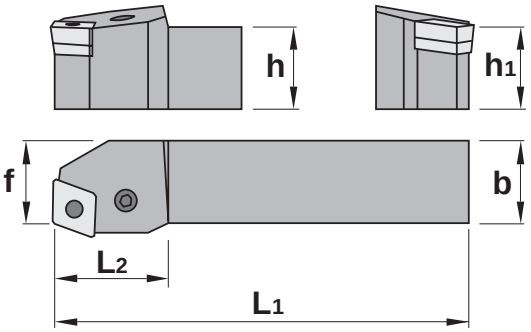


P Style External Toolholder
for Negative Inserts: CN_2509
Application: Face and Turn O/D
Approach 95°
Axial -6°
Radial -6°
Profiling Clearance Angle β = 0°
RH Holder Shown

PCLNL/R Spare Parts (METRIC)												
Item Description	*Lever EDP*		*Lever Screw EDP*		*Anvil EDP*		*Anvil Clip EDP*		*Clip Punch EDP*		*Key EDP*	
PCLNL/R 4040 S25	*028408*	PL8025	*028409*	PLS1612	*034483*	PA3625	*028418*	PC4125	*034506*	PCP0025	*018285*	KH5005
PCLNL/R 5050 T25												

PCBN 75°
(METRIC)





PCBN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h_1	b	f	L_1	L_2
017118	**PCBNL 2020 K12**	LH	CN_1204	20	20	17	125	28
017120	**PCBNL 2525 M12**	LH	CN_1204	25	25	22	150	28
017119	**PCBNR 2020 K12**	RH	CN_1204	20	20	17	125	28
017121	**PCBNR 2525 M12**	RH	CN_1204	25	25	22	150	28
028373	**PCBNL 3232 P16**	LH	CN_1606	32	32	27	170	34
017127	**PCBNR 3232 P16**	RH	CN_1606	32	32	27	170	34

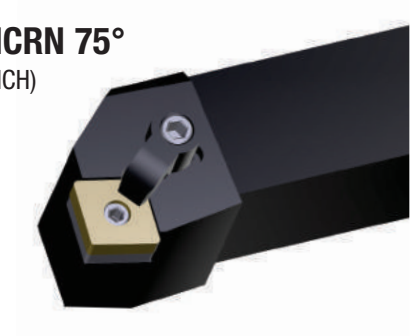


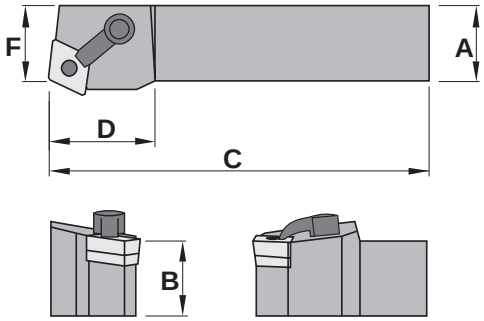
P Style External Toolholder
for Negative Inserts:
CN_1204 & CN_1606
Application: Turn O/D
Approach 75°
Axial -7.25°
Radial -4.25°
RH Holder Shown

PCBNL/R Spare Parts (METRIC)												
Item Description	*Lever EDP*		*Lever Screw EDP*		*Anvil EDP*		*Anvil Clip EDP*		*Clip Punch EDP*		*Key EDP*	
PCBNL/R 2020 K12	*017443*	PL8012	*017448*	PLS1608	*017456*	PA3612	*017453*	PC4112	*028054*	PCP0012	*018286*	KH5003
PCBNL/R 2525 M12												
PCBNL/R 3232 P16	*017445*	PL8016	*017450*	PLS1618	*017457*	PA3616	*028051*	PC4115	*034505*	PCP0015		

STELLRAM

MCRN 75°
(INCH)





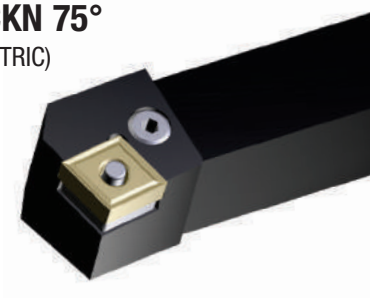
MCRN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				A	B	F	C	D
022414	**MCRNL-124B**	LH	CN_43	0.75	0.75	0.878	4.50	1.102
032994	**MCRNL-164D**	LH	CN_43	1.00	1.00	1.128	6.00	1.102
033277	**MCRNL-204D**	LH	CN_43	1.25	1.25	1.318	6.00	1.338
022420	**MCRNR-124B**	RH	CN_43	0.75	0.75	0.878	4.50	1.102
032930	**MCRNR-164D**	RH	CN_43	1.00	1.00	1.128	6.00	1.102
033278	**MCRNR-204D**	RH	CN_43	1.25	1.25	1.318	6.00	1.338
033032	**MCRNL-205D**	LH	CN_54	1.25	1.25	1.351	6.00	1.653
033279	**MCRNR-205D**	RH	CN_54	1.25	1.25	1.351	6.00	1.653

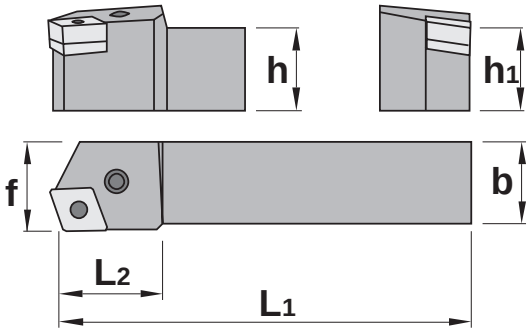


M Style External Toolholder
for Negative Inserts:
CN_43 & CN_54
Application: Turn O/D
Approach 75°
Axial -6°
Radial -6°
RH Holder Shown

MCRNL/R Spare Parts (INCH)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Key EDP*		*Lock Pin EDP*		*Lock Pin Key EDP*		*Anvil EDP*	
MCRNL/R-124B	*028992*	XNS48	*028996*	CL20	*008207*	KH5103	*004708*	NL46	*007785*	KH5124	*029079*	ICSN432
MCRNL/R-164D												
MCRNL/R-204D												
MCRNL/R-205D	*029076*	XNS510	*029071*	CL12	*029085*	KH5104	*004710*	NL58	*008207*	KH5103	*001685*	ICSN533

PCKN 75°
(METRIC)





PCKN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h_1	b	f	L_1	L_2
017130	**PCKNL 2020 K 12**	LH	CN_1204	20	20	25	125	28
017132	**PCKNL 2525 M 12**	LH	CN_1204	25	25	32	150	28
033280	**PCKNL 3225 P 12**	LH	CN_1204	32	25	32	170	28
017131	**PCKNR 2020 K 12**	RH	CN_1204	20	20	25	125	28
017133	**PCKNR 2525 M 12**	RH	CN_1204	25	25	32	150	28
033281	**PCKNR 3225 P 12**	RH	CN_1204	32	25	32	170	28

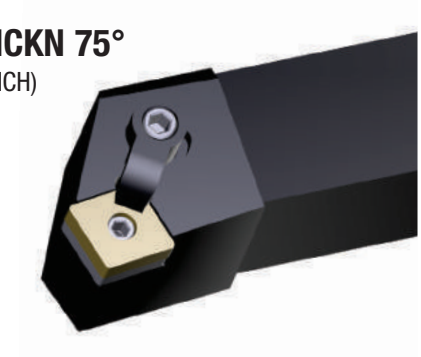


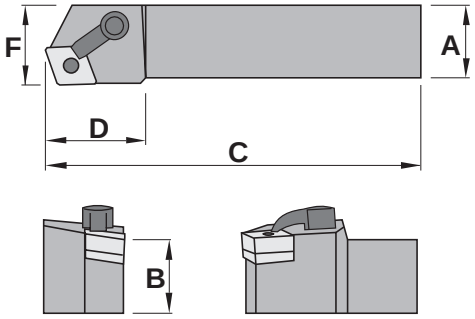
P Style External Toolholder
for Negative Inserts: CN_1204
Application: Facing
Approach 75°
Axial -6.5°
Radial -5.5°
RH Holder Shown

PCKNL/R Spare Parts (METRIC)												
Item Description	Lever EDP		*Lever Screw EDP*		*Anvil EDP*		*Anvil Clip EDP*		*Clip Punch EDP*		*Key EDP*	
PCKNL/R 2020 K12	*017443*	PL8012	*017448*	PLS1608	*017456*	PA3612	*017453*	PC4112	*028054*	PCP0012	*018286*	KH5003
PCKNL/R 2525 M12												
PCKNL/R 3225 P12												

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MCKN 75°
(INCH)





MCKN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				A	B	F	C	D
022381	**MCKNL-124B**	LH	CN_43	0.75	0.75	1.00	4.50	1.338
022382	**MCKNL-164D**	LH	CN_43	1.00	1.00	1.25	6.00	1.338
033282	**MCKNL-204D**	LH	CN_43	1.25	1.25	1.50	6.00	1.338
022387	**MCKNR-124B**	RH	CN_43	0.75	0.75	1.00	4.50	1.338
004187	**MCKNR-164D**	RH	CN_43	1.00	1.00	1.25	6.00	1.338
033283	**MCKNR-204D**	RH	CN_43	1.25	1.25	1.50	6.00	1.338
033284	**MCKNL-205D**	LH	CN_54	1.25	1.25	1.50	6.00	1.338
033285	**MCKNR-205D**	RH	CN_54	1.25	1.25	1.50	6.00	1.338



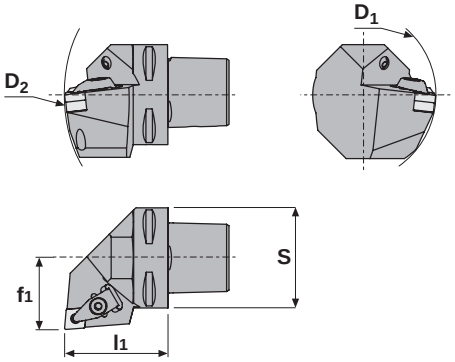
M Style External Toolholder
for Negative Inserts:
CN_43 & CN_54
Application: Facing
Axial Approach 75°
Axial -4°
Radial -7°
RH Holder Shown

MCKNL/R Spare Parts (INCH)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Key EDP*		*Lock Pin EDP*		*Lock Pin Key EDP*		*Anvil EDP*	
MCKNL/R-124B	*028997*	XNS48	*028996*	CL20	*008207*	KH5103	*004708*	NL46	*007785*	KH5124	*029079*	ICSN432
MCKNL/R-164D												
MCKNL/R-204D												
MCKNL/R-205D	*029076*	XNS510	*029071*	CL12	*029085*	KH5104	*004713*	NL58	*008207*	KH5103	*001685*	ICSN533

STELLRAM

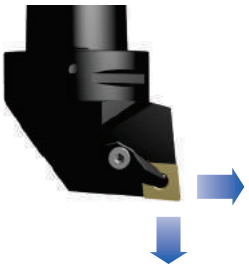
DCLN 95°
(METRIC / INCH)





DCLN LH & RH External PSC Toolholders

EDP	Item Description	Hand	Insert Sizes	S	D1	D2	f1	l1
				mm	mm	mm	mm	mm
				inch	inch	inch	inch	inch
033691	**C5-50-DCLNL35060-12**	LH	CN_1204	50	110	165	35	60
			CN_43	1.969	4.331	6.496	1.378	2.362
033692	**C5-50-DCLNR35060-12**	RH	CN_1204	50	110	165	35	60
			CN_43	1.969	4.331	6.496	1.378	2.362
033693	**C6-63-DCLNL45065-12**	LH	CN_1204	63	110	190	45	65
			CN_43	2.480	4.331	7.480	1.772	2.559
033694	**C6-63-DCLNR45065-12**	RH	CN_1204	63	110	190	45	65
			CN_43	2.480	4.331	7.480	1.772	2.559
033695	**C8-80-DCLNL55080-19**	LH	CN_1906	80	125	250	55	80
			CN_64	3.150	4.921	9.843	2.165	3.150
033696	**C8-80-DCLNR55080-19**	RH	CN_1906	80	125	250	55	80
			CN_64	3.150	4.921	9.843	2.165	3.150



D Style External Toolholder
for Negative Inserts:
CN_1204 (CN_43) & CN_1906 (CN_64)
Application: External Face, Turn O/D
Approch 95°
Axial -5°
Radial -6°
Profilling Clearance Angle β = 0°
RH Holder Shown

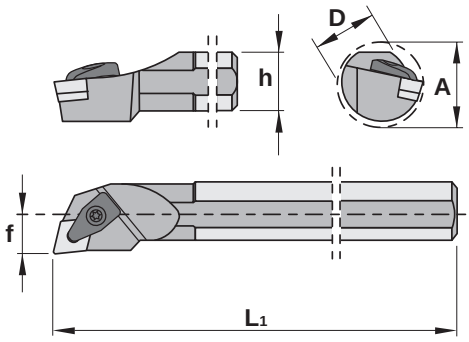
DCLNL/R Spare Parts

Item Description	Clamp EDP		Clamp Screw EDP		Anvil EDP		Anvil Screw EDP		Clamp Spring EDP		Screw Key EDP	
C5-50-DCLNL/R 35060-12	033707	2712	033710	1696	033712	ICSN442	033716	1766	033719	4295	018287	KH5004
C6-63-DCLNL/R 45065-12												
C8-80-DCLNL/R 55080-19	033708	2719			001686	ICSN633	033717	1770				

STELLRAM

S..DCLN 95°
(INCH)

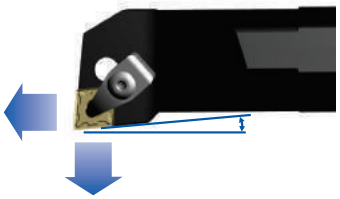




S..DCLN LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (inch)					
				Min Bore Ø A	ØD	f	L1	h	Through Coolant
033296	**S16T DCLNL-4**	LH	CN_43	1.280	1.000	0.640	12.000	0.900	
033297	**S20U DCLNL-4**	LH	CN_43	1.530	1.250	0.765	14.000	1.180	
033298	**S24U DCLNL-4**	LH	CN_43	1.780	1.500	0.890	14.000	1.370	
033299	**S16T DCLNR-4**	RH	CN_43	1.280	1.000	0.640	12.000	0.900	
033300	**S20U DCLNR-4**	RH	CN_43	1.530	1.250	0.765	14.000	1.180	
033301	**S24U DCLNR-4**	RH	CN_43	1.780	1.500	0.890	14.000	1.370	
033302	***S24U DCLNL-5**	LH	CN_54	1.780	1.500	0.890	14.000	1.370	
033303	***S32V DCLNL-5**	LH	CN_54	2.562	2.000	1.281	16.000	1.870	
033304	***S24U DCLNR-5**	RH	CN_54	1.780	1.500	0.890	14.000	1.370	
033305	***S32V DCLNR-5**	RH	CN_54	2.562	2.000	1.281	16.000	1.870	

* Non Stock Items, subject to extended delivery time



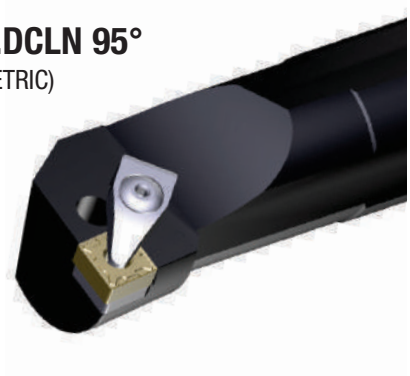
D Style Internal Boring Bar
for Negative Inserts:
CN_43 & CN_54
Application:- I/D Face and Bore
Axial Approach 95°
Axial -5°
Radial -13.5°
Profiling Clearance Angle β = 0°
RH Bar Shown

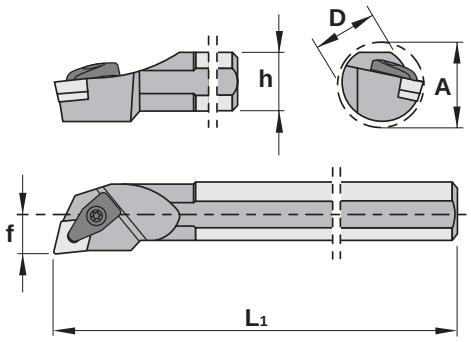
S..DCLNL/R Spare Parts (INCH)

Item Description	Clamp Screw EDP		Clamp EDP		Clamp Spring EDP		Anvil EDP		Anvil Screw EDP		Clamp & Anvil Screw Key	
S16T DCLNL/R-4	033710	1696	033707	DC2712	033719	4295	017456	3612	029095	1765	029085	KH5104
S20U DCLNL/R-4							029079	ICSN432	034508	1161		
S24U DCLNL/R-4									034507	1160		
***S24U DCLNL/R-5**			034495	DC2716			001685	ICSN533	034509	1768		
***S32V DCLNL/R-5**												

STELLRAM

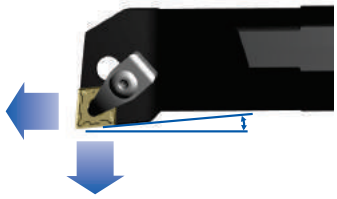
S..DCLN 95°
(METRIC)





S..DCLN LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L_1	h	Through Coolant
033286	**S25T DCLNL 12**	LH	CN_1204	31	25	17	300	23	⊘
033287	**S32U DCLNL 12**	LH	CN_1204	39	32	22	350	30	⊘
033288	**S40V DCLNL 12**	LH	CN_1204	48	40	27	400	37	⊘
033289	**S25T DCLNR 12**	RH	CN_1204	31	25	17	300	23	⊘
033290	**S32U DCLNR 12**	RH	CN_1204	39	32	22	350	30	⊘
033291	**S40V DCLNR 12**	RH	CN_1204	48	40	27	400	37	⊘
033292	***S40V DCLNL 16**	LH	CN_1606	48	40	27	400	37	⊘
033293	***S50W DCLNL 16**	LH	CN_1606	61	50	35	450	47	⊘
033294	***S40V DCLNR 16**	RH	CN_1606	48	40	27	400	37	⊘
033295	***S50W DCLNR 16**	RH	CN_1606	61	50	35	450	47	⊘

* Non Stock Items, subject to extended delivery time

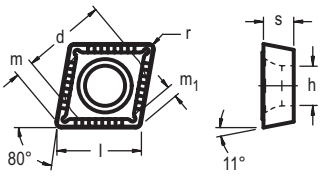


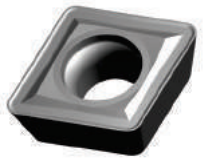
D Style Internal Boring Bar
for Negative Inserts:
CN_1204 & CN_1606
Application:- I/D Face and Bore
Axial Approach 95°
Axial -5°
Radial -13.5°
Profiling Clearance Angle β = 0°
RH Bar Shown

S..DCLNL/R Spare Parts (METRIC)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Spring EDP*		*Anvil EDP*		*Anvil Screw EDP*		*Clamp & Anvil Screw Key*	
S25T DCLNL/R 12	*033710*	1696	*033707*	DC2712	*033719*	4295	*017456*	3612	*029095*	1765	*018287*	KH5004
S32U DCLNL/R 12							*029079*	ICCN432	*034508*	1161		
S40V DCLNL/R 12									*034507*	1160		
***S40V DCLNL/R 16**			*034495*	DC2716			*001685*	ICSN-533	*034509*	1768		
***S50W DCLNL/R 16**												

STELLRAM

CPMT
-73 Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032496	**CPMT060204E-73** **CPMT21.51A-73**	SP4019	6.35 0.250	6.45 0.254	2.38 0.094	0.40 0.016	2.80 0.110		Medium
032497	**CPMT080302E-73** **CPMT2.520.5A-73**	SP4019	9.52 0.375	7.94 0.313	3.18 0.125	0.20 0.008	3.05 0.120		Medium
032498	**CPMT080304E -73** **CPMT2.521E -73**	SP4019	9.52 0.375	7.94 0.313	3.18 0.125	0.40 0.016	3.05 0.120		Medium
032499	**CPMT080308E-73** **CPMT2.522A-73**	SP4019	9.52 0.375	7.94 0.313	3.18 0.125	0.80 0.031	3.05 0.120		Medium

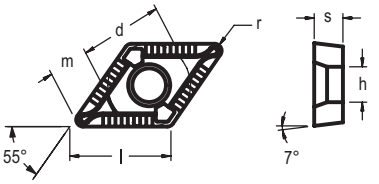
Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

DCGT & DCGX
-62 Geometry

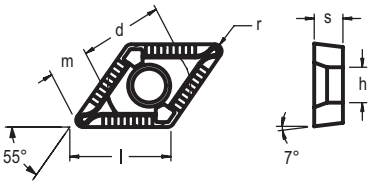


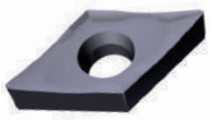


EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
031401	DCGX0702005E-62 DCGX21.50A-62	SP4019	6.35 0.250	7.70 0.303	2.38 0.094	0.05 0.002	2.79 0.110		Finishing
030577	DCGT070201E-62 DCGT21.50.2A-62	SP4019	6.35 0.250	7.70 0.303	2.38 0.094	0.10 0.004	2.79 0.110		Finishing
030578	DCGT070202E-62 DCGT21.50.5A-62	SP4019	6.35 0.250	7.70 0.303	2.38 0.094	0.20 0.008	2.79 0.110		Finishing
030579	DCGT070204E-62 DCGT21.51A-62	SP4019	6.35 0.250	7.70 0.303	2.38 0.094	0.40 0.016	2.79 0.110		Finishing
031402	DCGX11T3005E-62 DCGX32.50A-62	SP4019	9.52 0.375	11.60 0.457	3.97 0.156	0.05 0.002	4.39 0.173		Finishing
030581	DCGT11T301E-62 DCGT32.50.25A-62	SP4019	9.52 0.375	11.60 0.457	3.97 0.156	0.10 0.004	4.39 0.173		Finishing
030582	DCGT11T302E-62 DCGT32.50.5A-62	SP4019	9.52 0.375	11.60 0.457	3.97 0.156	0.20 0.008	4.39 0.173		Finishing
030583	DCGT11T304E-62 DCGT32.51A-62	SP4019	9.52 0.375	11.60 0.457	3.97 0.156	0.40 0.016	4.39 0.173		Finishing
030584	DCGT11T308E-62 DCGT32.52A-62	SP4019	9.52 0.375	11.60 0.457	3.97 0.156	0.80 0.031	4.39 0.173		Finishing

For Toolholders External: see pages C90 - C95 | Internal: see pages C96 - C101

DCGT
-64 Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
034465	DCGT11T302F-64 DCGT32.50.5-64	GH1	9.52 0.375	11.60 0.457	3.97 0.156	0.20 0.008	4.39 0.173		Finishing
014068	DCGT11T304F-64 DCGT32.51-64	GH1	9.52 0.375	11.60 0.457	3.97 0.156	0.40 0.016	4.39 0.173		Finishing
014069	DCGT11T308F-64 DCGT32.52-64	GH1	9.52 0.375	11.60 0.457	3.97 0.156	0.80 0.031	4.39 0.173		Finishing

For Toolholders External: see pages C90 - C95 | Internal: see pages C96 - C101

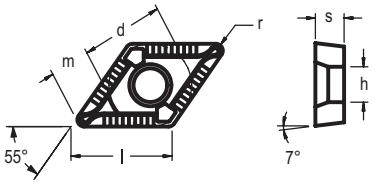
Material Guide – Key to Recommended Inserts

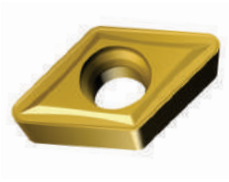
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

DCMT
-73 Geometry

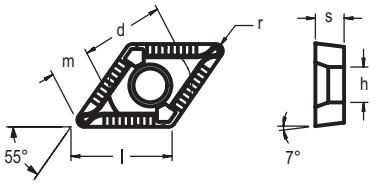




EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032501	**DCMT070202E-73** **DCMT21.50.5A-73**	SP4019	6.35 0.250	7.70 0.303	2.38 0.094	0.20 0.008	2.79 0.110		Medium
032502	**DCMT070202E-73** **DCMT21.50.5A-73**	NL300	6.35 0.250	7.70 0.303	2.38 0.094	0.20 0.008	2.79 0.110		Medium
032503	**DCMT070204E-73** **DCMT21.51A-73**	SP4019	6.35 0.250	7.70 0.303	2.38 0.094	0.40 0.016	2.79 0.110		Medium
032504	**DCMT070204E-73** **DCMT21.51A-73**	NL300	6.35 0.250	7.70 0.303	2.38 0.094	0.40 0.016	2.79 0.110		Medium
032285	**DCMT11T304E-73** **DCMT32.51A-73**	SP4019	9.52 0.375	11.60 0.457	3.97 0.156	0.40 0.016	4.39 0.173		Medium
032505	**DCMT11T304E-73** **DCMT32.51A-73**	NL300	9.52 0.375	11.60 0.457	3.97 0.156	0.40 0.016	4.39 0.173		Medium
032506	**DCMT11T304E-73** **DCMT32.51A-73**	NL920	9.52 0.375	11.60 0.457	3.97 0.156	0.40 0.016	4.39 0.173		Medium
032297	**DCMT11T308E-73** **DCMT32.52A-73**	SP4019	9.52 0.375	11.60 0.457	3.97 0.156	0.80 0.031	4.39 0.173		Medium
032507	**DCMT11T308E-73** **DCMT32.52A-73**	NL300	9.52 0.375	11.60 0.457	3.97 0.156	0.80 0.031	4.39 0.173		Medium
032508	**DCMT11T308E-73** **DCMT32.52A-73**	NL920	9.52 0.375	11.60 0.457	3.97 0.156	0.80 0.031	4.39 0.173		Medium

For Toolholders External: see pages C90 - C95 | Internal: see pages C96 - C101

DCMT
M Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032509	**DCMT150404E-M** **DCMT431A-M**	SP4019	12.70 0.500	15.50 0.610	4.76 0.187	0.40 0.016	5.16 0.203		Medium
032510	**DCMT150404E-M** **DCMT431A-M**	NL300	12.70 0.500	15.50 0.610	4.76 0.187	0.40 0.016	5.16 0.203		Medium
032511	**DCMT150408E-M** **DCMT432A-M**	SP4019	12.70 0.500	15.50 0.610	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032512	**DCMT150408E-M** **DCMT432A-M**	NL300	12.70 0.500	15.50 0.610	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032513	**DCMT150408E-M** **DCMT432A-M**	NL920	12.70 0.500	15.50 0.610	4.76 0.187	0.80 0.031	5.16 0.203		Medium

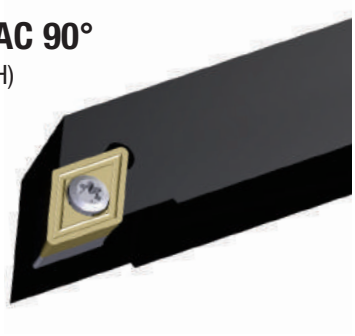
For Toolholders External: see pages 92 - 97 | Internal: see pages 98 - 103

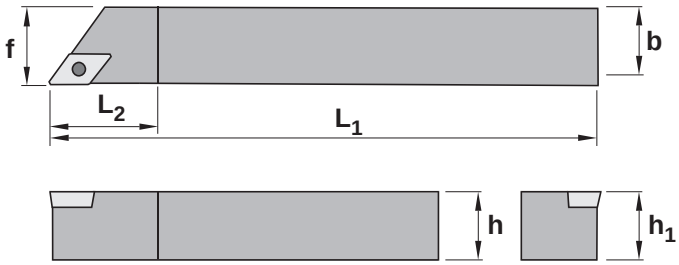
Material Guide – Key to Recommended Inserts

Material Designation

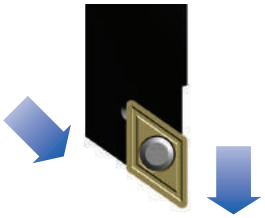
P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

SDAC 90°
(INCH)





SDAC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h_1	b	f	L_1	L_2
025080	**SDACL 062D**	LH	DC_21.5	0.375	0.375	0.375	6.000	0.590
033488	**SDACL 082D**	LH	DC_21.5	0.500	0.500	0.500	6.000	0.590
025079	**SDACR 062D**	RH	DC_21.5	0.375	0.375	0.375	6.000	0.590
033489	**SDACR 082D**	RH	DC_21.5	0.500	0.500	0.500	6.000	0.590
025082	**SDACL 083D**	LH	DC_32.5	0.500	0.500	0.500	6.000	0.748
025084	**SDACL 103D**	LH	DC_32.5	0.625	0.625	0.625	6.000	0.748
025081	**SDACR 083D**	RH	DC_32.5	0.500	0.500	0.500	6.000	0.748
025083	**SDACR 103D**	RH	DC_32.5	0.625	0.625	0.625	6.000	0.748

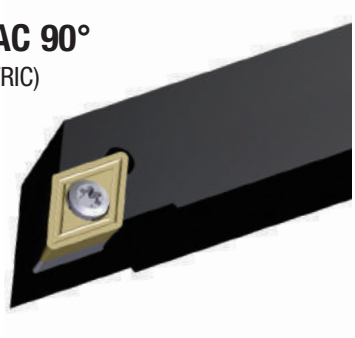


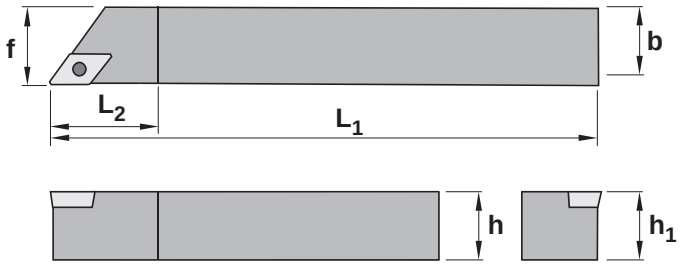
S Style External Toolholder
for Positive Inserts:
DC_21.5 and DC_32.5
Application: O/D Profiling
Approach 90°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 32°
RH Holder Shown

SDACL/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SDACL/R 062D	*015061*	F25007T	*018488*	T7	-	-	-	-
SDACL/R 082D								
SDACL/R 083D	*015262*	D4010T	*015240*	T15	-	-	-	-
SDACL/R 103D								

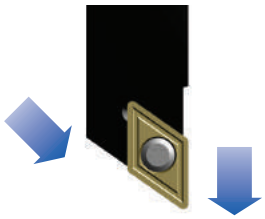
STELLRAM

SDAC 90°
(METRIC)





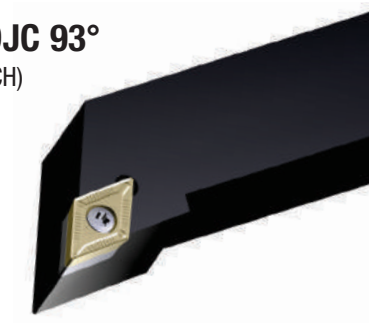
SDAC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
025072	**SDACL 1010 M07**	LH	DC_0702	10	10	10	150	15
033486	**SDACL 1212 M07**	LH	DC_0702	12	12	12	150	15
025071	**SDACR 1010 M07**	RH	DC_0702	10	10	10	150	15
033487	**SDACR 1212 M07**	RH	DC_0702	12	12	12	150	15
025074	**SDACL 1212 M11**	LH	DC_11T3	12	12	12	150	19
025076	**SDACL 1616 M11**	LH	DC_11T3	16	16	16	150	19
025078	**SDACL 2020 K11**	LH	DC_11T3	20	20	20	125	20
025073	**SDACR 1212 M11**	RH	DC_11T3	12	12	12	150	19
025075	**SDACR 1616 M11**	RH	DC_11T3	16	16	16	150	19
025077	**SDACR 2020 K11**	RH	DC_11T3	20	20	20	125	20

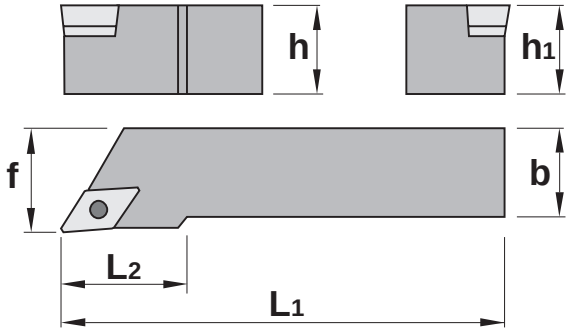


S Style External Toolholder
for Positive Inserts:
DC_0702 and DC_11T3
Application: O/D Profiling
Approach 90°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 32°
RH Holder Shown

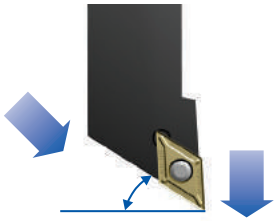
SDACL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SDACL/R 1010 M07	*015061*	F25007T	*018488*	T7	-	-	-	-
SDACL/R 1212 M07								
SDACL/R 1212 M11	*015262*	D4010T	*015240*	T15	-	-	-	-
SDACL/R 1616 M11								
SDACL/R 2020 K11								

SDJC 93°
(INCH)





SDJC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h_1	b	f	L_1	L_2
011239	**SDJCL 062**	LH	DC_21.5	0.375	0.375	0.500	2.500	0.551
033490	**SDJCL 082**	LH	DC_21.5	0.500	0.500	0.625	3.500	0.629
011238	**SDJCR 062**	RH	DC_21.5	0.375	0.375	0.500	2.500	0.551
033491	**SDJCR 082**	RH	DC_21.5	0.500	0.500	0.625	3.500	0.629
011245	**SDJCL 123B**	LH	DC_32.5	0.750	0.750	1.000	4.500	0.866
033492	**SDJCL 163D**	LH	DC_32.5	1.000	1.000	1.250	6.000	1.102
011244	**SDJCR 123B**	RH	DC_32.5	0.750	0.750	1.000	4.500	0.866
033493	**SDJCR 163D**	RH	DC_32.5	1.000	1.000	1.250	6.000	1.102

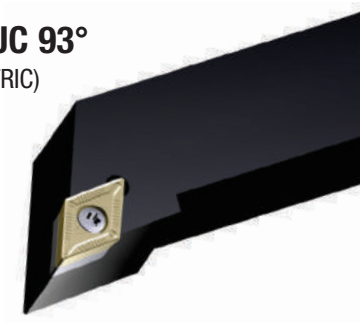


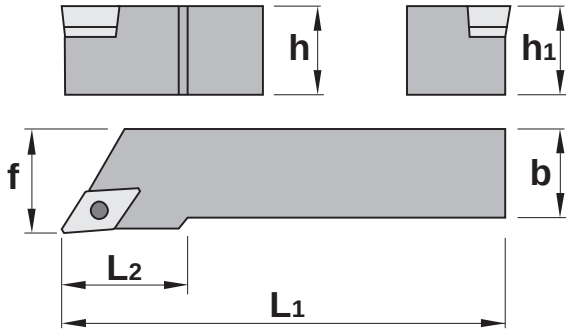
S Style External Toolholder
for Positive Inserts:
DC_21.5, and DC_32.5
Application: Facing and O/D Profiling
Approach 93°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 29°
RH Holder Shown

SDJCL/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SDJCL/R 062D	*015061*	F2507T	*018488*	T7	-	-	-	-
SDJCL/R 082D								
SDJCL/R 123B	*034497*	1335	*028475*	K5516	*028477*	SA3714	*028478*	SAS1750
SDJCL/R 163D								

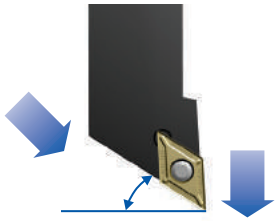
STELLRAM

SDJC 93°
(METRIC)





SDJC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
028462	**SDJCL 1010 E07**	LH	DC_0702	10	10	12	70	14
018001	**SDJCL 1212 F07**	LH	DC_0702	12	12	16	80	16
018469	**SDJCR 1010 E07**	RH	DC_0702	10	10	12	70	14
018010	**SDJCR 1212 F07**	RH	DC_0702	12	12	16	80	16
018002	**SDJCL 1212 F11**	LH	DC_11T3	12	12	16	80	20
028464	**SDJCL 1616 H11**	LH	DC_11T3	16	16	20	100	18
028465	**SDJCL 2020 K11**	LH	DC_11T3	20	20	25	125	22
028466	**SDJCL 2525 M11**	LH	DC_11T3	25	25	32	150	28
018011	**SDJCR 1212 F11**	RH	DC_11T3	12	12	16	80	20
028470	**SDJCR 1616 H11**	RH	DC_11T3	16	16	20	100	18
028471	**SDJCR 2020 K11**	RH	DC_11T3	20	20	25	125	22
028472	**SDJCR 2525 M11**	RH	DC_11T3	25	25	32	150	28

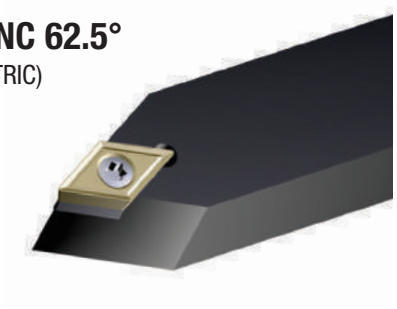


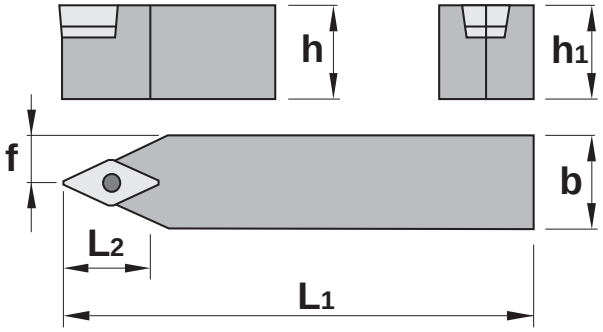
S Style External Toolholder
for Positive Inserts:
DC_0702 and DC_11T3
Application: Facing and O/D Profiling
Approach 93°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 29°
RH Holder Shown

SDJCL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SDJCL/R 1010 E07	*015061*	F2507T	*018488*	T7	-	-	-	-
SDJCL/R 1212 F07								
SDJCL/R 1212 F11	*015262*	D4010T	*015240*	T15	-	-	-	-
SDJCL/R 1616 H11	*034497*	1335	*028475*	K5516	*028477*	SA3714	*028478*	SAS1750
SDJCL/R 2020 K11								
SDJCL/R 2525 M11								

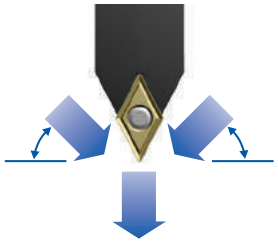
STELLRAM

SDNC 62.5°
(METRIC)





SDNC Neutral External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h_1	b	f	L_1	L_2
028519	**SDNC N 1010 E07**	Neutral	DC_0702	10	10	5	70	16
028520	**SDNC N 1212 F07**	Neutral	DC_0702	12	12	6	80	16
028522	**SDNC N 1616 H11**	Neutral	DC_11T3	16	16	8	100	22
028523	**SDNC N 2020 K11**	Neutral	DC_11T3	20	20	10	125	22
028524	**SDNC N 2525 M11**	Neutral	DC_11T3	25	25	12.5	150	22

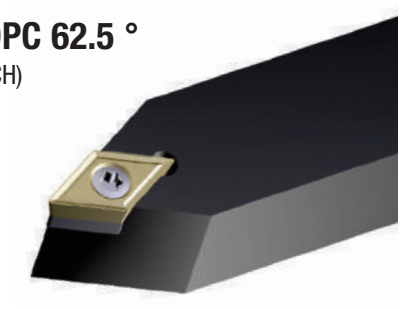


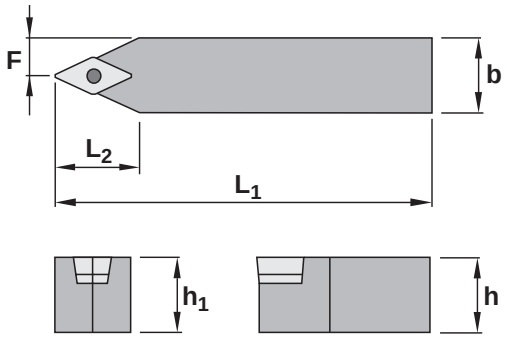
S Style External Toolholder
for Positive Inserts:
DC_0702, and DC_11T3
Application: Plunge and O/D Profiling
Approach 62.5°
Axial 0°
Radial 0°
Profilling Clerance Angle β = 59.5°
Neutral Holder Shown

SDNC Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SDNC N 1010 E07	*015061*	F2507T	*018488*	T7	-	-	-	-
SDNC N 1212 F07								
SDNC N 1010 E07	*034497*	1335	*028475*	K5516	*028477*	SA3714	*028739*	SAS1750
SDNC N 1212 F07								
SDJCL/R 2525 M11								

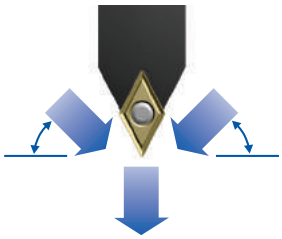
STELLRAM

SDPC 62.5 °
(INCH)





SDPC Neutral External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h_1	b	f	L_1	L_2
033494	**SDPC N 062**	Neutral	DC_21.5	0.375	0.375	0.1875	2.500	0.370
033495	**SDPC N 082**	Neutral	DC_21.5	0.500	0.500	0.250	3.500	0.492
033496	**SDPC N 103**	Neutral	DC_32.5	0.625	0.625	0.3125	4.000	0.630
033497	**SDPC N 123B**	Neutral	DC_32.5	0.750	0.750	0.375	4.500	0.744
033498	**SDPC N 163D**	Neutral	DC_32.5	1.000	1.000	0.500	6.000	0.984

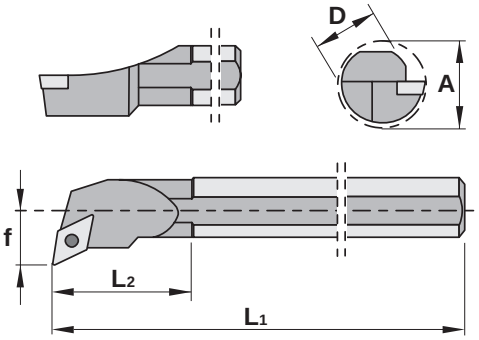


S Style External Toolholder
for Positive Inserts:
DC_21.5, and DC_32.5
Application: Plunge and O/D Profiling
Approach 62.5°
Axial 0°
Radial 0°
Profilling Clerance Angle β = 59.5°
Neutral Holder Shown

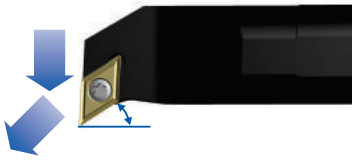
SDPC Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SDPC N 062 **SDPC N 082**	*015061*	F2507T	*018488*	T7	-	-	-	-
SDPC N 103 **SDPC N 123B** **SDPC N 163D**	*034497*	1335	*028475*	K5516	*028477*	SA3714	*028739*	SAS1750

A.. SDUC 93°
(INCH)





A.. SDUC LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)					
				Min Bore Ø A	ØD	f	L_1	L_2	Through Coolant
033499	**A06M SDUCL 2**	LH	DC_21.5	0.750	0.375	0.375	6.000	0.826	
011293	**A08M SDUCL 2**	LH	DC_21.5	0.875	0.500	0.438	6.000	0.905	
024451	**A10R SDUCL 2**	LH	DC_21.5	1.000	0.625	0.500	8.000	1.220	
033500	**A06M SDUCR 2**	RH	DC_21.5	0.750	0.375	0.375	6.000	0.826	
011292	**A08M SDUCR 2**	RH	DC_21.5	0.875	0.500	0.438	6.000	0.905	
024452	**A10R SDUCR 2**	RH	DC_21.5	1.000	0.625	0.500	8.000	1.220	
011295	**A12S SDUCL 3M**	LH	DC_32.5	1.250	0.750	0.625	10.000	1.417	
011294	**A12S SDUCR 3M**	RH	DC_32.5	1.250	0.750	0.625	10.000	1.417	



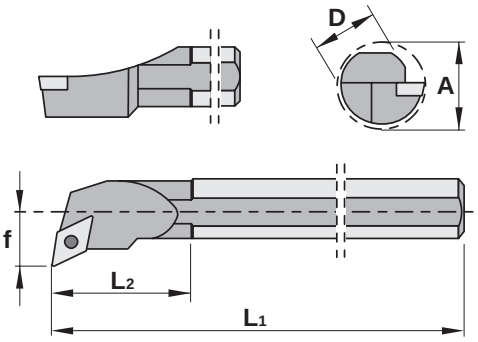
S Style Boring Bar
for Positive Inserts:
DC_21.5, and DC_32.5
Application: I/D Profiling
Aproach 93°
Axial 0°
Radial -8°
Profilling Claerance Angle β = 29°
RH Bar Shown

A.. SDUCL/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
A06M SDUCL/R 2	*034498*	1425	*018488*	T7	-	-	-	-
A08M SDUCL/R 2	*015061*	F2507T						
A10R SDUCL/R 2								
A12S SDUCL/R 3M	*015262*	D4010T	*015240*	T15	-	-	-	-

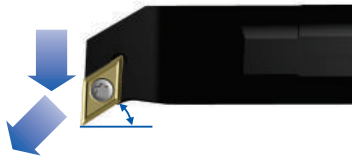
STELLRAM

A.. SDUC 93°
(METRIC)





A.. SDUC LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L1	L2	Through Coolant
018357	**A12K SDUCL 07**	LH	DC_0702	16	12	9	125	23	
018359	**A16M SDUCL 07**	LH	DC_0702	20	16	11	150	31	
018358	**A12K SDUCR 07**	RH	DC_0702	16	12	9	125	23	
018360	**A16M SDUCR 07**	RH	DC_0702	20	16	11	150	31	
018361	**A20Q SDUCL 11**	LH	DC_11T3	24	20	13	180	36	
017990	**A25R SDUCL 11**	LH	DC_11T3	31	25	17	200	42	
018363	**A32S SDUCL 11**	LH	DC_11T3	39	32	22	250	45	
018362	**A20Q SDUCR 11**	RH	DC_11T3	24	20	13	180	36	
017991	**A25R SDUCR 11**	RH	DC_11T3	31	25	17	200	42	
018364	**A32S SDUCR 11**	RH	DC_11T3	39	32	22	250	45	



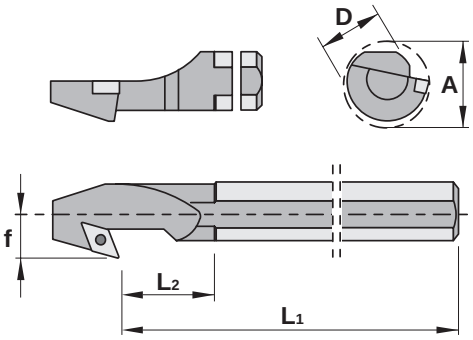
S Style Boring Bar
for Positive Inserts:
DC_0702, and DC_11T3
Application: I/D Profiling
Aproach 93°
Axial 0°
Radial -6°
Profilling Claerance Angle β = 29°
RH Bar Shown

A.. SDUCL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
A12K SDUCL/R 07	*015061*	F2507T	*018488*	T7	-	-	-	-
A16M SDUCL/R 07								
A20Q SDUCL/R 11	*015262*	D4010T	*018488*	T7	-	-	-	-
A25R SDUCL/R 11								
A32S SDUCL/R 11	*034497*	1335	*028475*	K5516	*028477*	SA3714	*028478*	SAS1750

S.. SDUC 93°-EX

(INCH)





S.. SDUC -EX LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)					
				Min Bore Ø A	ØD	f	L_1	L_2	Through Coolant
033501	**S12S SDUCL 2EX**	LH	DC_21.5	1.250	0.750	0.625	10.000	1.770	
033502	**S16T SDUCL 2DX**	LH	DC_21.5	1.500	1.000	0.750	12.000	1.968	
033503	**S12S SDUCR 2EX**	RH	DC_21.5	1.250	0.750	0.625	10.000	1.770	
033504	**S16T SDUCR 2DX**	RH	DC_21.5	1.500	1.000	0.750	12.000	1.968	
033505	***S20U SDUCL 3X**	LH	DC_32.5	1.750	1.250	0.765	14.000	2.755	
033506	***S20U SDUCR 3X**	RH	DC_32.5	1.750	1.250	0.765	14.000	2.755	

* Non Stock Items, subject to extended delivery time



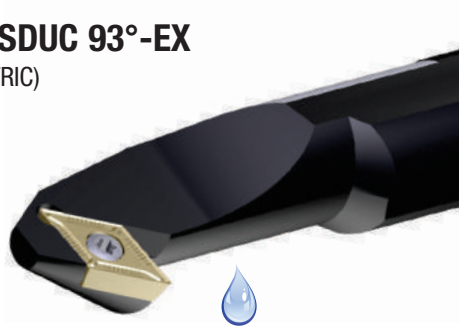
S Style Boring Bar
for Positive Inserts:
DC_21.5, and DC_32.5
Application: Back Boring and Profiling
Approach 93°
Axial 0°
Radial -6°
Profilling Clearance Angle β = 29°
RH Bar Shown

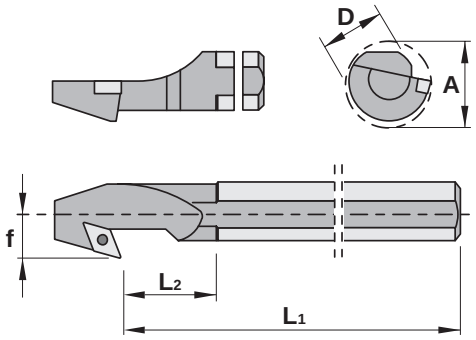
S.. SDUCL/R -EX Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
A12S SDUCL/R 2EX	*015061*	F2507T	*018488*	T7	-	-	-	-
S16T SDUCL/R 2DX								
S20U SDUCL/R 3X	*034497*	1335	*028475*	K5516	*028477*	SA3714	*028478*	SAS1750

STELLRAM

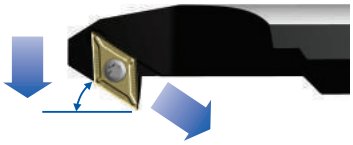
A.. SDUC 93°-EX

(METRIC)





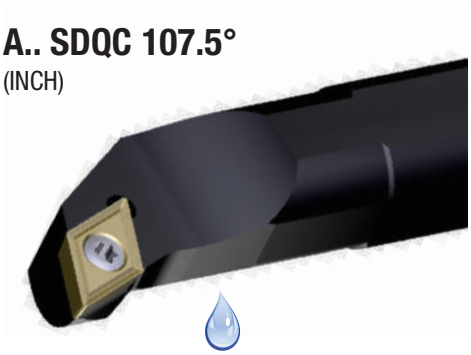
A.. SDUC -EX LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L_1	L_2	Through Coolant
034596	**A12K SDUCL 07-EX**	LH	DC_0702	16	12	9	125	32	💧
034597	**A16M SDUCL 07-EX**	LH	DC_0702	20	16	11	150	40	💧
034598	**A12K SDUCR 07-EX**	RH	DC_0702	16	12	9	125	32	💧
034599	**A16M SDUCR 07-EX**	RH	DC_0702	20	16	11	150	40	💧
034600	**A20Q SDUCL 11-EX**	LH	DC_11T3	24	20	13	180	45	💧
034601	**A25R SDUCL 11-EX**	LH	DC_11T3	31	25	17	200	50	💧
034602	**A20Q SDUCR 11-EX**	RH	DC_11T3	24	20	13	180	45	💧
034603	**A25R SDUCR 11-EX**	RH	DC_11T3	31	25	17	200	50	💧

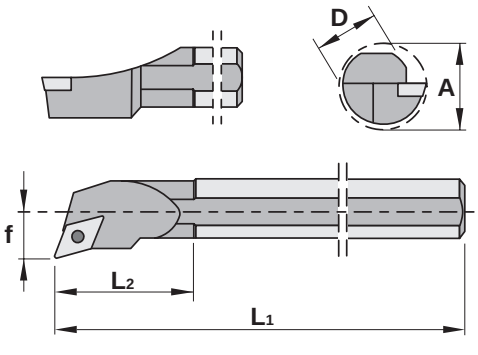


S Style Boring Bar
for Positive Inserts:
DC_0702, and DC_11T3
Application: Back Boring and Profiling
Approach 93°
Axial 0°
Radial -6°
Profilling Clearance Angle β = 29°
RH Bar Shown

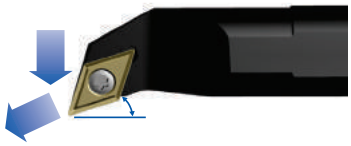
A.. SDUCL/R -EX Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
A12K SDUCL/R 07	*015061*	F2507T	*018488*	T7	-	-	-	-
A16M SDUCL/R 07								
A20Q SDUCL/R 11	*034499*	1440	*015240*	T15	-	-	-	-
A25R SDUCL/R 11	*015262*	D4010T						

A.. SDQC 107.5°
(INCH)





A.. SDQC LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)					
				Min Bore Ø A	ØD	f	L_1	L_2	Through Coolant
033515	**A08M SDQCL 2**	LH	DC_21.5	0.875	0.500	0.438	6.000	0.905	
033516	**A10R SDQCL 2**	LH	DC_21.5	1.000	0.625	0.500	8.000	1.220	
033517	**A08M SDQCR 2**	RH	DC_21.5	0.875	0.500	0.438	6.000	0.905	
033518	**A10R SDQCR 2**	RH	DC_21.5	1.000	0.625	0.500	8.000	1.220	
033519	**A12S SDQCL 3**	LH	DC_32.5	1.250	0.750	0.625	10.000	1.417	
033520	**A16T SDQCL 3**	LH	DC_32.5	1.500	1.000	0.750	12.000	1.653	
033521	**A12S SDQCR 3**	RH	DC_32.5	1.250	0.750	0.625	10.000	1.417	
033522	**A16T SDQCR 3**	RH	DC_32.5	1.500	1.000	0.875	12.000	1.653	



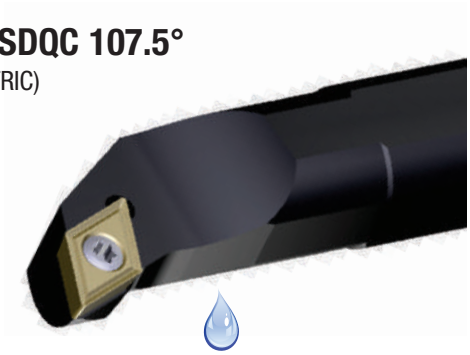
S Style Boring Bar
for Positive Inserts:
DC_21.5, and DC_32.5
Application: Face and I/D Profiling
Approach 107.5°
Axial: 0°
Radial -8°
Profilling Clearance Angle β = 14.5°
RH Bar Shown

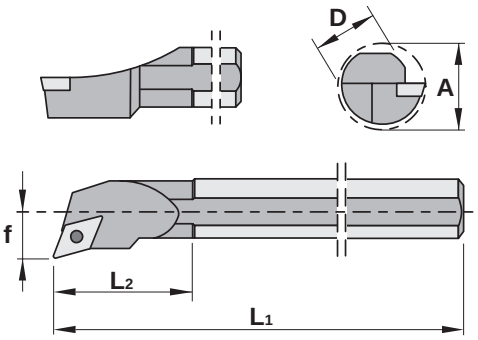
A.. SDQCL/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
A08M SDQCL/R 2	*015061*	F2507T	*018488*	T7	-	-	-	-
A10R SDQCL/R 2								
A12S SDQCL/R 3	*015262*	D4010T	*015240*	T15	-	-	-	-

STELLRAM

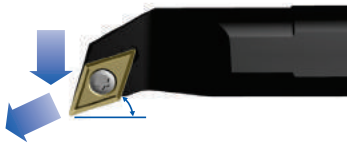
A.. SDQC 107.5°

(METRIC)





A.. SDQC LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L_1	L_2	Through Coolant
033507	**A12K SDQCL 07**	LH	DC_0702	16	12	9	125	23	
033508	**A16M SDQCL 07**	LH	DC_0702	20	16	11	150	31	
033509	**A12K SDQCR 07**	RH	DC_0702	16	12	9	125	23	
033510	**A16M SDQCR 07**	RH	DC_0702	20	16	11	150	31	
033511	**A20Q SDQCL 11**	LH	DC_11T3	24	20	13	180	36	
033512	**A25R SDQCL 11**	LH	DC_11T3	31	25	17	200	42	
033513	**A20Q SDQCR 11**	RH	DC_11T3	24	20	13	180	36	
033514	**A25R SDQCR 11**	RH	DC_11T3	31	25	17	200	42	

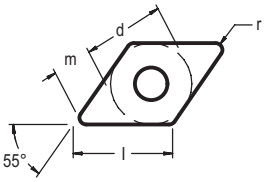


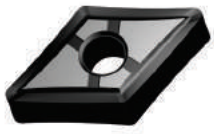
S Style Boring Bar
for Positive Inserts:
DC_0702, and DC_11T3
Application: Face and I/D Profiling
Approach 107.5°
Axial: 0°
Radial -6°
Profilling Clearance Angle β = 14.5°
RH Bar Shown

A.. SDQCL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
A12K SDQCL/R 07 **A16M SDQCL/R 07**	*015061*	F2507T	*018488*	T7	-	-	-	-
A20Q SDQCL/R 11 **A25R SDQCL/R 11**	*015262*	D4010T	*015240*	T15	-	-	-	-

STELLRAM

DNGG
3F Geometry

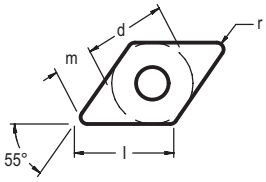




EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
031561	DNGG150402F-3F DNGG430.5-3F	SP0819	12.70 0.500	15.50 0.610	4.76 0.187	0.20 0.008	5.16 0.203	P M K N S	Medium
031562	DNGG150404F-3F DNGG431-3F	SP0819	12.70 0.500	15.50 0.610	4.76 0.187	0.40 0.016	5.16 0.203	P M K N S	Medium
031563	DNGG150408F-3F DNGG432-3F	SP0819	12.70 0.500	15.50 0.610	4.76 0.187	0.80 0.031	5.16 0.203	P M K N S	Medium
031564	DNGG150412F-3F DNGG433-3F	SP0819	12.70 0.500	15.50 0.610	4.76 0.187	1.20 0.047	5.16 0.203	P M K N S	Medium
031547	DNGG150602F-3F DNGG440.5-3F	SP0819	12.70 0.500	15.50 0.610	6.35 0.250	0.20 0.008	5.16 0.203	P M K N S	Medium
031548	DNGG150604F-3F DNGG441-3F	SP0819	12.70 0.500	15.50 0.610	6.35 0.250	0.40 0.016	5.16 0.203	P M K N S	Medium
031565	DNGG150608F-3F DNGG442-3F	SP0819	12.70 0.500	15.50 0.610	6.35 0.250	0.80 0.031	5.16 0.203	P M K N S	Medium
031566	DNGG150612F-3F DNGG443-3F	SP0819	12.70 0.500	15.50 0.610	6.35 0.250	1.20 0.047	5.16 0.203	P M K N S	Medium

For Toolholders External: see pages C111 - C116 | Internal: see pages C117 - C119

DNMA
Flat Top





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032514	DNMA150408E DNMA432A	NL250	12.70 0.500	15.50 0.610	4.76 0.187	0.80 0.031	5.16 0.203	K	Heavy Roughing
034471	DNMA150412E DNMA433A	NL250	12.70 0.500	15.50 0.610	4.76 0.187	1.20 0.047	5.16 0.203	K	Heavy Roughing
032515	DNMA150608E DNMA442A	NL250	12.70 0.500	15.50 0.610	6.35 0.250	0.80 0.031	5.16 0.203	K	Heavy Roughing
032516	DNMA150612E DNMA443A	NL250	12.70 0.500	15.50 0.610	6.35 0.250	1.20 0.047	5.16 0.203	K	Heavy Roughing

For Toolholders External: see pages C111 - C116 | Internal: see pages C117 - C119

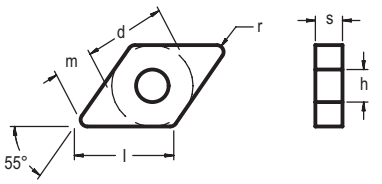
Material Guide – Key to Recommended Inserts

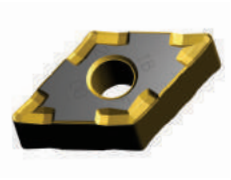
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

DNMG
1B Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032517	DNMG110404E-1B DNMG331A-1B	NL250	9.52 0.375	11.00 0.433	4.76 0.187	0.40 0.016	4.39 0.173		Finishing
030869	DNMG110404E-1B DNMG331A-1B	SP0819	9.52 0.375	11.00 0.433	4.76 0.187	0.40 0.016	4.39 0.173		Finishing
032518	DNMG110408E-1B DNMG332A-1B	NL250	9.52 0.375	11.00 0.433	4.76 0.187	0.80 0.031	4.39 0.173		Finishing
030870	DNMG110408E-1B DNMG332A-1B	SP0819	9.52 0.375	11.00 0.433	4.76 0.187	0.80 0.031	4.39 0.173		Finishing
032519	DNMG150404E-1B DNMG431A-1B	NL250	12.70 0.500	15.50 0.610	4.76 0.187	0.40 0.016	5.16 0.203		Finishing
030872	DNMG150404E-1B DNMG431A-1B	SP0819	12.70 0.500	15.50 0.610	4.76 0.187	0.40 0.016	5.16 0.203		Finishing
032520	DNMG150408E-1B DNMG432A-1B	NL250	12.70 0.500	15.50 0.610	4.76 0.187	0.80 0.031	5.16 0.203		Finishing
030873	DNMG150408E-1B DNMG432A-1B	SP0819	12.70 12.700	15.50 15.500	4.76 4.760	0.80 0.800	5.16 5.160		Finishing
030874	DNMG150412E-1B DNMG433A-1B	SP0819	12.70 0.500	15.50 0.610	4.76 0.187	1.20 0.047	5.16 0.203		Finishing
032521	DNMG150412E-1B DNMG433A-1B	NL250	12.70 0.500	15.50 0.610	4.76 0.187	1.20 0.047	5.16 0.203		Finishing
030875	DNMG150604E-1B DNMG441A-1B	SP0819	12.70 0.500	15.50 0.610	6.35 0.250	0.40 0.016	5.16 0.203		Finishing
032522	DNMG150604E-1B DNMG441A-1B	NL250	12.70 0.500	15.50 0.610	6.35 0.250	0.40 0.016	5.16 0.203		Finishing
032523	DNMG150608E-1B DNMG442A-1B	NL250	12.70 0.500	15.50 0.610	6.35 0.250	0.80 0.031	5.16 0.203		Finishing
030876	DNMG150608E-1B DNMG442A-1B	SP0819	12.70 0.500	15.50 0.610	6.35 0.250	0.80 0.031	5.16 0.203		Finishing
030877	DNMG150612E-1B DNMG443A-1B	SP0819	12.70 0.500	15.50 0.610	6.35 0.250	1.20 0.047	5.16 0.203		Finishing
032524	DNMG150612E-1B DNMG443A-1B	NL250	12.70 0.500	15.50 0.610	6.35 0.250	1.20 0.047	5.16 0.203		Finishing

For Toolholders External: see pages C111 - C116 | Internal: see pages C117 - C119

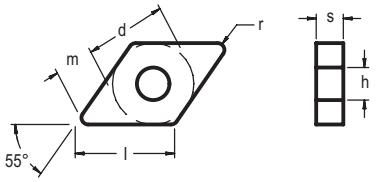
Material Guide – Key to Recommended Inserts

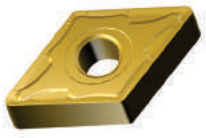
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

DNMG
2N Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032525	**DNMG110404E-2N** **DNMG331A-2N**	NL250	9.52 0.375	11.00 0.433	4.76 0.187	0.40 0.016	4.39 0.173		Medium
032526	**DNMG110404E-2N** **DNMG331A-2N**	NL300	9.52 0.375	11.00 0.433	4.76 0.187	0.40 0.016	4.39 0.173		Medium
032527	**DNMG110404E-2N** **DNMG331A-2N**	NL920	9.52 0.375	11.00 0.433	4.76 0.187	0.40 0.016	4.39 0.173		Medium
032528	**DNMG110408E-2N** **DNMG332A-2N**	NL250	9.52 0.375	11.00 0.433	4.76 0.187	0.80 0.031	4.39 0.173		Medium
032529	**DNMG110408E-2N** **DNMG332A-2N**	NL300	9.52 0.375	11.00 0.433	4.76 0.187	0.80 0.031	4.39 0.173		Medium
032530	**DNMG110408E-2N** **DNMG332A-2N**	NL920	9.52 0.375	11.00 0.433	4.76 0.187	0.80 0.031	4.39 0.173		Medium

For Toolholders External: see pages C111 - C116 | Internal: see pages C117 - C119

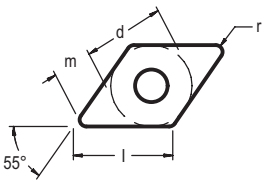
Material Guide – Key to Recommended Inserts

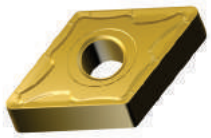
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

DNMG
2N Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032531	DNMG150404E-2N DNMG431A-2N	NL250	12.70 0.500	15.50 0.610	4.76 0.187	0.40 0.016	5.16 0.203		Medium
032532	DNMG150404E-2N DNMG431A-2N	NL300	12.70 0.500	15.50 0.610	4.76 0.187	0.40 0.016	5.16 0.203		Medium
032533	DNMG150404E-2N DNMG431A-2N	NL920	12.70 0.500	15.50 0.610	4.76 0.187	0.40 0.016	5.16 0.203		Medium
032534	DNMG150408E-2N DNMG432A-2N	NL250	12.70 0.500	15.50 0.610	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032535	DNMG150408E-2N DNMG432A-2N	NL300	12.70 0.500	15.50 0.610	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032536	DNMG150408E-2N DNMG432A-2N	NL920	12.70 0.500	15.50 0.610	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032537	DNMG150412E-2N DNMG433A-2N	NL250	12.70 0.500	15.50 0.610	4.76 0.187	1.20 0.047	5.16 0.203		Medium
034472	DNMG150412E-2N DNMG433A-2N	NL300	12.70 0.500	15.50 0.610	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032538	DNMG150412E-2N DNMG433A-2N	NL920	12.70 0.500	15.50 0.610	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032539	DNMG150604E-2N DNMG441A-2N	NL250	12.70 0.500	15.50 0.610	6.35 0.250	0.40 0.016	5.16 0.203		Medium
032540	DNMG150604E-2N DNMG441A-2N	NL300	12.70 0.500	15.50 0.610	6.35 0.250	0.40 0.016	5.16 0.203		Medium
032541	DNMG150604E-2N DNMG441A-2N	NL920	12.70 0.500	15.50 0.610	6.35 0.250	0.40 0.016	5.16 0.203		Medium
032542	DNMG150608E-2N DNMG442A-2N	NL250	12.70 0.500	15.50 0.610	6.35 0.250	0.80 0.031	5.16 0.203		Medium
032543	DNMG150608E-2N DNMG442A-2N	NL300	12.70 0.500	15.50 0.610	6.35 0.250	0.80 0.031	5.16 0.203		Medium
032544	DNMG150608E-2N DNMG442A-2N	NL920	12.70 0.500	15.50 0.610	6.35 0.250	0.80 0.031	5.16 0.203		Medium
032545	DNMG150612E-2N DNMG443A-2N	NL250	12.70 0.500	15.50 0.610	6.35 0.250	1.20 0.047	5.16 0.203		Medium
032546	DNMG150612E-2N DNMG443A-2N	NL300	12.70 0.500	15.50 0.610	6.35 0.250	1.20 0.047	5.16 0.203		Medium
032547	DNMG150612E-2N DNMG443A-2N	NL920	12.70 0.500	15.50 0.610	6.35 0.250	1.20 0.047	5.16 0.203		Medium

For Toolholders External: see pages C111 - C116 | Internal: see pages C117 - C119

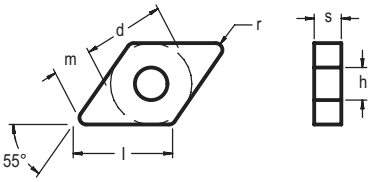
Material Guide – Key to Recommended Inserts

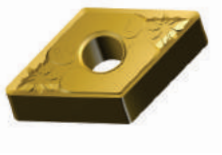
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

DNMG
3J Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032548	**DNMG110404E-3J** **DNMG331A-3J**	SP4019	9.52 0.375	11.00 0.433	4.76 0.187	0.40 0.016	4.39 0.173		Medium
032549	**DNMG110408E-3J** **DNMG332A-3J**	SP4019	9.52 0.375	11.00 0.433	4.76 0.187	0.80 0.031	4.39 0.173		Medium
032550	**DNMG150404E-3J** **DNMG431A-3J**	SP4019	12.70 0.500	15.50 0.610	4.76 0.187	0.40 0.016	5.16 0.203		Medium
032551	**DNMG150408E-3J** **DNMG432A-3J**	SP4019	12.70 0.500	15.50 0.610	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032552	**DNMG150412E-3J** **DNMG433A-3J**	SP4019	12.70 0.500	15.50 0.610	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032553	**DNMG150604E-3J** **DNMG441A-3J**	SP4019	12.70 0.500	15.50 0.610	6.35 0.250	0.40 0.016	5.16 0.203		Medium
032554	**DNMG150608E-3J** **DNMG442A-3J**	SP4019	12.70 0.500	15.50 0.610	6.35 0.250	0.80 0.031	5.16 0.203		Medium
032555	**DNMG150612E-3J** **DNMG443A-3J**	SP4019	12.70 0.500	15.50 0.610	6.35 0.250	1.20 0.047	5.16 0.203		Medium

For Toolholders External: see pages C111 - C116 | Internal: see pages C117 - C119

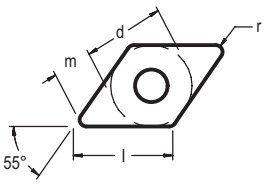
Material Guide – Key to Recommended Inserts

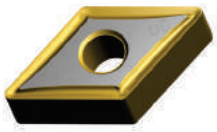
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

DNMG
4E Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
030516	**DNMG150404E-4E** **DNMG431A-4E**	SP0819	12.70 0.500	15.50 0.610	4.76 0.187	0.40 0.016	5.16 0.203		Medium-Roughing
030517	**DNMG150408E-4E** **DNMG432A-4E**	SP0819	12.70 0.500	15.50 0.610	4.76 0.187	0.80 0.031	5.16 0.203		Medium-Roughing
032556	**DNMG150408E-4E** **DNMG432A-4E**	NL400	12.70 0.500	15.50 0.610	4.76 0.187	0.80 0.031	5.16 0.203		Medium-Roughing
030518	**DNMG150412E-4E** **DNMG433A-4E**	SP0819	12.70 0.500	15.50 0.610	4.76 0.187	1.20 0.047	5.16 0.203		Medium-Roughing
032557	**DNMG150412E-4E** **DNMG433A-4E**	NL400	12.70 0.500	15.50 0.610	4.76 0.187	1.20 0.047	5.16 0.203		Medium-Roughing
030524	**DNMG150604E-4E** **DNMG441A-4E**	SP0819	12.70 0.500	15.50 0.610	6.35 0.250	0.40 0.016	5.16 0.203		Medium-Roughing
030525	**DNMG150608E-4E** **DNMG442A-4E**	SP0819	12.70 0.500	15.50 0.610	6.35 0.250	0.80 0.031	5.16 0.203		Medium-Roughing
032558	**DNMG150608E-4E** **DNMG442A-4E**	NL400	12.70 0.500	15.50 0.610	6.35 0.250	0.80 0.031	5.16 0.203		Medium-Roughing
030526	**DNMG150612E-4E** **DNMG443A-4E**	SP0819	12.70 0.500	15.50 0.610	6.35 0.250	1.20 0.047	5.16 0.203		Medium-Roughing
032559	**DNMG150612E-4E** **DNMG443A-4E**	NL400	12.70 0.500	15.50 0.610	6.35 0.250	1.20 0.047	5.16 0.203		Medium-Roughing

For Toolholders External: see pages C111 - C116 | Internal: see pages C117 - C119

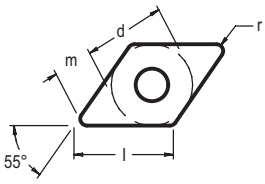
Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

DNMG
4T Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032560	DNMG150404E-4T DNMG431A-4T	NL250	12.70 0.500	15.50 0.610	4.76 0.187	0.40 0.016	5.16 0.203		Roughing
032561	DNMG150404E-4T DNMG431A-4T	NL300	12.70 0.500	15.50 0.610	4.76 0.187	0.40 0.016	5.16 0.203		Roughing
032562	DNMG150404E-4T DNMG431A-4T	NL400	12.70 0.500	15.50 0.610	4.76 0.187	0.40 0.016	5.16 0.203		Roughing
032563	DNMG150404E-4T DNMG431A-4T	NL920	12.70 0.500	15.50 0.610	4.76 0.187	0.40 0.016	5.16 0.203		Roughing
032564	DNMG150408E-4T DNMG432A-4T	NL250	12.70 0.500	15.50 0.610	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032565	DNMG150408E-4T DNMG432A-4T	NL300	12.70 0.500	15.50 0.610	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032566	DNMG150408E-4T DNMG432A-4T	NL400	12.70 0.500	15.50 0.610	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032567	DNMG150408E-4T DNMG432A-4T	NL920	12.70 0.500	15.50 0.610	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032568	DNMG150412E-4T DNMG433A-4T	NL250	12.70 0.500	15.50 0.610	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032569	DNMG150412E-4T DNMG433A-4T	NL300	12.70 0.500	15.50 0.610	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032570	DNMG150412E-4T DNMG433A-4T	NL400	12.70 0.500	15.50 0.610	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032571	DNMG150412E-4T DNMG433A-4T	NL920	12.70 0.500	15.50 0.610	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032572	DNMG150604E-4T DNMG441A-4T	NL250	12.70 0.500	15.50 0.610	6.35 0.250	0.40 0.016	5.16 0.203		Roughing
032573	DNMG150604E-4T DNMG441A-4T	NL300	12.70 0.500	15.50 0.610	6.35 0.250	0.40 0.016	5.16 0.203		Roughing
032574	DNMG150604E-4T DNMG441A-4T	NL400	12.70 0.500	15.50 0.610	6.35 0.250	0.40 0.016	5.16 0.203		Roughing
032575	DNMG150604E-4T DNMG441A-4T	NL920	12.70 0.500	15.50 0.610	6.35 0.250	0.40 0.016	5.16 0.203		Roughing
032576	DNMG150608E-4T DNMG442A-4T	NL250	12.70 0.500	15.50 0.610	6.35 0.250	0.80 0.031	5.16 0.203		Roughing
032577	DNMG150608E-4T DNMG442A-4T	NL300	12.70 0.500	15.50 0.610	6.35 0.250	0.80 0.031	5.16 0.203		Roughing
032578	DNMG150608E-4T DNMG442A-4T	NL400	12.70 0.500	15.50 0.610	6.35 0.250	0.80 0.031	5.16 0.203		Roughing
032579	DNMG150608E-4T DNMG442A-4T	NL920	12.70 0.500	15.50 0.610	6.35 0.250	0.80 0.031	5.16 0.203		Roughing

For Toolholders External: see pages C111 - C116 | Internal: see pages C117 - C119

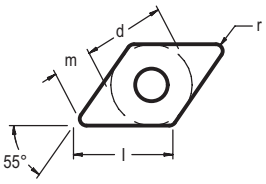
Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

DNMG
4T Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032580	**DNMG150612E-4T** **DNMG443A-4T**	NL250	12.70 0.500	15.50 0.610	6.35 0.250	1.20 0.047	5.16 0.203		Roughing
032581	**DNMG150612E-4T** **DNMG443A-4T**	NL300	12.70 0.500	15.50 0.610	6.35 0.250	1.20 0.047	5.16 0.203		Roughing
032582	**DNMG150612E-4T** **DNMG443A-4T**	NL400	12.70 0.500	15.50 0.610	6.35 0.250	1.20 0.047	5.16 0.203		Roughing
032583	**DNMG150612E-4T** **DNMG443A-4T**	NL920	12.70 0.500	15.50 0.610	6.35 0.250	1.20 0.047	5.16 0.203		Roughing
032584	**DNMG190608E-4T** **DNMG542A-4T**	NL250	15.88 0.625	19.40 0.764	6.35 0.250	0.80 0.031	6.35 0.250		Roughing
032585	**DNMG190608E-4T** **DNMG542A-4T**	NL300	15.88 0.625	19.40 0.764	6.35 0.250	0.80 0.031	6.35 0.250		Roughing
032586	**DNMG190608E-4T** **DNMG542A-4T**	NL400	15.88 0.625	19.40 0.764	6.35 0.250	0.80 0.031	6.35 0.250		Roughing
032587	**DNMG190608E-4T** **DNMG542A-4T**	NL920	15.88 0.625	19.40 0.764	6.35 0.250	0.80 0.031	6.35 0.250		Roughing
032588	**DNMG190612E-4T** **DNMG543A-4T**	NL250	15.88 0.625	19.40 0.764	6.35 0.250	1.20 0.047	6.35 0.250		Roughing
032589	**DNMG190612E-4T** **DNMG543A-4T**	NL300	15.88 0.625	19.40 0.764	6.35 0.250	1.20 0.047	6.35 0.250		Roughing
032590	**DNMG190612E-4T** **DNMG543A-4T**	NL400	15.88 0.625	19.40 0.764	6.35 0.250	1.20 0.047	6.35 0.250		Roughing
032591	**DNMG190612E-4T** **DNMG543A-4T**	NL920	15.88 0.625	19.40 0.764	6.35 0.250	1.20 0.047	6.35 0.250		Roughing

For Toolholders External: see pages C111 - C116 | Internal: see pages C117 - C119

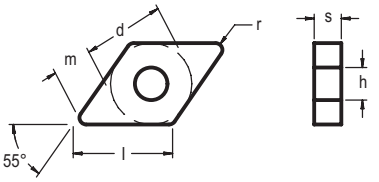
Material Guide – Key to Recommended Inserts

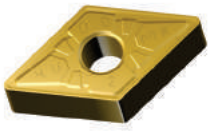
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

DNMG
4U Geometry





EDP	Description	Grade	d	l	S	r_ε	h	Material	Application
	ISO		mm	mm	mm	mm	mm		
	ANSI		inch	inch	inch	inch	inch		
032592	**DNMG150408E-4U**	NL200	12.70	15.50	4.76	0.80	5.16		Roughing
	DNMG432A-4U		0.500	0.610	0.187	0.031	0.203		
032593	**DNMG150412E-4U**	NL200	12.70	15.50	4.76	1.20	5.16		Roughing
	DNMG433A-4U		0.500	0.610	0.187	0.047	0.203		
032594	**DNMG150608E-4U**	NL200	12.70	15.50	6.35	0.80	5.16		Roughing
	DNMG442A-4U		0.500	0.610	0.250	0.031	0.203		
032595	**DNMG150612E-4U**	NL200	12.70	15.50	6.35	1.20	5.16		Roughing
	DNMG443A-4U		0.500	0.610	0.250	0.047	0.203		

For Toolholders External: see pages C111 - C116 | Internal: see pages C117 - C119

Material Guide – Key to Recommended Inserts

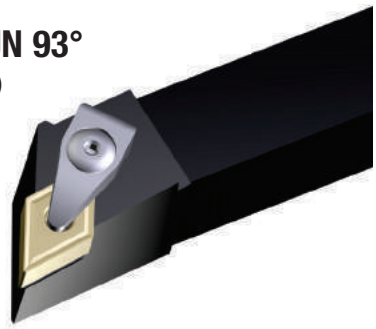
Material Designation

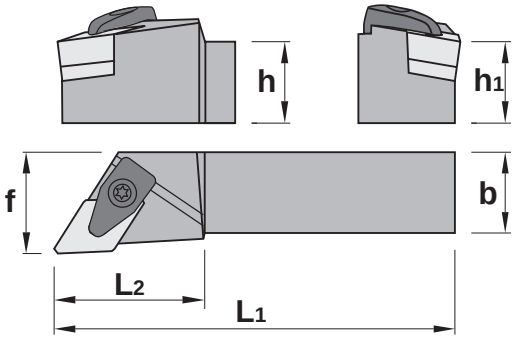
P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

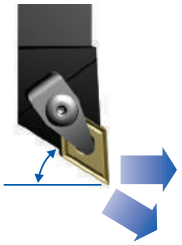
DDJN 93°

(INCH)





DDJN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h_1	b	f	L_1	L_2
033316	**DDJNL-123B**	LH	DN_33	0.75	0.75	1.00	4.50	1.34
033317	**DDJNL-163D**	LH	DN_33	1.00	1.00	1.25	6.00	1.34
033318	**DDJNR-123B**	RH	DN_33	0.75	0.75	1.00	4.50	1.34
033319	**DDJNR-163D**	RH	DN_33	1.00	1.00	1.25	6.00	1.34
033320	**DDJNL-124B**	LH	DN_43	0.75	0.75	1.00	4.50	1.50
033321	**DDJNL-164D**	LH	DN_43	1.00	1.00	1.25	6.00	1.50
033322	**DDJNL-204D**	LH	DN_43	1.25	1.25	1.50	6.00	1.50
033323	**DDJNR-124B**	RH	DN_43	0.75	0.75	1.00	4.50	1.50
033324	**DDJNR-164D**	RH	DN_43	1.00	1.00	1.25	6.00	1.50
033325	**DDJNR-204D**	RH	DN_43	1.25	1.25	1.50	6.00	1.50

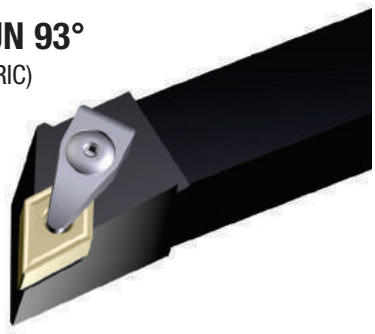


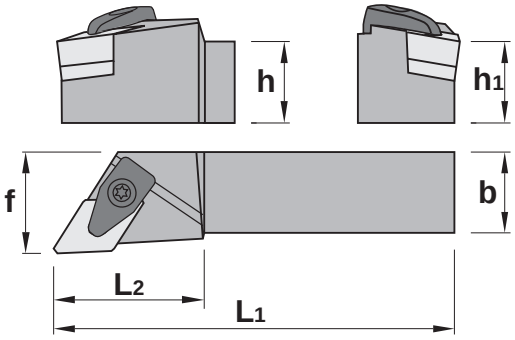
D Style External Toolholder
for Negative Inserts:
DN_33 & DN_43
Application: Turn and Profile
Axial Approach 93°
Axial -6.25°
Radial -6.75°
Profiling Clearance Angle β = 29°
RH Holder Shown

DDJNL/R Spare Parts (INCH)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Spring EDP*		*Anvil EDP*		*Anvil Screw EDP*		*Clamp & Anvil Screw Key*	
DDJNL/R-123B	*033711*	1695	*033709*	DC2708	*033720*	4294	*034496*	IDSN322	*033718*	1764	*018286*	KH5003
DDJNL/R-163D												
DDJNL/R-124B	*033710*	1696	*033707*	DC2712	*033719*	4295	*001689*	IDSN433	*033716*	1766	*018287*	KH5004
DDJNL/R-164D												
DDJNL/R-204D												

STELLRAM

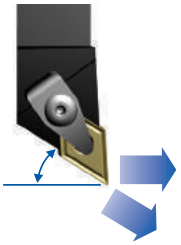
DDJN 93°
(METRIC)





DDJN LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
033306	**DDJNL 2020 K 11**	LH	DN_1104	20	20	25	125	34
033307	**DDJNL 2525 M11**	LH	DN_1104	25	25	32	150	34
033308	**DDJNR 2020 K11**	RH	DN_1104	20	20	25	125	34
033309	**DDJNR 2525 M11**	RH	DN_1104	25	25	32	150	34
033310	**DDJNL 2020 K 15**	LH	DN_1506	20	20	25	125	38
033311	**DDJNL 2525 M15**	LH	DN_1506	25	25	32	150	38
033312	**DDJNL 3232 P15**	LH	DN_1506	32	32	40	170	38
033313	**DDJNR 2020 K15**	RH	DN_1506	20	20	25	125	38
033314	**DDJNR 2525 M15**	RH	DN_1506	25	25	32	150	38
033315	**DDJNR 3232 P15**	RH	DN_1506	32	32	40	170	38



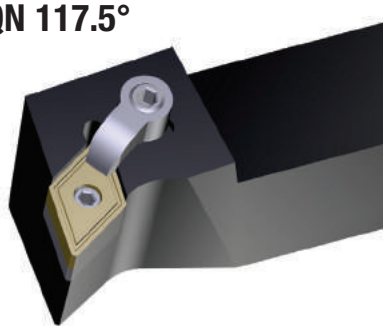
D Style External Toolholder
for Negative Inserts:
DN_1104 & DN_1506
Application: Turn and Profile
Axial Approach 93°
Axial -6.25
Radial -6.75
Profiling Clearance Angle β = 29°
RH Holder Shown

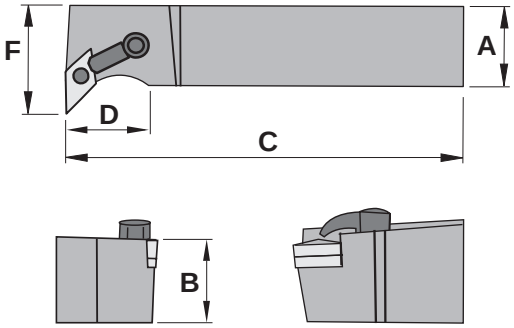
DDJNL/R Spare Parts (METRIC)

Item Description	Clamp Screw EDP		Clamp EDP		Clamp Spring EDP		Anvil EDP		Anvil Screw EDP		Clamp & Anvil Screw Key	
DDJNL/R 2020 K11	033711	1695	033709	DC2708	033720	4294	034496	IDSN322	033718	1764	018286	KH5003
DDJNL/R 2525 M11												
DDJNL/R 2020 K15	033710	1696	033707	DC2712	033719	4295	001689	IDSN433	033716	1766	018287	KH5004
DDJNL/R 2525 M15												
DDJNL/R 3232 P15												

STELLRAM

MDQN 117.5°
(INCH)





MDQN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				A	B	F	C	D
033326	**MDQNL-124B**	LH	DN_43	0.750	0.750	1.000	4.500	1.259
033327	**MDQNL-164D**	LH	DN_43	1.000	1.000	1.250	6.000	1.338
033328	**MDQNL- 204D**	LH	DN_43	1.250	1.250	1.500	6.000	1.338
033329	**MDQNR-124B**	RH	DN_43	0.750	0.750	1.000	4.500	1.259
033330	**MDQNR-164D**	RH	DN_43	1.000	1.000	1.250	6.000	1.338
033331	**MDQNR- 204D**	RH	DN_43	1.250	1.250	1.500	6.000	1.338

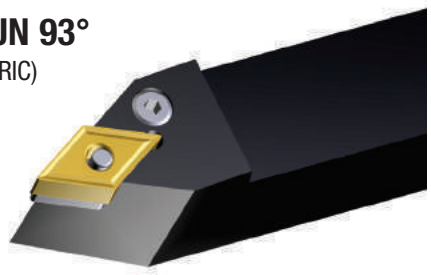


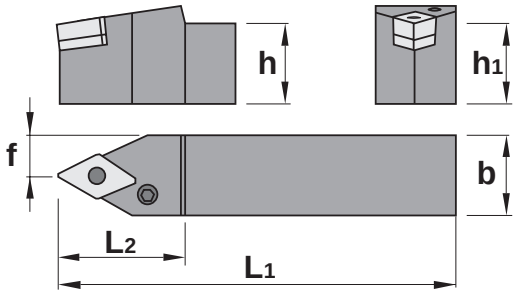
M Style External Toolholder
for Negative Inserts:
DN_43
Application: Turn and Profile
Axial Approach 117.5°
Axial -6°
Raidal -6°
Profiling Clearance Angle β = 59.5°
RH Holder Shown

MDQN L/R Spare Parts (INCH)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Key EDP*		*Lock Pin EDP*		*Lock Pin Key EDP*		*Anvil EDP*	
MDQNL/R-124B	*028997*	XNS48	*028996*	CL20	*008207*	KH5103	*004708*	NL46	*007785*	KH5124	*001689*	IDSN433
MDQNL/R-164D												
MDQNL/R-204D												

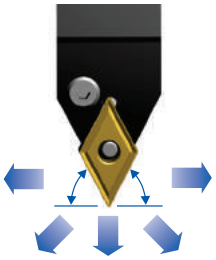
STELLRAM

DDJN 93°
(METRIC)





DDJN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h_1	b	f	L_1	L_2
033306	**DDJNL 2020 K 11**	LH	DN_1104	20	20	25	125	34
033307	**DDJNL 2525 M11**	LH	DN_1104	25	25	32	150	34
033308	**DDJNR 2020 K11**	RH	DN_1104	20	20	25	125	34
033309	**DDJNR 2525 M11**	RH	DN_1104	25	25	32	150	34
033310	**DDJNL 2020 K 15**	LH	DN_1506	20	20	25	125	38
033311	**DDJNL 2525 M15**	LH	DN_1506	25	25	32	150	38
033312	**DDJNL 3232 P15**	LH	DN_1506	32	32	40	170	38
033313	**DDJNR 2020 K15**	RH	DN_1506	20	20	25	125	38
033314	**DDJNR 2525 M15**	RH	DN_1506	25	25	32	150	38
033315	**DDJNR 3232 P15**	RH	DN_1506	32	32	40	170	38



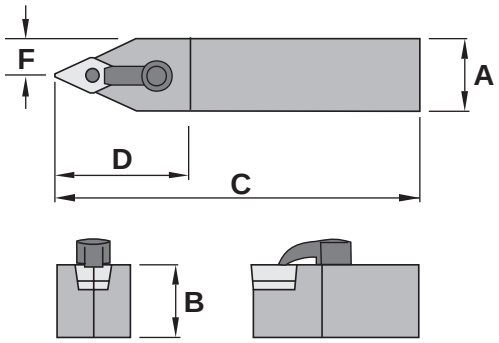
P Style External Toolholder
for Negative Inserts: DN_1506
Application: External Plunge, Turn & Profile
Axial Approach 63°
Axial -8°
Radial -2.5°
Profiling Clearance Angle β = 59.5°
Neutral Holder Shown

DDJNL/R Spare Parts (METRIC)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Spring EDP*		*Anvil EDP*		*Anvil Screw EDP*		*Clamp & Anvil Screw Key*	
DDJNL/R 2020 K11	*033711*	1695	*033709*	DC2708	*033720*	4294	*034496*	IDSN322	*033718*	1764	*018286*	KH5003
DDJNL/R 2525 M11												
DDJNL/R 2020 K15	*033710*	1696	*033707*	DC2712	*033719*	4295	*001689*	IDSN433	*033716*	1766	*018287*	KH5004
DDJNL/R 2525 M15												
DDJNL/R 3232 P15												

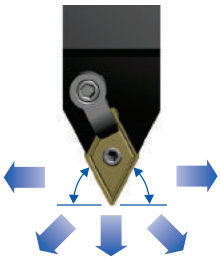
STELLRAM

MDQN 117.5°
(INCH)





MDQN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				A	B	F	C	D
033326	**MDQNL-124B**	LH	DN_43	0.750	0.750	1.000	4.500	1.259
033327	**MDQNL-164D**	LH	DN_43	1.000	1.000	1.250	6.000	1.338
033328	**MDQNL- 204D**	LH	DN_43	1.250	1.250	1.500	6.000	1.338
033329	**MDQNR-124B**	RH	DN_43	0.750	0.750	1.000	4.500	1.259
033330	**MDQNR-164D**	RH	DN_43	1.000	1.000	1.250	6.000	1.338
033331	**MDQNR- 204D**	RH	DN_43	1.250	1.250	1.500	6.000	1.338

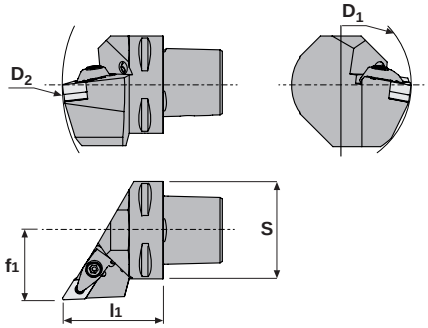


M style External Toolholder
for Negative Inserts: DN_43
Application: Plunge, Turn & Profile
Axial Approach 62.5°
Axial -8°
Radial 0°
Profiling Clearance Angle β = 59.5°
Neutral Holder Shown

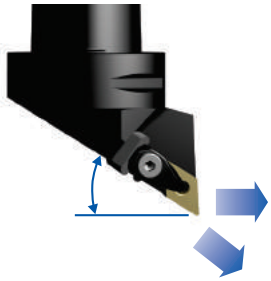
MDQN L/R Spare Parts (INCH)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Key EDP*		*Lock Pin EDP*		*Lock Pin Key EDP*		*Anvil EDP*	
MDQNL/R-124B	*028997*	XNS48	*028996*	CL20	*008207*	KH5103	*004708*	NL46	*007785*	KH5124	*001689*	IDSN433
MDQNL/R-164D												
MDQNL/R-204D												

DDJN 93°
(METRIC / INCH)





DDJN LH & RH External PSC Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	S	D1	D2	f1	l1
				mm	mm	mm	mm	mm
				inch	inch	inch	inch	inch
033697	**C5-50-DDJNL35060-15**	LH	DN_1506	50	110	165	35	60
			DN_44	1.969	4.331	6.496	1.378	2.362
033698	**C5-50-DDJNR35060-15**	RH	DN_1506	50	110	165	35	60
			DN_44	1.969	4.331	6.496	1.378	2.362
033699	**C6-63-DDJNL45065-15**	LH	DN_1506	63	110	190	45	65
			DN_44	2.480	4.331	7.480	1.772	2.559
033700	**C6-63-DDJNR45065-15**	RH	DN_1506	63	110	190	45	65
			DN_44	2.480	4.331	7.480	1.772	2.559



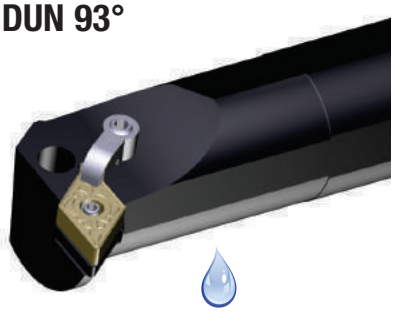
D Style External Toolholder
for Negative Inserts:
DN_1506, (DN_44)
Application: External Profile Turn O/D
Approach 93
Axial -6°
Radial -7°
Profilling Clearance Angle β= 27°
RH Holder Shown

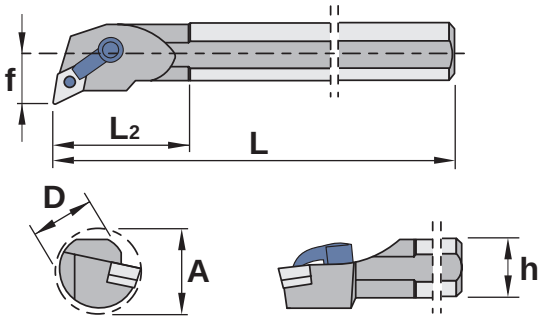
DDJNL/R Spare Parts												
Item Description	*Clamp EDP*		*Clamp Screw EDP*		*Anvil EDP*		*Anvil Screw EDP*		*Clamp Spring EDP*		*Screw Key EDP*	
C5-50-DDJNL/R 35060-15	*033707*	2712	*033710*	1696	*033713*	IDSN432	*033716*	1766	*033719*	4295	*018287*	KH5004
C6-63-DDJNL/R 45065-15												

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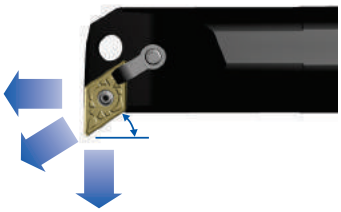
A..MDUN 93°

(INCH)





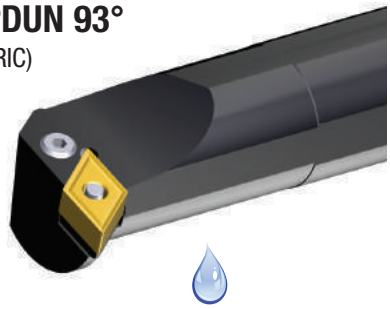
A..MDUN LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)					
				Min Bore Ø A	ØD	f	L	h	Through Coolant
033340	**A16T MDUNL-4**	LH	DN_43	1.750	1.000	0.875	12.000	0.900	💧
033341	**A20U MDUNL-4**	LH	DN_43	2.000	1.250	1.000	14.000	1.180	💧
033342	**A24U MDUNL-4**	LH	DN_43	2.250	1.500	1.125	14.000	1.370	💧
033343	**A16T MDUNR-4**	RH	DN_43	1.750	1.000	0.875	12.000	0.900	💧
033344	**A20U MDUNR-4**	RH	DN_43	2.000	1.250	1.000	14.000	1.180	💧
033345	**A24U MDUNR-4**	RH	DN_43	2.250	1.500	1.125	14.000	1.370	💧

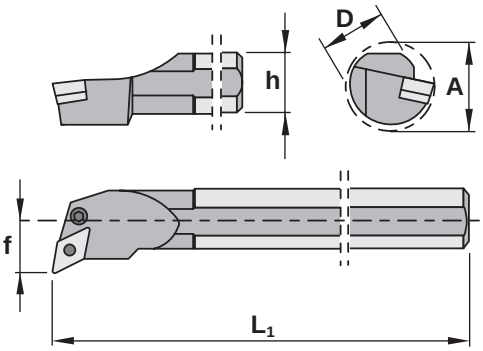


M Style Internal Boring Bar
for Negative Inserts:
DN_43 (DN_1504)
Application: Bore and Profile
Axial Approach 93°
Profiling Clearance Angle β = 29°
RH Bar Shown

A..MDUNL/R Spare Parts (INCH)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Key EDP*		*Lock Pin EDP*		*Lock Pin Key EDP*		*Anvil EDP*	
A16T MDUNL/R-4	*029075*	XNS47	*028996*	CL20	*008207*	KH5103	*004707*	NL44	*007785*	KH5124	-	-
A20U MDUNL/R-4	*028997*	XNS48					*004708*	NL46			*001689*	IDSN433
A24U MDUNL/R-4												

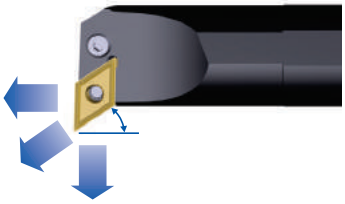
A..PDUN 93°
(METRIC)





A..PDUN LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L_1	h	Through Coolant
033334	**A25R PDUNL 11**	LH	DN_1104	31	25	17	200	23	
033335	**A25R PDUNR 11**	RH	DN_1104	31	25	17	200	23	
033336	**A32S PDUNL 15**	LH	DN_1506	39	32	22	250	30	
033337	**A40T PDUNL 15**	LH	DN_1506	48	40	27	300	37	
033338	**A32S PDUNR 15**	RH	DN_1506	39	32	22	250	30	
033339	**A40T PDUNR 15**	RH	DN_1506	48	40	27	300	37	



P Style Boring Bar
for Negative Inserts:
DN_1104 & DN_1506
Application: Bore and profile
Axial Approach 93°
Axial -6°
Radial -14°
Profiling Clearance Angle β= 29°
RH Bar Shown

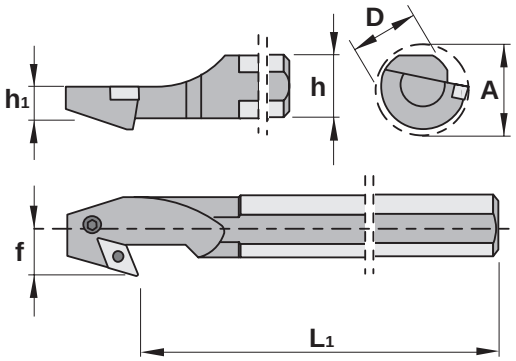
A..PDUNL/R Spare Parts (METRIC)

Item Description	*Lever EDP*		*Lever Screw EDP*		*Anvil EDP*		*Anvil Clip EDP*		*Clip Punch EDP*		*Key EDP*	
A25R PDUNL/R 11	*017442*	PL8009	*017447*	PLS1606	*028375*	PA3711	*000000*	PC4109	*028053*	PCP0009	*018285*	KH5025
A32S PDUNL/R 15	*017444*	PL8415	*022625*	PLS1648	*017459*	PA3715	*017453*	PC4112	*028054*	PCP0012	*018286*	KH5003
A40T PDUNL/R 15												

STELLRAM

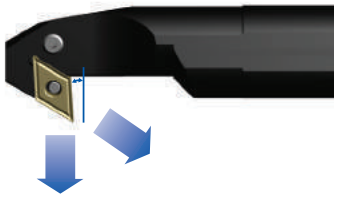
S..PDUN 93°-EX
(METRIC)





S..PDUN LH & RH Internal Boring Bars

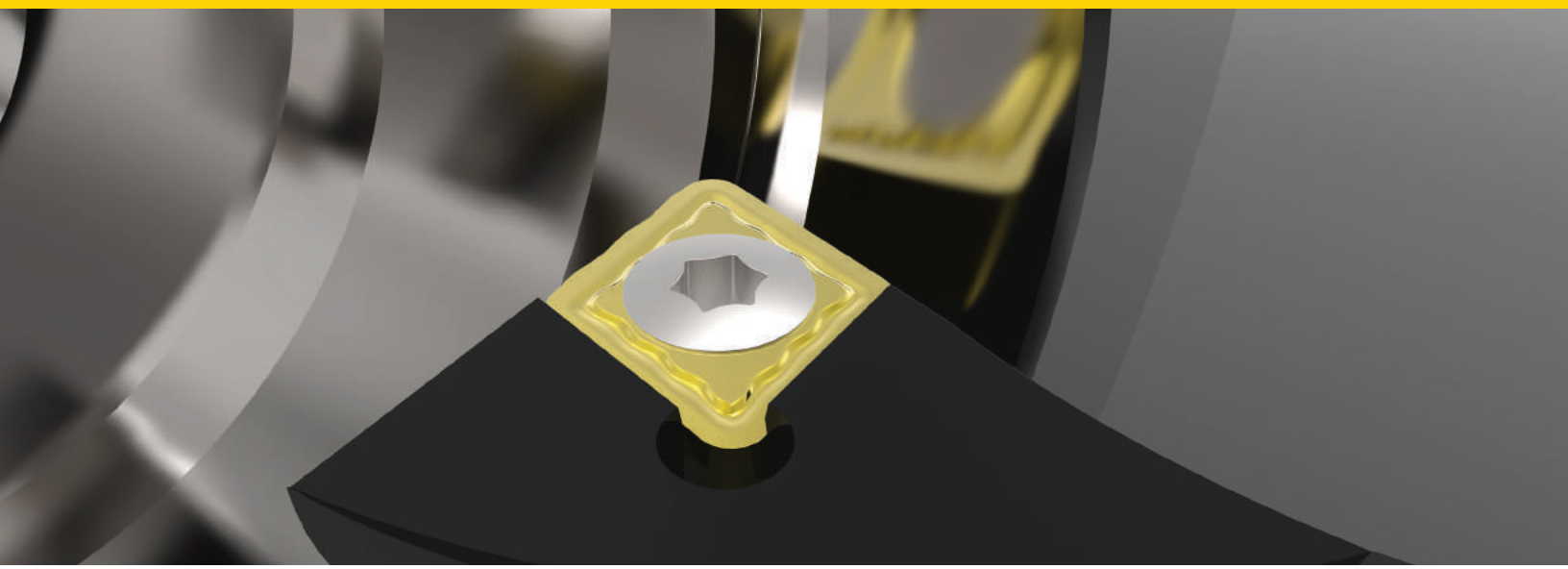
EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)						
				Min Bore Ø A	ØD	f	L1	h	h1	Through Coolant
033346	**S32U PDUNL 15-EX**	LH	DN_1506	39	32	22	350	30	15	
033347	**S40V PDUNL 15-EX**	LH	DN_1506	48	40	27	400	37	18.5	
033348	**S32U PDUNR 15-EX**	RH	DN_1506	39	32	22	350	30	15	
033349	**S40V PDUNR 15-EX**	RH	DN_1506	48	40	27	400	37	18.5	



P Style Internal Boring Bar
Negative Inserts: DN_1506
Application: Internal Back Boring & Profiling
Axial Approach 93°
Profiling Clearance Angle β = 29°
RH Bar Shown

S..PDUNL/R -EX Spare Parts (METRIC)

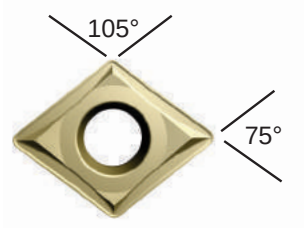
Item Description	Lever EDP		Lever Screw EDP		Anvil EDP		Anvil Clip EDP		Clip Punch EDP		Key EDP	
S32U PDUNL/R 15-EX	*017444*	PL8415	*022625*	PLS1648	-	-	-	-	-	-	*018286*	KH5003
S40V PDUNL/R 15-EX			*017499*	PLS1638	*017459*	PA3715	*017453*	PC4112	*028054*	PCP0012		



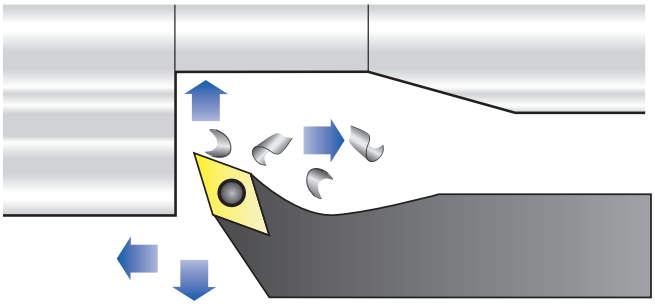
The Posicut® range of positive inserts and holders, along with the Posimatic® range for small part machining for medical and watchmaker components.

The "E" Style Program, developed exclusively by Kennametal:
With the 75° inclusive cutting angle this gives the "E" inserts an advantage over the "C" style inserts, allowing for greater radial clearance between the work piece and insert for profiling and chip evacuation. Also improves insert location with a more secure pocket design whilst not compromising insert edge strength.

E" Style Inserts in combination with the Stellram Boring Bars give greater radial clearance, and with the improved design of Insert and Boring Bar, allows for greater profiling capability and chip evacuation.

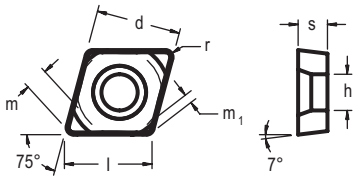


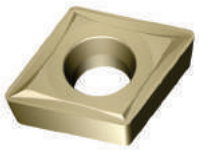
Posicut:
The world's first, for screw-on inserts



STELLRAM

ECMT
-73 Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
034429	**ECMT09T304E-73** **ECMT32.51A-73**	NL300	9.52 0.375	9.85 0.388	3.97 0.156	0.40 0.016	4.40 0.173		Medium
034456	**ECMT09T308E-73** **ECMT32.52A-73**	NL300	9.52 0.375	9.85 0.388	3.97 0.156	0.80 0.031	4.40 0.173		Medium
032295	**ECMT12T304E-73** **ECMT421A-73**	SP4019	12.00 0.472	12.40 0.488	3.97 0.156	0.40 0.016	5.40 0.213		Medium
032598	**ECMT12T304E-73** **ECMT421A-73**	NL300	12.00 0.472	12.40 0.488	3.97 0.156	0.40 0.016	5.40 0.213		Medium
032599	**ECMT12T304E-73** **ECMT421A-73**	NL920	12.00 0.472	12.40 0.488	3.97 0.156	0.40 0.016	5.40 0.213		Medium
032296	**ECMT12T308E-73** **ECMT422A-73**	SP4019	12.00 0.472	12.40 0.488	3.97 0.156	0.80 0.031	5.40 0.213		Medium
032600	**ECMT12T308E-73** **ECMT422A-73**	NL300	12.00 0.472	12.40 0.488	3.97 0.156	0.80 0.031	5.40 0.213		Medium
032601	**ECMT12T308E-73** **ECMT422A-73**	NL920	12.00 0.472	12.40 0.488	3.97 0.156	0.80 0.031	5.40 0.213		Medium
032602	**ECMT12T312E-73** **ECMT423A-73**	NL300	12.00 0.472	12.40 0.488	3.97 0.156	1.20 0.047	5.40 0.213		Medium
032603	**ECMT12T312E-73** **ECMT423A-73**	NL920	12.00 0.472	12.40 0.488	3.97 0.156	1.20 0.047	5.40 0.213		Medium
032604	**ECMT16M608E-73** **ECMT16M608E-73**	NL300	15.88 0.625	16.40 0.646	6.00 0.236	0.80 0.031	6.40 0.252		Medium
032605	**ECMT16M608E-73** **ECMT16M608E-73**	NL920	15.88 0.625	16.40 0.646	6.00 0.236	0.80 0.031	6.40 0.252		Medium
032606	**ECMT16M612E-73** **ECMT16M612E-73**	NL300	15.88 0.625	16.40 0.646	6.00 0.236	1.20 0.047	6.40 0.252		Medium
032607	**ECMT16M612E-73** **ECMT16M612E-73**	NL920	15.88 0.625	16.40 0.646	6.00 0.236	1.20 0.047	6.40 0.252		Medium

For Toolholders External: see pages C127 - C133 | Internal: see pages C134 - C137

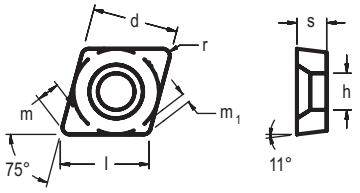
Material Guide – Key to Recommended Inserts

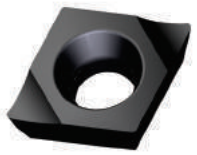
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

EPEX
-15 Geometry

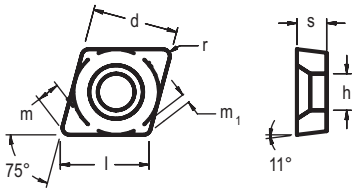


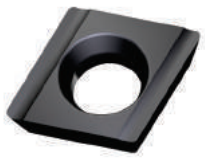


EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	rε mm inch	h mm inch	Material	Application
022212	**EPEX040202F-15** **EPEX1.51.50.5-15**	GH1	4.76 0.187	4.93 0.194	2.38 0.094	0.20 0.008	2.30 0.091		Finishing
032608	**EPEX040202F-15** **EPEX1.51.50.5-15**	SP4019	4.76 0.187	4.93 0.194	2.38 0.094	0.20 0.008	2.30 0.091		Finishing
032609	**EPEX060202F-15** **EPEX21.50.5-15**	GH1	6.35 0.250	6.54 0.257	2.38 0.094	0.20 0.008	2.80 0.110		Finishing
032610	**EPEX060202F-15** **EPEX21.50.5-15**	SP4019	6.35 0.250	6.54 0.257	2.38 0.094	0.20 0.008	2.80 0.110		Finishing

For Toolholders External: see pages C127 - C133 | Internal: see pages C134 - C137

EPEX





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	rε mm inch	h mm inch	Material	Application
032611	**EPEX060202FL** **EPEX21.50.5L**	SP4019	6.35 0.250	6.54 0.257	2.38 0.094	0.20 0.008	2.80 0.110		Medium
032612	**EPEX060202FR** **EPEX21.50.5R**	SP4019	6.35 0.250	6.54 0.257	2.38 0.094	0.20 0.008	2.80 0.110		Medium
017378	**EPEX060202FL** **EPEX21.50.5L**	GH1	6.35 0.250	6.54 0.257	2.38 0.094	0.20 0.008	2.80 0.110		Medium
018118	**EPEX060202FR** **EPEX21.50.5R**	GH1	6.35 0.250	6.54 0.257	2.38 0.094	0.20 0.008	2.80 0.110		Medium
032613	**EPEX060204FL** **EPEX21.51L**	SP4019	6.35 0.250	6.54 0.257	2.38 0.094	0.40 0.016	2.80 0.110		Medium
034460	**EPEX060204FR** **EPEX21.51R**	SP4019	6.35 0.250	6.54 0.257	2.38 0.094	0.40 0.016	2.80 0.110		Medium
017280	**EPEX060204FL** **EPEX21.51L**	GH1	6.35 0.250	6.54 0.257	2.38 0.094	0.40 0.016	2.80 0.110		Medium
017387	**EPEX060204FR** **EPEX21.51R**	GH1	6.35 0.250	6.54 0.257	2.38 0.094	0.40 0.016	2.80 0.110		Medium

For Toolholders External: see pages C127 - C133 | Internal: see pages C134 - C137

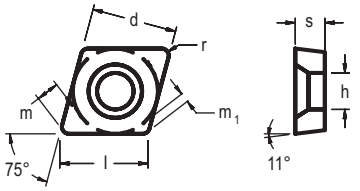
Material Guide – Key to Recommended Inserts

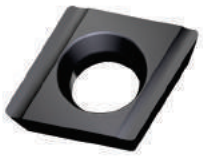
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

EPEX





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
034592	**EPEX08M3005FL** **EPEX08M3005FL**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.05 0.002	4.20 0.165	P M	Medium
034593	**EPEX08M3005FR** **EPEX08M3005FR**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.05 0.002	4.20 0.165	P M	Medium
034594	**EPEX08M3005FL** **EPEX08M3005FL**	GH1	8.00 0.315	8.20 0.323	3.00 0.118	0.05 0.002	4.20 0.165	N	Medium
034595	**EPEX08M3005FR** **EPEX08M3005FR**	GH1	8.00 0.315	8.20 0.323	3.00 0.118	0.05 0.002	4.20 0.165	N	Medium
032310	**EPEX08M301FL** **EPEX08M301FL**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.10 0.004	4.20 0.165	P M	Medium
032618	**EPEX08M301FR** **EPEX08M301FR**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.10 0.004	4.20 0.165	P M	Medium
032619	**EPEX08M301FL** **EPEX08M301FL**	GH1	8.00 0.315	8.20 0.323	3.00 0.118	0.10 0.004	4.20 0.165	N	Medium
032620	**EPEX08M301FR** **EPEX08M301FR**	GH1	8.00 0.315	8.20 0.323	3.00 0.118	0.10 0.004	4.20 0.165	N	Medium
032306	**EPEX08M302FL** **EPEX08M302FL**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.20 0.008	4.20 0.165	P M	Medium
032304	**EPEX08M302FR** **EPEX08M302FR**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.20 0.008	4.20 0.165	P M	Medium
017853	**EPEX08M302FL** **EPEX08M302FL**	GH1	8.00 0.315	8.20 0.323	3.00 0.118	0.20 0.008	4.20 0.165	N	Medium
017854	**EPEX08M302FR** **EPEX08M302FR**	GH1	8.00 0.315	8.20 0.323	3.00 0.118	0.20 0.008	4.20 0.165	N	Medium
032312	**EPEX08M304FL** **EPEX08M304FL**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.40 0.016	4.20 0.165	P M	Medium
032311	**EPEX08M304FR** **EPEX08M304FR**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.40 0.016	4.20 0.165	P M	Medium

For Toolholders External: see pages C127 - C133 | Internal: see pages C134 - C137

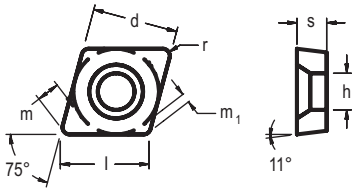
Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

EPGT
-62 Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
031612	**EPGT040201E-62** **EPGT1.51.50.25A-62**	SP4019	4.76 0.187	4.93 0.194	2.38 0.094	0.10 0.004	2.30 0.091		Finishing
030585	**EPGT040202E-62** **EPGT1.51.50.5A-62**	SP4019	4.76 0.187	4.93 0.194	2.38 0.094	0.20 0.008	2.30 0.091		Finishing
030586	**EPGT040204E-62** **EPGT1.51.51A-62**	SP4019	4.76 0.187	4.93 0.194	2.38 0.094	0.40 0.016	2.30 0.091		Finishing
030587	**EPGT060202E-62** **EPGT21.50.5A-62**	SP4019	6.35 0.250	6.54 0.257	2.38 0.094	0.20 0.008	2.80 0.110		Finishing
030588	**EPGT060204E-62** **EPGT21.51A-62**	SP4019	6.35 0.250	6.54 0.257	2.38 0.094	0.40 0.016	2.80 0.110		Finishing
030590	**EPGT08M301E-62** **EPGT08M301E-62**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.10 0.004	4.20 0.165		Finishing
030591	**EPGT08M302E-62** **EPGT08M302E-62**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.20 0.008	4.20 0.165		Finishing
030592	**EPGT08M304E-62** **EPGT08M304E-62**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.40 0.016	4.20 0.165		Finishing
030593	**EPGT08M308E-62** **EPGT08M308E-62**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.80 0.031	4.20 0.165		Finishing
031403	**EPGX08M3005E-62** **EPGX08M3005E-62**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.05 0.002	4.20 0.165		Finishing

For Toolholders External: see pages C127 - C133 | Internal: see pages C134 - C137

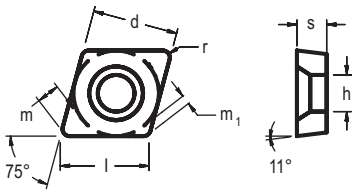
Material Guide – Key to Recommended Inserts

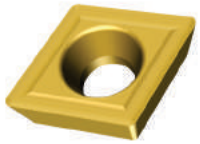
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

EPMT





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032299	**EPMT060202E** **EPMT21.50.5A**	SP4019	6.35 0.250	6.54 0.257	2.38 0.094	0.20 0.008	2.80 0.110		Medium
032622	**EPMT060202E** **EPMT21.50.5A**	NL300	6.35 0.250	6.54 0.257	2.38 0.094	0.20 0.008	2.80 0.110		Medium
018135	**EPMT060204E** **EPMT21.51A**	GH1	6.35 0.250	6.54 0.257	2.38 0.094	0.40 0.016	2.80 0.110		Medium
032274	**EPMT060204E** **EPMT21.51A**	SP4019	6.35 0.250	6.54 0.257	2.38 0.094	0.40 0.016	2.80 0.110		Medium
032623	**EPMT060204E** **EPMT21.51A**	NL300	6.35 0.250	6.54 0.257	2.38 0.094	0.40 0.016	2.80 0.110		Medium
034464	**EPMT060204E** **EPMT21.51A**	NL920	6.35 0.250	6.54 0.257	2.38 0.094	0.40 0.016	2.80 0.110		Medium
018142	**EPMT08M302E** **EPMT08M302E**	GH1	8.00 0.315	8.20 0.323	3.00 0.118	0.20 0.008	4.20 0.165		Medium
032286	**EPMT08M302E** **EPMT08M302E**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.20 0.008	4.20 0.165		Medium
032624	**EPMT08M302E** **EPMT08M302E**	NL300	8.00 0.315	8.20 0.323	3.00 0.118	0.20 0.008	4.20 0.165		Medium
017335	**EPMT08M304E** **EPMT08M304E**	GH1	8.00 0.315	8.20 0.323	3.00 0.118	0.40 0.016	4.20 0.165		Medium
032275	**EPMT08M304E** **EPMT08M304E**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.40 0.016	4.20 0.165		Medium
032625	**EPMT08M304E** **EPMT08M304E**	NL300	8.00 0.315	8.20 0.323	3.00 0.118	0.40 0.016	4.20 0.165		Medium
034589	**EPMT08M304E** **EPMT08M304E**	NL920	8.00 0.315	8.20 0.323	3.00 0.118	0.40 0.016	4.20 0.165		Medium
018156	**EPMT08M308E** **EPMT08M308E**	GH1	8.00 0.315	8.20 0.323	3.00 0.118	0.80 0.031	4.20 0.165		Medium
032290	**EPMT08M308E** **EPMT08M308E**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.80 0.031	4.20 0.165		Medium
032626	**EPMT08M308E** **EPMT08M308E**	NL300	8.00 0.315	8.20 0.323	3.00 0.118	0.80 0.031	4.20 0.165		Medium
034590	**EPMT08M308E** **EPMT08M308E**	NL920	8.00 0.315	8.20 0.323	3.00 0.118	0.80 0.031	4.20 0.165		Medium

For Toolholders External: see pages C127 - C133 | Internal: see pages C134 - C137

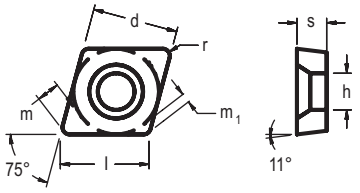
Material Guide – Key to Recommended Inserts

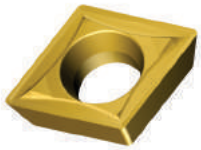
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

EPMT
-73 Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032279	**EPMT08M302E-73** **EPMT08M302E-73**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.20 0.008	4.20 0.165		Medium
032627	**EPMT08M302E-73** **EPMT08M302E-73**	NL300	8.00 0.315	8.20 0.323	3.00 0.118	0.20 0.008	4.20 0.165		Medium
031245	**EPMT08M304E-73** **EPMT08M304E-73**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.40 0.016	4.20 0.165		Medium
032628	**EPMT08M304E-73** **EPMT08M304E-73**	NL300	8.00 0.315	8.20 0.323	3.00 0.118	0.40 0.016	4.20 0.165		Medium
032629	**EPMT08M304E-73** **EPMT08M304E-73**	NL920	8.00 0.315	8.20 0.323	3.00 0.118	0.40 0.016	4.20 0.165		Medium
032287	**EPMT08M308E-73** **EPMT08M308E-73**	SP4019	8.00 0.315	8.20 0.323	3.00 0.118	0.80 0.031	4.20 0.165		Medium
032630	**EPMT08M308E-73** **EPMT08M308E-73**	NL300	8.00 0.315	8.20 0.323	3.00 0.118	0.80 0.031	4.20 0.165		Medium
032631	**EPMT08M308E-73** **EPMT08M308E-73**	NL920	8.00 0.315	8.20 0.323	3.00 0.118	0.80 0.031	4.20 0.165		Medium

For Toolholders External: see pages C127 - C133 | Internal: see pages C134 - C137

Material Guide – Key to Recommended Inserts

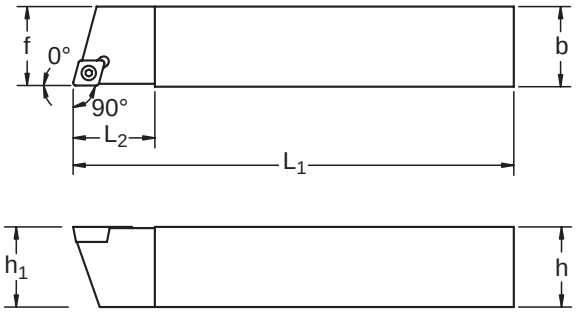
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

SEAP 90°
(INCH)

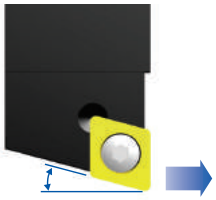




Inserts - EPGT08M3 & EPMT08M3

SEAP LH & RH External Square Shank Toolholders

EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h_1	b	f	L_1	L_2
025048	**SEAPL 062.5**	LH	EP_08M3	0.375	0.375	0.375	6.000	0.625
025050	**SEAPL 082.5**	LH	EP_08M3	0.500	0.500	0.500	6.000	0.625
025052	**SEAPL 102.5**	LH	EP_08M3	0.625	0.625	0.625	6.000	0.625
025054	**SEAPL 122.5**	LH	EP_08M3	0.750	0.750	0.750	5.000	0.625
025047	**SEAPR 062.5**	RH	EP_08M3	0.375	0.375	0.375	6.000	0.625
025049	**SEAPR 082.5**	RH	EP_08M3	0.500	0.500	0.500	6.000	0.625
025051	**SEAPR 102.5**	RH	EP_08M3	0.625	0.625	0.625	6.000	0.625
025053	**SEAPR 122.5**	RH	EP_08M3	0.750	0.750	0.750	5.000	0.625

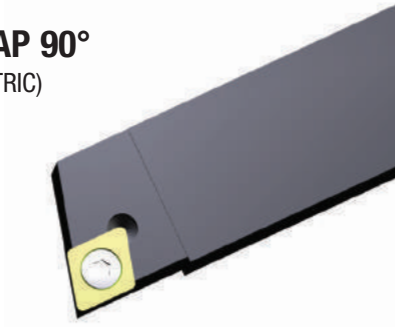


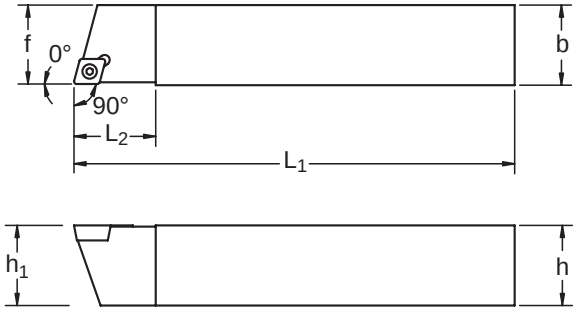
S Style External Toolholder
for Positive Inserts: EP_08M3
Application: Face, Turning and Profile
Approach 90°
Axial: 0°
Radial 0°
Profilling Clearance Angle β = 12°
RH Holder Shown

SEAPL/R Spare Parts (INCH)

Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SEAPL/R 062.5	*017032*	A3006T	*013214*	T9	-	-	-	-
SEAPL/R 082.5								
SEAPL/R 102.5								
SEAPL/R 122.5								

SEAP 90°
(METRIC)

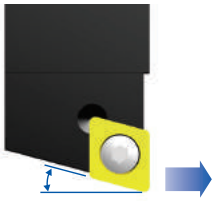




Inserts - EPGT08M3 & EPMT08M3

SEAP LH & RH External Square Shank Toolholders

EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h_1	b	f	L_1	L_2
018024	**SEAPL 1010 M08**	LH	EP_08M3	10	10	10	150	16
018025	**SEAPL 1212 M08**	LH	EP_08M3	12	12	12	150	16
025044	**SEAPL 1616 M08**	LH	EP_08M3	16	16	16	150	16
025046	**SEAPL 2020 K08**	LH	EP_08M3	20	20	20	125	16
018027	**SEAPR 1010 M08**	RH	EP_08M3	10	10	10	150	16
018028	**SEAPR 1212 M08**	RH	EP_08M3	12	12	12	150	16
025043	**SEAPR 1616 M08**	RH	EP_08M3	16	16	16	150	16
025045	**SEAPR 2020 K08**	RH	EP_08M3	20	20	20	125	16



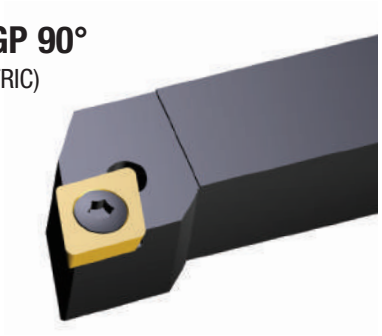
S Style External Toolholder
for Positive Inserts: EP_08M3
Application: Face, Turning and Profile
Approach 90°
Axial: 0°
Radial 0°
Profilling Clearance Angle β = 12°
RH Holder Shown

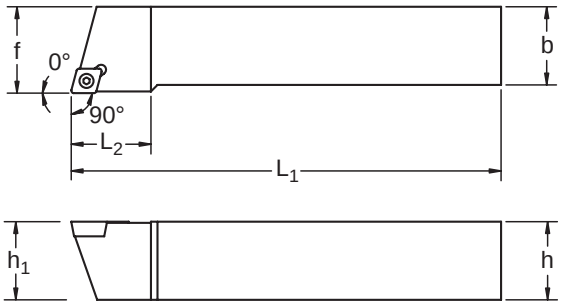
SEAPL/R Spare Parts (METRIC)

Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SEAPL/R 1010 E06	*017032*	A3006T	*013214*	T9	-	-	-	-
SEAPL/R 1212 F09								
SEAPL/R 1616 H09								
SEAPL/R 2020 K09								

STELLRAM

SEGP 90°
(METRIC)

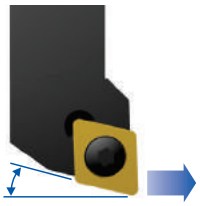




Inserts - EPGT08M3 & EPMT08M3

SEGP LH & RH External Square Shank Toolholders

EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h_1	b	f	L_1	L_2
018087	**SEGPL 0808 F08**	LH	EP_08M3	8	8	11	80	14
017987	**SEGPL 1010 F08**	LH	EP_08M3	10	10	12	80	14
018077	**SEGPL 1212 F08**	LH	EP_08M3	12	12	16	80	16
018078	**SEGPR 0808 F08**	RH	EP_08M3	8	8	11	80	14
018079	**SEGPR 1010 F08**	RH	EP_08M3	10	10	12	80	14
018080	**SEGPR 1212 F08**	RH	EP_08M3	12	12	16	80	16

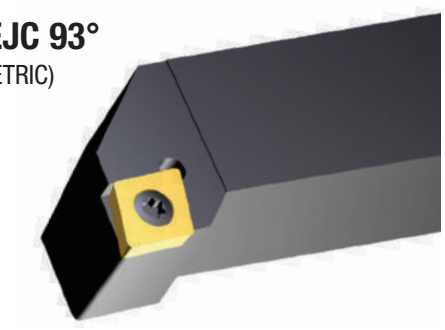


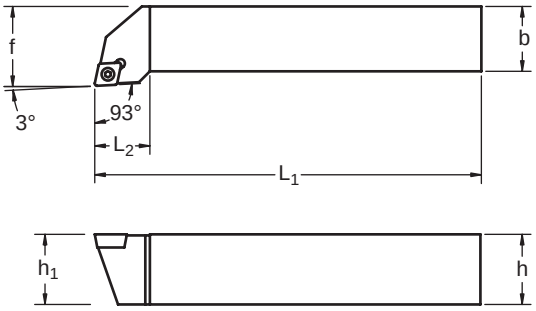
S Style External Toolholder
for Positive Inserts: EP_08M3
Application: Face, Turning and Profile
Approach 90°
Axial: 0°
Radial 0°
Profilling Clearance Angle β = 12°
RH Holder Shown

SEGPL/R Spare Parts (METRIC)

Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SEGPL/R 0808 F08	*017032*	A3006T	*013214*	T9	-	-	-	-
SEGPL/R 1010 F08								
SEGPL/R 1212 F08								

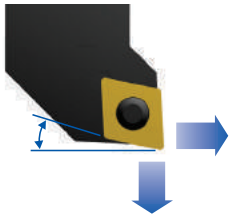
SEJC 93°
(METRIC)





Inserts - EC_16M6

SEJC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				$h = h_1$	b	f	L_1	L_2
028581	**SEJCL 2525 M16**	LH	EC_16M6	25	25	32	150	28
028582	**SEJCR 2525 M16**	RH	EC_16M6	25	25	32	150	28

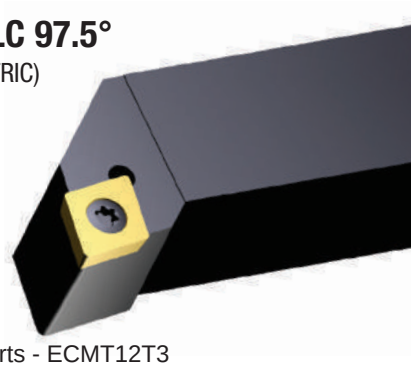


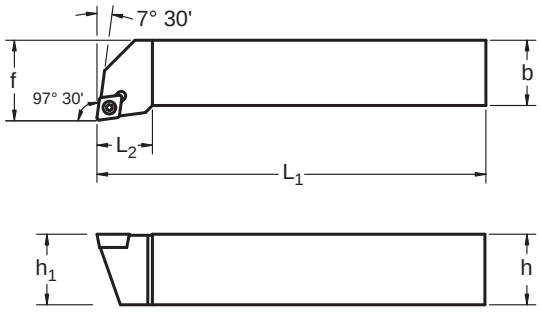
S Style External Toolholder
for Positive Inserts: EC_16M6
Application: Face, Turning and Profile
Approach 93°
Axial: 0°
Radial 0°
Profilling Clearance Angle β = 9°
RH Holder Shown

SEJCL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SEJCL/R 2525 M16	*023081*	A5025T	*015241*	T20	-	-	-	-

STELLRAM

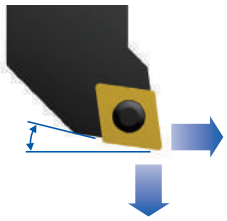
SELC 97.5°
(METRIC)





Inserts - ECMT12T3

SELC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				$h = h_1$	b	f	L_1	L_2
018082	**SELCL 2020 K12**	LH	EC_12T3	20	20	25	125	22
018083	**SELCL 2525 M12**	LH	EC_12T3	25	25	32	150	28
018085	**SELCR 2020 K12**	RH	EC_12T3	20	20	25	125	22
018086	**SELCR 2525 M12**	RH	EC_12T3	25	25	32	150	28

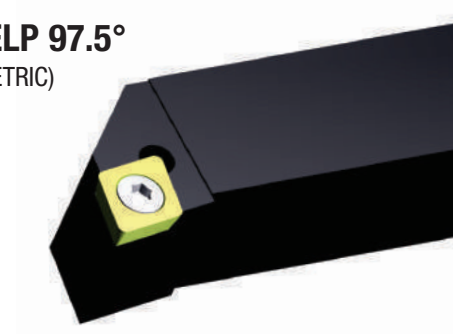


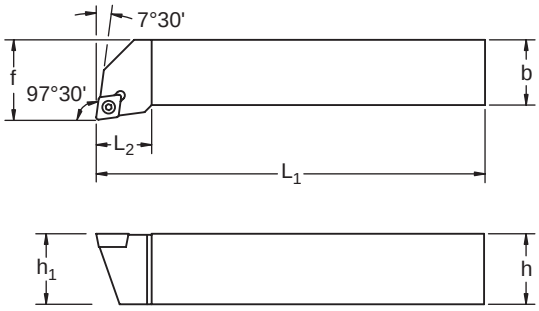
S Style External Toolholder
for Positive Inserts: EC_12T3
Application: Face, Turning and Profile
Approach 97.5°
Axial: 0°
Radial 0°
Profilling Clearance Angle β = 4.5°
RH Holder Shown

SELCL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SELCL/R 2020 K12	*034500*	1540	*034577*	K5517	*029091*	SA3712	*029095*	SAS1765
SELCL/R 2525 M12								

STELLRAM

SELP 97.5°
(METRIC)

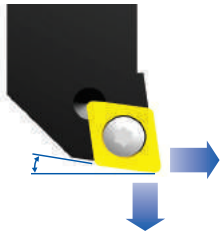




Inserts - EPGT08M3 & EPMT08M3

SELP LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				$h = h_1$	b	f	L_1	L_2
018089	**SELPL 1010 F08**	LH	EP_08M3	10	10	12	80	14
018090	**SELPL 1212 F08**	LH	EP_08M3	12	12	16	80	16
018091	**SELPL 1616 H08**	LH	EP_08M3	16	16	20	100	18
018092	**SELPL 2020 K08**	LH	EP_08M3	20	20	25	125	22
018093	**SELPL 2525 M08**	LH	EP_08M3	25	25	32	150	28
018094	**SELPR 1010 F08**	RH	EP_08M3	10	10	12	80	14
018095	**SELPR 1212 F08**	RH	EP_08M3	12	12	16	80	16
018096	**SELPR 1616 H08**	RH	EP_08M3	16	16	20	100	18
018097	**SELPR 2020 K08**	RH	EP_08M3	20	20	25	125	22
018098	**SELPR 2525 M08**	RH	EP_08M3	25	25	32	150	28



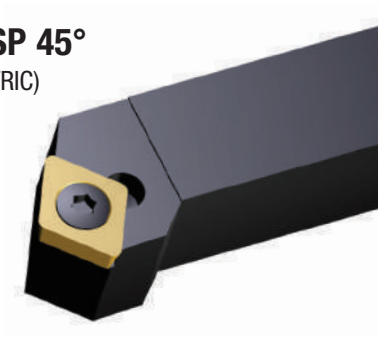
S Style External Toolholder
for Positive Inserts: EP_08M3
Application: Face, Turning and Profile
Approach 97.5°
Axial: 0°
Radial 0°
Profilling Clearance Angle β = 4.5°
RH Holder Shown

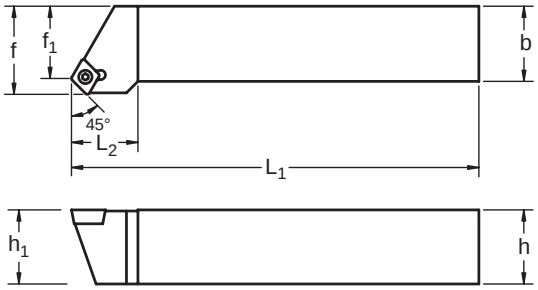
SELPL/R Spare Parts (METRIC)

Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SELPL/R 1010 F08	*017032*	A3006T	*013214*	T9	-	-	-	-
SELPL/R 1212 F08								
SELPL/R 1616 H08								
SELPL/R 2020 K08								
SELPL/R 2525 M08								

STELLRAM

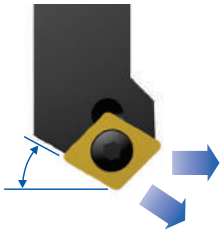
SESP 45°
(METRIC)





Inserts - EPGT08M3 & EPMT8M3

SESP LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
018099	**SESPL 1010 F08**	LH	EP_08M3	10	10	13.6	80	14
018100	**SESPL 1212 F08**	LH	EP_08M3	12	12	16	80	16
018101	**SESPR 1010 F08**	RH	EP_08M3	10	10	13.6	80	14
018102	**SESPR 1212 F08**	RH	EP_08M3	12	12	16	80	16



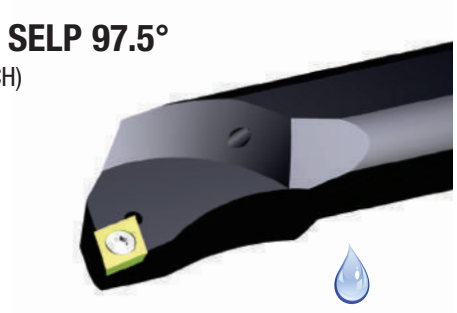
S Style External Toolholder
Positive Inserts: EP_08M3
Application: Turning and Profile
Approach 45°
Axial: 0°
Radial 0°
Profilling Clearance Angle β = 34°
RH Holder Shown

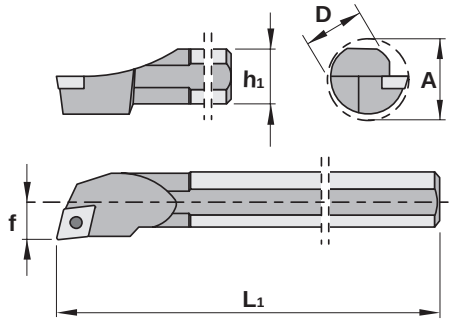
SESPL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SESPL/R 1010 F08	*017032*	A3006T	*013214*	T9	-	-	-	-
SESPL/R 1212 F08								

STELLRAM

A.. SELP 97.5°

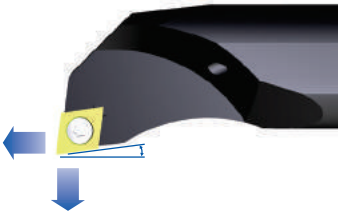
(INCH)





Inserts - EPEX1.51, EPGT1.51, EPEX21.5, EPGT21.5, EPMT2.5, EPEX08M3, EPGT08M3 and EPMT8M3

A.. SELP LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)					
				Min Bore Ø A	ØD	f	L_1	h_1	Through Coolant
024477	**A05H SELPL 1.5**	LH	EP_1.51	0.440	0.313	0.250	4.000	0.156	
024478	**A05H SELPR 1.5**	RH	EP_1.51	0.440	0.313	0.250	4.000	0.156	
024479	**A06K SELPL 2**	LH	EP_21.5	0.500	0.375	0.281	5.000	0.188	
024481	**A08M SELPL 2**	LH	EP_21.5	0.630	0.500	0.344	6.000	0.250	
024480	**A06K SELPR 2**	RH	EP_21.5	0.500	0.375	0.281	5.000	0.188	
024482	**A08M SELPR 2**	RH	EP_21.5	0.630	0.500	0.344	6.000	0.250	
024485	**A10R SELPL 2.5**	LH	EP_08M3	0.780	0.625	0.438	8.000	0.313	
024487	**A12S SELPL 2.5**	LH	EP_08M3	0.910	0.750	0.500	10.000	0.375	
024486	**A10R SELPR 2.5**	RH	EP_08M3	0.780	0.625	0.438	8.000	0.313	
024488	**A12S SELPR 2.5**	RH	EP_08M3	0.910	0.750	0.500	10.000	0.375	



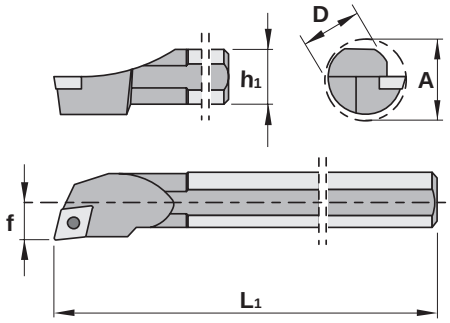
S Style Boring Bar
for Positive Inserts:
EP_1.51, EP_21.5, and EP_08M3
Application: Facing and I/D part profiling
Approach 97.5°
Axial 5°
Radial 3° - 5°
Profilling Clearance Angle β = 0°
RH Bar Shown

A.. SELPL/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
A05H SELPL/R 1.5	*015059*	F2004T	*018487*	T6	-	-	-	-
A06K SELPL/R 2	*01060*	F2505T	*018488*	T7	-	-	-	-
A08M SELPL/R 2								
A10R SELPL/R 2.5	*017032*	A3006T	*013214*	T9	-	-	-	-
A12S SELPL/R 2.5								

STELLRAM

A.. SELP 97.5°
(METRIC)

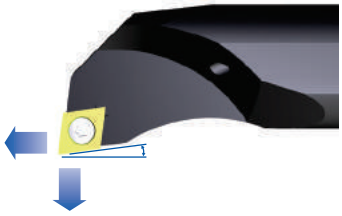




Inserts - EPEX0402, EPGT0402, EPEX0602, EPGT0602, EPMT0602, EPEX08M3, EPGT08M3 and EPMT8M3

A.. SELP LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L1	h1	Through Coolant
018408	**S06F SELPL 04**	LH	EP_0402	8	6	4	80	4.2	
018397	**A08H SELPL 04**	LH	EP_0402	11	8	6	100	4	
018322	**S06F SELPR 04**	RH	EP_0402	8	6	4	80	4.2	
018315	**A08H SELPR 04**	RH	EP_0402	11	8	6	100	4	
018398	**A08H SELPL 06**	LH	EP_0602	11	8	6	100	4	
018399	**A10K SELPL 06**	LH	EP_0602	13	10	7	125	5	
018316	**A08H SELPR 06**	RH	EP_0602	11	8	6	100	4	
018401	**A10K SELPR 06**	RH	EP_0602	13	10	7	125	5	
018400	**A10K SELPL 08**	LH	EP_08M3	13	10	7	125	5	
018318	**A12K SELPL 08**	LH	EP_08M3	16	12	9	125	6	
018320	**A16M SELPL 08**	LH	EP_08M3	20	16	11	150	8	
018402	**A20Q SELPL 08**	LH	EP_08M3	24	20	13	180	10	
018404	**A25R SELPL 08**	LH	EP_08M3	31	25	17	200	12.5	
018317	**A10K SELPR 08**	RH	EP_08M3	13	10	7	125	5	
018319	**A12K SELPR 08**	RH	EP_08M3	16	12	9	125	6	
018321	**A16M SELPR 08**	RH	EP_08M3	20	16	11	150	8	
018403	**A20Q SELPR 08**	RH	EP_08M3	24	20	13	180	10	
018405	**A25R SELPR 08**	RH	EP_08M3	31	25	17	200	12.5	



S Style Boring Bar
for Positive Inserts:
EP_0402, EP_0602, and EP_08M3
Application: Facing and I/D part profiling
Approach 97.5°
Axial 5°
Radial 3° - 5°
Profilling Clearance Angle β = 0°
RH Bar Shown

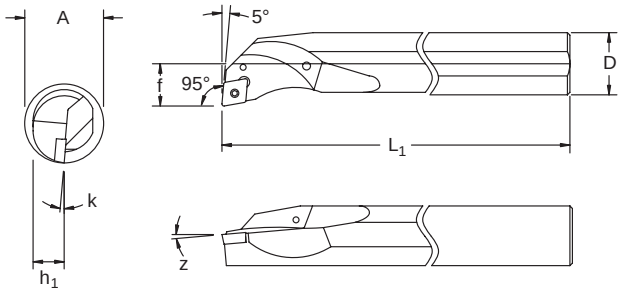
A.. SELPL/R Spare Parts (METRIC)

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
S06F SELPL/R 04	015059	F2004T	018487	T6	-	-	-	-
A08H SELPL/R 04								
A/D08H SELPL/R 06	015059	F2505T	018488	T7	-	-	-	-
A10K SELPL/R 06								
A/D10K SELPL/R 08	017032	A3006T	013214	T9	-	-	-	-
A/D12K SELPL/R 08								
A/D16M SELPL/R 08								
A/D20Q SELPL/R 08								
A/D25R SELPL/R 08								

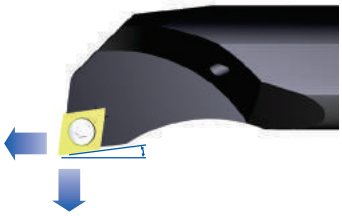
STELLRAM

D.. SELP 97.5°
Anti-Vibration Bars
(METRIC)





D.. SELP LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L_1	h_1	Through Coolant
023135	**D08H SELPR 06**	RH	EP_0602	11	8	6	100	4	
023137	**D10K SELPR 08**	RH	EP_08M3	13	10	7	125	5	
023139	**D12K SELPR 08**	RH	EP_08M3	16	12	9	125	6	
023141	**D16M SELPR 08**	RH	EP_08M3	20	16	11	150	8	
023143	**D20Q SELPR 08**	RH	EP_08M3	24	20	13	180	10	



S Style Boring Bar
for Positive Inserts:
EP_0402, EP_0602, and EP_08M3
Application: Facing and I/D part profiling
Approach 97.5°
Axial 5°
Radial 3° - 5°
Profilling Clearance Angle β = 0°
RH Bar Shown

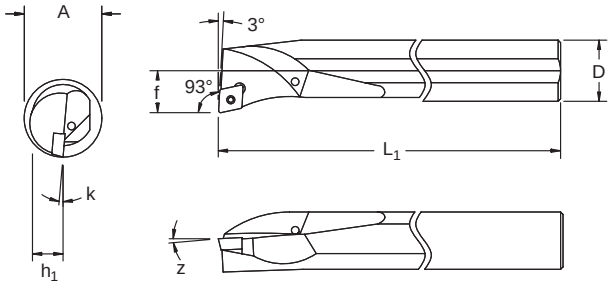
A.. SELPL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
S06F SELPL/R 04	*015059*	F2004T	*018487*	T6	-	-	-	-
A08H SELPL/R 04								
A/D08H SELPL/R 06	*015059*	F2505T	*018488*	T7	-	-	-	-
A10K SELPL/R 06								
A/D10K SELPL/R 08	*017032*	A3006T	*013214*	T9	-	-	-	-
A/D12K SELPL/R 08								
A/D16M SELPL/R 08								
A/D20Q SELPL/R 08								
A/D25R SELPL/R 08								

STELLRAM

A.. SEUP 93°

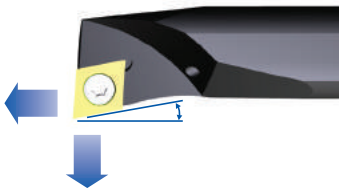
(METRIC)





Inserts - EPEX0402, EPGT0402, EPEX0602, EPGT0602, EPMT0602, EPEX08M3, EPGT08M3 and EPMT8M3

A.. SEUP LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L_1	h_1	Through Coolant
018324	**S06F SEUPL 04**	LH	EP_0402	8	6	4	80	4.2	
018325	**S06F SEUPR 04**	RH	EP_0402	8	6	4	80	4.2	
018409	**A08H SEUPL 06**	LH	EP_0602	11	8	6	100	4	
018410	**A08H SEUPR 06**	RH	EP_0602	11	8	6	100	4	
018412	**A10K SEUPL 08**	LH	EP_08M3	13	10	7	125	5	
018415	**A12K SEUPL 08**	LH	EP_08M3	16	12	9	125	6	
018414	**A10K SEUPR 08**	RH	EP_08M3	13	10	7	125	5	
018323	**A12K SEUPR 08**	RH	EP_08M3	16	12	9	125	6	

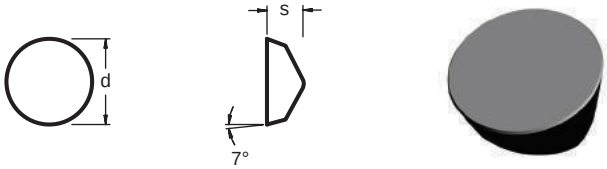


S Style Boring Bar
for Positive Inserts:
EP_0402, EP_0602, and EP_08M3
Application: Facing and I/D part profiling
Approach 93°
Axial 0° - 3°
Radial 5° - 10°
Profilling Clearance Angle β = 9°
RH Bar Shown

A.. SEUPL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
S06F SEUPL/R 04	*015059*	F2004T	*018487*	T6	-	-	-	-
A08H SEUPL/R 06	*015059*	F2505T	*018488*	T7	-	-	-	-
A10K SEUPL/R 08	*017032*	A3006T	*013214*	T9	-	-	-	-
A12K SEUPL/R 08								

STELLRAM

RCGX
Ceramics



EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032338	**RCGX060400 E010** **RCGX2V E010**	SA6609	6.35 0.250	- -	4.76 0.187	0.00 0.000	- -	◆	Roughing
032339	**RCGX090700 E010** **RCGX3V E010**	SA6609	9.52 0.375	- -	7.94 0.313	0.00 0.000	- -	◆	Roughing
032340	**RCGX120700 E010** **RCGX4V E010**	SA6609	12.70 0.500	- -	7.94 0.313	0.00 0.000	- -	◆	Roughing

Note: For edge condition refer to Grade page C37

Material Guide – Key to Recommended Inserts

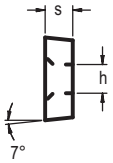
Material Designation

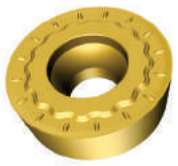
P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

RCMT
2N Geometry





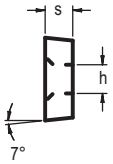


EDP#	Description	Grade	d	l	S	rε	h	Material	Application
	ISO		mm	mm	mm	mm	mm		
	ANSI		inch	inch	inch	inch	inch		
032632	RCMT190600E-2N	NL920	19.05	-	6.35	-	6.50		Medium
	RCMT64A-2N		0.750	-	0.250	-	0.256		

For Toolholders External: see pages C141 - C144

RCMT







EDP	Description	Grade	d	l	S	rε	h	Material	Application
	ISO		mm	mm	mm	mm	mm		
	ANSI		inch	inch	inch	inch	inch		
032633	RCMT0602M0E	NL250	6.00	-	2.38	-	2.79		Medium
	RCMT0602M0E		0.236	-	0.094	-	0.110		
032634	RCMT0602M0E	NL920	6.00	-	2.38	-	2.79		Medium
	RCMT0602M0E		0.236	-	0.094	-	0.110		
032635	RCMT10T3M0E	NL250	10.00	-	3.97	-	4.39		Medium
	RCMT10T3M0E		0.394	-	0.156	-	0.173		
032636	RCMT10T3M0E	NL400	10.00	-	3.97	-	4.39		Medium
	RCMT10T3M0E		0.394	-	0.156	-	0.173		
032637	RCMT10T3M0E	NL920	10.00	-	3.97	-	4.39		Medium
	RCMT10T3M0E		0.394	-	0.156	-	0.173		
032638	RCMT1204M0E	NL250	12.00	-	4.76	-	5.50		Medium
	RCMT1204M0E		0.472	-	0.187	-	0.217		
032639	RCMT1204M0E	NL400	12.00	-	4.76	-	5.50		Medium
	RCMT1204M0E		0.472	-	0.187	-	0.217		
032640	RCMT1204M0E	NL920	12.00	-	4.76	-	5.50		Medium
	RCMT1204M0E		0.472	-	0.187	-	0.217		
032641	RCMT1606M0E	NL300	15.88	-	6.35	-	5.51		Roughing
	RCMT1606M0E		0.625	-	0.250	-	0.217		
032642	RCMT1606M0E	NL400	15.88	-	6.35	-	5.51		Roughing
	RCMT1606M0E		0.625	-	0.250	-	0.217		
032643	RCMT1606M0E	NL920	15.88	-	6.35	-	5.51		Roughing
	RCMT1606M0E		0.625	-	0.250	-	0.217		

For Toolholders External: see pages C141 - C144

Material Guide – Key to Recommended Inserts

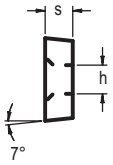
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

RCMT







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032644	**RCMT2006M0E** **RCMT2006M0E**	NL300	20.00 0.787	- -	6.35 0.250	- -	6.50 0.256		Roughing
032645	**RCMT2006M0E** **RCMT2006M0E**	NL400	20.00 0.787	- -	6.35 0.250	- -	6.50 0.256		Roughing
032646	**RCMT2006M0E** **RCMT2006M0E**	NL920	20.00 0.787	- -	6.35 0.250	- -	6.50 0.256		Roughing
032647	**RCMT2507M0S** **RCMT2507M0S**	NL300	25.00 0.984	- -	7.94 0.313	- -	7.11 0.280		Roughing
032648	**RCMT2507M0S** **RCMT2507M0S**	NL400	25.00 0.984	- -	7.94 0.313	- -	7.11 0.280		Roughing
032649	**RCMT2507M0S** **RCMT2507M0S**	NL920	25.00 0.984	- -	7.94 0.313	- -	7.11 0.280		Roughing
032650	**RCMT3209M0S** **RCMT3209M0S**	NL400	32.00 1.260	- -	9.53 0.375	- -	9.52 0.375		Roughing
032924	**RCMT3209M0S** **RCMT3209M0S**	NL300	32.00 1.260	- -	9.53 0.375	- -	9.52 0.375		Roughing

For Toolholders External: see pages C141 - C144

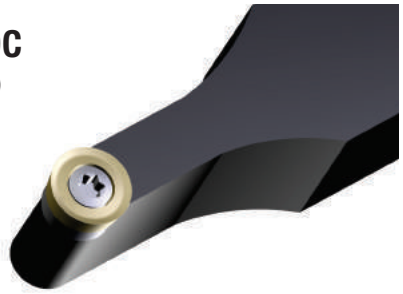
Material Guide – Key to Recommended Inserts

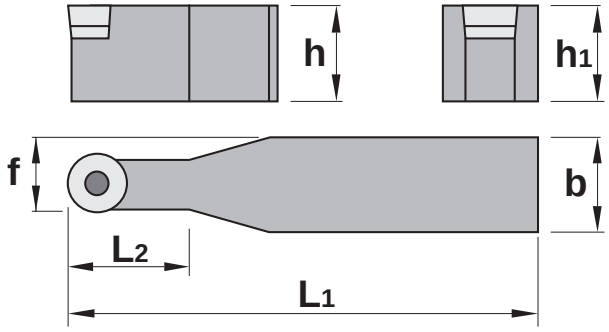
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

SRDC
(INCH)

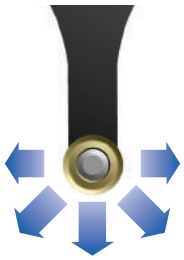




Inserts - RCMT10T3M0, 1204M0 (metric inserts)

SRDC Neutral External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h_1	b	f	L_1	L_2
011246	**SRDC N 103**	Neutral	RCMT_10T3	0.625	0.625	0.510	4.000	0.630
033524	**SRDC N 123B**	Neutral	RCMT_10T3	0.750	0.750	0.571	4.500	1.000
033525	**SRDC N 164D**	Neutral	RCMT_1204	1.000	1.000	0.736	6.000	1.000
033526	***SRDC N 204D**	Neutral	RCMT_1204	1.250	1.250	0.861	6.000	1.000

* Non Stock Items, subject to extended delivery time

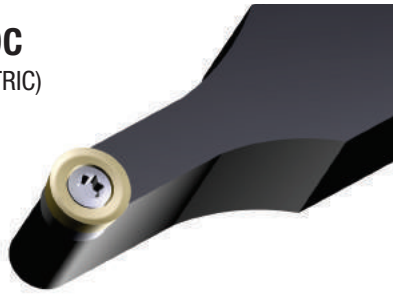


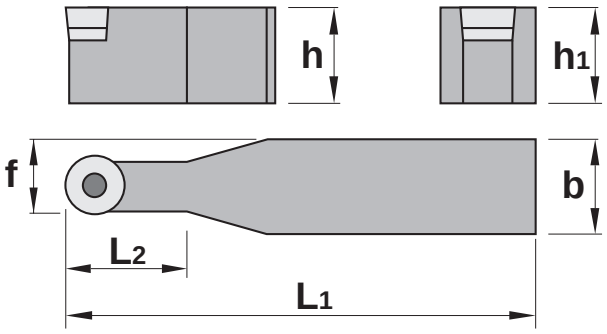
S Style External Toolholder
for Positive Inserts:
RCMT10 and 12
Application: Turning, Plunge and Profile
Approach Angle 0°
Axial 0°
Radial 0°
Neutral Holder Shown

SRDC N Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SRDC N 103	*034497*	1335	*028475*	K5516	*034501*	SA3811	*028478*	SAS1750
SRDC N 123B								
SRDC N 164D					*034502*	SA3814		
***SRDC N 204D**								

STELLRAM

SRDC
-(METRIC)

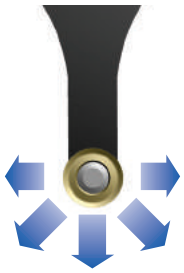




Inserts - RCMT0602, 10T3, and 1204

SRDC Neutral External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h_1	b	f	L_1	L_2
018106	**SRDC N 1616 H06**	Neutral	RCMT_0602	16	16	11	100	20
018107	**SRDC N 2020 K06**	Neutral	RCMT_0602	20	20	13	125	20
018108	**SRDC N 2020 K10**	Neutral	RCMT_10T3	20	20	15	125	22
028594	**SRDC N 2525 M10**	Neutral	RCMT_10T3	25	25	17.5	150	22
033523	**SRDC N 2020 K12**	Neutral	RCMT_1204	20	20	16	125	22
018088	**SRDC N 2525 M12**	Neutral	RCMT_1204	25	25	18.5	150	28



S Style External Toolholder
for Positive Inserts:
RCMT06, 10, and 12
Application: Turning, Plunge and Profile
Approach Angle 0°
Axial 0°
Radial 0°
Neutral Holder Shown

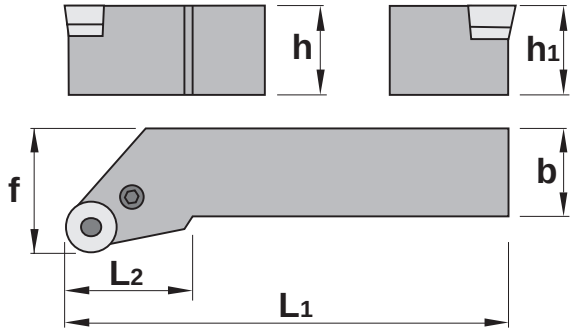
SRDC N Spare Parts (METRIC)

Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SRDC N 1616 H06	*015061*	F2507T	*018488*	T7	-	-	-	-
SRDC N 2020 K06								
SRDC N 2020 K10	*034497*	1335	*028475*	K5516	*034501*	SA3811	*028478*	SAS1750
SRDC N 2525 M10								
SRDC N 2020 K12					*034502*	SA3814		
SRDC N 2525 M12								

STELLRAM

PRSC
(METRIC)





Inserts - RCMT10T3, 1204, 1606, 2006, & 2507

PRSC LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
033527	**PRSCL 2020 K10**	LH	RCMT_10T3	20	20	25	125	28
033528	**PRSCL 2525 M10**	LH	RCMT_10T3	25	25	32	150	28
033529	**PRSCR 2020 K10**	RH	RCMT_10T3	20	20	25	125	28
033530	**PRSCR 2525 M10**	RH	RCMT_10T3	25	25	32	150	28
033531	**PRSCL 2020 K12**	LH	RCMT_1204	20	20	25	125	28
033532	**PRSCL 2525 M12**	LH	RCMT_1204	25	25	32	150	28
033533	**PRSCR 2020 K12**	RH	RCMT_1204	20	20	25	125	28
033534	**PRSCR 2525 M12**	RH	RCMT_1204	25	25	32	150	28
033535	**PRSCL 2525 M16**	LH	RCMT_1606	25	25	32	150	34
033536	**PRSCL 3225 P16**	LH	RCMT_1606	32	25	32	170	34
033537	**PRSCR 2525 M16**	RH	RCMT_1606	25	25	32	150	34
033538	**PRSCR 3225 P16**	RH	RCMT_1606	32	25	32	170	34
033539	**PRSCL 3232 P20**	LH	RCMT_2006	32	32	40	170	42
033540	**PRSCR 3232 P20**	RH	RCMT_2006	32	32	40	170	42
033541	***PRSCL 4040 S25**	LH	RCMT_2507	40	40	50	250	48
033542	***PRSCR 4040 S25**	RH	RCMT_2507	40	40	50	250	48

* Non Stock Items, subject to extended delivery time

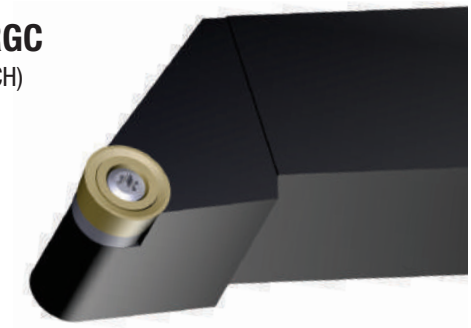


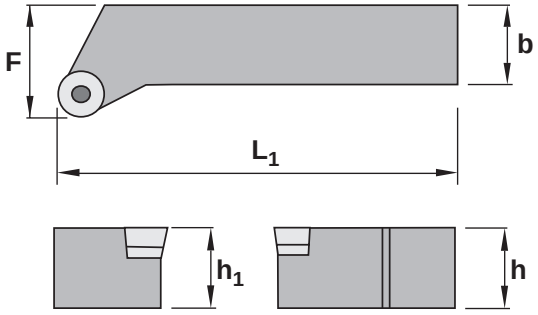
P Style External Toolholder
for Positive Inserts:
RCMT10, 12, 16, 20 and 25
Application: Turning, Plunge and Profile
Approach Angle 0°
Axial 0°
Radial 0°
RH Holder Shown

PRSCL/R Spare Parts (METRIC)

Item Description	Lever EDP		Lever Screw EDP		Anvil EDP		Anvil Clip EDP		Clip Punch EDP		Key EDP	
PRSCL/R 2020 K10	034475	PL8110	034480	PLS1705	034484	PA3810	028417	PC4110	028053	PCP0009	028578	KH5002
PRSCL/R 2525 M10												
PRSCL/R 2020 K12	034476	PL8112	017447	PLS1606	034485	PA3812					018285	KH5025
PRSCL/R 2525 M12												
PRSCL/R 2525 M16	034477	PL8116	034481	PLS1706	034486	PA3816	034504	PC4116	028054	PCP0012		
PRSCL/R 3232 P16												
PRSCL/R 3232 P20	034478	PL8120	028458	PLS1708	034487	PA3820	028051	PC4115	034505	PCP0015	018286	KH5003
***PRSCL/R 4040 S25**	034479	PL8125	034482	PLS1710	034488	PA3825	017455	PC4119	028056	PCP0019	018287	KH5004

SRGC
(INCH)

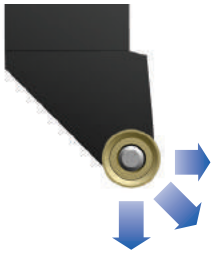




Inserts - RCMT10T3M0, 1204M0 (Metric Inserts)

SRGC Neutral External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h_1	b	f	L_1	L_2
033543	**SRGCL 123B**	LH	RCMT_10T3	0.750	0.750	1.000	4.500	-
033544	**SRGCL 163D**	LH	RCMT_10T3	1.000	1.000	1.250	6.000	-
033545	**SRGCR 123B**	RH	RCMT_10T3	0.750	0.750	1.000	4.500	-
033546	**SRGCR 163D**	RH	RCMT_10T3	1.000	1.000	1.250	6.000	-
033547	**SRGCL 164D**	LH	RCMT_1204	1.000	1.000	1.250	6.000	-
033548	**SRGCR 164D**	RH	RCMT_1204	1.000	1.000	1.250	6.000	-

* Non Stock Items, subject to extended delivery time

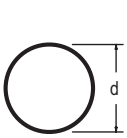


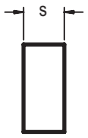
S Style External Toolholder
for Positive Inserts:
RCMT10, and 12
Application: Turning, Plunge and Profile
Approach Angle 0°
Axial 0°
Radial 0°
RH Holder Shown

SRGCL/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SRGCL/R 123B	*034497*	1335	*028475*	K5516	*034501*	SA3811	*028478*	SAS1750
SRGCL/R 163D								
SRGCL/R 164D					*034502*	SA3814		

STELLRAM

RNGN
Ceramics





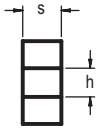


EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032324	RNGN090300 E010 RNG32 E010	SA6609	9.52 0.375	- -	3.18 0.125	- -	- -	◆	Roughing
032325	RNGN090400 E010 RNG33 E010	SA6609	9.52 0.375	- -	4.76 0.187	- -	- -	◆	Roughing
032326	RNGN120400 E010 RNG43 E010	SA6609	12.70 0.500	- -	4.76 0.187	- -	- -	◆	Roughing
032327	RNGN120700 E010 RNG45 E010	SA6609	12.70 0.500	- -	7.94 0.313	- -	- -	◆	Roughing
032328	RNGN120700 E030 RNG45 E030	SA6609	12.70 0.500	- -	7.94 0.313	- -	- -	◆	Roughing
032329	RNGN150700 E010 RNG55 E010	SA6609	15.88 0.625	- -	7.94 0.313	- -	- -	◆	Roughing
032330	RNGN190700 E010 RNG65 E010	SA6609	19.05 0.750	- -	7.94 0.313	- -	- -	◆	Roughing

Note: For edge condition refer to Grade page C37

RNMG
4T Geometry







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032651	RNMG250900E-4T RNMG86A-4T	NL300	25.00 0.984	- -	9.53 0.375	0.80 0.031	5.16 0.203	◆◆◆◆◆	Roughing
032652	RNMG250900E-4T RNMG86A-4T	NL920	25.00 0.984	- -	9.53 0.375	0.80 0.031	5.16 0.203	◆◆◆◆◆	Roughing

For Toolholders External: see pages C147 - C148

Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

RPGN
Ceramics







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032336	**RPGN090300 E010** **RPGN32 E010**	SA6609	9.52 0.375	- -	3.18 0.125	- -	- -	◆	Roughing
032337	**RPGN120400 E010** **RPGN43 E010**	SA6609	12.70 0.500	- -	4.76 0.187	- -	- -	◆	Roughing

Note: For edge condition refer to Grade page C37

RPGX
Ceramics







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032341	**RPGX060400 E010** **RPGX2V E010**	SA6609	6.35 0.250	- -	4.76 0.187	- -	- -	◆	Roughing
032342	**RPGX090700 E010** **RPGX3V E010**	SA6609	9.52 0.375	- -	7.94 0.313	- -	- -	◆	Roughing
032343	**RPGX120700 E010** **RPGX4V E010**	SA6609	12.70 0.500	- -	7.94 0.313	- -	- -	◆	Roughing

Note: For edge condition refer to Grade page C37

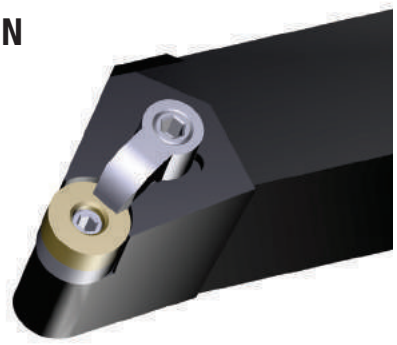
Material Guide – Key to Recommended Inserts

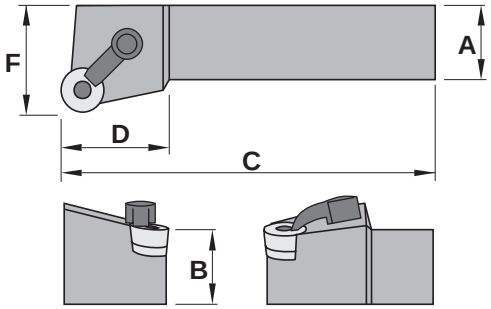
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

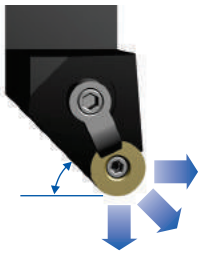
STELLRAM

MRGN
(INCH)





MRGN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				A	B	F	C	D
033350	**MRGNL-248E**	LH	RN_86	1.50	1.50	2.000	7.00	1.890
033351	**MRGNR-248E**	RH	RN_86	1.50	1.50	2.000	7.00	1.890

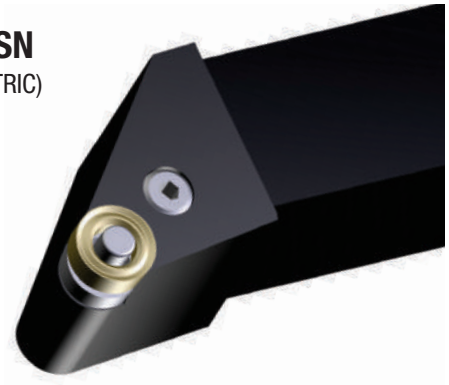


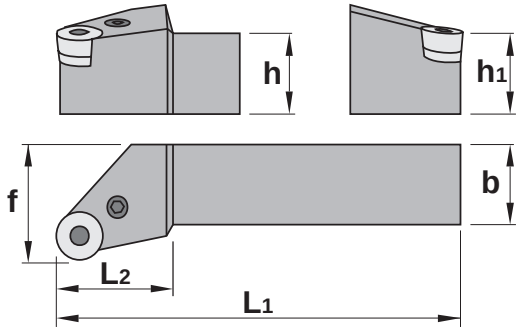
M Style External Toolholder
for Negative Inserts: RN_86
Application: Turn, Face, Plunge and Profile
Axial Approach 0°
Axial -7°
Radial -7°
Profiling Clearance Angle β = 0°
RH Holder Shown

MRGNL/R Spare Parts (INCH)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Key EDP*		*Lock Pin EDP*		*Lock Pin Key EDP*		*Anvil EDP*	
MRGNL/R-248E	*029076*	XNS510	*029073*	CL30	*029085*	KH5104	*004716*	NL810	*029085*	KH5104	*001670*	IRSN84

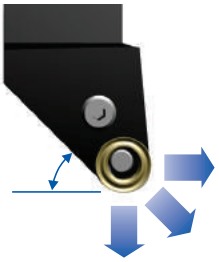
STELLRAM

PRSN
(METRIC)





PRSN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h_1	b	f	L_1	L_2
028392	**PRSNL 4040 S25**	LH	RN_2509	40	40	50	250	45
028396	**PRSNR 4040 S25**	RH	RN_2509	40	40	50	250	45

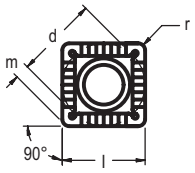


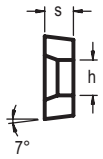
P Style External Toolholder
for Negative Inserts: RN_2509
Application: Turn, Face Plunge and Profile
Axial Approach 0°
Axial -6°
Radial -6°
Profiling Clearance Angle β = 42°
RH Holder Shown

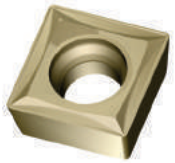
PRSNL/R Spare Parts (METRIC)												
Item Description	Lever *EDP*		Lever Screw *EDP*		*Anvil EDP*		*Anvil Clip EDP*		*Clip Punch EDP*		*Key EDP*	
PRSNL/R 4040 S25	*028408*	PL8025	*028409*	PLS1612	*034489*	PA3925	*028418*	PC4125	*034506*	PCP0025	*018288*	KH5005

STELLRAM

SCMT
-73 Geometry







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032653	**SCMT09T304E-73** **SCMT32.51A-73**	SP4019	9.53 0.375	9.53 0.375	3.97 0.156	0.40 0.016	4.40 0.173		Medium
032654	**SCMT09T304E-73** **SCMT32.51A-73**	NL300	9.53 0.375	9.53 0.375	3.97 0.156	0.40 0.016	4.40 0.173		Medium
032655	**SCMT09T304E-73** **SCMT32.51A-73**	NL920	9.53 0.375	9.53 0.375	3.97 0.156	0.40 0.016	4.40 0.173		Medium
030484	**SCMT09T308E-73** **SCMT32.52A-73**	SP4019	9.53 0.375	9.53 0.375	3.97 0.156	0.80 0.031	4.40 0.173		Medium
032656	**SCMT09T308E-73** **SCMT32.52A-73**	NL300	9.53 0.375	9.53 0.375	3.97 0.156	0.80 0.031	4.40 0.173		Medium
032657	**SCMT09T308E-73** **SCMT32.52A-73**	NL920	9.53 0.375	9.53 0.375	3.97 0.156	0.80 0.031	4.40 0.173		Medium
032658	**SCMT12M504E-73** **SCMT12M504E-73**	SP4019	12.70 0.500	12.70 0.500	5.00 0.197	0.40 0.016	5.50 0.217		Medium
032659	**SCMT12M504E-73** **SCMT12M504E-73**	NL300	12.70 0.500	12.70 0.500	5.00 0.197	0.40 0.016	5.50 0.217		Medium
032660	**SCMT12M504E-73** **SCMT12M504E-73**	NL920	12.70 0.500	12.70 0.500	5.00 0.197	0.40 0.016	5.50 0.217		Medium
032661	**SCMT12M508E-73** **SCMT12M508E-73**	SP4019	12.70 0.500	12.70 0.500	5.00 0.197	0.80 0.031	5.50 0.217		Medium
032662	**SCMT12M508E-73** **SCMT12M508E-73**	NL300	12.70 0.500	12.70 0.500	5.00 0.197	0.80 0.031	5.50 0.217		Medium
032663	**SCMT12M508E-73** **SCMT12M508E-73**	NL920	12.70 0.500	12.70 0.500	5.00 0.197	0.80 0.031	5.50 0.217		Medium

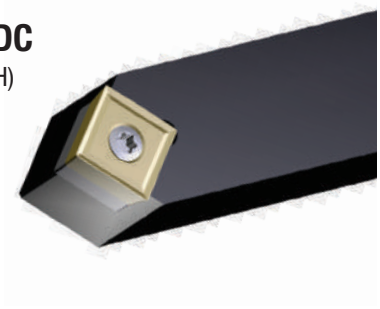
For Toolholders External: see pages C150 - C151 | Internal: see pages C152 - C153

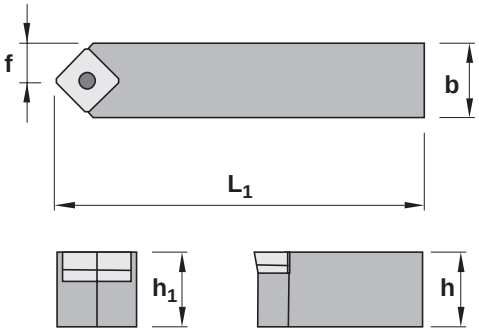
Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

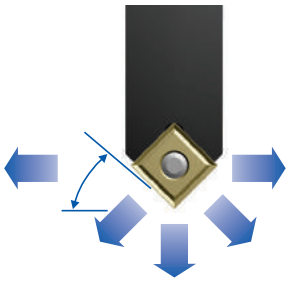
SSDC
(INCH)





Inserts - SCMT32.5 & 12M5

SSDC Neutral External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h_1	b	f	L_1	L_2
011248	**SSDC N 083**	Neutral	SCMT32.5	0.500	0.500	0.263	3.500	-
011249	**SSDC N 103**	Neutral	SCMT32.5	0.625	0.625	0.325	4.000	-
011250	**SSDC N 124B**	Neutral	SCMT12M5	0.750	0.750	0.388	4.500	-

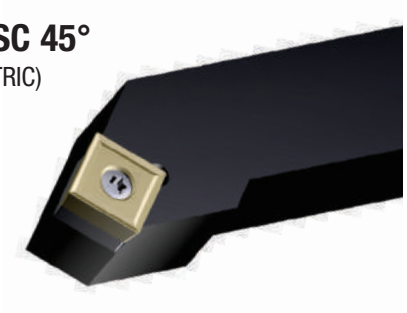


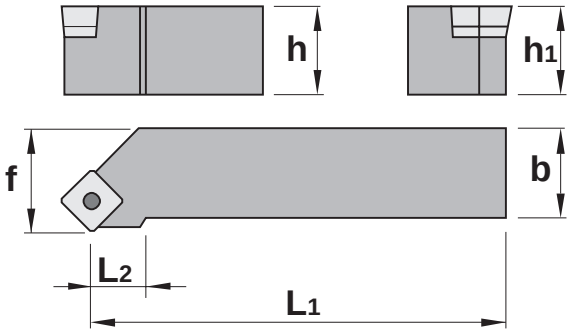
S Style External Toolholder
for Positive Inserts:
SCMT32.5 & SCMT12M5
Application: Turning, Plunge and Profile
Approach Angle 45°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 42°
Neutral Holder Shown

SSDC N Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SSDC N 083	*015262*	D4010T	*015240*	T15	-	-	-	-
SSDC N 103								
SSDC N 124B	*034500*	1540	*034577*	K5517	*28738*	SA3514	*28739*	SAS1760

STELLRAM

SSSC 45°
(METRIC)

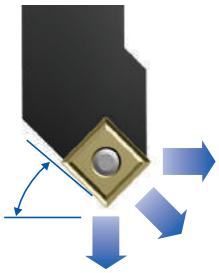




Inserts - SCMT09T3 & 12M5

SSSC LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
028605	**SSSCL 1212 F09**	LH	SCMT09T3	12	12	16	80	20
028606	**SSSCL 1616 H09**	LH	SCMT09T3	16	16	20	100	22
028609	**SSSCR 1212 F09**	RH	SCMT09T3	12	12	16	80	20
028610	**SSSCR 1616 H09**	RH	SCMT09T3	16	16	20	100	22
028607	**SSSCL 2020 K12**	LH	SCMT12M5	20	20	25	125	25
028608	**SSSCL 2525 M12**	LH	SCMT12M5	25	25	32	150	28
028611	**SSSCR 2020 K12**	RH	SCMT12M5	20	20	25	125	25
028612	**SSSCR 2525 M12**	RH	SCMT12M5	25	25	32	150	28



S Style External Toolholder
for Positive Inserts
SCMT09T3 & SCMT12M5
Application: Turning, Plunge and Profile
Approach Angle 45°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 42°
RH Holder Shown

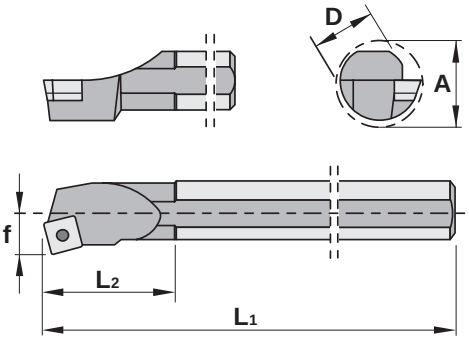
SSSCL/R Spare Parts (METRIC)

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SSSCL/R 1212 F09	*015262*	D4010T	*015240*	T15	-	-	-	-
SSSCL/R 1616 H09								
SSSCL/R 2020 K12	*034500*	1540	*034577*	K5517	*028738*	SA3514	*028739*	SAS1760
SSSCL/R 2525 M12								

STELLRAM

SSKC 75°
(INCH)





S.. SSKC LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)					
				Min Bore Ø A	ØD	f	L_1	L_2	Through Coolant
033561	**S10R SSKCL 3**	LH	SC_12M5	0.812	0.625	0.406	8.000	1.220	
033562	**S12S SSKCL 3**	LH	SC_12M5	1.000	0.750	0.500	10.000	1.417	
033563	**S16T SSKCL 3**	LH	SC_12M5	1.280	1.000	0.640	12.000	1.653	
033564	**S10R SSKCR 3**	RH	SC_12M5	0.812	0.625	0.406	8.000	1.220	
033565	**S12S SSKCR 3**	RH	SC_12M5	1.000	0.750	0.500	10.000	1.417	
033566	**S16T SSKCR 3**	RH	SC_12M5	1.280	1.000	0.640	12.000	1.653	



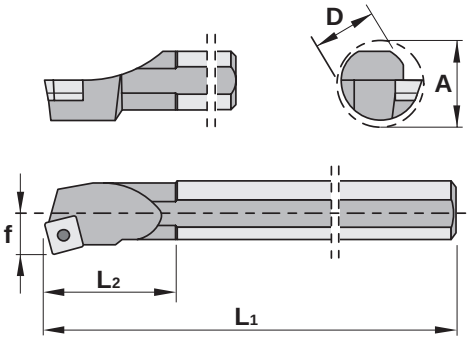
S Style Internal Boring Bar
for Positive Inserts: SCMT12M5
Application: I/D Boring
Axial Approach: 75°
Axial 0°
Radial -7°
Profilling Clearance Angle β = 12°
RH Bar Shown

S.. SSKCL/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
S10R SSKCL/R 3	*034499*	1440	*015240*	T15	-	-	-	-
S12S SSKCL/R 3	*015262*	D4010T						
S16T SSKCL/R 3								

STELLRAM

SSKC 75°
(METRIC)





S.. SSKC LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L1	L2	Through Coolant
033549	**S16R SSKCL 09**	LH	SC_09T3	20	16	11	200	31	⊘
033550	**S20S SSKCL 09**	LH	SC_09T3	24	20	13	250	36	⊘
033551	**S25T SSKCL 09**	LH	SC_09T3	31	25	17	300	42	⊘
033552	**S16R SSKCR 09**	RH	SC_09T3	20	16	11	200	31	⊘
033553	**S20S SSKCR 09**	RH	SC_09T3	24	20	13	250	36	⊘
033554	**S25T SSKCR 09**	RH	SC_09T3	31	25	17	300	42	⊘
033555	**S32U SSKCL 12**	LH	SC_12M5	39	32	22	350	45	⊘
033556	***S40V SSKCL 12**	LH	SC_12M5	48	40	27	400	50	⊘
033557	***S50W SSKCL 12**	LH	SC_12M5	61	50	35	450	50	⊘
033558	**S32U SSKCR 12**	RH	SC_12M5	39	32	22	350	45	⊘
033559	***S40V SSKCR 12**	RH	SC_12M5	48	40	27	400	50	⊘
033560	***S50W SSKCR 12**	RH	SC_12M5	61	50	35	450	50	⊘

* Note these items are on an extended delivery time



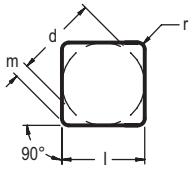
S Style Internal Boring Bar
for Positive Inserts:
SCMT09T3 & SCMT12M5
Application: I/D Boring
Axial Approach: 75°
Axial 0°
Radial -8°
Profilling Clearance Angle β = 12°
RH Bar Shown

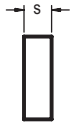
S.. SSKCL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
S16R SSKCL/R 09	*034499*	1440	*015240*	T15	-	-	-	-
S20S SSKCL/R 09	*015262*	D4010T						
S25T SSKCL/R 09								
S32U SSKCL/R 12	*034500*	1540	*034577*	K5517	*028738*	SA3514	*028739*	SAS1760
***S40V SSKCL/R 12**								
***S50W SSKCL/R 12**								

* Note these items are on an extended delivery time

STELLRAM

SNGN
Ceramics







EDP	Description	Grade	d	l	S	r_ε	h	Material	Application
	ISO		mm	mm	mm	mm	mm		
	ANSI		inch	inch	inch	inch	inch		
032331	**SNGN120408 E010**	SA6609	12.70	12.70	4.76	0.80	-	♦	Roughing
	SNGN432 E010		0.500	0.500	0.187	0.031	-		
032332	**SNGN120412 E010**	SA6609	12.70	12.70	4.76	1.20	-	♦	Roughing
	SNGN433 E010		0.500	0.500	0.187	0.047	-		
032333	**SNGN120708 E010**	SA6609	12.70	12.70	7.94	0.80	-	♦	Roughing
	SNGN452 E010		0.500	0.500	0.313	0.031	-		
032334	**SNGN120712 E010**	SA6609	12.70	12.70	7.94	1.20	-	♦	Roughing
	SNGN453 E010		0.500	0.500	0.313	0.047	-		
032335	**SNGN190616 E010**	SA6609	19.05	19.05	6.35	1.60	-	♦	Roughing
	SNGN644 E010		0.750	0.750	0.250	0.063	-		

Note: For edge condition refer to Grade page C37

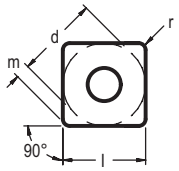
Material Guide – Key to Recommended Inserts

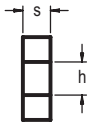
Material Designation

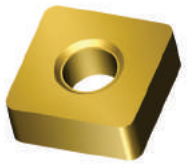
P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

SNMA



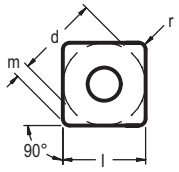


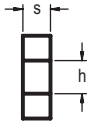


EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032664	SNMA120408E SNMA432A	NL250	12.70 0.500	12.70 0.500	4.76 0.187	0.80 0.031	5.16 0.203	♦	Heavy Roughing
032665	SNMA120412E SNMA433A	NL250	12.70 0.500	12.70 0.500	4.76 0.187	1.20 0.047	5.16 0.203	♦	Heavy Roughing
032666	SNMA120416E SNMA434A	NL250	12.70 0.500	12.70 0.500	4.76 0.187	1.60 0.063	5.16 0.203	♦	Heavy Roughing
032667	SNMA150612E SNMA543A	NL250	15.88 0.625	15.88 0.625	6.35 0.250	1.20 0.047	6.35 0.250	♦	Heavy Roughing
032668	SNMA190616E SNMA644A	NL250	19.05 0.750	19.05 0.750	6.35 0.250	1.60 0.063	7.94 0.313	♦	Heavy Roughing
032669	SNMA190632E SNMA648A	NL250	19.05 0.750	19.05 0.750	6.35 0.250	3.20 0.126	7.94 0.313	♦	Heavy Roughing

For Toolholders External: see pages C163 - C169 | Internal: see pages C170 - C171

SNMG
1B Geometry







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
030878	SNMG120408E-1B SNMG432A-1B	SP0819	12.70 0.500	12,70 0.500	4.76 0.187	0.80 0.031	5.16 0.203	♦♦♦♦♦♦	Finishing
032670	SNMG120408E-1B SNMG432A-1B	NL250	12.70 0.500	12.70 0.500	4.76 0.187	0.80 0.031	5.16 0.203	♦♦♦♦♦	Finishing

For Toolholders External: see pages C163 - C169 | Internal: see pages C170 - C171

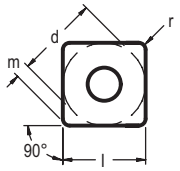
Material Guide – Key to Recommended Inserts

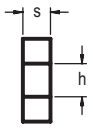
Material Designation

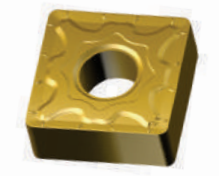
P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

SNMG
2N Geometry







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032671	SNMG120408E-2N SNMG432A-2N	NL250	12.70 0.500	12.70 0.500	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032672	SNMG120408E-2N SNMG432A-2N	NL300	12.70 0.500	12.70 0.500	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032673	SNMG120408E-2N SNMG432A-2N	NL920	12.70 0.500	12.70 0.500	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032674	SNMG120412E-2N SNMG433A-2N	NL250	12.70 0.500	12.70 0.500	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032675	SNMG120412E-2N SNMG433A-2N	NL300	12.70 0.500	12.70 0.500	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032676	SNMG120412E-2N SNMG433A-2N	NL920	12.70 0.500	12.70 0.500	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032677	SNMG120416E-2N SNMG434A-2N	NL250	12.70 0.500	12.70 0.500	4.76 0.187	1.60 0.063	5.16 0.203		Medium
032678	SNMG120416E-2N SNMG434A-2N	NL300	12.70 0.500	12.70 0.500	4.76 0.187	1.60 0.063	5.16 0.203		Medium
032679	SNMG120416E-2N SNMG434A-2N	NL920	12.70 0.500	12.70 0.500	4.76 0.187	1.60 0.063	5.16 0.203		Medium
032680	SNMG150608E-2N SNMG542A-2N	NL250	15.88 0.625	15.88 0.625	6.35 0.250	0.80 0.031	6.35 0.250		Medium
032681	SNMG150608E-2N SNMG542A-2N	NL300	15.88 0.625	15.88 0.625	6.35 0.250	0.80 0.031	6.35 0.250		Medium
032682	SNMG150608E-2N SNMG542A-2N	NL920	15.88 0.625	15.88 0.625	6.35 0.250	0.80 0.031	6.35 0.250		Medium
032683	SNMG150612E-2N SNMG543A-2N	NL250	15.88 0.625	15.88 0.625	6.35 0.250	1.20 0.047	6.35 0.250		Medium
032684	SNMG150612E-2N SNMG543A-2N	NL300	15.88 0.625	15.88 0.625	6.35 0.250	1.20 0.047	6.35 0.250		Medium
032685	SNMG150612E-2N SNMG543A-2N	NL920	15.88 0.625	15.88 0.625	6.35 0.250	1.20 0.047	6.35 0.250		Medium
032686	SNMG150616E-2N SNMG544A-2N	NL250	15.88 0.625	15.88 0.625	6.35 0.250	1.60 0.063	6.35 0.250		Medium
032687	SNMG150616E-2N SNMG544A-2N	NL300	15.88 0.625	15.88 0.625	6.35 0.250	1.60 0.063	6.35 0.250		Medium
032688	SNMG190612E-2N SNMG643A-2N	NL920	19.05 0.750	19.05 0.750	6.35 0.250	1.20 0.047	7.94 0.313		Medium
032689	SNMG190616E-2N SNMG644A-2N	NL300	19.05 0.750	19.05 0.750	6.35 0.250	1.60 0.063	7.94 0.313		Medium
032690	SNMG190616E-2N SNMG644A-2N	NL920	19.05 0.750	19.05 0.750	6.35 0.250	1.60 0.063	7.94 0.313		Medium

For Toolholders External: see pages C163 - C169 | Internal: see pages C170 - C171

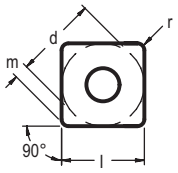
Material Guide – Key to Recommended Inserts

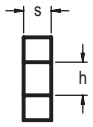
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

SNMG
3J Geometry



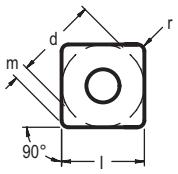


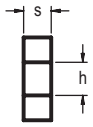


EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032691	SNMG120408E-3J SNMG432A-3J	SP4019	12.70 0.500	12.70 0.500	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032692	SNMG120412E-3J SNMG433A-3J	SP4019	12.70 0.500	12.70 0.500	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032693	SNMG120416E-3J SNMG434A-3J	SP4019	12.70 0.500	12.70 0.500	4.76 0.187	1.60 0.063	5.16 0.203		Medium

For Toolholders External: see pages C163 - C169 | Internal: see pages C170 - C171

SNMG
4E Geometry







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
031578	SNMG120408E-4E SNMG432A-4E	SP0819	12.70 0.500	12.70 0.500	4.76 0.187	0.80 0.031	5.16 0.203		Medium - Roughing
032694	SNMG120408E-4E SNMG432A-4E	NL400	12.70 0.500	12.70 0.500	4.76 0.187	0.80 0.031	5.16 0.203		Medium - Roughing
031658	SNMG120412E-4E SNMG433A-4E	SP0819	12.70 0.500	12.70 0.500	4.76 0.187	1.20 0.047	5.16 0.203		Medium - Roughing
032695	SNMG120412E-4E SNMG433A-4E	NL400	12.70 0.500	12.70 0.500	4.76 0.187	1.20 0.047	5.16 0.203		Medium - Roughing
031696	SNMG120416E-4E SNMG434A-4E	SP0819	12.70 0.500	12.70 0.500	4.76 0.187	1.60 0.063	5.16 0.203		Medium - Roughing
032696	SNMG120416E-4E SNMG434A-4E	NL400	12.70 0.500	12.70 0.500	4.76 0.187	1.60 0.063	5.16 0.203		Medium - Roughing

For Toolholders External: see pages C163 - C169 | Internal: see pages C170 - C171

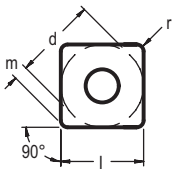
Material Guide – Key to Recommended Inserts

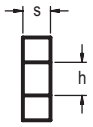
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

SNMG
4E Geometry







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
030527	**SNMG150608E-4E** **SNMG542A-4E**	SP0819	15.88 0.625	15.88 0.625	6.35 0.250	0.80 0.031	6.35 0.250		Medium-Roughing
032697	**SNMG150608E-4E** **SNMG542A-4E**	NL400	15.88 0.625	15.88 0.625	6.35 0.250	0.80 0.031	6.35 0.250		Medium-Roughing
030528	**SNMG150612E-4E** **SNMG543A-4E**	SP0819	15.88 0.625	15.88 0.625	6.35 0.250	1.20 0.047	6.35 0.250		Medium-Roughing
032698	**SNMG150612E-4E** **SNMG543A-4E**	NL400	15.88 0.625	15.88 0.625	6.35 0.250	1.20 0.047	6.35 0.250		Medium-Roughing
030529	**SNMG150616E-4E** **SNMG544A-4E**	SP0819	15.88 0.625	15.88 0.625	6.35 0.250	1.60 0.063	6.35 0.250		Medium-Roughing
032699	**SNMG150616E-4E** **SNMG544A-4E**	NL400	15.88 0.625	15.88 0.625	6.35 0.250	1.60 0.063	6.35 0.250		Medium-Roughing
030530	**SNMG190608E-4E** **SNMG642A-4E**	SP0819	19.05 0.750	19.05 0.750	6.35 0.250	0.80 0.031	7.94 0.313		Medium-Roughing
032700	**SNMG190608E-4E** **SNMG642A-4E**	NL400	19.05 0.750	19.05 0.750	6.35 0.250	0.80 0.031	7.94 0.313		Medium-Roughing
030531	**SNMG190612E-4E** **SNMG643A-4E**	SP0819	19.05 0.750	19.05 0.750	6.35 0.250	1.20 0.047	7.94 0.313		Medium-Roughing
032701	**SNMG190612E-4E** **SNMG643A-4E**	NL400	19.05 0.750	19.05 0.750	6.35 0.250	1.20 0.047	7.94 0.313		Medium-Roughing
032362	**SNMG190616E-4E** **SNMG644A-4E**	NL400	19.05 0.750	19.05 0.750	6.35 0.250	1.60 0.063	7.94 0.313		Medium-Roughing
030532	**SNMG190616E-4E** **SNMG644A-4E**	SP0819	19.05 0.750	19.05 0.750	6.35 0.250	1.60 0.063	7.94 0.313		Medium-Roughing
030533	**SNMG190624E-4E** **SNMG646A-4E**	SP0819	19.05 0.750	19.05 0.750	6.35 0.250	2.40 0.094	7.94 0.313		Medium-Roughing
032703	**SNMG190624E-4E** **SNMG646A-4E**	NL400	19.05 0.750	19.05 0.750	6.35 0.250	2.40 0.094	7.94 0.313		Medium-Roughing

For Toolholders External: see pages C163 - C169 | Internal: see pages C170 - C171

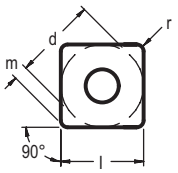
Material Guide – Key to Recommended Inserts

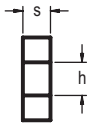
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

SNMG
4T Geometry







EDP	Description ISO / ANSI	Grade	d mm / inch	l mm / inch	S mm / inch	r_ε mm / inch	h mm / inch	Material	Application
032704	SNMG120404E-4T / SNMG431A-4T	NL250	12.70 / 0.500	12.70 / 0.500	4.76 / 0.187	0.40 / 0.016	5.16 / 0.203	P M K N S H	Roughing
032705	SNMG120404E-4T / SNMG431A-4T	NL300	12.70 / 0.500	12.70 / 0.500	4.76 / 0.187	0.40 / 0.016	5.16 / 0.203	P M K N S H	Roughing
032706	SNMG120404E-4T / SNMG431A-4T	NL400	12.70 / 0.500	12.70 / 0.500	4.76 / 0.187	0.40 / 0.016	5.16 / 0.203	P M	Roughing
032707	SNMG120404E-4T / SNMG431A-4T	NL920	12.70 / 0.500	12.70 / 0.500	4.76 / 0.187	0.40 / 0.016	5.16 / 0.203	P M K N S H	Roughing
032708	SNMG120408E-4T / SNMG432A-4T	NL250	12.70 / 0.500	12.70 / 0.500	4.76 / 0.187	0.80 / 0.031	5.16 / 0.203	P M K N S H	Roughing
032709	SNMG120408E-4T / SNMG432A-4T	NL300	12.70 / 0.500	12.70 / 0.500	4.76 / 0.187	0.80 / 0.031	5.16 / 0.203	P M K N S H	Roughing
032710	SNMG120408E-4T / SNMG432A-4T	NL400	12.70 / 0.500	12.70 / 0.500	4.76 / 0.187	0.80 / 0.031	5.16 / 0.203	P M	Roughing
032711	SNMG120408E-4T / SNMG432A-4T	NL920	12.70 / 0.500	12.70 / 0.500	4.76 / 0.187	0.80 / 0.031	5.16 / 0.203	P M K N S H	Roughing
032712	SNMG120412E-4T / SNMG433A-4T	NL250	12.70 / 0.500	12.70 / 0.500	4.76 / 0.187	1.20 / 0.047	5.16 / 0.203	P M K N S H	Roughing
032713	SNMG120412E-4T / SNMG433A-4T	NL300	12.70 / 0.500	12.70 / 0.500	4.76 / 0.187	1.20 / 0.047	5.16 / 0.203	P M K N S H	Roughing
032714	SNMG120412E-4T / SNMG433A-4T	NL400	12.70 / 0.500	12.70 / 0.500	4.76 / 0.187	1.20 / 0.047	5.16 / 0.203	P M	Roughing
032715	SNMG120412E-4T / SNMG433A-4T	NL920	12.70 / 0.500	12.70 / 0.500	4.76 / 0.187	1.20 / 0.047	5.16 / 0.203	P M K N S H	Roughing
032716	SNMG120416E-4T / SNMG434A-4T	NL250	12.70 / 0.500	12.70 / 0.500	4.76 / 0.187	1.60 / 0.063	5.16 / 0.203	P M K N S H	Roughing
032717	SNMG120416E-4T / SNMG434A-4T	NL300	12.70 / 0.500	12.70 / 0.500	4.76 / 0.187	1.60 / 0.063	5.16 / 0.203	P M K N S H	Roughing
032718	SNMG120416E-4T / SNMG434A-4T	NL400	12.70 / 0.500	12.70 / 0.500	4.76 / 0.187	1.60 / 0.063	5.16 / 0.203	P M	Roughing
032719	SNMG120416E-4T / SNMG434A-4T	NL920	12.70 / 0.500	12.70 / 0.500	4.76 / 0.187	1.60 / 0.063	5.16 / 0.203	P M K N S H	Roughing

For Toolholders External: see pages C163 - C169 | Internal: see pages C170 - C171

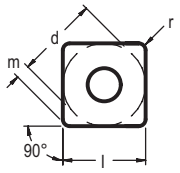
Material Guide – Key to Recommended Inserts

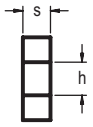
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

SNMG
4T Geometry







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032720	**SNMG150608E-4T** **SNMG542A-4T**	NL250	15.88 0.625	15.88 0.625	6.35 0.250	0.80 0.031	6.35 0.250		Roughing
032721	**SNMG150608E-4T** **SNMG542A-4T**	NL300	15.88 0.625	15.88 0.625	6.35 0.250	0.80 0.031	6.35 0.250		Roughing
032722	**SNMG150608E-4T** **SNMG542A-4T**	NL400	15.88 0.625	15.88 0.625	6.35 0.250	0.80 0.031	6.35 0.250		Roughing
032723	**SNMG150608E-4T** **SNMG542A-4T**	NL920	15.88 0.625	15.88 0.625	6.35 0.250	0.80 0.031	6.35 0.250		Roughing
032724	**SNMG150612E-4T** **SNMG543A-4T**	NL250	15.88 0.625	15.88 0.625	6.35 0.250	1.20 0.047	6.35 0.250		Roughing
032725	**SNMG150612E-4T** **SNMG543A-4T**	NL300	15.88 0.625	15.88 0.625	6.35 0.250	1.20 0.047	6.35 0.250		Roughing
032726	**SNMG150612E-4T** **SNMG543A-4T**	NL400	15.88 0.625	15.88 0.625	6.35 0.250	1.20 0.047	6.35 0.250		Roughing
032727	**SNMG150612E-4T** **SNMG543A-4T**	NL920	15.88 0.625	15.88 0.625	6.35 0.250	1.20 0.047	6.35 0.250		Roughing
032728	**SNMG150616E-4T** **SNMG544A-4T**	NL250	15.88 0.625	15.88 0.625	6.35 0.250	1.60 0.063	6.35 0.250		Roughing
032729	**SNMG150616E-4T** **SNMG544A-4T**	NL300	15.88 0.625	15.88 0.625	6.35 0.250	1.60 0.063	6.35 0.250		Roughing
032730	**SNMG150616E-4T** **SNMG544A-4T**	NL400	15.88 0.625	15.88 0.625	6.35 0.250	1.60 0.063	6.35 0.250		Roughing
032731	**SNMG150616E-4T** **SNMG544A-4T**	NL920	15.88 0.625	15.88 0.625	6.35 0.250	1.60 0.063	6.35 0.250		Roughing

For Toolholders External: see pages C163 - C169 | Internal: see pages C170 - C171

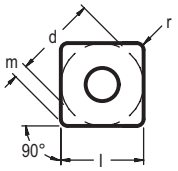
Material Guide – Key to Recommended Inserts

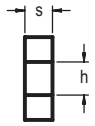
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

SNMG
4T Geometry



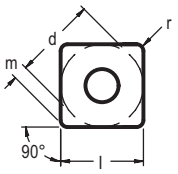


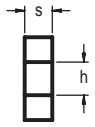


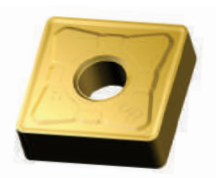
EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032732	SNMG190612E-4T SNMG643A-4T	NL250	19.05 0.750	19.05 0.750	6.35 0.250	1.20 0.047	7.94 0.313		Roughing
032733	SNMG190612E-4T SNMG643A-4T	NL300	19.05 0.750	19.05 0.750	6.35 0.250	1.20 0.047	7.94 0.313		Roughing
032734	SNMG190612E-4T SNMG643A-4T	NL400	19.05 0.750	19.05 0.750	6.35 0.250	1.20 0.047	7.94 0.313		Roughing
032735	SNMG190612E-4T SNMG643A-4T	NL920	19.05 0.750	19.05 0.750	6.35 0.250	1.20 0.047	7.94 0.313		Roughing
032736	SNMG190616E-4T SNMG644A-4T	NL250	19.05 0.750	19.05 0.750	6.35 0.250	1.60 0.063	7.94 0.313		Roughing
032737	SNMG190616E-4T SNMG644A-4T	NL300	19.05 0.750	19.05 0.750	6.35 0.250	1.60 0.063	7.94 0.313		Roughing
032738	SNMG190616E-4T SNMG644A-4T	NL400	19.05 0.750	19.05 0.750	6.35 0.250	1.60 0.063	7.94 0.313		Roughing
032739	SNMG190616E-4T SNMG644A-4T	NL920	19.05 0.750	19.05 0.750	6.35 0.250	1.60 0.063	7.94 0.313		Roughing
032740	SNMG250924E-4T SNMG866B-4T	NL300	25.40 1.000	25.40 1.000	9.53 0.375	2.40 0.094	9.12 0.359		Roughing
032741	SNMG250924E-4T SNMG866B-4T	NL400	25.40 1.000	25.40 1.000	9.53 0.375	2.40 0.094	9.12 0.359		Roughing
032742	SNMG250924E-4T SNMG866B-4T	NL920	25.40 1.000	25.40 1.000	9.53 0.375	2.40 0.094	9.12 0.359		Roughing

For Toolholders EExternal: see pages C163 - C169 | Internal: see pages C170 - C171

SNMG
4U Geometry







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032743	SNMG120408E-4U SNMG432A-4U	NL200	12.70 0.500	12.70 0.500	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032744	SNMG120412E-4U SNMG433A-4U	NL200	12.70 0.500	12.70 0.500	4.76 0.187	1.20 0.047	5.16 0.203		Roughing

For Toolholders External: see pages C163 - C169 | Internal: see pages C170 - C171

Material Guide – Key to Recommended Inserts

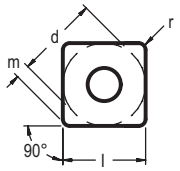
Material Designation

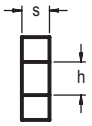
P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

SNMM

5R Geometry







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
031690	**SNMM150612E 5R** **SNMM543A-5R**	NL300	15.88 0.625	15.88 0.625	6.35 0.250	1.20 0.047	6.35 0.250		Heavy Roughing
031674	**SNMM150612E-5R** **SNMM543A-5R**	NL400	15.88 0.625	15.88 0.625	6.35 0.250	1.20 0.047	6.35 0.250		Heavy Roughing
031691	**SNMM150616E-5R** **SNMM544A-5R**	NL300	15.88 0.625	15.88 0.625	6.35 0.250	1.60 0.063	6.35 0.250		Heavy Roughing
031675	**SNMM150616E 5R** **SNMM544A-5R**	NL400	15.88 0.625	15.88 0.625	6.35 0.250	1.60 0.063	6.35 0.250		Heavy Roughing
031692	**SNMM150624E-5R** **SNMM546A-5R**	NL300	15.88 0.625	15.88 0.625	6.35 0.250	2.40 0.094	6.35 0.250		Heavy Roughing
031676	**SNMM150624E-5R** **SNMM546A-5R**	NL400	15.88 0.625	15.88 0.625	6.35 0.250	2.40 0.094	6.35 0.250		Heavy Roughing
031693	**SNMM190612E-5R** **SNMM643A-5R**	NL300	19.05 0.750	19.05 0.750	6.35 0.250	1.20 0.047	7.94 0.313		Heavy Roughing
031677	**SNMM190612E-5R** **SNMM643A-5R**	NL400	19.05 0.750	19.05 0.750	6.35 0.250	1.20 0.047	7.94 0.313		Heavy Roughing
031694	**SNMM190616E-5R** **SNMM644A-5R**	NL300	19.05 0.750	19.05 0.750	6.35 0.250	1.60 0.063	7.94 0.313		Heavy Roughing
031678	**SNMM190616E-5R** **SNMM644A-5R**	NL400	19.05 0.750	19.05 0.750	6.35 0.250	1.60 0.063	7.94 0.313		Heavy Roughing
031695	**SNMM190624E-5R** **SNMM646A 5R**	NL300	19.05 0.750	19.05 0.750	6.35 0.250	2.40 0.094	7.94 0.313		Heavy Roughing
031679	**SNMM190624E-5R** **SNMM646A 5R**	NL400	19.05 0.750	19.05 0.750	6.35 0.250	2.40 0.094	7.94 0.313		Heavy Roughing
031681	**SNMM250924E-5R** **SNMM866A 5R**	NL300	25.40 1.000	25.40 1.000	9.53 0.375	2.40 0.094	9.12 0.359		Heavy Roughing
032750	**SNMM250924E-5R** **SNMM866A 5R**	NL400	25.40 1.000	25.40 1.000	9.53 0.375	2.40 0.094	9.12 0.359		Heavy Roughing
031680	**SNMM250924E-5R** **SNMM866A 5R**	NL920	25.40 1.000	25.40 1.000	9.53 0.375	2.40 0.094	9.12 0.359		Heavy Roughing

For Toolholders External: see pages C163 - C169 | Internal: see pages C170 - C171

Material Guide – Key to Recommended Inserts

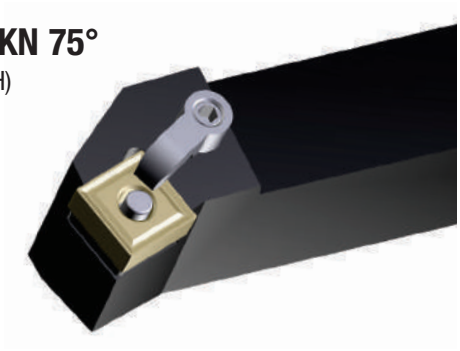
Material Designation

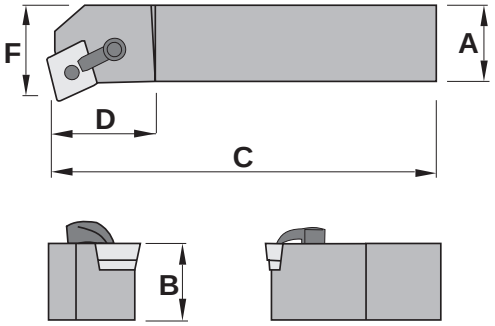
P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

MSKN 75°
(INCH)

MSKN 75°
(INCH)





MSKN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				A	B	F	C	D
022457	**MSKNL-124B**	LH	SN_43	0.75	0.75	1.00	4.50	1.260
004323	**MSKNL-164D**	LH	SN_43	1.00	1.00	1.25	6.00	1.338
022463	**MSKNR-124B**	RH	SN_43	0.75	0.75	1.00	4.50	1.260
022464	**MSKNR-164D**	RH	SN_43	1.00	1.00	1.25	6.00	1.338
033354	**MSKNL-165D**	LH	SN_54	1.00	1.00	1.25	6.00	1.338
004324	**MSKNL-205D**	LH	SN_54	1.25	1.25	1.50	6.00	1.338
033355	**MSKNR-165D**	RH	SN_54	1.00	1.00	1.25	6.00	1.338
004313	**MSKNR-205D**	RH	SN_54	1.25	1.25	1.50	6.00	1.338
004325	**MSKNL-206D**	LH	SN_64	1.25	1.25	1.50	6.00	1.653
022461	**MSKNL-246E**	LH	SN_64	1.50	1.50	2.00	7.00	1.653
004314	**MSKNR-206D**	RH	SN_64	1.25	1.25	1.50	6.00	1.653
033005	**MSKNR-246E**	RH	SN_64	1.50	1.50	2.00	7.00	1.653

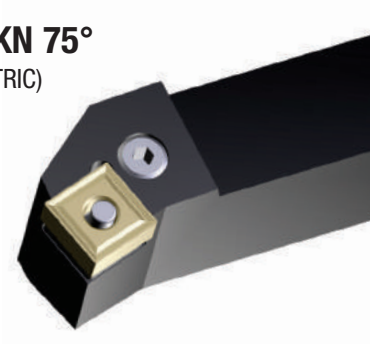


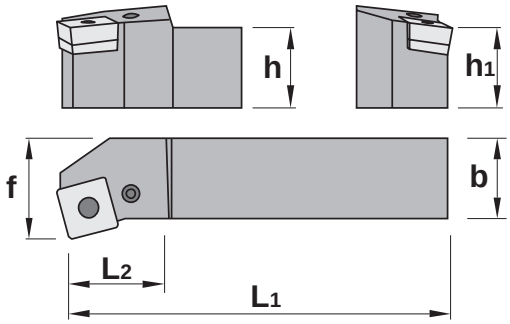
M Style External Toolholder
for Negative Inserts:
SN_43, SN_54, & SN_64
Application: Facing
Axial Approach 75°
Axial -4°
Radial -7°
Profiling Clearance Angle β = 0°
RH Holder Shown

MSKNL/R Spare Parts (INCH)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Key EDP*		*Lock Pin EDP*		*Lock Pin Key EDP*		*Anvil EDP*	
MSKNL/R-124B	*028997*	XNS48	*028996*	CL20	008207	KH5103	*004708*	NL46	*007785*	KH5124	*001704*	ISSN433
MSKNL/R-164D												
MSKNL/R-165D	*029076*	XNS510	*029071*	CL12	029085	KH5104	*004710*	NL58	*008207*	KH5103	*001707*	ISSN533
MSKNL/R-205D												
MSKNL/R-206D							*004713*	NL68	*029087*	KH5135	*001709*	ISSN633
MSKNL/R-246E												

STELLRAM

PSKN 75°
(METRIC)





PSKN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h_1	b	f	L_1	L_2
017165	**PSKNL 2020 K 12**	LH	SN_1204	20	20	25	125	28
017167	**PSKNL 2525 M12**	LH	SN_1204	25	25	32	150	28
017169	**PSKNL 3225 P12**	LH	SN_1204	32	25	32	170	34
017166	**PSKNR 2020 K 12**	RH	SN_1204	20	20	25	125	28
017168	**PSKNR 2525 M12**	RH	SN_1204	25	25	32	150	28
017170	**PSKNR 3225 P12**	RH	SN_1204	32	25	32	170	34
024735	**PSKNL 2525 M15**	LH	SN_1506	25	25	32	150	34
028429	**PSKNL 3232 P15**	LH	SN_1506	32	32	40	170	42
024739	**PSKNR 2525 M15**	RH	SN_1506	25	25	32	150	34
023289	**PSKNR 3232 P15**	RH	SN_1506	32	32	40	170	42
024738	***PSKNL 4040 S19**	LH	SN_1906	40	40	50	250	45
024741	***PSKNR 4040 S19**	RH	SN_1906	40	40	50	250	45
033352	***PSKNL 5050 T25**	LH	SN_2507	50	50	60	300	45
033353	***PSKNR 5050 T25**	RH	SN_2507	50	50	60	300	45

* Non Stock Items, subject to extended delivery time



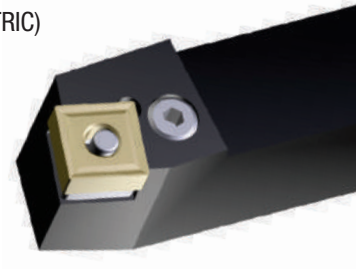
P Style External Toolholder
for Negative Inserts:
SN_1204, SN_1506, SN_1906 & SN_2507
Application: Facing
Axial Approach 75°
Axial -4.25°
Radial -7.25°
Profiling Clearance Angle β = 0°
RH Holder Shown

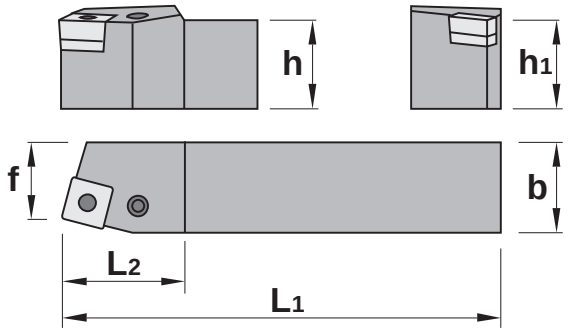
PSKNL/R Spare Parts (METRIC)												
Item Description	*Lever EDP*		*Lever Screw EDP*		*Anvil EDP*		*Anvil Clip EDP*		*Clip Punch EDP*		*Key EDP*	
PSKNL/R 2020 K 12	*017443*	8012	*017448*	1608	*017460*	PA3512	*017453*	PC4112	*028054*	PCP0012	*018286*	KH5003
PSKNL/R 2525 M12												
PSKNL/R 3225 P12												
PSKNL/R 2525 M15	*017445*	8016	*017450*	1618	*017461*	PA3515	*028051*	PC4115	*034505*	PCP0015		
PSKNL/R 3232 P15												
***PSKNL/R 4040 S19**	*017446*	8019	*017451*	1610	*017462*	PA3519	*017455*	PC4119	*028056*	PCP0019	*018287*	KH5004
***PSKNL/R 5050 T25**	*028408*	8025	*028409*	1612	*028416*	PA3525	*028418*	PC4125	*034506*	PCP0025	*018288*	KH5005

* Non Stock Items, subject to extended delivery time

STELLRAM

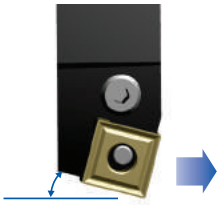
PSBN 75°
(METRIC)





PSBN LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
017152	**PSBNL 2020 K 12**	LH	SN_1204	20	20	17	125	28
017154	**PSBNL 2525 M12**	LH	SN_1204	25	25	22	150	28
028399	**PSBNL 3225 P12**	LH	SN_1204	32	25	22	170	28
017153	**PSBNR 2020 K 12**	RH	SN_1204	20	20	17	125	28
017155	**PSBNR 2525 M12**	RH	SN_1204	25	25	22	150	28
028405	**PSBNR 3225 P12**	RH	SN_1204	32	25	22	170	28
028400	**PSBNL 2525 M15**	LH	SN_1506	25	25	22	150	34
028401	**PSBNL 3232 P15**	LH	SN_1506	32	32	27	170	34
017159	**PSBNR 2525 M15**	RH	SN_1506	25	25	22	150	34
028406	**PSBNR 3232 P15**	RH	SN_1506	32	32	27	170	34
018466	***PSBNL 4040 S19**	LH	SN_1906	40	40	35	250	48
018467	***PSBNR 4040 S19**	RH	SN_1906	40	40	35	250	48
033356	***PSBNL 5050 T25**	LH	SN_2507	50	50	43	300	50
033357	***PSBNR 5050 T25**	RH	SN_2507	50	50	43	300	50



P Style External Toolholder
for Negative Inserts:
SN_1204, SN_1506, SN_1906 & SN_2507
Application: Turn O/D
Axial Approach 75°
Axial -7.25°
Radial -4.25°
Profiling Clearance Angle β = 12°
RH Holder Shown

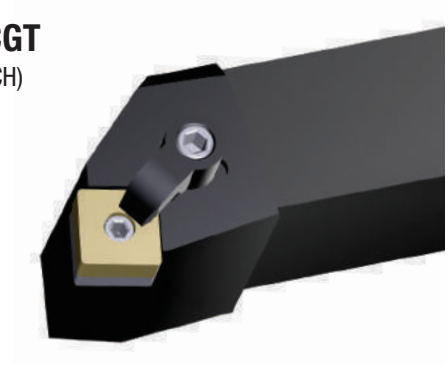
PSBNL/R Spare Parts (METRIC)

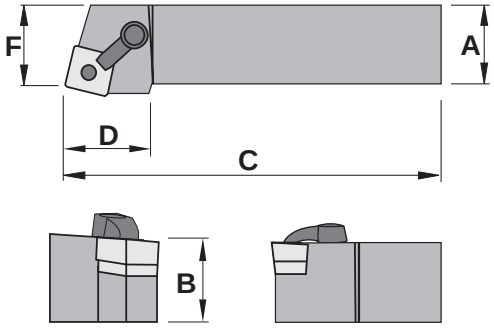
Item Description	Lever EDP		Lever Screw EDP		Anvil EDP		Anvil Clip EDP		Clip Punch EDP		Key EDP	
PSBNL/R 2020 K 12												
PSBNL/R 2525 M12	*017443*	PL8012	*017448*	PLS1608	*017460*	PA3512	*017453*	PC4112	*028054*	PCP0012	*018286*	KH5003
PSBNL/R 3225 P12												
PSBNL/R 2525 M15	*017445*	PL8016	*017450*	PLS1618	*017461*	PA3515	*028051*	PC4115	*034505*	PCP0015		
PSBNL/R 3232 P15												
PSBNL/R 4040 S19	*017446*	PL8019	*017451*	PLS1610	*017462*	PA3519	*017455*	PC4119	*028056*	PCP0019	*018287*	KH5004
***PSBNL/R 5050 T25**	*028408*	PL8025	*028409*	PLS1612	*028416*	PA3525	*028418*	PC4125	*034506*	PCP0025	*018288*	KH5005

* Non Stock Items, subject to extended delivery time

STELLRAM

CCGT
(INCH)





MSRN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				A	B	F	C	D
022472	**MSRNL-124B**	LH	SN_43	0.75	0.75	0.88	4.50	1.260
022473	**MSRNL-164D**	LH	SN_43	1.00	1.00	1.13	6.00	1.338
022485	**MSRNR-124B**	RH	SN_43	0.75	0.75	0.88	4.50	1.260
033009	**MSRNR-164D**	RH	SN_43	1.00	1.00	1.13	6.00	1.338
033006	**MSRNL-165D**	LH	SN_54	1.00	1.00	1.10	6.00	1.653
004294	**MSRNL -205D**	LH	SN_54	1.25	1.25	1.35	6.00	1.653
022487	**MSRNR-165D**	RH	SN_54	1.00	1.00	1.10	6.00	1.653
004277	**MSRNR -205D**	RH	SN_54	1.25	1.25	1.35	6.00	1.653
004295	**MSRNL-206D**	LH	SN_64	1.25	1.25	1.32	6.00	1.653
033008	**MSRNL -246E**	LH	SN_64	1.50	1.50	1.82	7.00	1.653
004278	**MSRNR-206D**	RH	SN_64	1.25	1.25	1.32	6.00	1.653
022490	**MSRNR -246E**	RH	SN_64	1.50	1.50	1.82	7.00	1.653



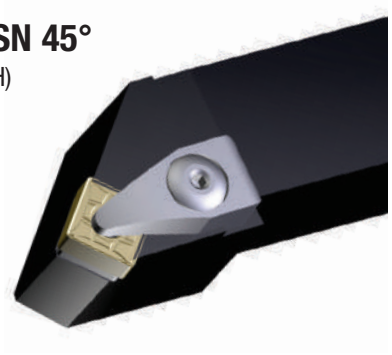
M Style External Toolholder
for Negative Inserts:
SN_1204, SN_1506 & SN_1906
Application: Turn O/D
Axial Approach 75°
Axial -7°
Radial -5°
Profiling Clearance Angle β = 12°
RH Holder Shown

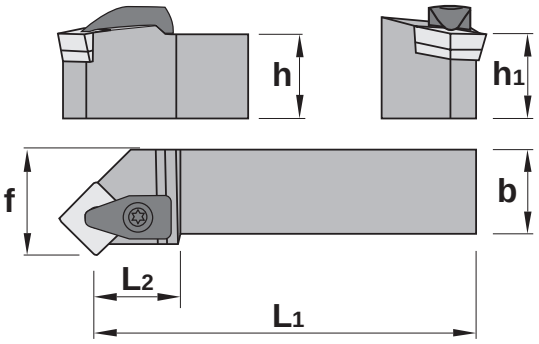
MSRNL/R Spare Parts (INCH)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Key EDP*		*Lock Pin EDP*		*Lock Pin Key EDP*		*Anvil EDP*	
MSRNL/R-124B	*028997*	XNS48	*028996*	CL20	*008207*	KH5103	*004708*	NL46	*007785*	KH5124	*001704*	ISSN433
MSRNL/R-164D												
MSRNL/R-165D	*029076*	XNS510	*029071*	CL12	*029085*	KH5104	*004710*	NL58	*008207*	KH5103	*001707*	ISSN533
MSRNL/R-205D												
MSRNL/R-206D							*004713*	NL68	*029087*	KH5135	*001709*	ISSN633
MSRNL/R-246E												

STELLRAM

DSSN 45°

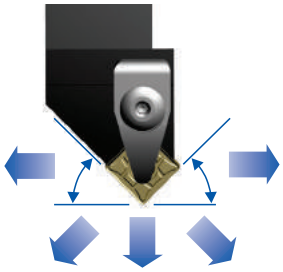
(INCH)





DSSN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h1	b	f	L1	L2
033372	**DSSNL-124B**	LH	SN_43	0.75	0.75	1.00	4.50	1.45
033373	**DSSNL-164D**	LH	SN_43	1.00	1.00	1.25	6.00	1.45
033374	**DSSNL-204D**	LH	SN_43	1.25	1.25	1.50	6.00	1.45
033375	**DSSNR-124B**	RH	SN_43	0.75	0.75	1.00	4.50	1.45
033376	**DSSNR-164D**	RH	SN_43	1.00	1.00	1.25	6.00	1.45
033377	**DSSNR-204D**	RH	SN_43	1.25	1.25	1.50	6.00	1.45
033378	**DSSNL-165D**	LH	SN_54	1.00	1.00	1.25	6.00	1.25
033379	**DSSNL-205D**	LH	SN_54	1.25	1.25	1.50	6.00	1.50
033380	**DSSNR-165D**	RH	SN_54	1.00	1.00	1.25	6.00	1.25
033381	**DSSNR-205D**	RH	SN_54	1.25	1.25	1.50	6.00	1.50
033382	**DSSNL-206D**	LH	SN_64	1.25	1.25	1.50	6.00	1.77
033383	**DSSNL-246E**	LH	SN_64	1.50	1.50	2.00	7.00	1.77
033384	**DSSNR-206D**	RH	SN_64	1.25	1,25	1.50	6.00	1.77
033385	**DSSNR-246E**	RH	SN_64	1.50	1.50	2.00	7.00	1.77

* Non Stock Items, subject to extended delivery time

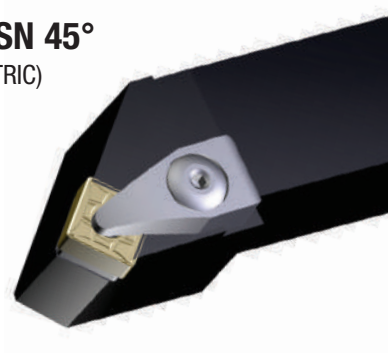


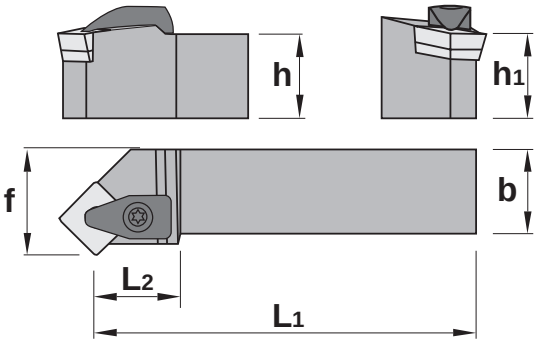
D style External Toolholder
for Negative Inserts:
SN_43, SN_54 & SN_64
Application: Turn O/D & Plunge Profile
Axial Approach 45°
Axial -5.75°
Radial -5,75°
Profiling Clearance Angle β = 42°
RH Holder Shown

DSSNL/R Spare Parts (INCH)											
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Spring EDP*		*Anvil EDP*		*Anvil Screw EDP*		*Clamp & Anvil Screw Key*	
DSSNL/R-124B	*033710*	1696	*033707*	DC2712	*033719*	4295	*001704*	ISSN433	*033716*	1766	*018287*	KH5004
DSSNL/R-164D												
DSSNL/R-204D												
DSSNL/R-165D			*034495*	DC2716			*001707*	ISSN533	*034509*	1768		
DSSNL/R- 205D												
DSSNL/R-206D			*033708*	DC2719			*001709*	ISSN633	*033717*	1770		
DSSNL/R- 246E												

STELLRAM

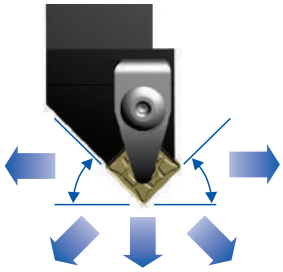
DSSN 45°
(METRIC)





DSSN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h_1	b	f	L_1	L_2
033358	**DSSNL 2020 K12**	LH	SN_1204	20	20	25	125	37
033359	**DSSNL 2525 M12**	LH	SN_1204	25	25	32	150	37
033360	**DSSNL 3225 P12**	LH	SN_1204	32	25	32	170	37
033361	**DSSNR 2020 K12**	RH	SN_1204	20	20	25	125	37
033362	**DSSNR 2525 M12**	RH	SN_1204	25	25	32	150	37
033363	**DSSNR 3225 P12**	RH	SN_1204	32	25	32	170	37
033364	**DSSNL 2525 M15**	LH	SN_1506	25	25	32	150	36
033365	**DSSNL 3232 P15**	LH	SN_1506	32	32	40	170	40
033366	**DSSNR 2525 M15**	RH	SN_1506	25	25	32	150	36
033367	**DSSNR 3232 P15**	RH	SN_1506	32	32	40	170	40
033368	**DSSNL 3232 P19**	LH	SN_1906	32	32	40	170	45
033369	***DSSNL 4040 S19**	LH	SN_1906	40	40	50	250	45
033370	**DSSNR 3232 P19**	RH	SN_1906	32	32	40	170	45
033371	***DSSNR 4040 S19**	RH	SN_1906	40	40	50	250	45

* Non Stock Items, subject to extended delivery time



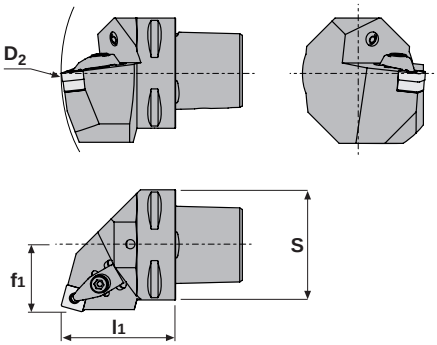
D Style External Toolholder
for Negative Inserts:
SN_1204, SN_1506 & SN_1906
Application: Turn O/D & Plunge Profile
Axial Approach 45°
Axial -5.75°
Radial -5.75°
Profiling Clearance Angle β = 42°
RH Holder Shown

DSSNL/R Spare Parts (METRIC)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Spring EDP*		*Anvil EDP*		*Anvil Screw EDP*		*Clamp & Anvil Screw Key*	
DSSNL/R 2020 K12	*033710*	1696	*033707*	DC2712	*033719*	4295	*001704*	ISSN433	*033716*	1766	*018287*	KH5004
DSSNL/R 2525 M12												
DSSNL/R 3225 P12												
DSSNL/R 2525 M15			*034495*	DC2716			*001707*	ISSN533	*034509*	1768		
DSSNL/R 3232 P15												
DSSNL/R 3232 P19			*033708*	DC2719			*001709*	ISSN633	*033717*	1770		
DSSNL/R 4040 S19												

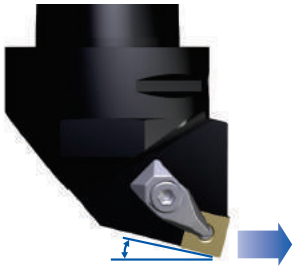
STELLRAM

DSRN 75°
(METRIC / INCH)





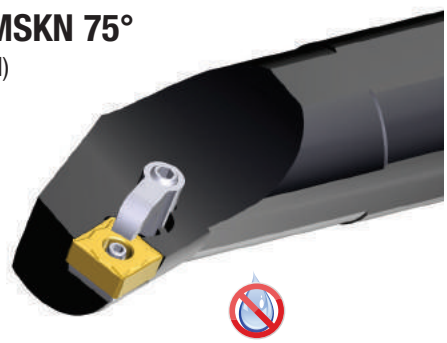
DSRN LH & RH External PSC Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	S	D1	D2	f1	l1
				mm	mm	mm	mm	mm
				inch	inch	inch	inch	inch
033705	**C6-63-DSRNL35065-12**	LH	SN_1204	63	-	190	35	65
			SN_43	2.480	-	7.480	1.378	2.559
033706	**C6-63-DSRNR35065-12**	RH	SN_1204	63	-	190	35	65
			SN_43	2.480	-	7.480	1.378	2.559

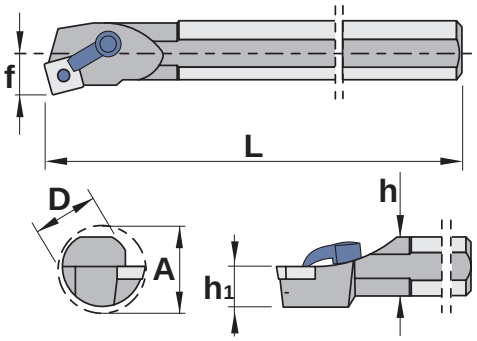


D Style External Toolholder
for Negative Inserts:
SN_1204 (SN_43)
Application: External Face and Turn O/D
Approach Angle 75°
Axial -6°
Radial -6°
Profilling Clearance Angle β= 12°
RH Holder Shown

C.. DSRNL/R Spare Parts												
Item Description	*Clamp EDP*		*Clamp Screw EDP*		*Anvil EDP*		*Anvil Screw EDP*		*Clamp Spring EDP*		*Screw Key EDP*	
C6-63-DSRNL/R 35065-12	*033707*	2712	*033710*	1696	*033715*	ISSN442	*033716*	1766	*033719*	4295	*018287*	KH5004

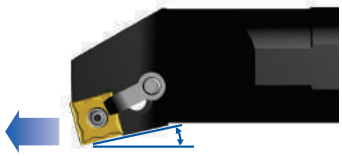
S..MSKN 75°
(INCH)





S..MSKN LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (inch)						
				Min Bore Ø A	ØD	f	L	h	h_1	Through Coolant
004935	**S20U MSKNL-4**	LH	SN_43	1.530	1.250	0.765	14.000	1.180	0.59	
004937	**S24U MSKNL-4**	LH	SN_43	1.780	1.500	0.890	14.000	1.370	0.685	
004936	**S20U MSKNR-4**	RH	SN_43	1.530	1.250	0.765	14.000	1.180	0.59	
005069	**S24U MSKNR-4**	RH	SN_43	1.780	1.500	0.890	14.000	1.370	0.685	
033386	**S32V MSKNL-5**	LH	SN_54	2.562	2.000	1.281	16.000	1.870	0.935	
005079	**S32V MSKNR-5**	RH	SN_54	2.562	2.000	1.281	16.000	1.870	0.935	



M Style Internal Boring Bar
for Negative Inserts:
SN_43, & SN_54
Application: Boring
Axial Approach 75°
Axial -3°
Radial -12°
Profiling Clearance Angle β = 0°
RH Bar Shown

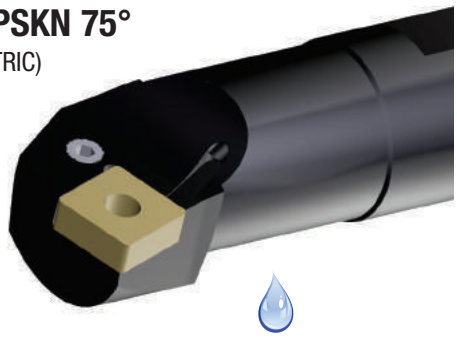
S..MSKNL/R Spare Parts (INCH)

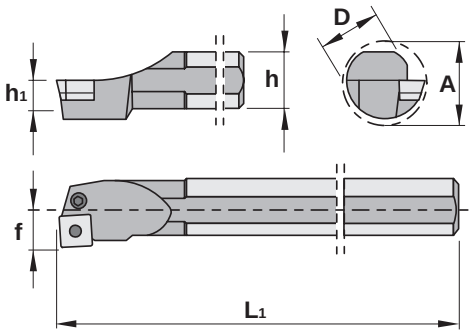
Item Description	Clamp Screw EDP		Clamp EDP		Clamp Key EDP		Lock Pin EDP		Lock Pin Key EDP		Anvil EDP	
S20U MSKNL/R-4	*028997*	XNS48	*028996*	CL20	*008207*	KH5103	*004708*	NL46	*007785*	KH5124	*001704*	ISSN433
S24U MSKNL/R-4												
S32V MSKNL/R-5	*029076*	XNS510	*029071*	CL12	*029085*	KH5104	*004710*	NL58	*008207*	KH5103	*001709*	ISSN533

STELLRAM

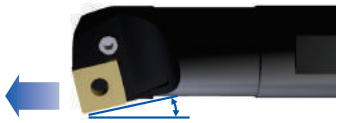
A..PSKN 75°

(METRIC)





A..PSKN LH & RH Internal Boring Bars										
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)						
				Min Bore Ø A	ØD	f	L_1	h	h_1	Through Coolant
028724	**A25R PSKNL 12**	LH	SN_1204	31	25	17	200	23	11.5	
028725	**A32S PSKNL 12**	LH	SN_1204	39	32	22	250	30	15.0	
028726	**A40T PSKNL 12**	LH	SN_1204	48	40	27	300	37	18.5	
028727	**A25R PSKNR 12**	RH	SN_1204	31	25	17	200	23	11.5	
028728	**A32S PSKNR 12**	RH	SN_1204	39	32	22	250	30	15.0	
028729	**A40T PSKNR 12**	RH	SN_1204	48	40	27	300	37	18.5	

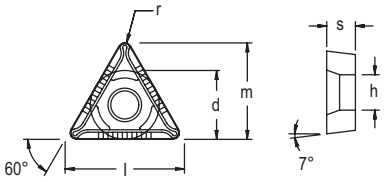


P Style Internal Boring Bar
for Negative Inserts: SN_1204
Application: Boring
Axial Approach 75°
Axial -3°
Radial -11°
Profiling Clearance Angle β = 12°
RH Bar Shown

A..PSKNL/R Spare Parts (METRIC)												
Item Description	*Lever EDP*		*Lever Screw EDP*		*Anvil EDP*		*Anvil Clip EDP*		*Clip Punch EDP*		*Key EDP*	
A25R PSKNL/R 12	*028742*	PL8212	*028743*	PLS1626	-	-	-	-	-	-	*018285*	KH5025
A32S PSKNIL/R 12	*028047*	PL8312	*022625*	PLS1648	*017460*	PA3512	*017453*	PC4112	*028054*	PCP0012	*018286*	KH5003
A40T PSKNL/R 12	*017443*	PL8012	*017448*	PLA1608								

STELLRAM

TCMT
-73 Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032751	**TCMT110202E-73** **TCMT21.50.5A-73**	SP4019	6.35 0.250	11.00 0.433	2.38 0.094	0.20 0.008	2.80 0.110		Medium
032752	**TCMT110202E-73** **TCMT21.50.5A-73**	NL300	6.35 0.250	11.00 0.433	2.38 0.094	0.20 0.008	2.80 0.110		Medium
032753	**TCMT110204E-73** **TCMT21.51A-73**	SP4019	6.35 0.250	11.00 0.433	2.38 0.094	0.40 0.016	2.80 0.110		Medium
032754	**TCMT110204E-73** **TCMT21.51A-73**	NL300	6.35 0.250	11.00 0.433	2.38 0.094	0.40 0.016	2.80 0.110		Medium
032755	**TCMT110204E-73** **TCMT21.51A-73**	NL920	6.35 0.250	11.00 0.433	2.38 0.094	0.40 0.016	2.80 0.110		Medium
032302	**TCMT16T304E-73** **TCMT32.51A-73**	SP4019	9.53 0.375	16.50 0.650	3.97 0.156	0.40 0.016	4.40 0.173		Medium
032756	**TCMT16T304E-73** **TCMT32.51A-73**	NL300	9.53 0.375	16.50 0.650	3.97 0.156	0.40 0.016	4.40 0.173		Medium
032757	**TCMT16T304E-73** **TCMT32.51A-73**	NL920	9.53 0.375	16.50 0.650	3.97 0.156	0.40 0.016	4.40 0.173		Medium
032294	**TCMT16T308E-73** **TCMT32.52A-73**	SP4019	9.53 0.375	16.50 0.650	3.97 0.156	0.80 0.031	4.40 0.173		Medium
032758	**TCMT16T308E-73** **TCMT32.52A-73**	NL300	9.53 0.375	16.50 0.650	3.97 0.156	0.80 0.031	4.40 0.173		Medium
032759	**TCMT16T308E-73** **TCMT32.52A-73**	NL920	9.53 0.375	16.50 0.650	3.97 0.156	0.80 0.031	4.40 0.173		Medium
032760	**TCMT22M508E-73** **TCMT22M508E-73**	NL920	12.70 0.500	22.00 0.866	5.00 0.197	0.80 0.031	5.50 0.217		Medium

For Toolholders External: see pages C173 - C174 | Internal: see pages C175 - C176

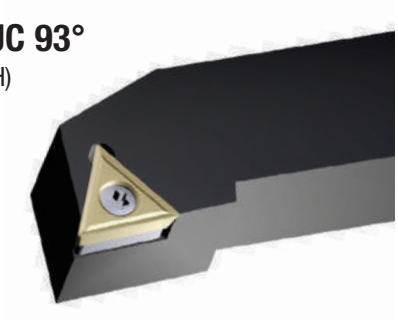
Material Guide – Key to Recommended Inserts

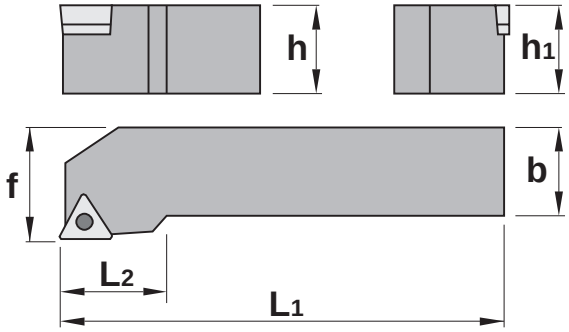
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

STJC 93°
(INCH)





STJC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h_1	b	f	L_1	L_2
033567	**STJCL 062D**	LH	TCMT21.5	0.375	0.375	0.375	6.000	-
033568	**STJCL 082D**	LH	TCMT21.5	0.500	0.500	0.500	6.000	-
033569	**STJCL 102D**	LH	TCMT21.5	0.625	0.625	0.625	6.000	-
033570	**STJCR 062D**	RH	TCMT21.5	0.375	0.375	0.375	6.000	-
033571	**STJCR 082D**	RH	TCMT21.5	0.500	0.500	0.500	6.000	-
033572	**STJCR 102D**	RH	TCMT21.5	0.625	0.625	0.625	6.000	-

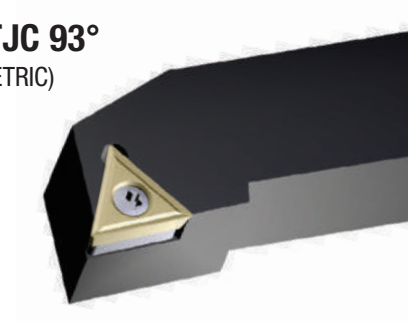


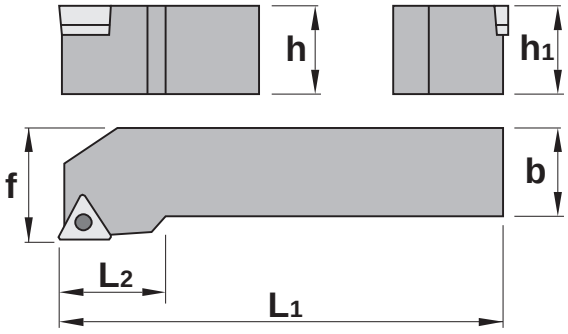
S Style External Toolholder
for Positive Inserts: TCMT21.5
Application: O/D Turning
Approach Angle 93°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 0°
RH Holder Shown

STJCL/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
STJCL/R 062D	*015061*	F2507T	*018488*	T7	-	-	-	-
STJCL/R 082D								
STJCL/R 102D								

STELLRAM

STJC 93°
(METRIC)





STJC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h_1	b	f	L_1	L_2
028625	**STJCL 1212 F11**	LH	TCMT1102	12	12	16	80	16
028626	**STJCL 1616 H11**	LH	TCMT1102	16	16	20	100	18
028630	**STJCR 1212 F11**	RH	TCMT1102	12	12	16	80	16
028631	**STJCR 1616 H11**	RH	TCMT1102	16	16	20	100	18
028627	**STJCL 1616 H16**	LH	TCMT16T3	16	16	20	100	18
028628	**STJCL 2020 K16**	LH	TCMT16T3	20	20	25	125	22
028629	**STJCL 2525 M16**	LH	TCMT16T3	25	25	32	150	28
028632	**STJCR 1616 H16**	RH	TCMT16T3	16	16	20	100	18
028633	**STJCR 2020 K16**	RH	TCMT16T3	20	20	25	125	22
028634	**STJCR 2525 M16**	RH	TCMT16T3	25	25	32	150	28

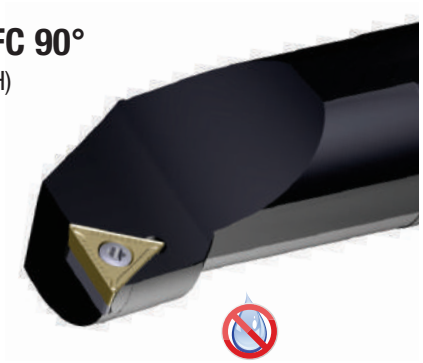


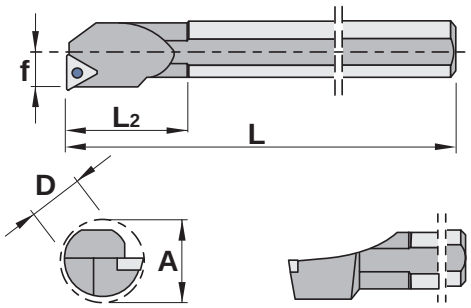
S Style External Toolholder
for Positive Inserts:
TCMT1102 and TCMT16T3
Application: O/D Turning
Approach Angle 93°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 0°
RH Holder Shown

STJCL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
STJCL/R 1212 F11	*015061*	F2507T	*018488*	T7	-	-	-	-
STJCL/R 1616 H11								
STJCL/R 1616 H16	*034497*	1335	*028475*	K5516	*028580*	SA3414	*028478*	SA1750
STJCL/R 2020 K16								
STJCL/R 2525 M16								

STELLRAM

STFC 90°
(INCH)





S.. STFC LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)					
				Min Bore Ø A	ØD	f	L_1	L_2	Through Coolant
033583	**S08M STFCL 2**	LH	TCMT_21.5	0.625	0.500	0.312	6.000	0.905	⊘
033584	**S10R STFCL 2**	LH	TCMT_21.5	0.812	0.625	0.460	8.000	1.220	⊘
033585	**S12S STFCL 2**	LH	TCMT_21.5	1.000	0.750	0.500	10.000	1.417	⊘
033586	**S08M STFCR 2**	RH	TCMT_21.5	0.625	0.500	0.312	6.000	0.905	⊘
033587	**S10R STFCR 2**	RH	TCMT_21.5	0.812	0.625	0.460	8.000	1.220	⊘
033588	**S12S STFCR 2**	RH	TCMT_21.5	1.000	0.750	0.500	10.000	1.417	⊘
033589	**S16T STFCL 3**	LH	TCMT_32.5	1.280	1.000	0.640	12.000	1.653	⊘
033590	**S20U STFCL 3**	LH	TCMT_32.5	1.530	1.250	0.765	14.000	1.771	⊘
033591	**S16T STFCR 3**	RH	TCMT_32.5	1.280	1.000	0.640	12.000	1.417	⊘
033592	**S20U STFCR 3**	RH	TCMT_32.5	1.530	1.250	0.765	14.000	1.771	⊘

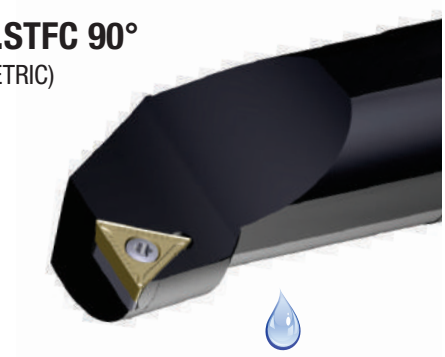


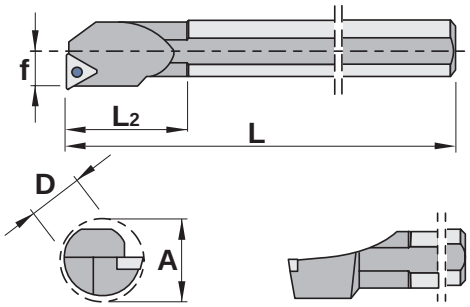
S Style Internal Boring Bar
for Positive Inserts:
TCMT21.5 and TCMT32.5
Application: I/D Boring
Axial Approach: 90°
Axial 0°
Radial -12°
Profilling Clearance Angle β = 0°
RH Bar Shown

S.. STFCL/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
S08M STFCL/R 2	*034498*	1425	*018488*	T7	-	-	-	-
S10R STFCL/R 2	*015061*	F2507T			-	-	-	-
S12S STFCL/R 2								
S16T STFCL/R 3	*015262*	D4010T	*015240*	T15	-	-	-	-
S20U STFCL/R 3	*034497*	1335	*028475*	K5516	*028580*	SA3414	*028478*	SAS1750

STELLRAM

A..STFC 90°
(METRIC)





A.. STFC LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L_1	L_2	Through Coolant
033573	**A12K STFCL 11**	LH	TCMT1102	16	12	9	125	23	💧
033574	**A16M STFCL 11**	LH	TCMT1102	20	16	11	150	31	💧
033577	**A20Q STFCL 11**	LH	TCMT1102	24	20	13	180	36	💧
033575	**A12K STFCR 11**	RH	TCMT1102	16	12	9	125	23	💧
033576	**A16M STFCR 11**	RH	TCMT1102	20	16	11	150	31	💧
033580	**A20Q STFCR 11**	RH	TCMT16T3	24	20	13	180	36	💧
033578	**A25R STFCL 16**	LH	TCMT16T3	31	25	17	200	42	💧
033579	**A32S STFCL 16**	LH	TCMT16T3	39	32	22	250	45	💧
033581	**A25R STFCR 16**	RH	TCMT16T3	31	25	17	200	42	💧
033582	**A32S STFCR 16**	RH	TCMT16T3	39	32	22	250	45	💧

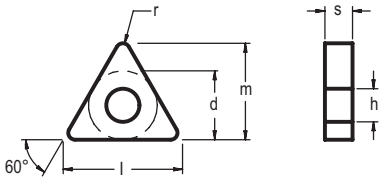


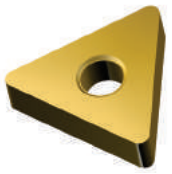
S Style Internal Boring Bar
for Positive Inserts:
TCMT1102 and TCMT16T3
Application: I/D Boring
Axial Approach: 90°
Axial 0°
Radial -6°
Profilling Clearance Angle β = 0°
RH Bar Shown

A.. STFCL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
A12K STFCL/R 11 **A16M STFCL/R 11** **A20Q STFCL/R 11**	*015061*	F2507T	*018488*	T7	-	-	-	-
A25R STFCL/R 16	*015262*	D4010T	*015240*	T15	-	-	-	-
A32S STFCL/R 16	*034497*	1335	*028475*	K5516	*028580*	SA3414	*028478*	SAS1750

STELLRAM

TNMA
Flat Top

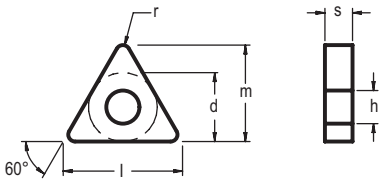


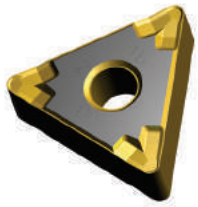


EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032761	TNMA160408E TNMA332A	NL250	9.53 0.375	16.50 0.650	4.76 0.187	0.80 0.031	3.81 0.150	P	Heavy Roughing
032762	TNMA160412E TNMA333A	NL250	9.53 0.375	16.50 0.650	4.76 0.187	1.20 0.047	3.81 0.150	P	Heavy Roughing
032763	TNMA220408E TNMA432A	NL250	12.70 0.500	22.00 0.866	4.76 0.187	0.80 0.031	5.16 0.203	P	Heavy Roughing
032764	TNMA220412E TNMA433A	NL250	12.70 0.500	22.00 0.866	4.76 0.187	1.20 0.047	5.16 0.203	P	Heavy Roughing
032765	TNMA220416E TNMA434A	NL250	12.70 0.500	22.00 0.866	4.76 0.187	1.60 0.063	5.16 0.203	P	Heavy Roughing
032766	TNMA270616E TNMA544A	NL250	15.88 0.625	27.50 1.083	6.35 0.250	1.60 0.063	6.35 0.250	P	Heavy Roughing

For Toolholders External: see pages C184 - C186 | Internal: see pages C187 - C188

TNMG
1B Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032767	TNMG160404E-1B TNMG331A-1B	NL250	9.53 0.375	16.50 0.650	4.76 0.187	0.40 0.016	3.81 0.150	P M	Finishing
030879	TNMG160404E-1B TNMG331A-1B	SP0819	9.53 0.375	16.50 0.650	4.76 0.187	0.40 0.016	3.81 0.150	P M S	Finishing
032768	TNMG160408E-1B TNMG332A-1B	NL250	9.53 0.375	16.50 0.650	4.76 0.187	0.80 0.031	3.81 0.150	P M	Finishing
030880	TNMG160408E-1B TNMG332A-1B	SP0819	9.53 0.375	16.50 0.650	4.76 0.187	0.80 0.031	3.81 0.150	P M S	Finishing
032769	TNMG160412E-1B TNMG333A-1B	SP0819	9.53 0.375	16.50 0.650	4.76 0.187	1.20 0.047	3.81 0.150	P M S	Finishing
032770	TNMG160412E-1B TNMG333A-1B	NL250	9.53 0.375	16.50 0.650	4.76 0.187	1.20 0.047	3.81 0.150	P M	Finishing

For Toolholders External: see pages C184 - C186 | Internal: see pages C187 - C188

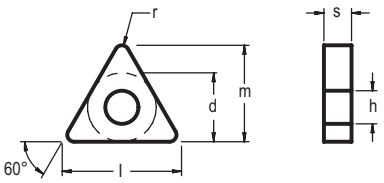
Material Guide – Key to Recommended Inserts

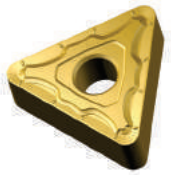
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

TNMG
2N Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032771	TNMG160404E-2N TNMG331A-2N	NL250	9.53 0.375	16.50 0.650	4.76 0.187	0.40 0.016	3.81 0.150		Medium
032772	TNMG160404E-2N TNMG331A-2N	NL300	9.53 0.375	16.50 0.650	4.76 0.187	0.40 0.016	3.81 0.150		Medium
032773	TNMG160404E-2N TNMG331A-2N	NL920	9.53 0.375	16.50 0.650	4.76 0.187	0.40 0.016	3.81 0.150		Medium
032774	TNMG160408E-2N TNMG332A-2N	NL250	9.53 0.375	16.50 0.650	4.76 0.187	0.80 0.031	3.81 0.150		Medium
032775	TNMG160408E-2N TNMG332A-2N	NL300	9.53 0.375	16.50 0.650	4.76 0.187	0.80 0.031	3.81 0.150		Medium
032776	TNMG160408E-2N TNMG332A-2N	NL920	9.53 0.375	16.50 0.650	4.76 0.187	0.80 0.031	3.81 0.150		Medium
032777	TNMG160412E-2N TNMG333A-2N	NL250	9.53 0.375	16.50 0.650	4.76 0.187	1.20 0.047	3.81 0.150		Medium
032778	TNMG160412E-2N TNMG333A-2N	NL300	9.53 0.375	16.50 0.650	4.76 0.187	1.20 0.047	3.81 0.150		Medium
032779	TNMG160412E-2N TNMG333A-2N	NL920	9.53 0.375	16.50 0.650	4.76 0.187	1.20 0.047	3.81 0.150		Medium
032780	TNMG220404E-2N TNMG431A-2N	NL250	12.70 0.500	22.00 0.866	4.76 0.187	0.40 0.016	5.16 0.203		Medium
032781	TNMG220404E-2N TNMG431A-2N	NL300	12.70 0.500	22.00 0.866	4.76 0.187	0.40 0.016	5.16 0.203		Medium
032782	TNMG220404E-2N TNMG431A-2N	NL920	12.70 0.500	22.00 0.866	4.76 0.187	0.40 0.016	5.16 0.203		Medium
032783	TNMG220408E-2N TNMG432A-2N	NL250	12.70 0.500	22.00 0.866	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032784	TNMG220408E-2N TNMG432A-2N	NL300	12.70 0.500	22.00 0.866	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032785	TNMG220408E-2N TNMG432A-2N	NL920	12.70 0.500	22.00 0.866	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032786	TNMG220412E-2N TNMG433A-2N	NL250	12.70 0.500	22.00 0.866	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032787	TNMG220412E-2N TNMG433A-2N	NL300	12.70 0.500	22.00 0.866	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032788	TNMG220412E-2N TNMG433A-2N	NL920	12.70 0.500	22.00 0.866	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032789	TNMG270616E-2N TNMG544A-2N	NL920	15.88 0.625	27.50 1.083	6.35 0.250	1.60 0.063	6.35 0.250		Medium

For Toolholders External: see pages C184 - C186 | Internal: see pages C187 - C188

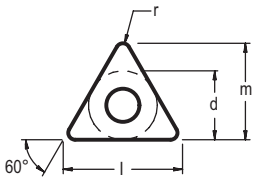
Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

TNMG
3J Geometry

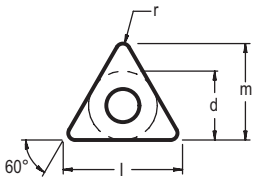


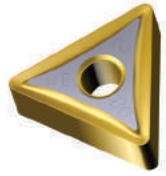


EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032790	TNMG160404E-3J TNMG331A-3J	SP4019	9.53 0.375	16.50 0.650	4.76 0.187	0.40 0.016	3.81 0.150		Medium
032791	TNMG160408E-3J TNMG332A-3J	SP4019	9.53 0.375	16.50 0.650	4.76 0.187	0.80 0.031	3.81 0.150		Medium
032792	TNMG160412E-3J TNMG333A-3J	SP4019	9.53 0.375	16.50 0.650	4.76 0.187	1.20 0.047	3.81 0.150		Medium
032793	TNMG220408E-3J TNMG432A-3J	SP4019	12.70 0.500	22.00 0.866	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032794	TNMG220412E-3J TNMG433A-3J	SP4019	12.70 0.500	22.00 0.866	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032795	TNMG220416E-3J TNMG434A-3J	SP4019	12.70 0.500	22.00 0.866	4.76 0.187	1.60 0.063	5.16 0.203		Medium

For Toolholders External: see pages C184 - C186 | Internal: see pages C187 - C188

TNMG
4E Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
030534	TNMG160404E-4E TNMG331A-4E	SP0819	9.53 0.375	16.50 0.650	4.76 0.187	0.40 0.016	3.81 0.150		Medium-Roughing
032926	TNMG160404E-4E TNMG331A-4E	NL400	9.53 0.375	16.50 0.650	4.76 0.187	0.40 0.016	3.81 0.150		Medium-Roughing
030535	TNMG160408E-4E TNMG332A-4E	SP0819	9.53 0.375	16.50 0.650	4.76 0.187	0.80 0.031	3.81 0.150		Medium-Roughing
032927	TNMG160408E-4E TNMG332A-4E	NL400	9.53 0.375	16.50 0.650	4.76 0.187	0.80 0.031	3.81 0.150		Medium-Roughing
030536	TNMG160412E-4E TNMG333A-4E	SP0819	9.53 0.375	16.50 0.650	4.76 0.187	1.20 0.047	3.81 0.150		Medium-Roughing
032928	TNMG160412E-4E TNMG333A-4E	NL400	9.53 0.375	16.50 0.650	4.76 0.187	1.20 0.047	3.81 0.150		Medium-Roughing

For Toolholders External: see pages C184 - C186 | Internal: see pages C187 - C188

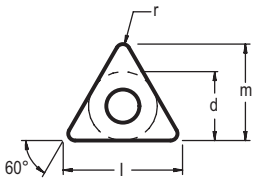
Material Guide – Key to Recommended Inserts

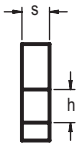
Material Designation

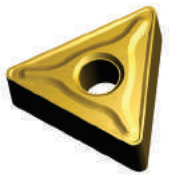
P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

TNMG
4T Geometry







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032796	**TNMG160304E-4T** **TNMG321A-4T**	NL300	9.53 0.375	16.50 0.650	3.18 0.125	0.40 0.016	3.81 0.150		Roughing
032797	**TNMG160304E-4T** **TNMG321A-4T**	NL400	9.53 0.375	16.50 0.650	3.18 0.125	0.40 0.016	3.81 0.150		Roughing
032798	**TNMG160304E-4T** **TNMG321A-4T**	NL920	9.53 0.375	16.50 0.650	3.18 0.125	0.40 0.016	3.81 0.150		Roughing
032799	**TNMG160308E-4T** **TNMG322A-4T**	NL300	9.53 0.375	16.50 0.650	3.18 0.125	0.80 0.031	3.81 0.150		Roughing
032800	**TNMG160308E-4T** **TNMG322A-4T**	NL400	9.53 0.375	16.50 0.650	3.18 0.125	0.80 0.031	3.81 0.150		Roughing
032801	**TNMG160308E-4T** **TNMG322A-4T**	NL920	9.53 0.375	16.50 0.650	3.18 0.125	0.80 0.031	3.81 0.150		Roughing
032802	**TNMG160404E-4T** **TNMG331A-4T**	NL250	9.53 0.375	16.50 0.650	4.76 0.187	0.40 0.016	3.81 0.150		Roughing
032803	**TNMG160404E-4T** **TNMG331A-4T**	NL300	9.53 0.375	16.50 0.650	4.76 0.187	0.40 0.016	3.81 0.150		Roughing
032804	**TNMG160404E-4T** **TNMG331A-4T**	NL400	9.53 0.375	16.50 0.650	4.76 0.187	0.40 0.016	3.81 0.150		Roughing
032805	**TNMG160404E-4T** **TNMG331A-4T**	NL920	9.53 0.375	16.50 0.650	4.76 0.187	0.40 0.016	3.81 0.150		Roughing
032806	**TNMG160408E-4T** **TNMG332A-4T**	NL250	9.53 0.375	16.50 0.650	4.76 0.187	0.80 0.031	3.81 0.150		Roughing
032807	**TNMG160408E-4T** **TNMG332A-4T**	NL300	9.53 0.375	16.50 0.650	4.76 0.187	0.80 0.031	3.81 0.150		Roughing
032808	**TNMG160408E-4T** **TNMG332A-4T**	NL400	9.53 0.375	16.50 0.650	4.76 0.187	0.80 0.031	3.81 0.150		Roughing
032809	**TNMG160408E-4T** **TNMG332A-4T**	NL920	9.53 0.375	16.50 0.650	4.76 0.187	0.80 0.031	3.81 0.150		Roughing
032810	**TNMG160412E-4T** **TNMG333A-4T**	NL250	9.53 0.375	16.50 0.650	4.76 0.187	1.20 0.047	3.81 0.150		Roughing
032811	**TNMG160412E-4T** **TNMG333A-4T**	NL300	9.53 0.375	16.50 0.650	4.76 0.187	1.20 0.047	3.81 0.150		Roughing
032812	**TNMG160412E-4T** **TNMG333A-4T**	NL400	9.53 0.375	16.50 0.650	4.76 0.187	1.20 0.047	3.81 0.150		Roughing
032813	**TNMG160412E-4T** **TNMG333A-4T**	NL920	9.53 0.375	16.50 0.650	4.76 0.187	1.20 0.047	3.81 0.150		Roughing

For Toolholders External: see pages C184 - C186 | Internal: see pages C187 - C188

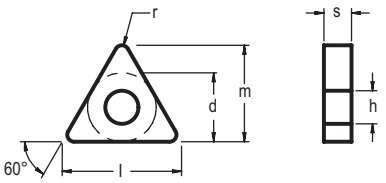
Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

TNMG
4T Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032814	TNMG220404E-4T TNMG431A-4T	NL250	12.70 0.500	22.00 0.866	4.76 0.187	0.40 0.016	5.16 0.203		Roughing
032815	TNMG220404E-4T TNMG431A-4T	NL300	12.70 0.500	22.00 0.866	4.76 0.187	0.40 0.016	5.16 0.203		Roughing
032816	TNMG220404E-4T TNMG431A-4T	NL400	12.70 0.500	22.00 0.866	4.76 0.187	0.40 0.016	5.16 0.203		Roughing
032817	TNMG220404E-4T TNMG431A-4T	NL920	12.70 0.500	22.00 0.866	4.76 0.187	0.40 0.016	5.16 0.203		Roughing
032818	TNMG220408E-4T TNMG432A-4T	NL250	12.70 0.500	22.00 0.866	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032819	TNMG220408E-4T TNMG432A-4T	NL300	12.70 0.500	22.00 0.866	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032820	TNMG220408E-4T TNMG432A-4T	NL400	12.70 0.500	22.00 0.866	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032821	TNMG220408E-4T TNMG432A-4T	NL920	12.70 0.500	22.00 0.866	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032822	TNMG220412E-4T TNMG433A-4T	NL250	12.70 0.500	22.00 0.866	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032823	TNMG220412E-4T TNMG433A-4T	NL300	12.70 0.500	22.00 0.866	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032824	TNMG220412E-4T TNMG433A-4T	NL400	12.70 0.500	22.00 0.866	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032825	TNMG220412E-4T TNMG433A-4T	NL920	12.70 0.500	22.00 0.866	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032826	TNMG220416E-4T TNMG434A-4T	NL250	12.70 0.500	22.00 0.866	4.76 0.187	1.60 0.063	5.16 0.203		Roughing
032827	TNMG220416E-4T TNMG434A-4T	NL300	12.70 0.500	22.00 0.866	4.76 0.187	1.60 0.063	5.16 0.203		Roughing
032828	TNMG220416E-4T TNMG434A-4T	NL400	12.70 0.500	22.00 0.866	4.76 0.187	1.60 0.063	5.16 0.203		Roughing
032829	TNMG220416E-4T TNMG434A-4T	NL920	12.70 0.500	22.00 0.866	4.76 0.187	1.60 0.063	5.16 0.203		Roughing
032830	TNMG220432E-4T TNMG438A-4T	NL300	12.70 0.500	22.00 0.866	4.76 0.187	3.20 0.126	5.16 0.203		Roughing

For Toolholders External: see pages C184 - C186 | Internal: see pages C187 - C188

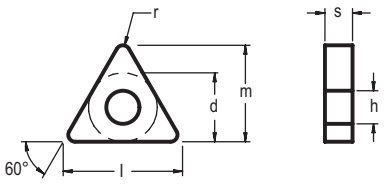
Material Guide – Key to Recommended Inserts

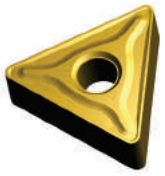
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

TNMG
4T Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032831	TNMG270608E-4T TNMG542A-4T	NL250	15.88 0.625	27.50 1.083	6.35 0.250	0.80 0.031	6.35 0.250		Roughing
032832	TNMG270608E-4T TNMG542A-4T	NL300	15.88 0.625	27.50 1.083	6.35 0.250	0.80 0.031	6.35 0.250		Roughing
032833	TNMG270608E-4T TNMG542A-4T	NL400	15.88 0.625	27.50 1.083	6.35 0.250	0.80 0.031	6.35 0.250		Roughing
032834	TNMG270608E-4T TNMG542A-4T	NL920	15.88 0.625	27.50 1.083	6.35 0.250	0.80 0.031	6.35 0.250		Roughing
032835	TNMG270612E-4T TNMG543A-4T	NL250	15.88 0.625	27.50 1.083	6.35 0.250	1.20 0.047	6.35 0.250		Roughing
032836	TNMG270612E-4T TNMG543A-4T	NL300	15.88 0.625	27.50 1.083	6.35 0.250	1.20 0.047	6.35 0.250		Roughing
032837	TNMG270612E-4T TNMG543A-4T	NL400	15.88 0.625	27.50 1.083	6.35 0.250	1.20 0.047	6.35 0.250		Roughing
032838	TNMG270612E-4T TNMG543A-4T	NL920	15.88 0.625	27.50 1.083	6.35 0.250	1.20 0.047	6.35 0.250		Roughing
032839	TNMG270616E-4T TNMG544A-4T	NL250	15.88 0.625	27.50 1.083	6.35 0.250	1.60 0.063	6.35 0.250		Roughing
032840	TNMG270616E-4T TNMG544A-4T	NL300	15.88 0.625	27.50 1.083	6.35 0.250	1.60 0.063	6.35 0.250		Roughing
032841	TNMG270616E-4T TNMG544A-4T	NL400	15.88 0.625	27.50 1.083	6.35 0.250	1.60 0.063	6.35 0.250		Roughing
032842	TNMG270616E-4T TNMG544A-4T	NL920	15.88 0.625	27.50 1.083	6.35 0.250	1.60 0.063	6.35 0.250		Roughing
032843	TNMG270632E-4T TNMG548A-4T	NL300	15.88 0.625	27.50 1.083	6.35 0.250	3.20 0.126	6.35 0.250		Roughing
032844	TNMG330924E-4T TNMG666B-4T	NL300	19.05 0.750	33.50 1.319	9.53 0.375	2.40 0.094	7.92 0.312		Roughing
032845	TNMG330924E-4T TNMG666B-4T	NL400	19.05 0.750	33.50 1.319	9.53 0.375	2.40 0.094	7.92 0.312		Roughing
032846	TNMG330924E-4T TNMG666B-4T	NL920	19.05 0.750	33.50 1.319	9.53 0.375	2.40 0.094	7.92 0.312		Roughing

For Toolholders External: see pages C184 - C186 | Internal: see pages C187 - C188

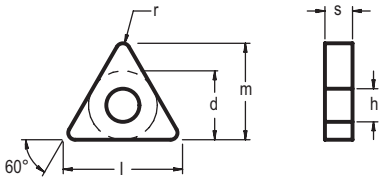
Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

TNMG
4U Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032847	**TNMG160408E-4U** **TNMG332A-4U**	NL200	9.53 0.375	16.50 0.650	4.76 0.187	0.80 0.031	3.81 0.150		Roughing
032848	**TNMG160412E-4U** **TNMG333A-4U**	NL200	9.53 0.375	16.50 0.650	4.76 0.187	1.20 0.047	3.81 0.150		Roughing
032849	**TNMG220408E-4U** **TNMG432A-4U**	NL200	12.70 0.500	22.00 0.866	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032850	**TNMG220412E-4U** **TNMG433A-4U**	NL200	12.70 0.500	22.00 0.866	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032851	**TNMG220416E-4U** **TNMG434A-4U**	NL200	12.70 0.500	22.00 0.866	4.76 0.187	1.60 0.063	5.16 0.203		Roughing

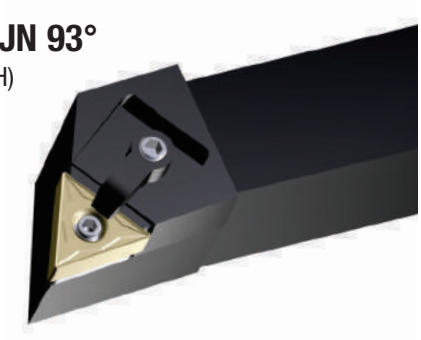
For Toolholders External: see pages C184 - C186 | Internal: see pages C187 - C188

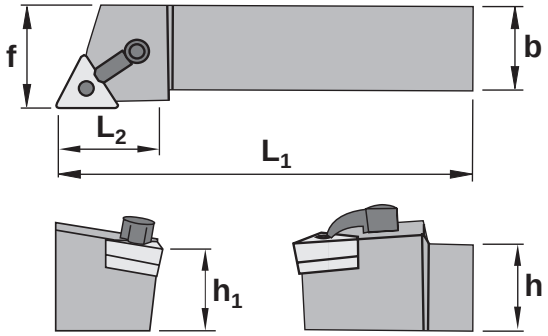
Material Guide – Key to Recommended Inserts

Material Designation

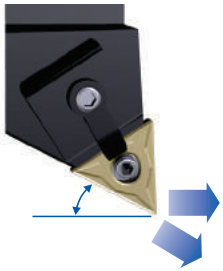
P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

MTJN 93°
(INCH)





MTJN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h_1	b	f	L_1	L_2
033387	**MTJNL-123B**	LH	TN_33	0.75	0.75	1.00	4.50	1.102
033388	**MTJNL-163D**	LH	TN_33	1.00	1.00	1.25	6.00	1.102
033389	**MTJNR-123B**	RH	TN_33	0.75	0.75	1.00	4.50	1.102
033390	**MTJNR-163D**	RH	TN_33	1.00	1.00	1.25	6.00	1.102
033391	**MTJNL-164D**	LH	TN_43	1.00	1.00	1.25	6.00	1.338
033392	**MTJNL- 204D**	LH	TN_43	1.25	1.25	1.50	6.00	1.338
033393	**MTJNR-164D**	RH	TN_43	1.00	1.00	1.25	6.00	1.338
033394	**MTJNR- 204D**	RH	TN_43	1.25	1.25	1.50	6.00	1.338

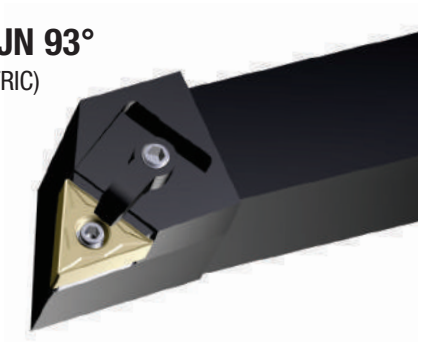


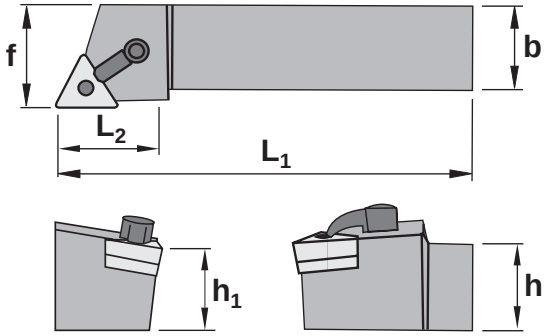
M Style External Toolholder
for Negative Inserts:
TN_33, & TN_43
Application: Turn O/D
Axial Approach 93°
Axial -6°
Radial -6°
Profiling Clearance Angle β = 24°
RH Holder Shown

MTJNL/R Spare Parts (INCH)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Key EDP*		*Lock Pin EDP*		*Lock Pin Key EDP*		*Anvil EDP*	
MTJNL/R-123B	*028997*	XNS48	*028996*	CL20	*008207*	KH5103	*004705*	NL34L	*029083*	KH5102	*001714*	ITSN323
MTJNL/R-163D												
MTJNL/R-164D							*004708*	NL46	*007785*	KH5124	*001689*	ITSN433
MTJNL/R-204D												

STELLRAM

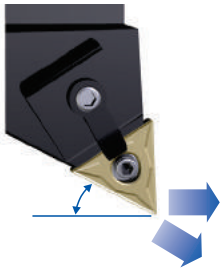
MTJN 93°
(METRIC)





MTJN LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
028557	**MTJNL 2020 K 16-S**	LH	TN_1604	20	20	25	125	28
028558	**MTJNL 2525 M16-S**	LH	TN_1604	25	25	32	150	28
028563	**MTJNR 2020 K16-S**	RH	TN_1604	20	20	25	125	28
028564	**MTJNR 2525 M16-S**	RH	TN_1604	25	25	32	150	28
028560	**MTJNL 2525 M22 -S**	LH	TN_2204	25	25	32	150	34
028562	**MTJNL 3232 P22-S**	LH	TN_2204	32	32	40	170	34
028566	**MTJNR 2525 M22-S**	RH	TN_2204	25	25	32	150	34
028568	**MTJNR 3232 P22 -S**	RH	TN_2204	32	32	40	170	34

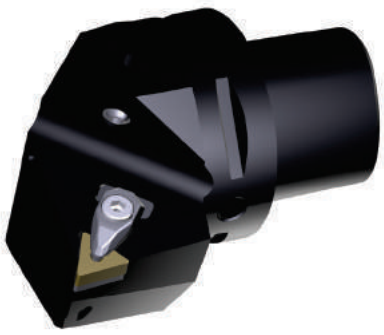


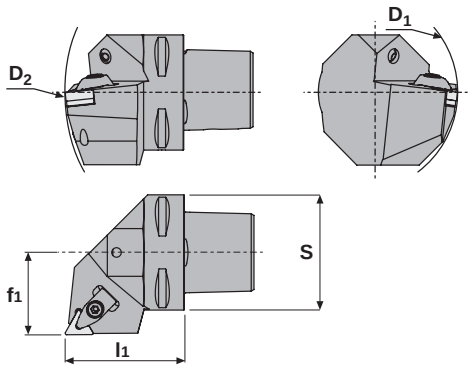
M Style External Toolholder
Negative Inserts: TN_1604, & TN_2204
Application:- Turn O/D
Axial Approach 93°
Axial -6°
Radial -6°
Profiling Clearance Angle β = 24°
RH Holder Shown

MTJNL/R Spare Parts (METRIC)

Item Description	Clamp Screw EDP		Clamp EDP		Clamp Key EDP		Lock Pin EDP		Lock Pin Key EDP		Anvil EDP	
MTJNL/R 2020 K16-S	028575	1086	034490	CL2613	018286	KH5003	034511	1665	028578	KH5002	001714	ITSN323
MTJNL/R 2525 M16-S												
MTJNL/R 2525 M22-S									018285	KH5025	001689	ITSN433
MTJNL/R 3232 P22-S												

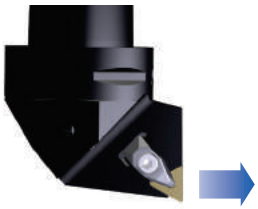
DTGN 90°
(METRIC / INCH)





DTGN LH & RH External PSC Toolholders

EDP	Item Description	Hand	Insert Sizes	S	D1	D2	f1	l1
				mm	mm	mm	mm	mm
				inch	inch	inch	inch	inch
033701	**C5-50-DTGNL35060-16**	LH	TN_1604	50	110	165	35	60
			TN_33	1.969	4.331	6.496	1.378	2.362
033702	**C5-50-DTGNR35060-16**	RH	TN_1604	50	110	165	35	60
			TN_33	1.969	4.331	6.496	1.378	2.362
033703	**C6-63-DTGNL45065-16**	LH	TN_1604	63	110	190	45	65
			TN_33	2.480	4.331	7.480	1.772	2.559
033704	**C6-63-DTGNR45065-16**	RH	TN_1604	63	110	190	45	65
			TN_33	2.480	4.331	7.480	1.772	2.559



D Style External Toolholder
for Negative Inserts:
TN_1604, (TN_33)
Application: External Turn O/D
Approach 90°
Axial -6°
Radial -6°
Profilling Clearance Angle β = 0°
RH Holder Shown

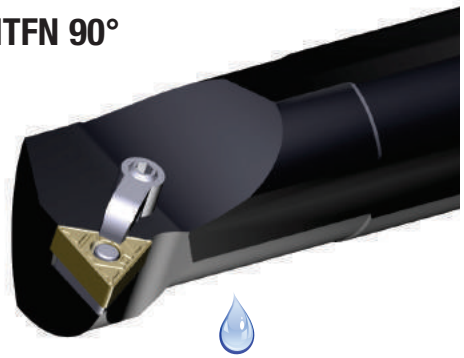
C.. DTGNL/R Spare Parts

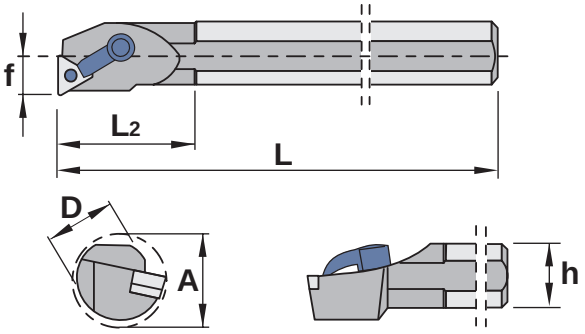
Item Description	*Clamp EDP*		*Clamp Screw EDP*		*Anvil EDP*		*Anvil Screw EDP*		*Clamp Spring EDP*		*Screw Key EDP*	
C5-50-DTGNL/R 35060-16	*033709*	2708	*033711*	1695	*033714*	ITSN342	*033718*	1764	*033720*	4294	*018286*	KH5003
C6-63-DTGNL/R 45065-16												

STELLRAM

A..MTFN 90°

(INCH)





A..MTFN LH & RH Internal Boring Bars											
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)							
				Min Bore Ø A	ØD	f	L_1	L_2	h	Through Coolant	
033395	**A16T MTFNL-3**	LH	TN_33	1.280	1.000	0.640	12.000	2.500	0.920		
033396	**A20U MTFNL-3**	LH	TN_33	1.530	1.250	0.765	14.000	3.000	1.170		
033397	**A16T MTFNR-3**	RH	TN_33	1.280	1.000	0.640	12.000	2.500	0.920		
033398	**A20U MTFNR-3**	RH	TN_33	1.530	1.250	0.765	14.000	3.000	1.170		
033399	**A24U MTFNL-4**	LH	TN_43	1.780	1.500	0.890	14.000	3.000	1.420		
033400	**A24U MTFNR-4**	RH	TN_43	1.780	1.500	0.890	14.000	3.000	1.420		

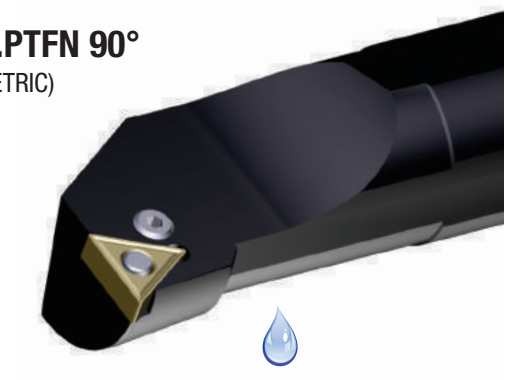


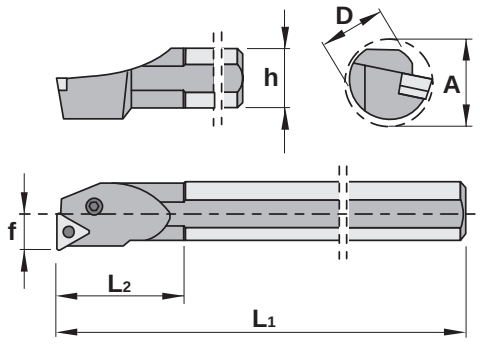
M style Internal Boring Bar
for Negative Inserts:
TN_33 & TN_43
Application:- I/D Boring
Axial Approach = 90°
Axial -6°
Radial -13°
Profiling Clearance Angle β = 0°
RH Bar Shown

A..MTFNL/R Spare Parts (INCH)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Key EDP*		*Lock Pin EDP*		*Lock Pin Key EDP*		*Anvil EDP*	
A16T MTFNL/R-3	*029075*	XNS47	*028996*	CL20	*008207*	KH5103	*004703*	NL33L	*029083*	KH5102	-	-
A20U MTFNL/R-3							*004705*	NL34L			*001714*	ITSN323
A24U MTFNL/R-4							*004708*	NL46	*007785*	KH5124	*001718*	ITSN433

STELLRAM

A..PTFN 90°
(METRIC)





A..PTFN LH & RH Internal Boring Bars											
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)							
				Min Bore Ø A	ØD	f	L_1	L_2	h	Through Coolant	
028710	**A25R PTFNL 16**	LH	TN_1604	31	25	17	200	42	23		
028711	**A32S PTFNL 16**	LH	TN_1604	39	32	22	250	45	30		
028713	**A25R PTFNR 16**	RH	TN_1604	31	25	17	200	42	23		
028714	**A32S PTFNR 16**	RH	TN_1604	39	32	22	250	45	30		
028712	**A40T PTFNL 22**	LH	TN_2204	48	40	27	300	50	37		
028715	**A40T PTFNR 22**	RH	TN_2204	48	40	27	300	50	37		

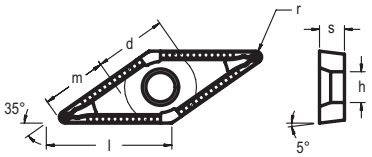


P Style Internal Boring Bar
for Negative Inserts:
TN_1604 & TN_2204
Application: I/D Boring
Axial Approach = 90°
Axial -6°
Radial -11°
Profiling Clearance Angle β = 0°
RH Bar Shown

A..PTFNL/R Spare Parts (METRIC)												
Item Description	*Lever EDP*		*Lever Screw EDP*		*Anvil EDP*		*Anvil Clip EDP*		*Clip Punch EDP*		*Key EDP*	
A25R PTFNL/R 16	*022652*	PL8216	*028741*	PLS1605	-	-	-	-	-	-	*028578*	KH5002
A32S PTFNL/R 16	*017442*	PL8009	*017447*	PLS1606	*017463*	PA3416	*034503*	PC4109	*028053*	PCP0009	*018285*	KH5025
A40T PTFNL/R 22	*017443*	PL8012	*017448*	PLS1608	*017464*	PA3422	*017453*	PC4112	*028054*	PCP0012	*018286*	KH5003

STELLRAM

VBGT
-62 Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
031665	**VBGT160402E-62** **VBGT330.5A-62**	SP4019	9.53 0.375	16.60 0.654	6.35 0.250	0.20 0.008	4.40 0.173		Finishing
031666	**VBGT160404E-62** **VBGT331A-62**	SP4019	9.53 0.375	16.60 0.654	6.35 0.250	0.40 0.016	4.40 0.173		Finishing
031667	**VBGT160408E-62** **VBGT332A-62**	SP4019	9.53 0.375	16.60 0.654	6.35 0.250	0.80 0.031	4.40 0.173		Finishing

For Toolholders External: see pages 195 - C198 | Internal: see pages C205 - C206

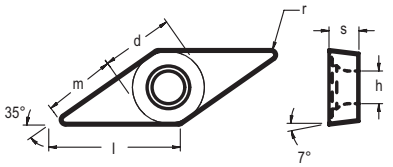
Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

VCGT
M Geometry

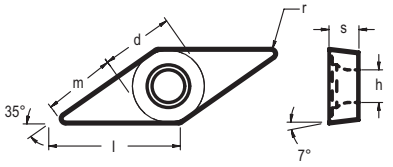




EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	rε mm inch	h mm inch	Material	Application
032852	**VCGT130301F-M** **VCGT22.50.25-M**	GH1	7.94 0.313	13.80 0.543	3.97 0.156	0.10 0.004	3.40 0.134		Medium
034463	**VCGT130301E-M** **VCGT22.50.25A-M**	SP4019	7.94 0.313	13.80 0.543	3.97 0.156	0.10 0.004	3.40 0.134		Medium
032854	**VCGT130302F-M** **VCGT2.52.50.5-M**	GH1	7.94 0.313	13.80 0.543	3.97 0.156	0.20 0.008	3.40 0.134		Medium
034461	**VCGT130302E-M** **VCGT2.52.50.5A-M**	SP4019	7.94 0.313	13.80 0.543	3.97 0.156	0.20 0.008	3.40 0.134		Medium
032856	**VCGT130304F-M** **VCGT2.52.51-M**	GH1	7.94 0.313	13.80 0.543	3.97 0.156	0.40 0.016	3.40 0.134		Medium
034462	**VCGT130304E-M** **VCGT2.52.51A-M**	SP4019	7.94 0.313	13.80 0.543	3.97 0.156	0.40 0.016	3.40 0.134		Medium

For Toolholders External: see pages C193 - C194, C199 - C204 | Internal: see pages C207 - C210

VCGT & VCGX
-62 Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	rε mm inch	h mm inch	Material	Application
031608	**VCGX1103005E-62** **VCGX1103005E-62**	SP4019	6.35 0.250	10.07 0.396	3.18 0.125	0.05 0.002	2.80 0.110		Finishing
031609	**VCGT110301E-62** **VCGT220.025A-62**	SP4019	6.35 0.250	10.07 0.396	3.18 0.125	0.10 0.004	2.80 0.110		Finishing
031610	**VCGT110302E-62** **VCGT220.5A-62**	SP4019	6.35 0.250	10.07 0.396	3.18 0.125	0.20 0.008	2.80 0.110		Finishing
031611	**VCGT110304E-62** **VCGT221A-62**	SP4019	6.35 0.250	10.07 0.396	3.18 0.125	0.40 0.016	2.80 0.110		Finishing
030594	**VCGT130301E-62** **VCGT220.25A-62**	SP4019	7.94 0.313	13.80 0.543	3.18 0.125	0.10 0.004	3.40 0.134		Finishing
030595	**VCGT130302E-62** **VCGT220.5A-62**	SP4019	7.94 0.313	13.80 0.543	3.18 0.125	0.20 0.008	3.40 0.134		Finishing
030596	**VCGT130304E-62** **VCGT221A-62**	SP4019	7.94 0.313	13.80 0.543	3.18 0.125	0.40 0.016	3.40 0.134		Finishing

For Toolholders External: see pages C193 - C194, C199 - C204 | Internal: see pages C207 - C210

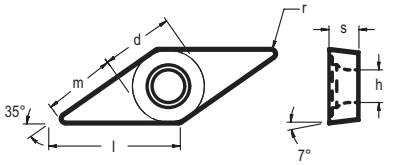
Material Guide – Key to Recommended Inserts

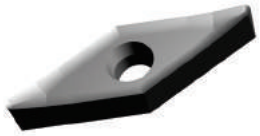
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

VCGT
-64 Geometry

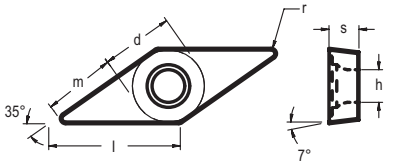




EDP	Description	Grade	d	l	S	r_ε	h	Material	Application
	ISO		mm	mm	mm	mm	mm		
	ANSI		inch	inch	inch	inch	inch		
014071	VCGT160408F-64	GH1	9.53	16.60	4.76	0.80	4.40	◆	Finishing
	VCGT332-64		0.375	0.654	0.187	0.031	0.173		

For Toolholders External: see pages C193 - C194, C199 - C204 | Internal: see pages C207 - C210

VCGT
-66 Geometry





EDP	Description	Grade	d	l	S	r_ε	h	Material	Application
	ISO		mm	mm	mm	mm	mm		
	ANSI		inch	inch	inch	inch	inch		
027453	VCGT130302F-66	GH1	7.94	13.80	3.18	0.20	3.40	◆◆◆	Finishing
	VCGT220.5-66		0.313	0.543	0.125	0.008	0.134		
027454	VCGT130304F-66	GH1	7.94	13.80	3.18	0.40	3.40	◆◆◆	Finishing
	VCGT221-66		0.313	0.543	0.125	0.016	0.134		
027455	VCGT130308F-66	GH1	7.94	13.80	3.18	0.80	3.40	◆◆◆	Finishing
	VCGT222-66		0.313	0.543	0.125	0.031	0.134		

For Toolholders External: see pages C193 - C194, C199 - C204 | Internal: see pages C207 - C210

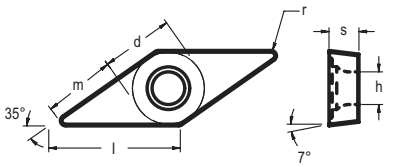
Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

VCMT
M Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032858	**VCMT160404E-M** **VCMT331E-M**	GH1	9.53 0.375	16.60 0.654	4.76 0.187	0.40 0.016	4.40 0.173		Medium
032276	**VCMT160404E-M** **VCMT331E-M**	SP4019	9.53 0.375	16.60 0.654	4.76 0.187	0.40 0.016	4.40 0.173		Medium
032859	**VCMT160408E-M** **VCMT332E-M**	GH1	9.53 0.375	16.60 0.654	4.76 0.187	0.80 0.031	4.40 0.173		Medium
032282	**VCMT160408E-M** **VCMT332E-M**	SP4019	9.53 0.375	16.60 0.654	4.76 0.187	0.80 0.031	4.40 0.173		Medium

For Toolholders External: see pages C193 - C194, C199 - C204 | Internal: see pages C207 - C210

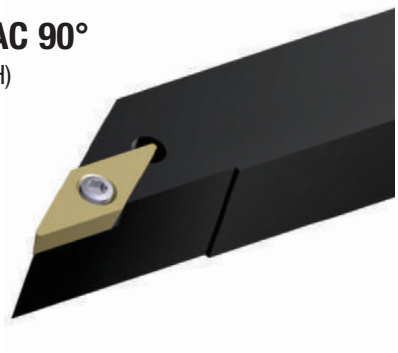
Material Guide – Key to Recommended Inserts

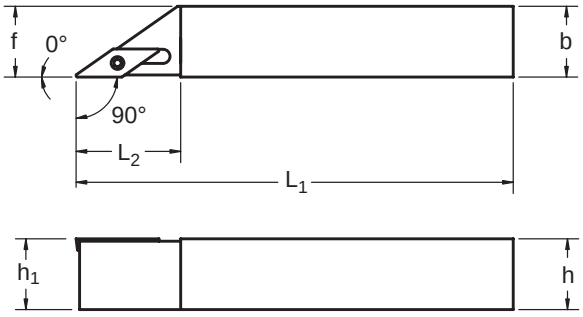
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

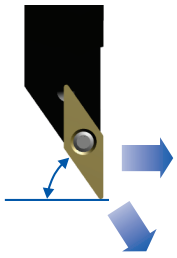
STELLRAM

SVAC 90°
(INCH)





SVAC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				$h = h_1$	b	f	L_1	L_2
033721	**SVACL 062D**	LH	VC_22	0.375	0.375	0.375	6.000	-
033722	**SVACL 082D**	LH	VC_22	0.500	0.500	0.500	6.000	-
033723	**SVACR 062D**	RH	VC_22	0.375	0.375	0.375	6.000	-
033724	**SVACR 082D**	RH	VC_22	0.500	0.500	0.500	6.000	-
025102	**SVACL 082.5**	LH	VC_2.5	0.500	0.500	0.500	6.000	1.000
025104	**SVACL 102.5**	LH	VC_2.5	0.625	0.625	0.625	6.000	1.125
025106	**SVACL 122.5**	LH	VC_2.5	0.750	0.750	0.750	5.000	1.125
025104	**SVACR 082.5**	RH	VC_2.5	0.500	0.500	0.500	6.000	1.000
025106	**SVACR 102.5**	RH	VC_2.5	0.625	0.625	0.625	6.000	1.125
025101	**SVACR 122.5**	RH	VC_2.5	0.750	0.750	0.750	5.000	1.125
025103	**SVACL 103D**	LH	VC_33	0.625	0.625	0.625	6.000	-
025105	**SVACR 103D**	RH	VC_33	0.625	0.625	0.625	6.000	-

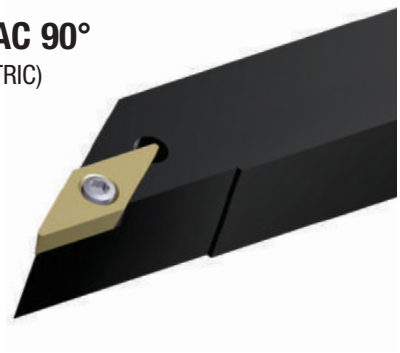


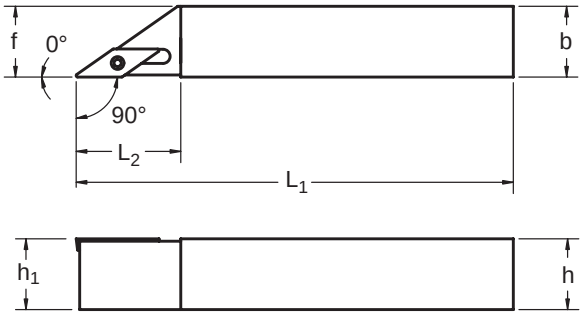
S Style External Toolholder
for Positive Inserts:
VC_22, VC_2.5, and VC_33
Application: O/D Profiling
Approach 90°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 52°
RH Holder Shown

SVACL/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SVACL/R 062D	*015061*	F2507T	*018488*	T7	-	-	-	-
SVACL/R 082D								
SVACL/R 082.5	*015063*	F3008T	*013214*	T9	-	-	-	-
SVACL/R 102.5								
SVACL/R 122.5								
SVACL/R 103D	*015061*	F2507T	*018488*	T7				

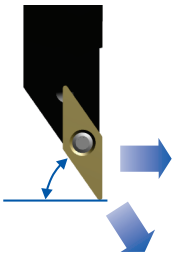
STELLRAM

SVAC 90°
(METRIC)





SVAC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h_1	b	f	L_1	L_2
033593	**SVACL 1010 M11**	LH	VC_1103	10	10	10	150	-
033594	**SVACL 1212 M11**	LH	VC_1103	12	12	12	150	-
033595	**SVACL 1616 M11**	LH	VC_1103	16	16	16	150	-
033596	**SVACR 1010 M11**	RH	VC_1103	10	10	10	150	-
033597	**SVACR 1212 M11**	RH	VC_1103	12	12	12	150	-
033598	**SVACR 1616 M11**	RH	VC_1103	16	16	16	150	-
025092	**SVACL 1010 M13**	LH	VC_1303	10	10	10	150	30
025094	**SVACL 1212 M13**	LH	VC_1303	12	12	12	150	30
025096	**SVACL 1616 M13**	LH	VC_1303	16	16	16	150	30
025098	**SVACL 2020 K13**	LH	VC_1303	20	20	20	125	30
025091	**SVACR 1010 M13**	RH	VC_1303	10	10	10	150	30
025093	**SVACR 1212 M13**	RH	VC_1303	12	12	12	150	30
025095	**SVACR 1616 M13**	RH	VC_1303	16	16	16	150	30
025097	**SVACR 2020 K13**	RH	VC_1303	20	20	20	125	30

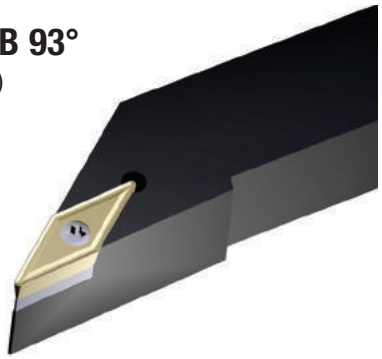


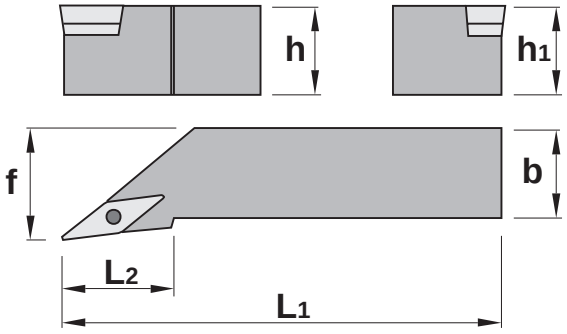
S Style External Toolholder
Positive Inserts VC_1103, and VC_1303
Application: O/D Profiling
Approach 90°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 52°
RH Holder Shown

SVACL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SVACL/R 1010 M11	*15061*	F2507T	*18488*	T7	-	-	-	-
SVACL/R 1212 M11								
SVACL/R 1616 M11								
SVACL/R 1010 M13	*15063*	F3008T	*013214*	T9	-	-	-	-
SVACL/R 1212 M13								
SVACL/R 1616 M13								
SVACL/R 2020 K13								

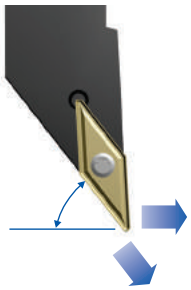
STELLRAM

SVJB 93°
(INCH)





SVJB LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h_1	b	f	L_1	L_2
011271	**SVJBL 123B**	LH	VB_33	0.750	0.750	1.000	4.500	1.338
011273	**SVJBL 163D**	LH	VB_33	1.000	1.000	1.250	6.000	1.338
011270	**SVJBR 123B**	RH	VB_33	0.750	0.750	1.000	4.500	1.338
011272	**SVJBR 163D**	RH	VB_33	1.000	1.000	1.250	6.000	1.338

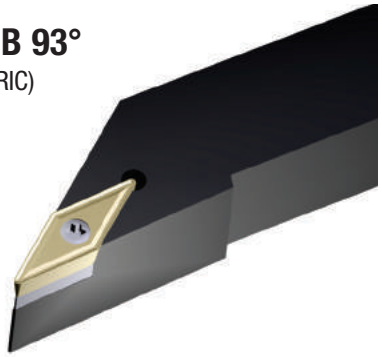


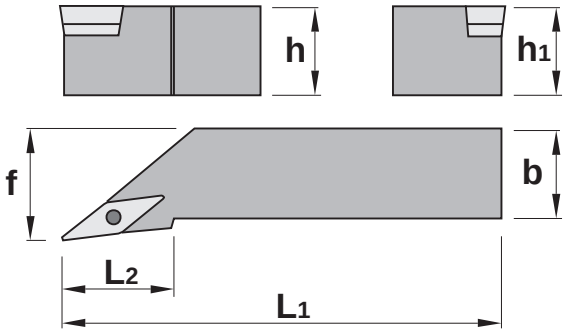
S Style External Toolholder
for Positive Inserts: VB_33
Application: O/D Profiling.
Approach 93°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 49°
RH Holder Shown

SVJBL/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SVJBL/R 123B **SVJBL/R 163D**	034497	1335	028475	K5516	028740	SA3718	028478	SAS1750

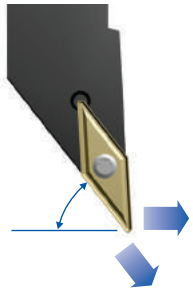
STELLRAM

SVJB 93°
(METRIC)





SVJB LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h_1	b	f	L_1	L_2
028641	**SVJBL 2020 K16**	LH	VB_1604	20	20	25	125	34
028642	**SVJBL 2525 M16**	LH	VB_1604	25	25	32	150	34
028644	**SVJBR 2020 K16**	RH	VB_1604	20	20	25	125	34
028645	**SVJBR 2525 M16**	RH	VB_1604	25	25	32	150	34

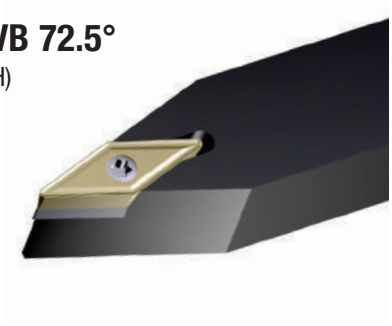


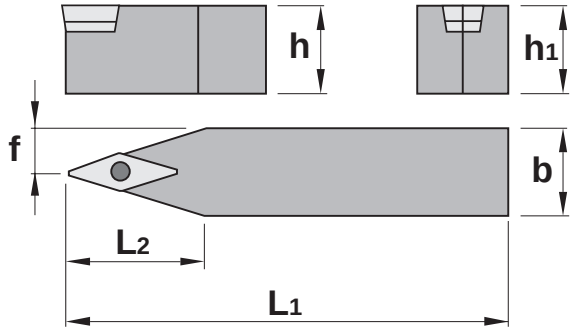
S Style External Toolholder
for Positive Inserts: VB_1604
Application: O/D Profiling.
Approach 93°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 49°
RH Holder Shown

SVJBL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SVJBL/R 2020 K16 **SVJBL/R 2525 M16**	034497	1335	*028475*	K5516	*028740*	SA3718	*028478*	SAS1750

STELLRAM

SVVB 72.5°
(INCH)





SVVB Neutral External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h_1	b	f	L_1	L_2
033603	**SVVBN 123B**	Neutral	VB_33	0.750	0.750	-	4.500	-
033604	**SVVBN 163D**	Neutral	VB_33	1.000	1.000	-	6.000	-

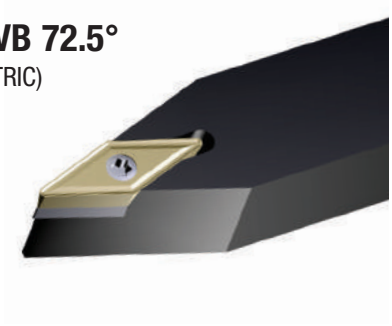


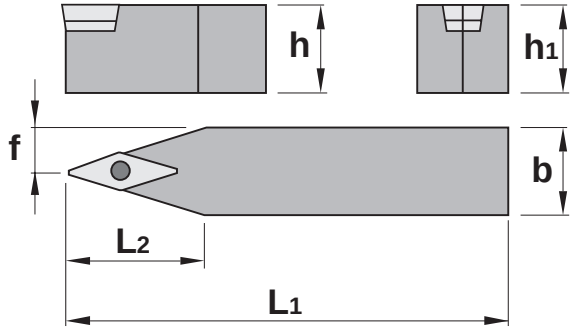
S Style External Toolholder
Positive Inserts VB_33
Application: O/D Profiling.
Approach 72.5°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 69.5°
Neutral Holder Shown

SVVB N Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SVVBN 123B **SVVBN 163D**	034497	1335	*028475*	K5516	*028740*	SA3718	*028478*	SAS1750

STELLRAM

SVVB 72.5°
(METRIC)





SVVB Neutral External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h_1	b	f	L_1	L_2
033599	**SVVBN 2020 K16**	Neutral	VB_1604	20	20	10	125	-
033600	**SVVBN 2525 M16**	Neutral	VB_1604	25	25	12.5	150	-

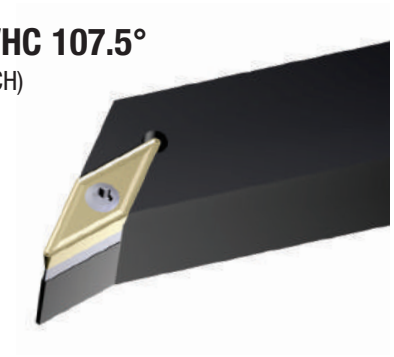


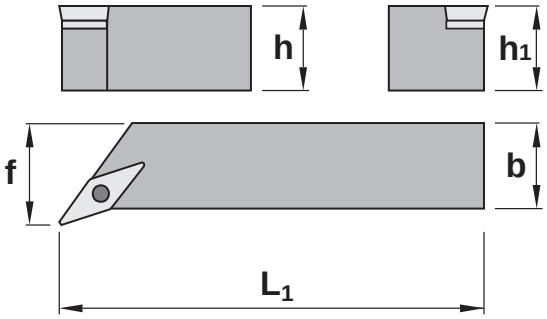
S Style External Toolholder
for Positive Inserts: VB_1604
Application: O/D Profiling.
Approach 72.5°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 69.5°
Neutral Holder Shown

SVVBL N Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SVVBN 2020 K16 **SVVBN 2525 M16**	034497	1335	*028475*	K5516	*028740*	SA3718	*028478*	SAS1750

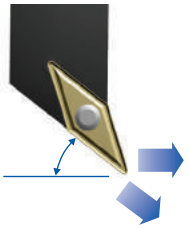
STELLRAM

SVHC 107.5°
(INCH)





SVHC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h_1	b	f	L_1	L_2
033609	**SVHCL 123B**	LH	VC_33	0.750	0.750	1.000	4.500	-
033610	**SVHCL 163D**	LH	VC_33	1.000	1.000	1.250	6.000	-
033611	**SVHCL 203D**	LH	VC_33	1.250	1.250	1.500	7.000	-
033612	**SVHCR123B**	RH	VC_33	0.750	0.750	1.000	4.500	-
033613	**SVHCR 163D**	RH	VC_33	1.000	1.000	1.250	6.000	-
033614	**SVHCR 203D**	RH	VC_33	1.250	1.250	1.500	7.000	-

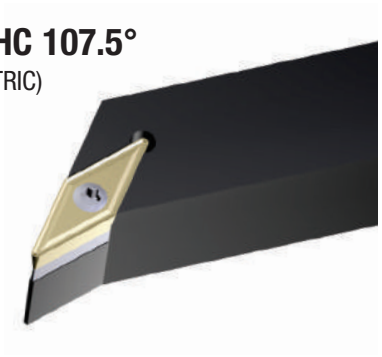


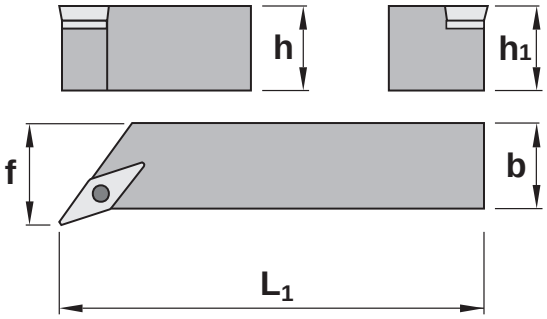
S Style External Toolholder
for Positive Inserts: VC_33
Application: O/D and Face Profiling
Approach 107.5°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 44.5°
RH Holder Shown

SVHCL/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SVHCL/R 123B	034497	1335	*028475*	K5516	*028740*	SA3718	*028478*	SAS1750
SVHCL/R 163D								
SVHCL/R 203D								

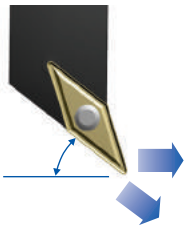
STELLRAM

SVHC 107.5°
(METRIC)





SVHC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h_1	b	f	L_1	L_2
028635	**SVHCL 2020 K16**	LH	VC_1604	20	20	25	125	-
028636	**SVHCL 2525 M16**	LH	VC_1604	25	25	32	150	-
033607	**SVHCL 3225 P16**	LH	VC_1604	32	25	32	170	-
028638	**SVHCR 2020 K16**	RH	VC_1604	20	20	25	125	-
028639	**SVHCR 2525 M16**	RH	VC_1604	25	25	32	150	-
033608	**SVHCR 3225 P16**	RH	VC_1604	32	25	32	170	-



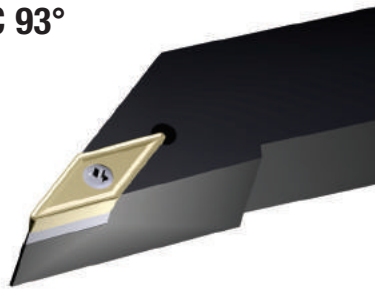
S Style External Toolholder
for Positive Inserts: VC_1604
Application: O/D and Face Profiling.
Approach 107.5°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 44.5°
RH Holder Shown

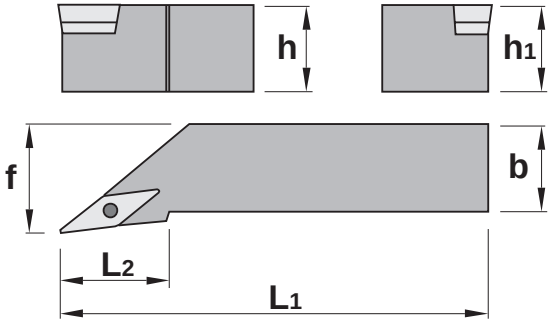
SVHCL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SVHCL/R 2020 K16 **SVHCL/R 2525 M16** **SVHCL/R 3232 P16**	034497	1335	*028475*	K5516	*028740*	SA3718	*028478*	SAS1750

KENNAMETAL

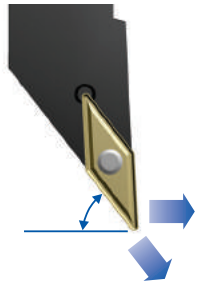
STELLRAM

SVJC 93°
(INCH)





SVJC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h_1	b	f	L_1	L_2
033623	**SVJCL 062D**	LH	VC_22	0.375	0.375	0.375	6.000	-
033624	**SVJCL 082D**	LH	VC_22	0.500	0.500	0.500	6.000	-
033625	**SVJCR 062D**	RH	VC_22	0.375	0.375	0.375	6.000	-
033626	**SVJCR 082D**	RH	VC_22	0.500	0.500	0.500	6.000	-
033627	**SVJCL 082.5**	LH	VC_2.5	0.500	0.500	0.625	6.000	1.000
033628	**SVJCL 102.5**	LH	VC_2.5	0.625	0.625	0.750	6.000	1.125
033629	**SVJCL 122.5**	LH	VC_2.5	0.750	0.750	1.000	5.000	1.125
033630	**SVJCR 082.5**	RH	VC_2.5	0.500	0.500	0.625	6.000	1.000
033631	**SVJCR 102.5**	RH	VC_2.5	0.625	0.625	0.750	6.000	1.125
033632	**SVJCR 122.5**	RH	VC_2.5	0.750	0.750	1.000	5.000	1.125
033633	**SVJCL 103D**	LH	VC_33	0.625	0.625	0.625	6.000	0.940
033634	**SVJCL 123B**	LH	VC_33	0.750	0.750	1.000	4.500	1,102
033635	**SVJCL 163D**	LH	VC_33	1.000	1.000	1.250	6.000	1,102
033636	**SVJCR 103D**	RH	VC_33	0.625	0.625	0.625	6.000	0.940
033637	**SVJCR 123B**	RH	VC_33	0.750	0.750	1.000	4.500	1,102
033638	**SVJCR 163D**	RH	VC_33	1.000	1.000	1.250	6.000	1,102

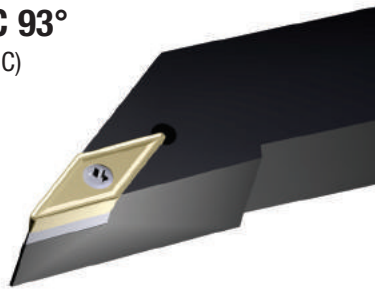


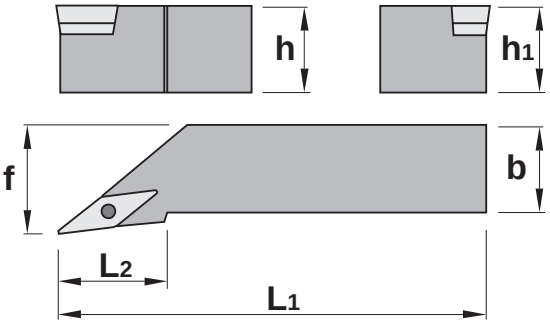
S Style External Toolholder
for Positive Inserts:
VC_22, VC_2.5, and VC_33
Application: O/D Profiling.
Approach 93°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 49°
RH Holder Shown

SVJCL/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SVJCL/R 062D	*015061*	F2507T	*018488*	T7	-	-	-	-
SVJCL/R 082D								
SVJCL/R 082.5	*015063*	F3008T	*013214*	T9	-	-	-	-
SVJCL/R 102.5								
SVJCL/R 122.5								
SVJCL/R 103D	*015262*	D4010T	*034577*	K5517	-	-	-	-
SVJCL/R 123B	034497	1335	*028475*	K5516	*028740*	SA3718	*028478*	SAS1750
SVJCL/R 163D								

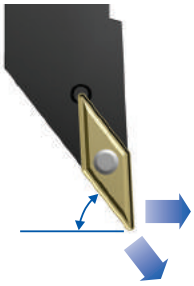
STELLRAM

SVJC 93°
(METRIC)





SVJC LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
033615	**SVJCL 1010 M11**	LH	VC_1103	10	10	10	150	-
033616	**SVJCL 1212 M11**	LH	VC_1103	12	12	12	150	-
033617	**SVJCL 1616 M11**	LH	VC_1103	16	16	16	150	-
033618	**SVJCL 2020 K11**	LH	VC_1103	20	20	25	125	25
033619	**SVJCR 1010 M11**	RH	VC_1103	10	10	10	150	-
033620	**SVJCR 1212 M11**	RH	VC_1103	12	12	12	150	-
033621	**SVJCR 1616 M11**	RH	VC_1103	16	16	16	150	-
033622	**SVJCR 2020 K11**	RH	VC_1103	20	20	25	125	25
018330	**SVJCL 1212 F13**	LH	VC_1303	12	12	16	80	26
018331	**SVJCL 1616 H13**	LH	VC_1303	16	16	20	100	30
018333	**SVJCL 2020 K13**	LH	VC_1303	20	20	25	125	30
018337	**SVJCR 1212 F13**	RH	VC_1303	12	12	16	80	26
018338	**SVJCR 1616 H13**	RH	VC_1303	16	16	20	100	30
018340	**SVJCR 2020 K13**	RH	VC_1303	20	20	25	125	30
028648	**SVJCL 2020 K16**	LH	VC_1604	20	20	25	125	34
028649	**SVJCL 2525 M16**	LH	VC_1604	25	25	32	150	34
028651	**SVJCR 2020 K16**	RH	VC_1604	20	20	25	125	34
028652	**SVJCR 2525 M16**	RH	VC_1604	25	25	32	150	34

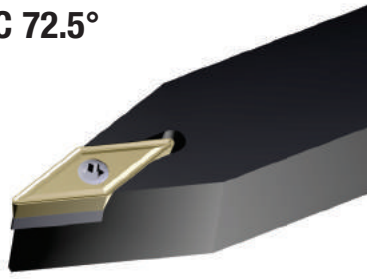


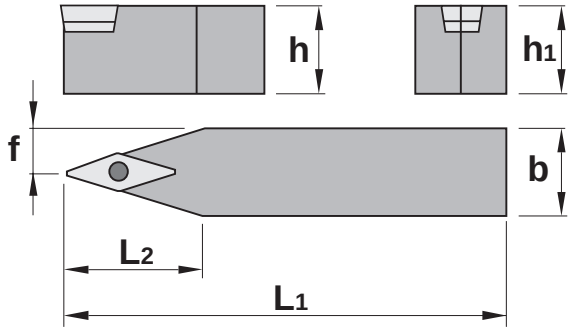
S Style External Toolholder
for Positive Inserts:
VC_1103, VC_1303, and VC_1604
Application: O/D Profiling
Approach 93°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 49°
RH Holder Shown

SVJCL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SVJCL/R 1010 M11	*015061*	F2507T	*18488*	T7	-	-	-	-
SVJCL/R 1212 M11								
SVJCL/R 1616 M11								
SVJCL/R 2020 K11								
SVJCL/R 1212 F13	*015063*	F3008T	*013214*	T9	-	-	-	-
SVJCL/R 1616 H13								
SVJCL/R 2020 K13								
SVJCL/R 2020 K16	034497	1335	*028475*	K5516	*028740*	SA3718	*028478*	SAS1750
SVJCL/R 2525 M16								

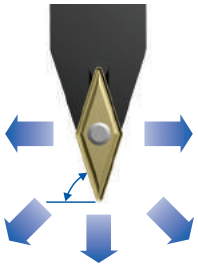
STELLRAM

SVVC 72.5°
(INCH)





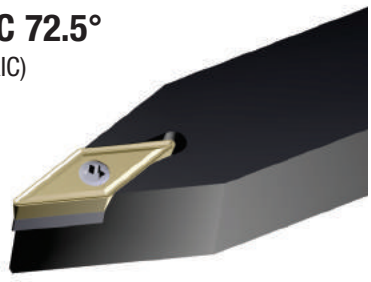
SVVC Neutral External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h1	b	f	L1	L2
033727	**SVVCN 062D**	Neutral	VC_22	0.375	0.375	0.187	6.000	0.620
033728	**SVVCN 082D**	Neutral	VC_22	0.500	0.500	0.250	6.000	0.620
033729	**SVVCN 102D**	Neutral	VC_22	0.625	0.625	0.312	6.000	0.620
026527	**SVVCN 082.5**	Neutral	VC_2.5	0.500	0.500	0.250	6.000	0.620
026528	**SVVCN 102.5**	Neutral	VC_2.5	0.625	0.625	0.313	6.000	0.620
026529	**SVVCN 122.5**	Neutral	VC_2.5	0.750	0.750	0.375	5.000	0.620
033730	**SVVCN 123B**	Neutral	VC_33	0.750	0.750	0.375	4.500	1.121
033731	**SVVCN 163D**	Neutral	VC_33	1.000	1.000	0.500	6.000	1.610

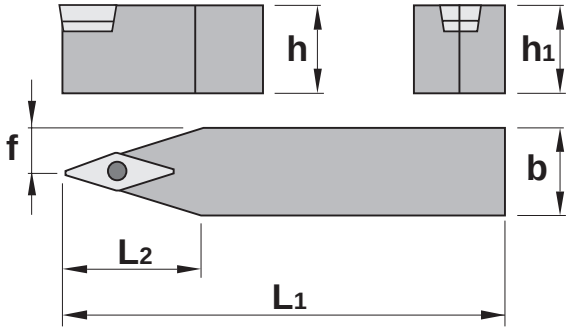


S Style External Toolholder
for Positive Inserts:
VC_22, VC_2.5, and VC_33
Application: O/D Profiling.
Approach 72.5°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 69.5°
Neutral Holder Shown

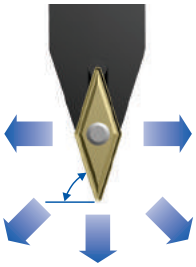
SVVC N Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SVVCN 062D **SVVCN 082D** **SVVCN 102D**	*015061*	F2507T	*018488*	T7	-	-	-	-
SVVCN 082.5 **SVVCN 102.5** **SVVCN 122.5**	*015063*	F3008T	*013214*	T9	-	-	-	-
SVVCL/R 123B **SVVCL/R 163D**	034497	1335	*028475*	K5516	*028740*	SA3718	*028478*	SAS1750

SVVC 72.5°
(METRIC)





SVVC Neutral External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
033639	**SVVCN 1212 M11**	Neutral	VC_1103	12	12	6	150	-
033640	**SVVCN 1616 M11**	Neutral	VC_1103	16	16	8	150	-
033641	**SVVCN 2020 K11**	Neutral	VC_1103	20	20	10	125	-
018344	**SVVCN 1212 F13**	Neutral	VC_1303	12	12	6	150	28
018345	**SVVCN 1616 H13**	Neutral	VC_1303	16	16	8	150	28
018346	**SVVCN 2020 K13**	Neutral	VC_1303	20	20	10	125	28
028653	**SVVCN 2020 K16**	Neutral	VC_1604	20	20	10	125	-
028654	**SVVCN 2525 M16**	Neutral	VC_1604	25	25	12.5	150	-



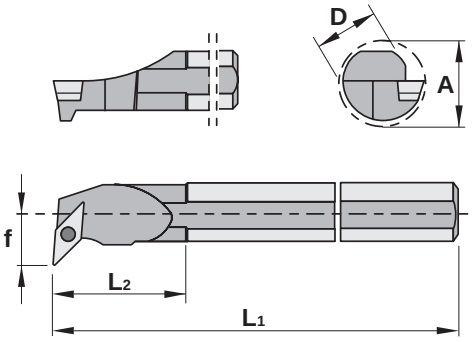
S Style External Toolholder
for Positive Inserts:
VC_1103, VC_1303 and VC_1604
Application: O/D Profiling.
Approach 72.5°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 69.5°
Neutral Holder Shown

SVVC N Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SVVCN 1212 M11 **SVVCN 1616 M11** **SVVCN 2020 K11**	*015061*	F2507T	*018488*	T7	-	-	-	-
SVVCN 1212 F13 **SVVCN 1616 H13** **SVVCN 2020 K13**	*015063*	F3008T	*013214*	T9	-	-	-	-
SVVCN 2020 K16 **SVVCN 2525 M16**	034497	1335	*028475*	K5516	*028740*	SA3718	*028478*	SAS1750

STELLRAM

SVUB 93°
(INCH)





S.. SVUB LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)					
				Min Bore Ø A	ØD	f	L_1	L_2	Through Coolant
033646	**S16T SVUBL 3**	LH	VB_33	2.000	1.000	1.000	12.000	1.653	
033647	**S20U SVUBL 3**	LH	VB_33	2.250	1.250	1.125	14.000	1.771	
033648	**S16T SVUBR 3**	RH	VB_33	2.000	1.000	1.000	12.000	1.653	
033649	**S20U SVUBR 3**	RH	VB_33	2.250	1.250	1.125	14.000	1.771	



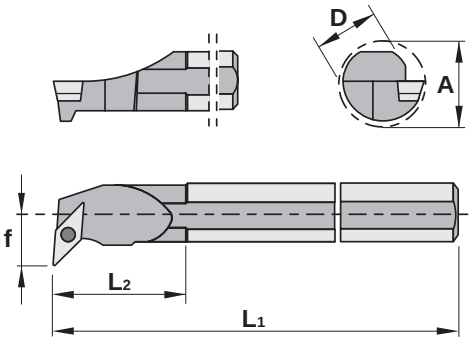
S Style Boring Bar
for Positive Inserts: VB_33
Application: I/D Profiling
Aproach 93°
Axial 0°
Radial -6°
Profilling Clearance Angle β = 49°
RH Bar Shown

S.. SVUBL/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
S16T SVUBL/R 3	*015262*	D4010T	*015240*	T15	-	-	-	-
S20U SVUBL/R 3	034497	1335	*028475*	K5516	*028740*	SA3718	*028478*	SAS1750

STELLRAM

SVUB 93°
(METRIC)





S.. SVUB LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L_1	L_2	Through Coolant
033642	**S25R SVUBL 16**	LH	VB_1604	31	25	17	300	42	⊘
033643	**S32S SVUBL 16**	LH	VB_1604	39	32	22	350	45	⊘
033644	**S25R SVUBR 16**	RH	VB_1604	31	25	17	300	42	⊘
033645	**S32S SVUBR 16**	RH	VB_1604	39	32	22	350	45	⊘



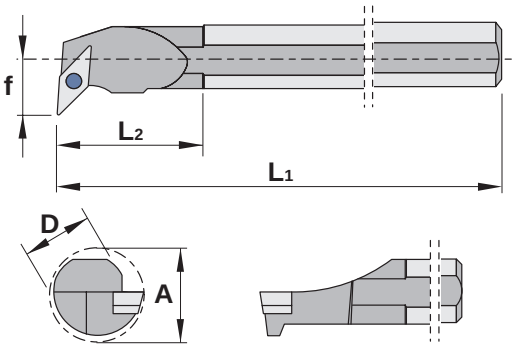
S Style Boring Bar
for Positive Inserts: VB_1604
Application: I/D Profiling
Aproach 93°
Axial 0°
Radial -6°
Profilling Clearance Angle β = 49°
RH Bar Shown

S.. SVUBL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
S25R SVUBL/R 16	*015262*	D4010T	*015240*	T15	-	-	-	-
S32S SVUBL/R 16	034497	1335	*028475*	K5516	*028740*	SA3718	*028478*	SAS1750

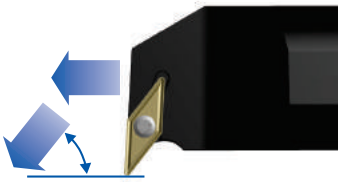
STELLRAM

SVUC 93°
(INCH)





S.. SVUC LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)					
				Min Bore Ø A	ØD	f	L_1	L_2	Through Coolant
033658	**S10R SVUCL 2E**	LH	VC_22	0.867	0.625	0.500	8.000	1.220	⊘
033659	**S12S SVUCL 2E**	LH	VC_22	1.060	0.750	0.625	10.000	1.417	⊘
033660	**S16T SVUCL 2D**	LH	VC_22	1.300	1.000	0.740	12.000	1.653	⊘
033661	**S10R SVUCR 2E**	RH	VC_22	0.867	0.625	0.500	8.000	1.220	⊘
033662	**S12S SVUCR 2E**	RH	VC_22	1.060	0.750	0.625	10.000	1.417	⊘
033663	**S16T SVUCR 2D**	RH	VC_22	1.300	1.000	0.740	12.000	1.653	⊘
024499	**S12S SVUCL 2.5**	LH	VC_2.5	1.060	0.750	0.625	10.000	1.580	⊘
024501	**S16T SVUCL 2.5**	LH	VC_2.5	1.300	1.000	0.740	12.000	1.810	⊘
024500	**S12S SVUCR 2.5**	RH	VC_2.5	1.060	0.750	0.625	10.000	1.580	⊘
024502	**S16T SVUCR 2.5**	RH	VC_2.5	1.300	1.000	0.740	12.000	1.810	⊘
033664	**S16T SVUCL 3**	LH	VC_33	2.000	1.000	1.000	12.000	2.500	⊘
033665	**S20U SVUCL 3**	LH	VC_33	2.250	1.250	1.125	14.000	3.000	⊘
033666	**S16T SVUCR 3**	RH	VC_33	2.000	1.000	1.000	12.000	2.500	⊘
033667	**S20U SVUCR 3**	RH	VC_33	2.250	1.250	1.125	14.000	3.000	⊘

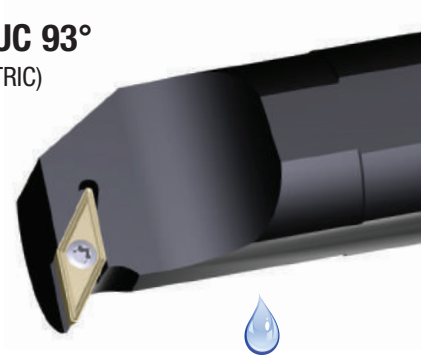


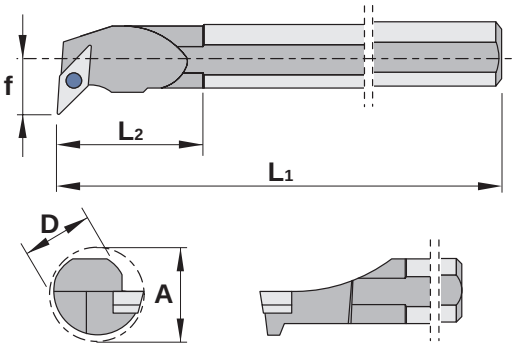
S Style Boring Bar
for Positive Inserts:
VC_22, VC_2.5, and VC_33
Application: I/D Profiling
Aproach 93°
Axial 0°
Radial -6°
Profilling Clearance Angle β = 49°
RH Bar Shown

SVUCL/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
S10R SVUCL/R 2	*015061*	F2507T	*018488*	T7	-	-	-	-
S12S SVUCL/R 2								
A16T SVUCL/R 2								
S12S SVUCL/R 2.5	*015063*	F3008T	*013214*	T9	-	-	-	-
A16T SVUCL/R 2.5								
A16T SVUCL/R 3	034497	1335	*028475*	K5516	*028740*	SA3718	*028478*	SAS1750
A20U SVUCL/R 3								

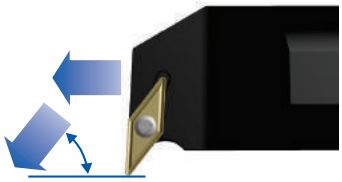
STELLRAM

SVUC 93°
(METRIC)





A.. SVUC LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L1	L2	Through Coolant
033650	**A16M SVUCL 11**	LH	VC_1103	20	16	11	150	31	
033651	**A20Q SVUCL 11**	LH	VC_1103	25	20	13	180	36	
033652	**A16M SVUCR 11**	RH	VC_1103	20	16	11	150	31	
033653	**A20Q SVUCR 11**	RH	VC_1103	25	20	13	180	36	
018443	**A20Q SVUCL 13**	LH	VC_1303	24	20	13	180	-	
018445	**A25S SVUCL 13**	LH	VC_1303	31	25	17	259	-	
018444	**A20Q SVUCR 13**	RH	VC_1303	24	20	13	180	-	
018446	**A25S SVUCR 13**	RH	VC_1303	31	25	17	259	-	
033654	**A25R SVUCL 16**	LH	VC_1604	31	25	17	200	42	
033655	**A32S SVUCL 16**	LH	VC_1604	39	32	22	250	45	
033656	**A25R SVUCR 16**	RH	VC_1604	31	25	17	200	42	
033657	**A32S SVUCR 16**	RH	VC_1604	39	32	22	250	45	



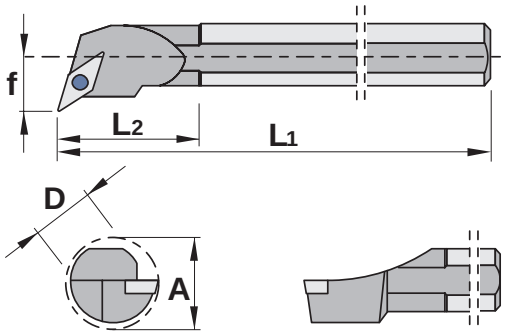
S Style Boring Bar
for Positive Inserts:
VC_1103, VC_1303, and VC_1604
Application: I/D Profiling
Aproach 93°
Axial 0°
Radial -6°
Profilling Clearance Angle β = 49°
RH Bar Shown

A.. SVUCL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
A16M SVUCL/R 11	*015061*	F2507T	*018488*	T7	-	-	-	-
A20Q SVUCL/R 11								
A20Q SVUCL/R 13	*015063*	F3008T	*013214*	T9	-	-	-	-
A25S SVUCL/R 13								
A25R SVUCL/R 16	034497	1335	*028475*	K5516	*028740*	SA3718	*028478*	SAS1750
A32S SVUCL/R 16								

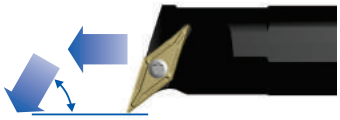
STELLRAM

SVQC 107.5°
(INCH)





S.. SVQC LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)					
				Min Bore Ø A	ØD	f	L_1	L_2	Through Coolant
033678	**S10S SVQCL 2**	LH	VC_22	0.910	0.625	0.500	10.000	1.220	⊘
033679	**S12S SVQCL 2**	LH	VC_22	1.06	0.750	0.625	10.000	1.417	⊘
033680	**S10S SVQCR 2**	RH	VC_22	0.910	0.625	0.500	10.000	1.220	⊘
033681	**S12S SVQCR 2**	RH	VC_22	1.06	0.750	0.625	10.000	1.417	⊘
033682	**S10S SVQCL 2.5**	LH	VC_2.5	0.910	0.625	0.500	10.000	1.220	⊘
033683	**S12S SVQCL 2.5**	LH	VC_2.5	1.06	0.750	0.625	10.000	1.417	⊘
033684	**S10S SVQCR 2.5**	RH	VC_2.5	0.910	0.625	0.500	10.000	1.220	⊘
033685	**S12S SVQCR 2.5**	RH	VC_2.5	1.06	0.750	0.625	10.000	1.417	⊘
033686	**S16T SVQCL 3**	LH	VC_33	1.375	1.000	0.750	12.000	1.653	⊘
033687	**S16T SVQCR 3**	RH	VC_33	1.375	1.000	0.750	12.000	1.653	⊘

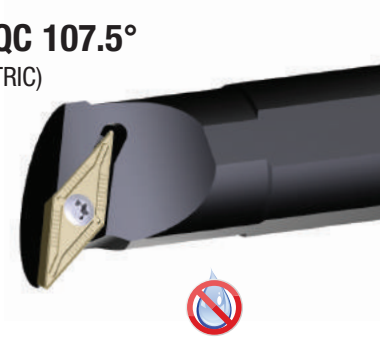


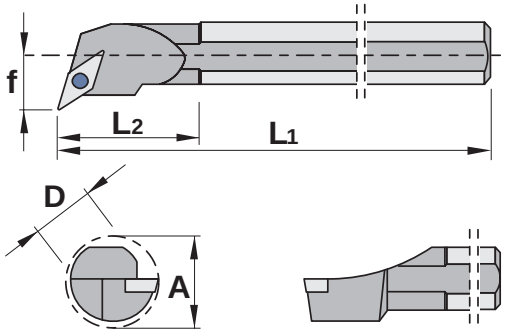
S Style Boring Bar
for Positive Inserts:
VC_22, VC_2.5, and VC_33
Application: I/D Profiling
Aproach 107.5°
Axial 0°
Radial -6°
Profilling Clearance Angle β = 34.5°
RH Bar Shown

S.. SVQCL/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
S10S SVQCL/R2 / **S12S SVQCL/R 2**	*015061*	F2507T	*018488*	T7	-	-	-	-
S10S SVQCL/R 2.5 / **S12S SVQCL/R 2.5**	*015063*	F3008T	*013214*	T9	-	-	-	-
S16T SVQCL/R 3	034497	1335	*028475*	K5516	*028740*	SA3718	*028478*	SAS1750

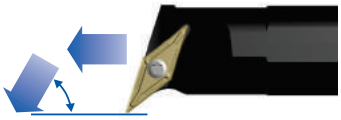
STELLRAM

SVQC 107.5°
(METRIC)





S.. SVQC LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L_1	L_2	Through Coolant
033668	**S16R SVQCL 11**	LH	VC_1103	20	16	11	200	31	
033669	**S20S SVQCL 11**	LH	VC_1103	24	20	13	250	36	
033670	**S16R SVQCR 11**	RH	VC_1103	20	16	11	200	31	
033671	**S20S SVQCR 11**	RH	VC_1103	24	20	13	250	36	
033672	**S16R SVQCL 13**	LH	VC_1303	20	16	11	200	31	
033673	**S20S SVQCL 13**	LH	VC_1303	24	20	13	250	36	
033674	**S16R SVQCR 13**	RH	VC_1303	20	16	11	200	31	
033675	**S20S SVQCR 13**	RH	VC_1303	24	20	13	250	36	
033676	**S25T SVQCL 16**	LH	VC_1604	31	25	17	300	42	
033677	**S25T SVQCR 16**	RH	VC_1604	31	25	17	300	42	

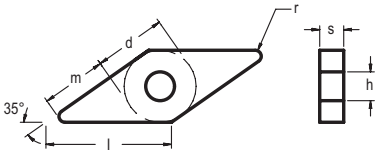


S Style Boring Bar
for Positive Inserts:
VC_1103, VC_1303 and VC_1604
Application: I/D Profiling
Aproach 107.5°
Axial 0°
Radial -6°
Profilling Clearance Angle β = 34.5°
RH Bar Shown

S.. SVQCL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
S16R SVQCL/R 11 / **S20S SVQCL/R 11**	*015061*	F2507T	*018488*	T7	-	-	-	-
S16R SVQCL/R 13 / **S20S SVQCL/R 13**	*015063*	F3008T	*013214*	T9	-	-	-	-
S25T SVQCL/R 16	034497	1335	*028475*	K5516	*028740*	SA3718	*028478*	SAS1750

STELLRAM

VNGG
3F Geometry

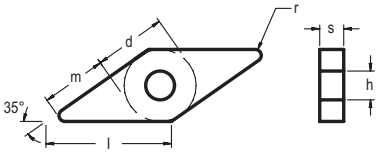




EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
031549	**VNGG160402F-3F** **VNGG330.5-3F**	SP0819	9.53 0.375	16.60 0.654	4.76 0.187	0.20 0.008	3.81 0.150		Medium
031550	**VNGG160404F-3F** **VNGG331-3F**	SP0819	9.53 0.375	16.60 0.654	4.76 0.187	0.40 0.016	3.81 0.150		Medium
031551	**VNGG160408F-3F** **VNGG332-3F**	SP0819	9.53 0.375	16.60 0.654	4.76 0.187	0.80 0.031	3.81 0.150		Medium

For Toolholders External: see pages C214 - C219 | Internal: see pages C220 - C221

VNMG
1B Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
030882	**VNMG160404E-1B** **VNMG331A-1B**	SP0819	9.53 0.375	16.60 0.654	4.76 0.187	0.40 0.016	3.81 0.150		Finishing
032860	**VNMG160404E-1B** **VNMG331A-1B**	NL250	9.53 0.375	16.60 0.654	4.76 0.187	0.40 0.016	3.81 0.150		Finishing
032861	**VNMG160408E-1B** **VNMG332A-1B**	NL250	9.53 0.375	16.60 0.654	4.76 0.187	0.80 0.031	3.81 0.150		Finishing
030883	**VNMG160408E-1B** **VNMG332A-1B**	SP0819	9.53 0.375	16.60 0.654	4.76 0.187	0.80 0.031	3.81 0.150		Finishing

For Toolholders External: see pages C214 - C219 | Internal: see pages C220 - C221

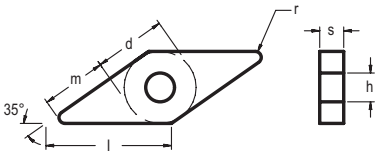
Material Guide – Key to Recommended Inserts

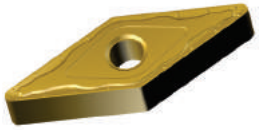
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

VNMG
2N Geometry

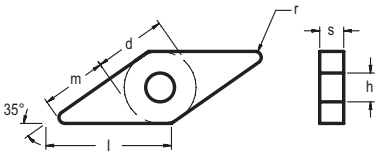


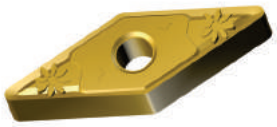


EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032864	**VNMG160404E-2N** **VNMG331A-2N**	NL250	9.53 0.375	16.60 0.654	4.76 0.187	0.40 0.016	3.81 0.150		Medium
032865	**VNMG160404E-2N** **VNMG331A-2N**	NL300	9.53 0.375	16.60 0.654	4.76 0.187	0.40 0.016	3.81 0.150		Medium
032866	**VNMG160404E-2N** **VNMG331A-2N**	NL920	9.53 0.375	16.60 0.654	4.76 0.187	0.40 0.016	3.81 0.150		Medium
032867	**VNMG160408E-2N** **VNMG332A-2N**	NL250	9.53 0.375	16.60 0.654	4.76 0.187	0.80 0.031	3.81 0.150		Medium
032868	**VNMG160408E-2N** **VNMG332A-2N**	NL300	9.53 0.375	16.60 0.654	4.76 0.187	0.80 0.031	3.81 0.150		Medium
032869	**VNMG160408E-2N** **VNMG332A-2N**	NL920	9.53 0.375	16.60 0.654	4.76 0.187	0.80 0.031	3.81 0.150		Medium

For Toolholders External: see pages C214 - C219 | Internal: see pages C220 - C221

VNMG
3J Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032873	**VNMG160404E-3J** **VNMG331A-3A**	SP4019	9.53 0.375	16.60 0.654	4.76 0.187	0.40 0.016	3.81 0.150		Medium
032874	**VNMG160408E-3J** **VNMG332A-3J**	SP4019	9.53 0.375	16.60 0.654	4.76 0.187	0.80 0.031	3.81 0.150		Medium

For Toolholders External: see pages C214 - C219 | Internal: see pages C220 - C221

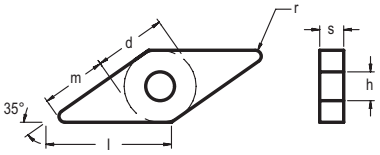
Material Guide – Key to Recommended Inserts

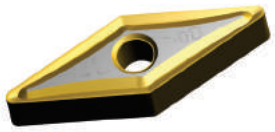
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

VNMG
4E Geometry

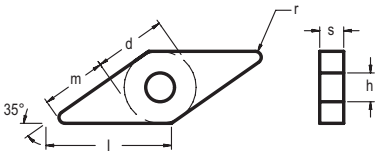


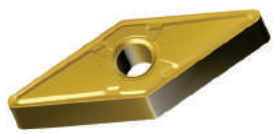


EDP	Description ISO / ANSI	Grade	d mm / inch	l mm / inch	S mm / inch	r_ε mm / inch	h mm / inch	Material	Application
030537	**VNMG160404E-4E**	SP0819	9.53	16.60	4.76	0.40	3.81		Medium-Roughing
	VNMG331A-4E		0.375	0.654	0.187	0.016	0.150		
030538	**VNMG160408E-4E**	SP0819	9.53	16.60	4.76	0.80	3.81		Medium-Roughing
	VNMG332A-4E		0.375	0.654	0.187	0.031	0.150		

For Toolholders External: see pages C214 - C219 | Internal: see pages C220 - C221

VNMG
4U Geometry





EDP	Description ISO	Grade	d mm	l mm	S mm	r_ε mm	h mm	Material	Application
032875	**VNMG160404E-4U**	NL200	9.53	16.60	4.76	0.40	3.81		Roughing
	VNMG331A-4U		0.375	0.654	0.187	0.016	0.150		
032876	**VNMG160408E-4U**	NL200	9.53	16.60	4.76	0.80	3.81		Roughing
	VNMG332A-4U		0.375	0.654	0.187	0.031	0.150		

For Toolholders External: see pages C214 - C219 | Internal: see pages C220 - C221

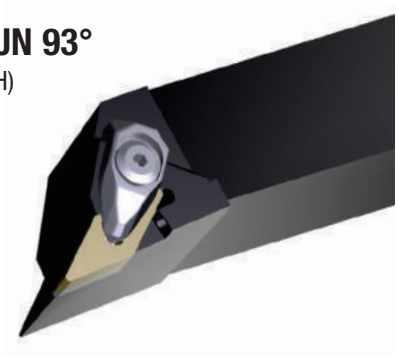
Material Guide – Key to Recommended Inserts

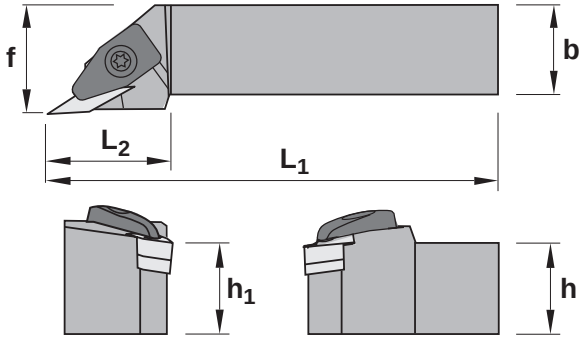
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

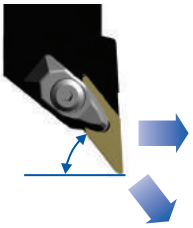
STELLRAM

DVJN 93°
(INCH)





DVJN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h1	b	f	L1	L2
033407	**DVJNL-123B**	LH	VN_33	0.750	0.750	1.000	4.500	1.496
033408	**DVJNL-163D**	LH	VN_33	1.000	1.000	1.250	6.000	1.496
033409	**DVJNL- 203D**	LH	VN_33	1.250	1.250	1.500	6.000	1.496
033410	**DVJNR-123B**	RH	VN_33	0.750	0.750	1.000	4.500	1.496
033411	**DVJNR-163D**	RH	VN_33	1.000	1.000	1.250	6.000	1.496
033412	**DVJNR- 203D**	RH	VN_33	1.250	1.250	1.500	6.000	1.496

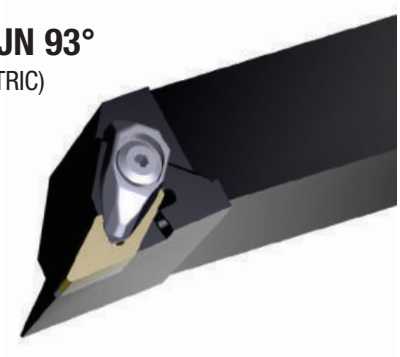


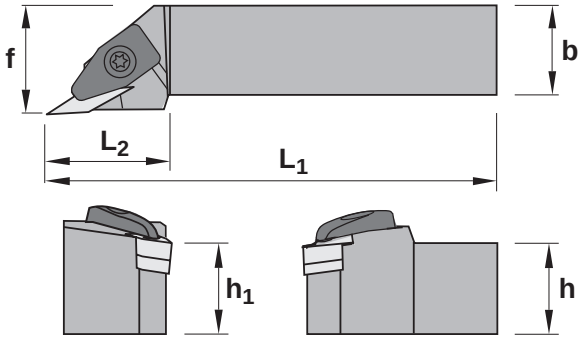
D Style External Toolholder
for Negative Inserts: VN_33
Application:- O/D Turn and Profile
Axial Approach 93°
Axial -8°
Radial -4°
Profiling Clearance Angle β = 49°
RH Holder Shown

DVJNL/R Spare Parts (INCH)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Spring EDP*		*Anvil EDP*		*Anvil Screw EDP*		*Clamp & Anvil Screw Key*	
DVJNL/R-123B **DVJNL/R-163D** **DVJNL/R-203D**	*033711*	1695	*033709*	DC2708	*033720*	4294	*001695*	IVSN322	*033718*	1764	*018286*	KH5003

STELLRAM

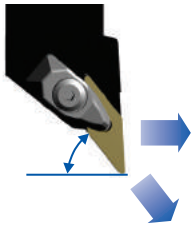
DVJN 93°
(METRIC)





DVJN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
033401	**DVJNL 2020 K16**	LH	VN_1604	20	20	25	125	38
033402	**DVJNL 2525 M16**	LH	VN_1604	25	25	32	150	38
033403	***DVJNL 3225 P16**	LH	VN_1604	32	25	32	170	38
033404	**DVJNR 2020 K16**	RH	VN_1604	20	20	25	125	38
033405	**DVJNR 2525 M16**	RH	VN_1604	25	25	32	150	38
033406	***DVJNR 3225 P16**	RH	VN_1604	32	25	32	170	38

* Non Stock Items, subject to extended delivery time



D Style External Toolholder
for Negative Inserts: VN_1604
Application: O/D Turn and Profile
Axial Approach 93°
Axial -6°
Radial -6°
Profiling Clearance Angle β = 49°
RH Holder Shown

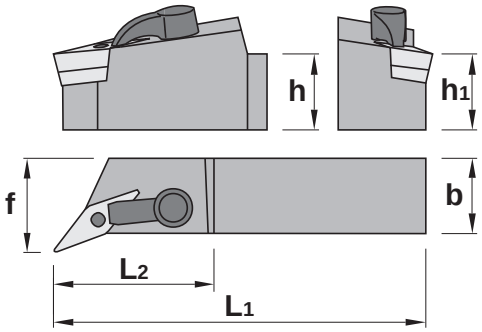
DVJNL/R Spare Parts (METRIC)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Spring EDP*		*Anvil EDP*		*Anvil Screw EDP*		*Clamp & Anvil Screw Key*	
DVJNL/R 2020 K16	*033711*	1695	*033709*	DC2708	*033720*	4294	*001695*	IVSN322	*033718*	1764	*018286*	KH5003
DVJNL/R 2525 M16												
***DVJNL/R 3225 P16**												

* Non Stock Items, subject to extended delivery time

STELLRAM

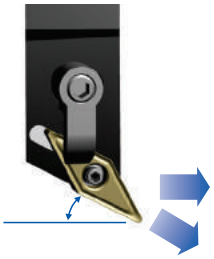
MVQN 117.5°
(INCH)





MVQN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h1	b	f	L1	L2
033419	**MVQNL-123B**	LH	VN_33	0.750	0.750	1.000	4.500	1.653
033420	**MVQNL-163D**	LH	VN_33	1.000	1.000	1.250	6.000	1.653
033421	**MVQNL- 203D**	LH	VN_33	1.250	1.250	1.500	6.000	1.653
033422	**MVQNR-123B**	RH	VN_33	0.750	0.750	1.000	4.500	1.653
033423	**MVQNR-163D**	RH	VN_33	1.000	1.000	1.250	6.000	1.653
033424	***MVQNR- 203D**	RH	VN_33	1.250	1.250	1.500	6.000	1.653

* Non Stock Items, subject to extended delivery time



M Style External Toolholder
for Negative Inserts: VN_33
Application: Face and Profile Turn
Axial Approach 117.5°
Axial -8°
Radial -10°
Profiling Clearance Angle β = 36.5°
RH Holder Shown

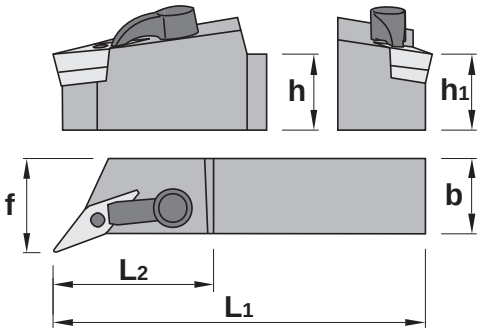
MVQNL/R Spare Parts (INCH)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Key EDP*		*Lock Pin EDP*		*Lock Pin Key EDP*		*Anvil EDP*	
MVQNL/R-123B	*028997*	XNS48	*029072*	CL22	*008207*	KH5103	*004705*	NL34L	*029083*	KH5102	*001695*	IVSN322
MVQNL/R-163D												
***MVQNL/R-203D**												

* Non Stock Items, subject to extended delivery time

STELLRAM

MVQN 117.5°
(METRIC)





MVQN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
033413	**MVQNL 2020 K16**	LH	VN_1604	20	20	25	125	42
033414	**MVQNL 2525 M16**	LH	VN_1604	25	25	32	150	42
033415	***MVQNL 3225 P16**	LH	VN_1604	32	25	32	170	42
033416	**MVQNR 2020 K16**	RH	VN_1604	20	20	25	125	42
033417	**MVQNR 2525 M16**	RH	VN_1604	25	25	32	150	42
033418	***MVQNR 3225 P16**	RH	VN_1604	32	25	32	170	42

* Non Stock Items, subject to extended delivery time

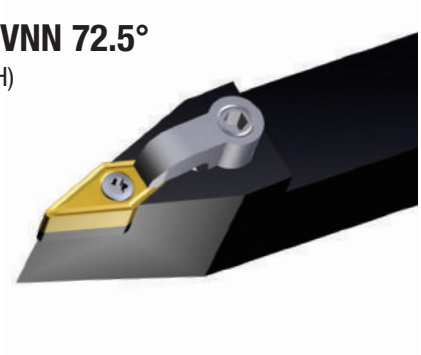


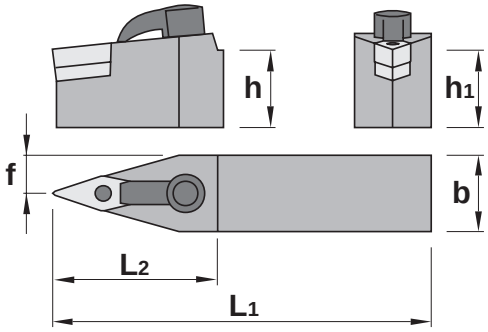
M Style External Toolholder
for Negative Inserts: VN_1604
Application: Face and Profile Turn
Axial Approach 117.5°
Axial -8°
Radial -10°
Profiling Clearance Angle β = 36.5°
RH Holder Shown

MVQNL/R Spare Parts (METRIC)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Key EDP*		*Lock Pin EDP*		*Lock Pin Key EDP*		*Anvil EDP*	
MVQNL/R 2020 K16 **MVQNL/R 2525 M16** ***MVQNL/R 3225 Q16**	*028575*	1086	*034492*	CL2616	*018286*	KH5003	*034511*	1665	*028578*	KH5002	*001695*	IVSN322

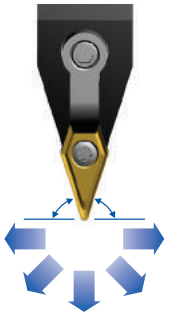
* Non Stock Items, subject to extended delivery time

MVVNN 72.5°
(INCH)





MVVNN Neutral External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h_1	b	f	L_1	L_2
033425	**MVVNN-123B**	Neutral	VN_33	0.750	0.750	1.000	4.500	1.653
033426	**MVVNN-163D**	Neutral	VN_33	1.000	1.000	1.250	6.000	1.653
033427	**MVVNN- 203D**	Neutral	VN_33	1.250	1.250	1.500	6.000	1.653

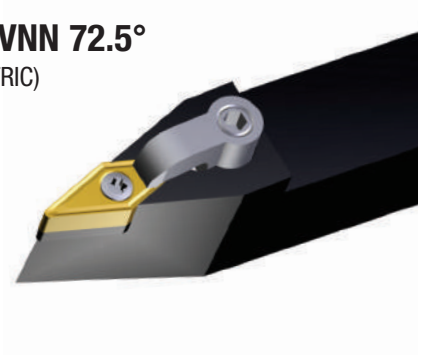


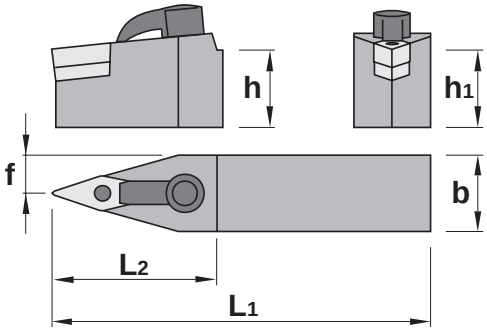
M Style External Toolholder
for Negative Inserts :VN_33
Application: O/D Plunge and Profile
Axial Approach 72.5°
Axial -6 °
Radial 0°
Profiling Clearance Angle β = 69.5°
Neutral Holder Shown

MVVNNL/R Spare Parts (INCH)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Key EDP*		*Lock Pin EDP*		*Lock Pin Key EDP*		*Anvil EDP*	
MVVNN-123B	*028997*	XNS48	*029072*	CL22	*008207*	KH5103	*004705*	NL34L	*029083*	KH5102	*001695*	IVSN322
MVVNN-163D												
MVVNN-203D												

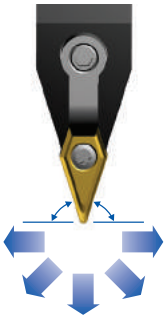
STELLRAM

MVVNN 72.5°
(METRIC)





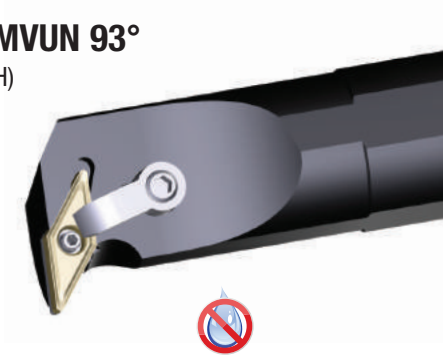
MVVNN Neutral External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
028549	**MVVNN 2020 K16**	Neutral	VN_1604	20	20	10	125	42
028550	**MVVNN 2525 M16**	Neutral	VN_1604	25	25	12.5	150	42

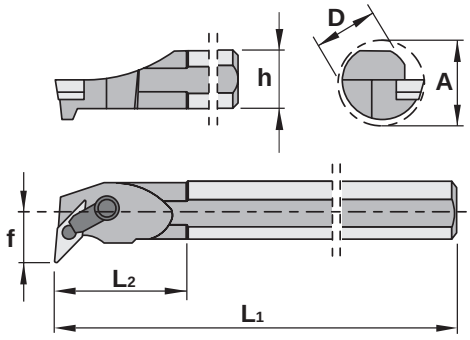


M Style External Toolholder
for Negative Inserts: VN_1604
Application: O/D Plunge and Profile
Axial Approach 72.5°
Axial -6 °
Radial 0°
Profiling Clearance Angle β = 69.5°
Neutral Holder Shown

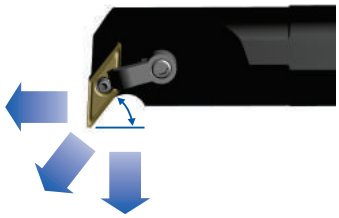
MVVNNL/R Spare Parts (METRIC)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Key EDP*		*Lock Pin EDP*		*Lock Pin Key EDP*		*Anvil EDP*	
MVVNN 2020 K16	*028575*	1086	*034492*	CL2616	*018286*	KH5003	*034511*	1665	*028578*	KH5002	*001695*	IVSN322
MVVNN 2525 M16												

A..MVUN 93°
(INCH)





A..MVUN LH & RH Internal Boring Bars											
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)							
				Min Bore Ø A	ØD	f	L_1	L_2	h	Through Coolant	
033428	**A16T MVUNL-3**	LH	VN_33	2.000	1.000	1.000	12.000	1.653	0.900		
004953	**A20U MVUNL-3**	LH	VN_33	2.250	1.250	1.125	14.000	1.771	1.180		
027819	**A24U MVUNL-3**	LH	VN_33	2.500	1.500	1.250	14.000	1.968	1.370		
033429	**A16T MVUNR-3**	RH	VN_33	2.000	1.000	1.000	12.000	1.653	0.900		
004952	**A20U MVUNR-3**	RH	VN_33	2.250	1.250	1.125	14.000	1.771	1.180		
004958	**A24U MVUNR-3**	RH	VN_33	2.500	1.500	1.250	14.000	1.968	1.370		

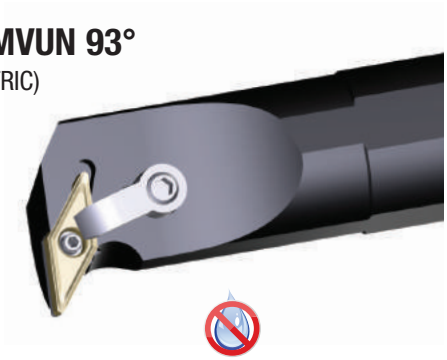


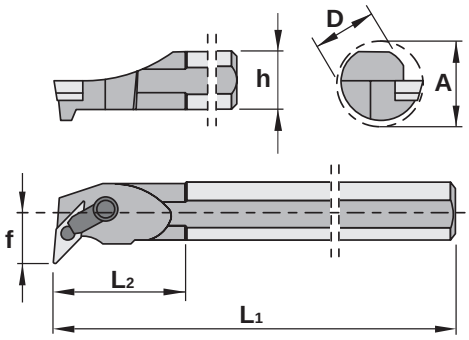
M Style External Toolholder
for Negative Inserts: VN_33
Application: Internal I/D Boring and Profile
Axial Approach 93°
Axial -5°
Radial -15°
Profiling Clearance Angle β = 51°
RH Bar Shown

A..MVUNL/R Spare Parts (INCH)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Key EDP*		*Lock Pin EDP*		*Lock Pin Key EDP*		*Anvil EDP*	
A16T MVUNL/R-3	*029075*	XNS47	*029072*	CL22	*008207*	KH5103	*004705*	NL34L	*029083*	KH5102	*001695*	IVSN322
A20U MVUNL/R-3	*028997*	XNS48										
A20U MVUNL/R-3												

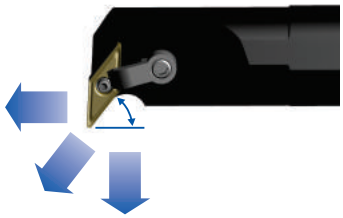
STELLRAM

S..MVUN 93°
(METRIC)





S..MVUN LH & RH Internal Boring Bars											
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)							
				Min Bore Ø A	ØD	f	L_1	L_2	h	Through Coolant	
033471	**S25T MVUNL 16**	LH	VN_1604	31	25	17	300	42	23	⊘	
033472	**S32U MVUNL 16**	LH	VN_1604	39	32	22	350	45	30	⊘	
033473	**S40V MVUNL 16**	LH	VN_1604	48	40	27	400	50	37	⊘	
033474	**S25T MVUNR 16**	RH	VN_1604	31	25	17	300	42	23	⊘	
033475	**S32U MVUNR 16**	RH	VN_1604	39	32	22	350	45	30	⊘	
033476	**S40V MVUNR 16**	RH	VN_1604	48	40	27	400	50	37	⊘	

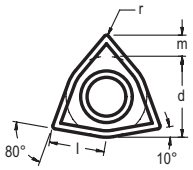


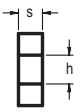
M Style External Toolholder
for Negative Inserts: VN_1604
Application: Internal I/D Boring and Profile
Axial Approach 93°
Axial -5°
Radial -15°
Profiling Clearance Angle β = 51°
RH Bar Shown

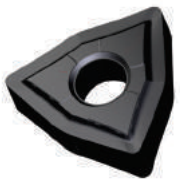
S.. MVUNL/R Spare Parts (METRIC)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Key EDP*		*Lock Pin EDP*		*Lock Pin Key EDP*		*Anvil EDP*	
S25T MVUNL/R 16	*034493*	1186	*034491*	CL2614	*018286*	KH5003	*034511*	1665	*028578*	KH5002	*001695*	IVSN322
S32U MVUNL/R 16	*028575*	1086										
S40V MVUNL/R 16												

STELLRAM

WNGG
3F Geometry



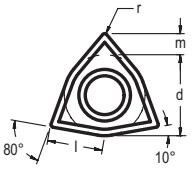


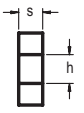


EDP	Description	Grade	d	l	S	r_ε	h	Material	Application
	ISO		mm	mm	mm	mm	mm		
	ANSI		inch	inch	inch	inch	inch		
031552	**WNGG080402F-3F**	SP0819	12.70	8.69	4.76	0.20	5.16		Medium
	WNGG430.5F-3F		0.500	0.342	0.187	0.008	0.203		
031553	**WNGG080404F-3F**	SP0819	12.70	8.69	4.76	0.40	5.16		Medium
	WNGG431-3F		0.500	0.342	0.187	0.016	0.203		
031554	**WNGG080408F-3F**	SP0819	12.70	8.69	4.76	0.80	5.16		Medium
	WNGG432-3F		0.500	0.342	0.187	0.031	0.203		

For Toolholders External: see pages C228 - C229 | Internal: see pages C230 - C231

WNMA
Flat Top







EDP	Description	Grade	d	l	S	r_ε	h	Material	Application
	ISO		mm	mm	mm	mm	mm		
	ANSI		inch	inch	inch	inch	inch		
032877	**WNMA080408E**	NL250	12.70	8.69	4.76	0.80	5.16		Heavy Roughing
	WNMA432A		0.500	0.342	0.187	0.031	0.203		
032878	**WNMA080412E**	NL250	12.70	8.69	4.76	1.20	5.16		Heavy Roughing
	WNMA433A		0.500	0.342	0.187	0.047	0.203		

For Toolholders External: see pages C228 - C229 | Internal: see pages C230 - C231

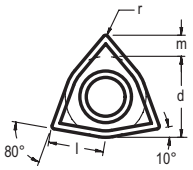
Material Guide – Key to Recommended Inserts

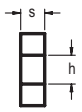
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

WNMG
1B Geometry







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
030884	**WNMG060404E-1B** **WNMG331A-1B**	SP0819	9.53 0.375	6.52 0.257	4.76 0.187	0.40 0.016	3.81 0.150		Finishing
032879	**WNMG060408E-1B** **WNMG332A-1B**	NL250	9.53 0.375	6.52 0.257	4.76 0.187	0.80 0.031	3.81 0.150		Finishing
030885	**WNMG060408E-1B** **WNMG332A-1B**	SP0819	9.53 0.375	6.52 0.257	4.76 0.187	0.80 0.031	3.81 0.150		Finishing
032880	**WNMG080404E-1B** **WNMG431A-1B**	NL250	12.70 0.500	8.69 0.342	4.76 0.187	0.40 0.016	5.16 0.203		Finishing
030886	**WNMG080404E-1B** **WNMG431A-1B**	SP0819	12.70 0.500	8.69 0.342	4.76 0.187	0.40 0.016	5.16 0.203		Finishing
032881	**WNMG080408E-1B** **WNMG432A-1B**	NL250	12.70 0.500	8.69 0.342	4.76 0.187	0.80 0.031	5.16 0.203		Finishing
030887	**WNMG080408E-1B** **WNMG432A-1B**	SP0819	12.70 0.500	8.69 0.342	4.76 0.187	0.80 0.031	5.16 0.203		Finishing
032882	**WNMG080412E-1B** **WNMG433A-1B**	NL250	12.70 0.500	8.69 0.342	4.76 0.187	1.20 0.047	5.16 0.203		Finishing
030888	**WNMG080412E-1B** **WNMG433A-1B**	SP0819	12.70 0.500	8.69 0.342	4.76 0.187	1.20 0.047	5.16 0.203		Finishing

For Toolholders External: see pages C228 - C229 | Internal: see pages C230 - C231

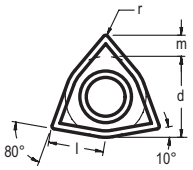
Material Guide – Key to Recommended Inserts

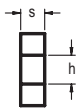
Material Designation

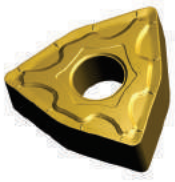
P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

WNMG
2N Geometry







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032884	**WNMG060404E-2N** **WNMG331A-2N**	NL250	9.53 0.375	6.52 0.257	4.76 0.187	0.40 0.016	3.81 0.150		Medium
032885	**WNMG060408E-2N** **WNMG332A-2N**	NL300	9.53 0.375	6.52 0.257	4.76 0.187	0.80 0.031	3.81 0.150		Medium
032886	**WNMG060408E-2N** **WNMG332A-2N**	NL920	9.53 0.375	6.52 0.257	4.76 0.187	0.80 0.031	3.81 0.150		Medium
032887	**WNMG080404E-2N** **WNMG431A-2N**	NL250	12.70 0.500	8.69 0.342	4.76 0.187	0.40 0.016	5.16 0.203		Medium
032888	**WNMG080404E-2N** **WNMG431A-2N**	NL300	12.70 0.500	8.69 0.342	4.76 0.187	0.40 0.016	5.16 0.203		Medium
032889	**WNMG080404E-2N** **WNMG431A-2N**	NL920	12.70 0.500	8.69 0.342	4.76 0.187	0.40 0.016	5.16 0.203		Medium
032890	**WNMG080408E-2N** **WNMG432A-2N**	NL250	12.70 0.500	8.69 0.342	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032891	**WNMG080408E-2N** **WNMG432A-2N**	NL300	12.70 0.500	8.69 0.342	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032892	**WNMG080408E-2N** **WNMG432A-2N**	NL920	12.70 0.500	8.69 0.342	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032893	**WNMG080412E-2N** **WNMG433A-2N**	NL250	12.70 0.500	8.69 0.342	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032894	**WNMG080412E-2N** **WNMG433A-2N**	NL300	12.70 0.500	8.69 0.342	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032895	**WNMG080412E-2N** **WNMG433A-2N**	NL920	12.70 0.500	8.69 0.342	4.76 0.187	1.20 0.047	5.16 0.203		Medium
032896	**WNMG080416E-2N** **WNMG434A-2N**	NL250	12.70 0.500	8.69 0.342	4.76 0.187	1.60 0.063	5.16 0.203		Medium
032897	**WNMG080416E-2N** **WNMG434A-2N**	NL300	12.70 0.500	8.69 0.342	4.76 0.187	1.60 0.063	5.16 0.203		Medium
032898	**WNMG080416E-2N** **WNMG434A-2N**	NL920	12.70 0.500	8.69 0.342	4.76 0.187	1.60 0.063	5.16 0.203		Medium

For Toolholders External: see pages C228 - C229 | Internal: see pages C230 - C231

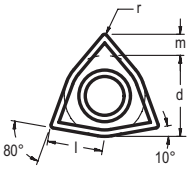
Material Guide – Key to Recommended Inserts

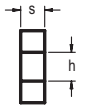
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

WNMG
3J Geometry



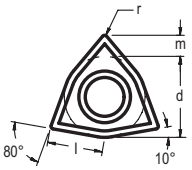


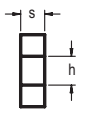


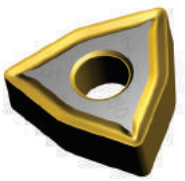
EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032899	WNMG060404E-3J WNMG331A-3J	SP4019	9.53 0.375	6.52 0.257	4.76 0.187	0.40 0.016	3.81 0.150		Medium
032900	WNMG060408E-3J WNMG332A-3J	SP4019	9.53 0.375	6.52 0.257	4.76 0.187	0.80 0.031	3.81 0.150		Medium
032901	WNMG080404E-3J WNMG431A-3J	SP4019	12.70 0.500	8.69 0.342	4.76 0.187	0.40 0.016	5.16 0.203		Medium
032902	WNMG080408E-3J WNMG432A-3J	SP4019	12.70 0.500	8.69 0.342	4.76 0.187	0.80 0.031	5.16 0.203		Medium
032903	WNMG080412E-3J WNMG433A-3J	SP4019	12.70 0.500	8.69 0.342	4.76 0.187	1.20 0.047	5.16 0.203		Medium

For Toolholders External: see pages C228 - C229 | Internal: see pages C230 - C231

WNMG
4E Geometry







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
030519	WNMG060404E-4E WNMG331A-4E	SP0819	9.53 0.375	6.52 0.257	4.76 0.187	0.40 0.016	3.81 0.150		Medium-Roughing
030520	WNMG060408E-4E WNMG332A-4E	SP0819	9.53 0.375	6.52 0.257	4.76 0.187	0.80 0.031	3.81 0.150		Medium-Roughing
031183	WNMG060412E-4E WNMG333A-4E	SP0819	9.53 0.375	6.52 0.257	4.76 0.187	1.20 0.047	3.81 0.150		Medium-Roughing
030521	WNMG080404E-4E WNMG431A-4E	SP0819	12.70 0.500	8.69 0.342	4.76 0.187	0.40 0.016	5.16 0.203		Medium-Roughing
032904	WNMG080404E-4E WNMG431A-4E	NL400	12.70 0.500	8.69 0.342	4.76 0.187	0.40 0.016	5.16 0.203		Medium-Roughing
030522	WNMG080408E-4E WNMG432A-4E	SP0819	12.70 0.500	8.69 0.342	4.76 0.187	0.80 0.031	5.16 0.203		Medium-Roughing
032905	WNMG080408E-4E WNMG432A-4E	NL400	12.70 0.500	8.69 0.342	4.76 0.187	0.80 0.031	5.16 0.203		Medium-Roughing
032906	WNMG080412E-4E WNMG433A-4E	NL400	12.70 0.500	8.69 0.342	4.76 0.187	1.20 0.047	5.16 0.203		Medium-Roughing
030523	WNMG080412E-4E WNMG433A-4E	SP0819	12.70 0.500	8.69 0.342	4.76 0.187	1.20 0.047	5.16 0.203		Medium-Roughing

For Toolholders External: see pages C228 - C229 | Internal: see pages C230 - C231

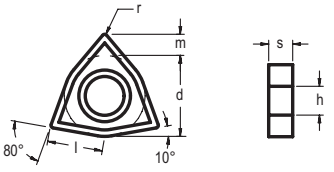
Material Guide – Key to Recommended Inserts

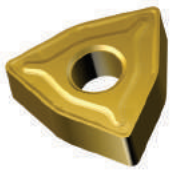
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

WNMG
4T Geometry





EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
034458	**WNMG060408E-4T** **WNMG332A-4T**	NL300	9.53 0.375	6.52 0.257	4.76 0.187	0.80 0.031	3.81 0.150		Roughing
034459	**WNMG060408E-4T** **WNMG332A-4T**	NL920	9.53 0.375	6.52 0.257	4.76 0.187	0.80 0.031	3.81 0.150		Roughing
032909	**WNMG060412E-4T** **WNMG333A-4T**	NL300	9.53 0.375	6.52 0.257	4.76 0.187	1.20 0.047	3.81 0.150		Roughing
032910	**WNMG060412E-4T** **WNMG333A-4T**	NL920	9.53 0.375	6.52 0.257	4.76 0.187	1.20 0.047	3.81 0.150		Roughing
032911	**WNMG080408E-4T** **WNMG432A-4T**	NL250	12.70 0.500	8.69 0.342	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032912	**WNMG080408E-4T** **WNMG432A-4T**	NL300	12.70 0.500	8.69 0.342	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032913	**WNMG080408E-4T** **WNMG432A-4T**	NL400	12.70 0.500	8.69 0.342	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032914	**WNMG080408E-4T** **WNMG432A-4T**	NL920	12.70 0.500	8.69 0.342	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032915	**WNMG080412E-4T** **WNMG433A-4T**	NL250	12.70 0.500	8.69 0.342	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032916	**WNMG080412E-4T** **WNMG433A-4T**	NL300	12.70 0.500	8.69 0.342	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032917	**WNMG080412E-4T** **WNMG433A-4T**	NL400	12.70 0.500	8.69 0.342	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032918	**WNMG080412E-4T** **WNMG433A-4T**	NL920	12.70 0.500	8.69 0.342	4.76 0.187	1.20 0.047	5.16 0.203		Roughing
032919	**WNMG080416E-4T** **WNMG434A-4T**	NL300	12.70 0.500	8.69 0.342	4.76 0.187	1.60 0.063	5.16 0.203		Roughing
032920	**WNMG080416E-4T** **WNMG434A-4T**	NL400	12.70 0.500	8.69 0.342	4.76 0.187	1.60 0.063	5.16 0.203		Roughing
032921	**WNMG080416E-4T** **WNMG434A-4T**	NL920	12.70 0.500	8.69 0.342	4.76 0.187	1.60 0.063	5.16 0.203		Roughing

For Toolholders External: see pages C228 - C229 | Internal: see pages C230 - C231

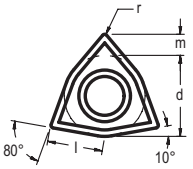
Material Guide – Key to Recommended Inserts

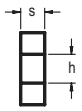
Material Designation

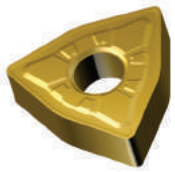
P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

STELLRAM

WNMG
4U Geometry







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032922	**WNMG080408E-4U** **WNMG432A-4U**	NL200	12.70 0.500	8.69 0.342	4.76 0.187	0.80 0.031	5.16 0.203		Roughing
032923	**WNMG080412E-4U** **WNMG433A-4U**	NL200	12.70 0.500	8.69 0.342	4.76 0.187	1.20 0.047	5.16 0.203		Roughing

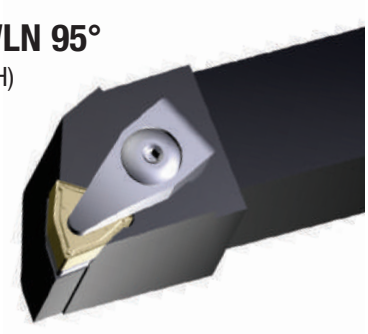
For Toolholders External: see pages C228 - C229 | Internal: see pages C230 - C231

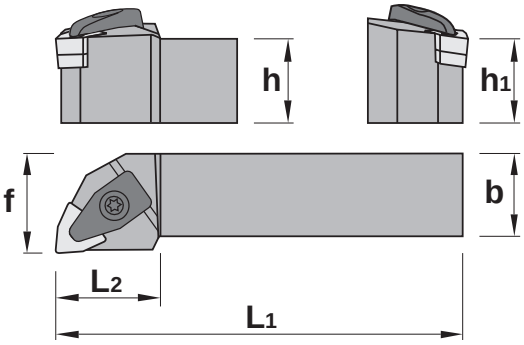
Material Guide – Key to Recommended Inserts

Material Designation

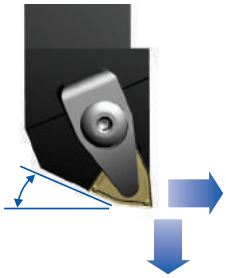
P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

DWLN 95°
(INCH)





DWLN LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)				
				h = h1	b	f	L1	L2
033440	**DWLNL-123B**	LH	WN_33	0.750	0.750	1.000	4.500	1.000
033441	**DWLNL-163D**	LH	WN_33	1.000	1.000	1.250	6.000	1.000
033442	**DWLNR-123B**	RH	WN_33	0.750	0.750	1.000	4.500	1.000
033443	**DWLNR-163D**	RH	WN_33	1.000	1.000	1.250	6.000	1.000
033444	**DWLNL-124B**	LH	WN_43	0.750	0.750	1.000	4.500	1.260
033445	**DWLNL-164D**	LH	WN_43	1.000	1.000	1.250	6.000	1.338
033446	**DWLNL- 204D**	LH	WN_43	1.250	1.250	1.500	6.000	1.338
033447	**DWLNR-124B**	RH	WN_43	0.750	0.750	1.000	4.500	1.260
033448	**DWLNR-164D**	RH	WN_43	1.000	1.000	1.250	6.000	1.338
033449	**DWLNR- 204D**	RH	WN_43	1.250	1.250	1.500	6.000	1.338

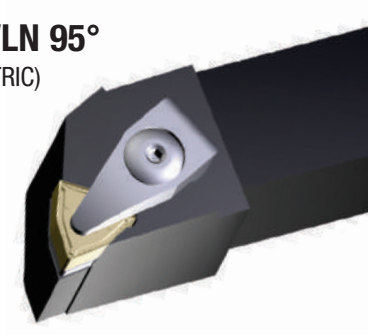


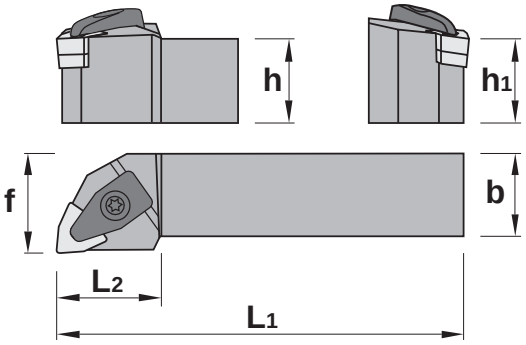
D Style External Toolholder
for Negative Inserts:
WN_33 & WN_43
Application: O/D Face and Turn
Axial Approach 95°
Axial -6°
Radial -6°
Profiling Clearance Angle β = 0°
RH Holder Shown

DWLNL/R Spare Parts (INCH)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Spring EDP*		*Anvil EDP*		*Anvil Screw EDP*		*Clamp & Anvil Screw Key*	
DWLNL/R-123B	*033711*	1695	*033709*	DC2708	*033720*	4294	*030973*	IWSN323	*033718*	1764	*018286*	KH5003
DWLNL/R-163D												
DWLNL/R-124B	*033710*	1696	*033707*	DC2712	*033719*	4295	*009251*	IWSN-433	*033716*	1766	*018287*	KH5004
DWLNL/R-164D												
DWLNL/R-204D												

STELLRAM

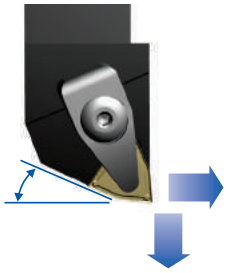
DWLN 95°
(METRIC)





DWLN LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
033430	**DWLNL 2020 K06**	LH	WN_0604	20	20	25	125	25
033431	**DWLNL 2525 M06**	LH	WN_0604	25	25	32	150	25
033432	**DWLNR 2020 K06**	RH	WN_0604	20	20	25	125	25
033433	**DWLNR 2525 M06**	RH	WN_0604	25	25	32	150	25
033434	**DWLNL 2020 K08**	LH	WN_0804	20	20	25	125	34
033435	**DWLNL 2525 M08**	LH	WN_0804	25	25	32	150	34
033436	**DWLNL 3232 P08**	LH	WN_0804	32	32	40	170	34
033437	**DWLNR 2020 K08**	RH	WN_0804	20	20	25	125	34
033438	**DWLNR 2525 M08**	RH	WN_0804	25	25	32	150	34
033439	**DWLNR 3232 P08**	RH	WN_0804	32	32	40	170	34



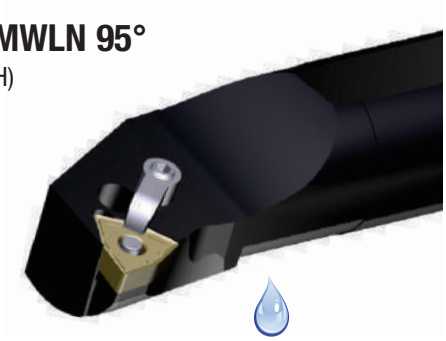
D Style External Toolholder
for Negative Inserts:
WN_0604, & WN_0804
Application: O/D Face and Turn
Axial Approach 95°
Axial -6°
Radial -6°
Profiling Clearance Angle β = 0°
RH Holder Shown

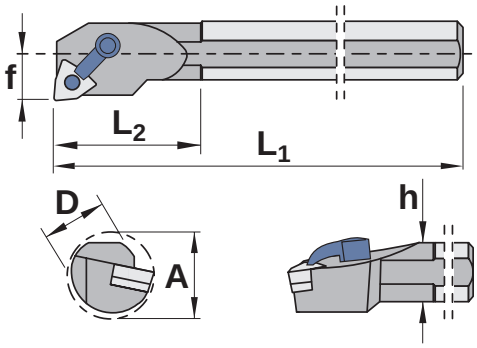
DWLNL/R Spare Parts (METRIC)

Item Description	Clamp Screw EDP		Clamp EDP		Clamp Spring EDP		Anvil EDP		Anvil Screw EDP		Clamp & Anvil Screw Key	
DWLNL/R 2020 K06	033711	1695	033709	DC2708	033720	4294	030973	IWSN323	033718	1764	018286	KH5003
DWLNL/R 2525 M06												
DWLNL/R 2020 K08	033710	1696	033707	DC2712	033719	4295	009251	IWSN433	033716	1766	018287	KH5004
DWLNL/R 2525 M08												
DWLNL/R 3232 P08												

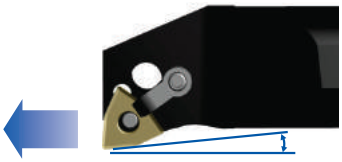
STELLRAM

A..MWLN 95°
(INCH)





A..MWLN LH & RH Internal Boring Bars											
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)							
				Min Bore Ø A	ØD	f	L_1	L_2	h	Through Coolant	
033461	**A12S MWLNL-3**	LH	WN_33	1.000	0.750	0.500	10.000	1.500	0.710		
033462	**A16T MWLNL-3**	LH	WN_33	1.280	1.000	0.640	12.000	2.500	0.900		
033463	**A12S MWLNR-3**	RH	WN_33	1.000	0.750	0.500	10.000	1.500	0.710		
033464	**A16T MWLNR-3**	RH	WN_33	1.280	1.000	0.640	12.000	2.500	0.900		
033465	**A16T MWLNL-4**	LH	WN_43	1.280	1.000	0.640	12.000	2.500	0.900		
033466	**A20U MWLNL-4**	LH	WN_43	1.530	1.250	0.765	14.000	3.000	1.180		
033467	**A24U MWLNL-4**	LH	WN_43	1.780	1.500	0.890	14.000	3.000	1.370		
033468	**A16T MWLNR-4**	RH	WN_43	1.280	1.000	0.640	12.000	2.500	0.900		
033469	**A20U MWLNR-4**	RH	WN_43	1.530	1.250	0.765	14.000	3.000	1.180		
033470	**A24U MWLNR-4**	RH	WN_43	1.780	1.500	0.890	14.000	3.000	1.370		



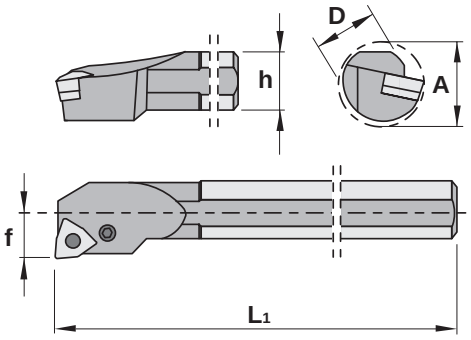
M Style External Toolholder
Negative Inserts: WN_33, & WN_43
Application:- O/D Face, and Turn
Axial Approach 95°
Axial -6°
Raial -12°
Profiling Clearance Angle β = 0°
RH Bar Shown

A..MWLNL/R Spare Parts (INCH)												
Item Description	*Clamp Screw EDP*		*Clamp EDP*		*Clamp Key EDP*		*Lock Pin EDP*		*Lock Pin Key EDP*		*Anvil EDP*	
A12S MWLNL/R-3	*029074*	XNS36	*030974*	CL6	*007785*	KH5124	*004703*	NL33L	*029083*	KH5102	-	-
A16T MWLNL/R-3	*029075*	XNS47	*028996*	CL20	*008207*	KH5103						
A16T MWLNL/R-4	*029075*	XNS47	*028996*	CL20	*008207*	KH5103	*004707*	NL44	*007785*	KH5124	-	-
A20U MWLNL/R-4	*028997*	XNS48					*004708*	NL46			*009251*	IWNS433
A24U MWLNL/R-4												

STELLRAM

S..PWLN 95°
(METRIC)





S..PWLN LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L_1	h	Through Coolant
033450	**S16R PWLNL 06**	LH	WN_06	20	16	11	200	15	
033451	**S20S PWLNL 06**	LH	WN_06	27	20	13	250	18	
033452	**S25T PWLNL 06**	LH	WN_06	31	25	17	300	23	
033453	**S16R PWLNR 06**	RH	WN_06	20	16	11	200	15	
033454	**S20S PWLNR 06**	RH	WN_06	27	20	13	250	18	
033455	**S25T PWLNR 06**	RH	WN_06	31	25	17	300	23	
033456	**S25T PWLNL 08**	LH	WN_08	31	25	17	300	23	
033457	**S32U PWLNL 08**	LH	WN_08	39	32	22	350	30	
034457	***S40V PWLNL 08**	LH	WN_08	48	40	27	400	37	
033458	**S25T PWLNR 08**	RH	WN_08	31	25	17	300	23	
033459	**S32U PWLNR 08**	RH	WN_08	39	32	22	350	30	
033460	***S40V PWLNR 08**	RH	WN_08	48	40	27	400	37	

* Non Stock Items, subject to extended delivery time



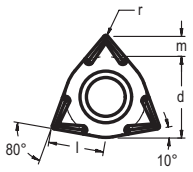
P Style External Toolholder
for Negative Inserts:
WN_0604 & WN_0804
Application:- O/D Face and Turn
Axial Approach 95°
Axial -6°
Raial -13.5°
Profiling Clearance Angle β = 0°
RH Bar Shown

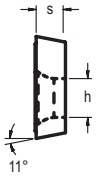
S..PWLNL/R Spare Parts (METRIC)												
Item Description	*Lever EDP*		*Lever Screw EDP*		*Anvil EDP*		*Anvil Clip EDP*		*Clip Punch EDP*		*Key EDP*	
S16R PWLNL/R 06	*022652*	PL8216	*028741*	PLS1605	-	-	-	-	-	-	*028578*	KH5002
S20S PWLNL/R 06												
S25T PWLNL/R 06	*017442*	PL8009	*017447*	PLS1606	*028460*	PA3007	*034503*	PC4109	*028053*	PCP0009	*018285*	KH5025
S25T PWLNL/R 08	*028047*	PL8312	*022625*	PLS1648	-	-	-	-	-	-	*018286*	KH5003
S32U PWLNL/R 08	*017443*	PL8012	*017448*	PLS1608	*028461*	PA3008	*017453*	PC4112	*028054*	PCP0012		
***S40V PWLNL/R 08**												

* Non Stock Items, subject to extended delivery time

STELLRAM

WPMT
61 Geometry







EDP	Description ISO ANSI	Grade	d mm inch	l mm inch	S mm inch	r_ε mm inch	h mm inch	Material	Application
032293	**WPMT020102E-61** **WPMT020102E-61**	SP4019	3.97 0.156	2.92 0.115	1.59 0.063	0.20 0.008	1.95 0.077		Finishing
032291	**WPMT050304E-61** **WPMT050304E-61**	SP4019	7.94 0.313	5.43 0.214	3.18 0.125	0.40 0.016	3.40 0.134		Finishing

For Toolholders External: see page 235 | Internal: see pages 236 - 237

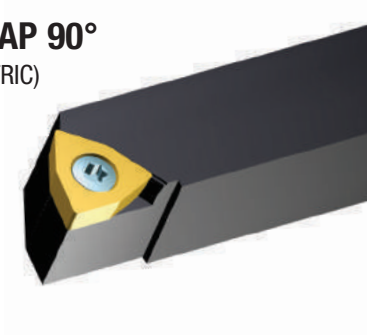
Material Guide – Key to Recommended Inserts

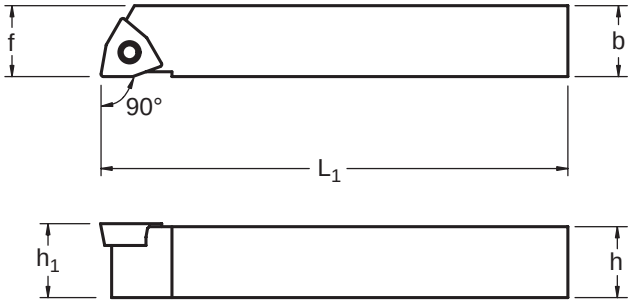
Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

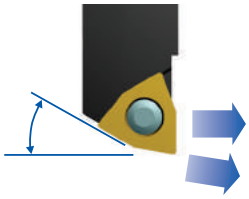
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SWAP 90°
(METRIC)





SWAP LH & RH External Square Shank Toolholders								
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)				
				$h = h_1$	b	f	L_1	L_2
025257	**SWAPL 1212 F05**	LH	WP_05	12	12	12.5	80	-
025256	**SWAPR 1212 F05**	RH	WP_05	12	12	12.5	80	-

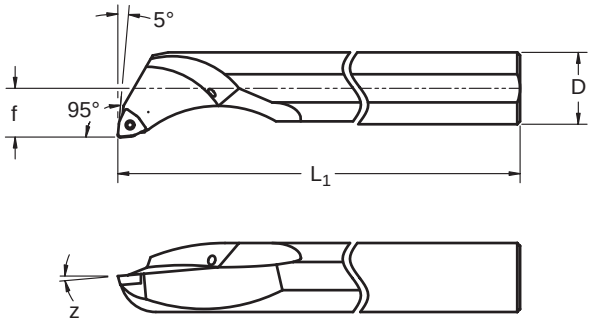


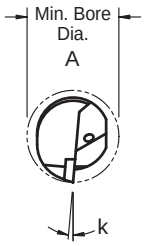
S Style External Toolholder
for Positive Inserts: WPMT_0503
Application: Face & Turn O/D
Approach Angle 90°
Axial 0°
Radial 0°
Profilling Clearance Angle β = 7°
RH Holder Shown

SWAPL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
SEAPL/R 1212 F09	*017032*	A3006T	*013214*	T9	-	-	-	-

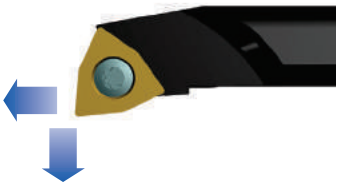
SWLP 95°
(INCH)







A.. SWLP LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (inch)					
				Min Bore Ø A	ØD	f	L_1	L_2	Through Coolant
024503	**S04F SWLPL 1.2**	LH	WP_0201	0.290	0.250	0.135	3.500	-	
024505	**A05H SWLPL 1.2**	LH	WP_0201	0.410	0.312	0.219	4.000	-	
024504	**S04F SWLPR 1.2**	RH	WP_0201	0.290	0.250	0.135	3.500	-	
024506	**A05H SWLPR 1.2**	RH	WP_0201	0.410	0.312	0.219	4.000	-	
024509	**A08M SWLPL 2.5**	LH	WP_0503	0.630	0.500	0.344	6.000	-	
024510	**A08M SWLPR 2.5**	RH	WP_0503	0.630	0.500	0.344	6.000	-	



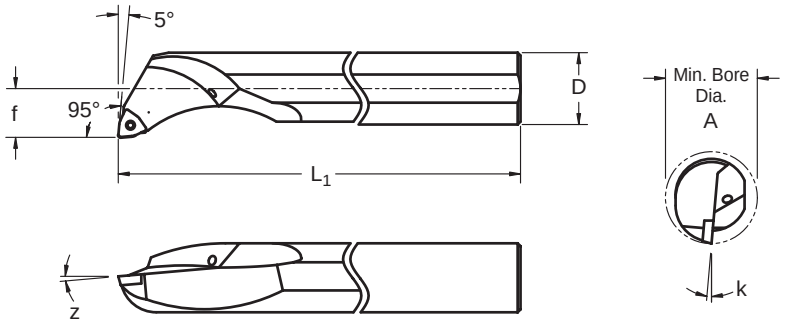
S Style Boring Bar
for Positive Inserts:
WP0503 & WP0201
Application: Facing and Profiling.
Approach Angle 95°
Axial 0°
Radial 5°
Profilling Clearance Angle β = 0°
RH Bar Shown

SWLPL/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
S04F SWLPL/R 1.2	*018489*	55F1803T	*018487*	T6	-	-	-	-
A05H SWLPL/R 1.2								
A08M SWLPL/R 2.5	*017032*	A3006T	*013214*	T9	-	-	-	-

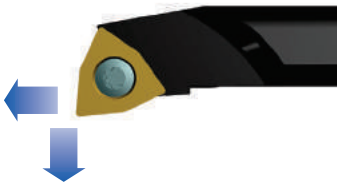
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SWLP 95°
(METRIC)





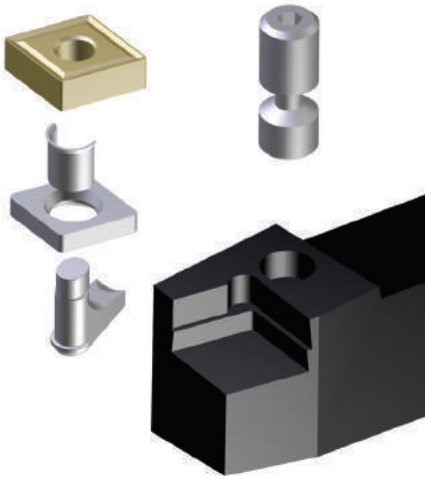
A.. SWLP LH & RH Internal Boring Bars									
EDP	**Item Description**	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L_1	L_2	Through Coolant
033688	**S06F SWLPL 02**	LH	WP_0201	7.50	6.00	3.20	80.00	-	
018450	**A08H SWLPL 02**	LH	WP_0201	11.00	8.00	6.00	100.00	-	
018451	**A10H SWLPL 02**	LH	WP_0201	13.00	10.00	7.00	100.00	-	
033689	**S06F SWLPR 02**	RH	WP_0201	7.50	6.00	3.20	80.00	-	
018327	**A08H SWLPR 02**	RH	WP_0201	11.00	8.00	6.00	100.00	-	
018328	**A10H SWLPR 02**	RH	WP_0201	13.00	10.00	7.00	100.00	-	
018453	**A12K SWLPL 05**	LH	WP_0503	16.00	12.00	9.00	125.00	-	
033690	**A12K SWLPR 05**	RH	WP_0503	16.00	12.00	9.00	125.00	-	



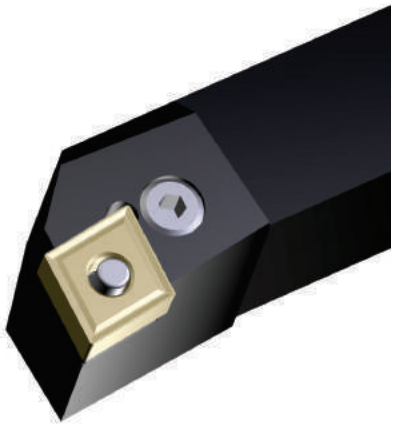
S Style Boring Bar
for Positive Inserts:
WP0503 & WP0201
Application: Facing and Profiling.
Approach Angle 95°
Axial 0°
Radial 5°
Profilling Clearance Angle β = 0°
RH Bar Shown

SWLPL/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
S06F SWLPL/R 02	*018489*	55F1803T	*018487*	T6	-	-	-	-
A08H SWLPL/R 02								
A10H SWLPL/R 02								
A12K SWLPL/R 05	*017032*	A3006T	*013214*	T9	-	-	-	-

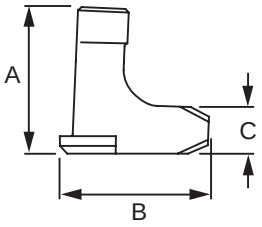
P - Lever Lock (Negative Inserts)



This system has a pivoted lever which tilts when the clamping screw is adjusted pulling the insert back against the pocket walls, for a strong location for the insert, with no obstruction to the chip flow. Also only one key is needed to facilitate the installation and removal of the insert.



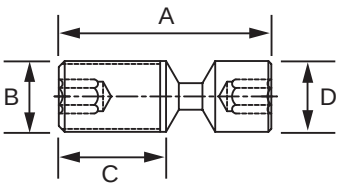




Lever Lock				
EDP	**Item Description**	A	B	C
		mm	mm	mm
		inch	inch	inch
017442	**PL8009**	12	10.2	3.4
		0.472	0.412	0.134
017443	**PL8012**	13.1	13.5	4.2
		0.516	0.531	0.165
017445	**PL8016**	17.1	16.5	5.4
		0.673	0.650	0.213
017446	**PL8019**	20.8	20.4	7.3
		0.819	0.803	0.287
028408	**PL8025**	25.2	25.7	8.2
		0.922	1.012	0.323
034475	**PL8110**	11.7	11	4
		0.461	0.433	0.157
034476	**PL8112**	13.3	13	4.4
		0.524	0.512	0.173
034477	**PL8116**	18	18.6	6.7
		0.709	0.732	0.264
034478	**PL8120**	18.7	20.4	6.7
		0.736	0.803	0.264
034479	**PL8125**	23	24	7.5
		0.906	0.945	0.295
028742	**PL8212**	12.1	13.4	4.7
		0.476	0.528	0.185
022652	**PL8216**	9.5	10.1	3.4
		0.374	0.398	0.134
028047	**PL8312**	13.2	13.5	4.2
		0.520	0.531	0.165
017444	**PL8415**	14.7	16.2	5.1
		0.579	0.638	0.201

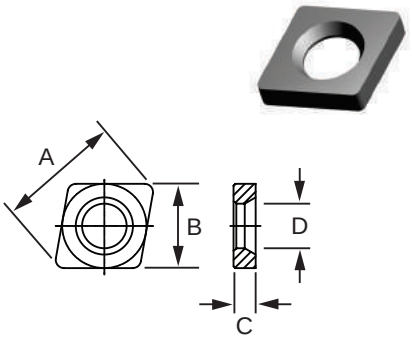
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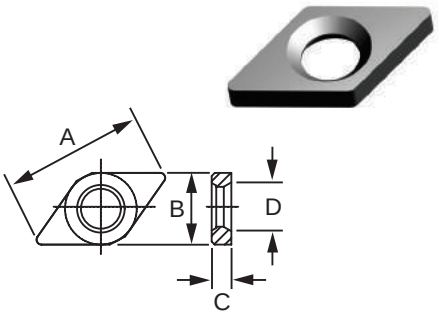


Lever Screws					
EDP	**Item Description**	A	B	C	D
		mm inch	mm inch	mm inch	mm inch
028741	**PLS1605**	12 0.4724	M5x0.8	6.10 0.2402	M5x0.8
017447	**PLS1606**	16.7 0.6575	M6x1	8.65 0.341	M6x1
017448	**PLS1608**	20.7 0.815	M8x1	8.75 0.344	M8x1
028409	**PLS1612**	36 1.417	M12x1	17.30 0.681	M12x1
017450	**PLS1618**	22.5 0.886	M8X1	11.25 0.443	M8X1
017449	**PLS1638**	21.1 0.831	M8x1	10.35 0.407	M8X1
022625	**PLS1648**	17 0.669	M8x1	9.1 0.358	M8X1
017451	**PLS1610**	27.2 1.071	M10x1	13.35 0.526	M10x1
028743	**PLS1626**	13.4 0.528	M6x1	8 0.315	M6x1
034480	**PLS1705**	14 0.551	M5x0.8	8.1 0.319	M5x0.8
034481	**PLS1706**	20.7 0.815	M6x1	12.65 0.498	M6x1
028458	**PLS1708**	23.5 0.925	M8X1	11.25 0.443	M8X1
034482	**PLS1710**	30.4 1.197	M10x1	16.35 0.644	M10x1

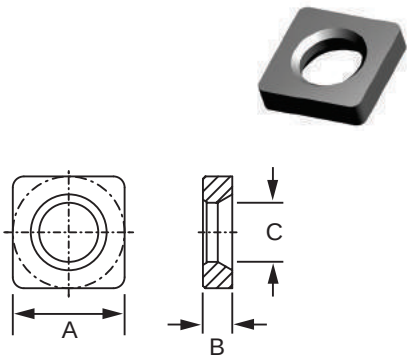
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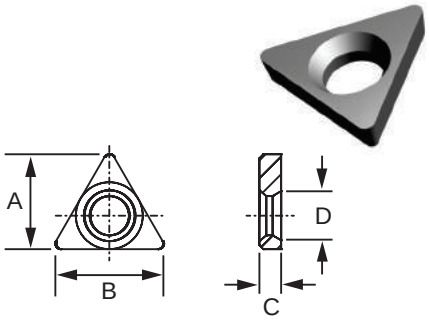
Anvils C-Style					
EDP	**Item Description**	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
017456	**PA3612**	17.16	11.68	3.18	6.8
		0.676	0.46	0.125	0.268
017457	**PA3616**	20.9	10.94	4.76	9.5
		0.823	0.431	0.187	0.374
034483	**PA3625**	36	24.9	6.6	12.8
		1.42	0.98	0.260	0.504



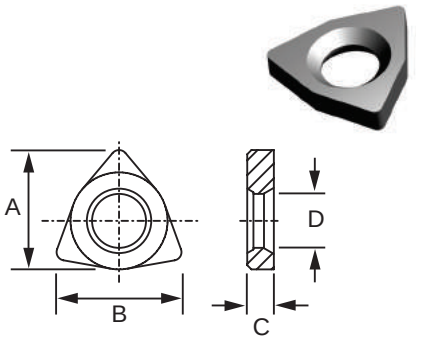
Anvils D-Style					
EDP	**Item Description**	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
028375	**PA3711**	17	8.5	2.7	4.9
		0.669	0.335	0.1063	0.193
017459	**PA3715**	23.4	11.6	3.18	6.4
		0.921	0.457	0.125	0.252



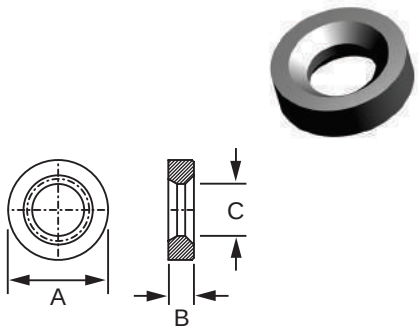
Anvils S-Style				
EDP	**Item Description**	A	B	C
		mm	mm	mm
		inch	inch	inch
017460	**PA3512**	11.66	3.18	6.35
		0.459	0.125	0.250
017461	**PA3515**	14.5	4.76	7.9
		0.575	0.187	0.311
017462	**PA3519**	18.1	4.76	7.9
		0.713	0.187	0.311
028416	**PA3525**	24.6	6.4	13
		0.969	0.252	0.512



Anvils T-Style					
EDP	**Item Description**	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
017463	**PA3416**	11.98	13.52	2.76	4.9
		0.472	0.532	0.109	0.193
017464	**PA3422**	16.6	18.92	3.18	6.4
		0.654	0.745	0.125	0.252

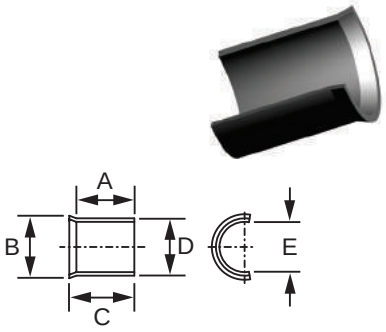


Anvils W-Style					
EDP	**Item Description**	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
028460	**PA3007**	10.85	11.3	3.18	6.4
		0.427	0.445	0.125	0.252
028461	**PA3008**	15.2	15.88	3.18	6.4
		0.598	0.625	0.125	0.252

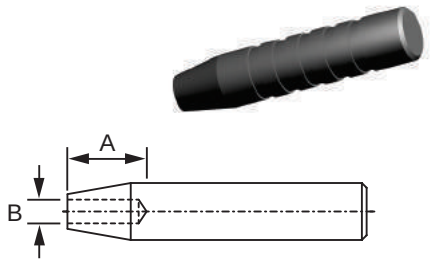


Anvils R-Style				
EDP	**Item Description**	A	B	C
		mm	mm	mm
		inch	inch	inch
034484	**PA3810**	8.34	3.18	4.9
		0.328	0.125	0.193
034485	**PA3812**	9.9	3.18	4.9
		0.390	0.125	0.193
034486	**PA3816**	13.55	4.76	6.4
		0.533	0.187	0.252
034487	**PA3820**	17.25	4.76	8.05
		0.679	0.187	0.317
034488	**PA3825**	21.9	6.35	9.6
		0.862	0.250	0.378
034489	**PA3925**	24.8	6.35	12.9
		0.976	0.250	0.508
001670	**IRSN84**	25.15	6.35	14.5
		0.991	0.250	0.575

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Clips						
EDP	**Item Description**	A	B	C	D	E
		mm	mm	mm	mm	mm
		inch	inch	inch	inch	inch
034503	**PC4109**	4.6	5.76	5.2	4.9	4.4
		0.181	0.227	0.205	0.193	0.173
028417	**PC4110**	6.1	5.6	6.8	4.9	3.8
		0.240	0.220	0.268	0.193	0.150
017453	**PC4112**	5.2	7	5.8	6.6	5.5
		0.205	0.278	0.228	0.260	0.217
028051	**PC4115**	7.7	9	8.7	8.2	7
		0.303	0.354	0.343	0.323	0.278
034504	**PC4116**	8.5	6.82	9.1	6.5	5.4
		0.335	0.269	0.358	0.256	0.213
017455	**PC4119**	9.8	10.57	11	9.7	8.5
		0.386	0.416	0.433	0.312	0.335
028418	**PC4125**	9.7	14.7	11.8	13.2	10.5
		0.312	0.579	0.465	0.520	0.413



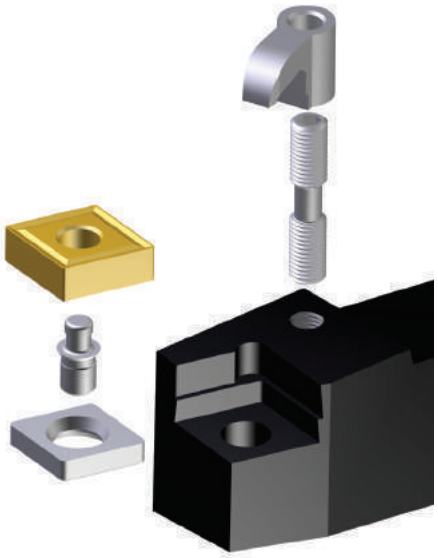
Clip Fixing Pin			
EDP	**Item Description**	A	B
		mm	mm
		inch	inch
028053	**PCP009**	9	4
		0.354	0.157
028054	**PCP0012**	9	4.750
		0.354	0.187
034505	**PCP0015**	12	6.5
		0.472	0.256
028056	**PCP0019**	12	8
		0.4720	0.315
034506	**PCP0025**	20	12.5
		0.787	0.492



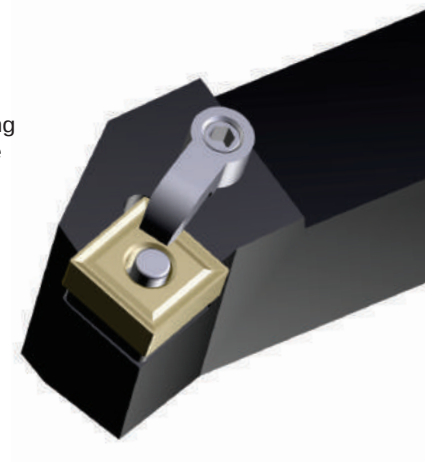
Keys		
EDP	**Item Description**	mm
028578	**KH5002**	2
018286	**KH5003**	3
018287	**KH5004**	4
018288	**KH5005**	5
018285	**KH5025**	2.5

STELLRAM

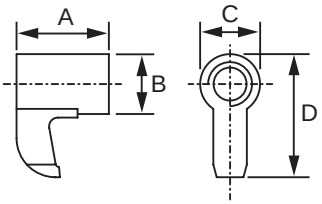
M - Clamp Lock (Negative Inserts)



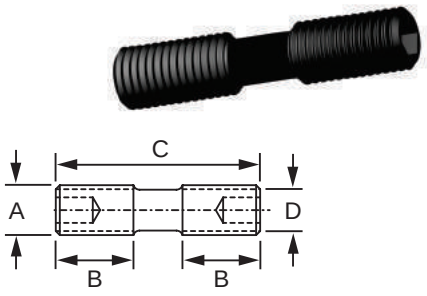
The combination of lock pin and top clamp makes this one of the most secure clamping systems available. The lock pin locates the insert against the pocket wall while the top clamp secures the insert down.



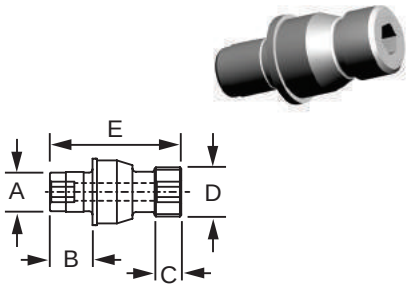




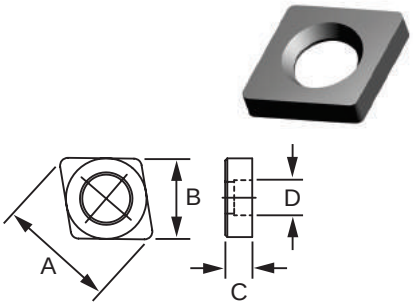
M Style Clamps					
EDP	**Item Description**	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
030974	**CL6**	10.90	3.99	7.62	14.73
		0.429	0.157	0.300	0.580
029071	**CL12**	16.6	5.99	10.77	22.50
		0.655	0.236	0.424	0.886
028996	**CL20**	13	5.31	9.35	18.34
		0.512	0.209	0.368	0.722
029072	**CL22**	13.36	5.99	9.35	21.74
		0.526	0.236	0.368	0.856
029073	**CL30**	16.84	5.84	10.74	24.64
		0.663	0.230	0.423	0.970
034490	**CL2613**	13.5	-	9.5	18.5
		0.531	-	0.374	0.7283
034491	**CL2614**	13.5	-	9.5	21.7
		0.531	-	0.374	0.374
034492	**CL2616**	13.5	-	9.5	24
		0.531	-	0.374	0.945



Clamp Screws					
EDP	**Item Description**	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
029074	**XNS36**	-	6.99	19.17	-
		3/16-28 (LH)	0.275	.755	3/16-28 (RH)
029075	**XNS47**	-	6.78	20.5	-
		1/4-28UNF (LH)	0.267	0.807	1/4-28UNF (RH)
028997	**XNS48**	-	4.6	25.4	
		1/4-28UNF (LH)	0.181	1.00	1/4-28UNF (RH)
029076	**XNS510**	-	5.31	31.7	-
		5/16-24UNF (LH)	0.209	1.248	5/16-24UNF (RH)
028575	**1086**	M6x1 (LH)	11.4	29.4	M6x1 (RH)
		-	0.449	1.157	-
034493	**1186**	M6x1 (LH)	7.11	20.50	M6x1 (RH)
		-	0.280	0.807	-

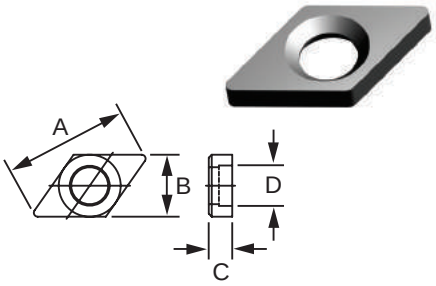


NL Pins						
EDP	**Item Description**	A	B	C	D	E
		mm	mm	mm	mm	Thread Form
		inch	inch	inch	inch	
004703	**NL33L**	5.00	14.71	5.21	6.71	8-32 UNC
		0.197	0.579	0.205	0.264	
004705	**NL34L**	3.66	13.13	5	2.69	10-32L
		0.144	0.517	0.197	0.106	
004707	**NL44**	5	13.2	5.4	3.2	1/4-28 UNC
		.0197	0.520	0.213	0.126	
004708	**NL46**	5	13.2	5.4	3.2	1/4-28 UNC
		0.197	0.520	0.213	0.126	
004710	**NL58**	6.25	22	6.9	5.3	5/16-24 UNC
		0.246	0.866	0.272	0.209	
004713	**NL68**	6.25	22	6.9	4.8	3/8-24
		0.246	0.866	0.272	0.189	
004716	**NL810**	9	29.69	9.8	5.58	7/16-20
		0.354	1.169	0.386	0.220	
034511	**1665**	3.68	13	5	2.3	M5X0.8
		0.145	0.512	0.197	0.091	



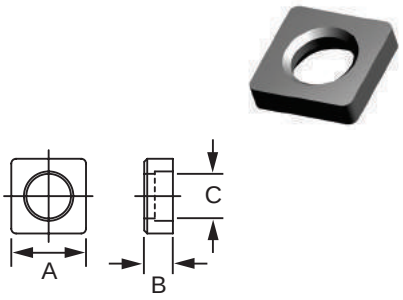
Anvils C-Style

EDP	Item Description	A	B	C	D
		mm inch	mm inch	mm inch	mm inch
029079	ICSN432	18.39 0.724	12.45 0.490	4.75 0.187	7.44 0.293
001685	ICSN533	22.94 0.903	15.62 0.615	4.75 0.187	9.78 0.385



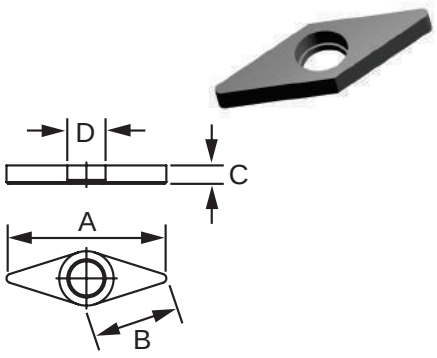
Anvils D-Style

EDP	Item Description	A	B	C	D
		mm inch	mm inch	mm inch	mm inch
001689	IDSN433	25.07 0.987	12.57 0.495	4.76 0.187	7.47 0.294



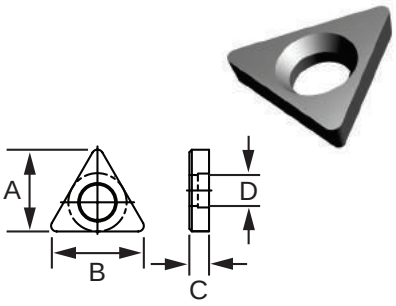
Anvils S-Style

EDP	Item Description	A	B	C
		mm inch	mm inch	mm inch
001704	ISSN433	12.45 0.490	4.75 0.187	7.49 0.295
001707	ISSN533	15.65 0.616	4.75 0.187	9.83 0.387
001709	ISSN633	18.72 0.737	4.75 0.187	11.38 0.448

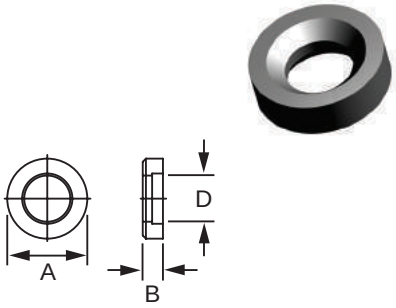


Anvils V-Style

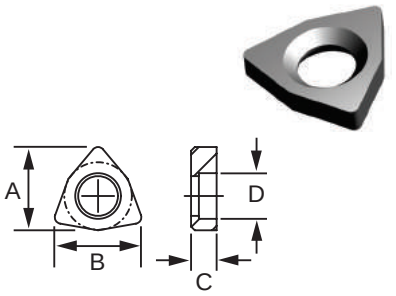
EDP	Item Description	A	B	C	D
		mm inch	mm inch	mm inch	mm inch
001695	IVSN322	28.70 1.130	9.19 0.362	3.18 0.125	5.99 0.236



Anvils T-Style					
EDP	**Item Description**	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
001714	**ITSN323**	12.9	14.6	3.18	5.9
		0.509	0.576	0.125	0.236
001718	**ITSN433**	17.3	19.7	4.76	7.4
		0.681	0.775	0.187	0.291



Anvils R-Style				
EDP	**Item Description**	A	B	C
		mm	mm	mm
		inch	inch	inch
001670	**IRSN84**	25.15	6.35	14.5
		0.991	0.250	0.575



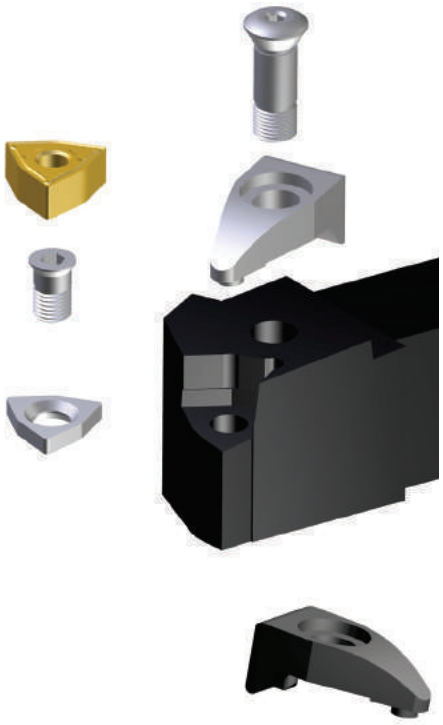
Anvils W-Style					
EDP	**Item Description**	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
009251	**IWSN433**	15.34	16.00	4.76	7.416
		0.604	0.630	0.187	0.292

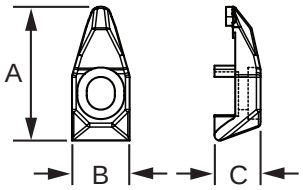


Keys		
EDP	**Item Description**	mm
		inch
028578	**KH5002**	2
018286	**KH5003**	3
018285	**KH5025**	2.5
029083	**KH5102**	5/64
008207	**KH5103**	1/8
029085	**KH5104**	5/32
007785	**KH5124**	3/32
029087	**KH5135**	9/64

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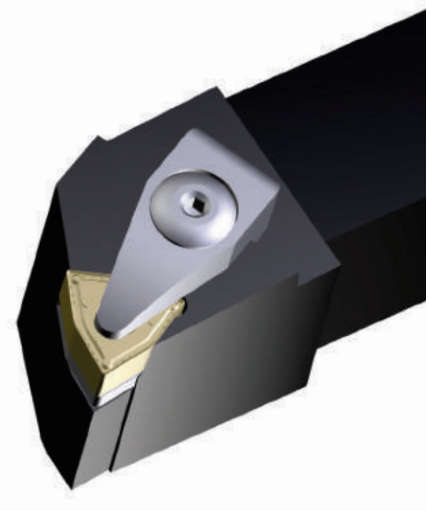
D - Dimple Lock (Negative Inserts)





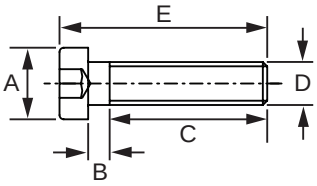
This system combines a pull back pin and top clamp in one, using a wedge action to locate the insert into the pocket, with the clamp screw pulling down on the insert. This clamping method provides a strong and rigid set-up, with the added benefit of only one key for replacement of inserts.

The “D” clamping system ensures zero insert movement during high feed or heavy interrupted machining, due to its accurate positioning that holds the insert securely clamped.



D Style Clamps				
EDP	**Item Description**	A	B	C
		mm	mm	mm
		inch	inch	inch
034494	**DC 2312**	28.90	14.00	12.00
		1.137	0.551	0.472
033709	**DC 2708**	24.90	10.90	9.20
		0.980	0.429	0.362
033707	**DC 2712**	29.00	12.50	10.00
		1.141	0.492	0.393
034495	**DC 2716**	33.80	13.00	10.50
		1.330	0.511	0.413
033708	**DC 2719**	35.20	13.50	10.50
		1.385	0.531	0.413

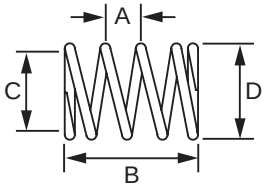




Clamp Screws

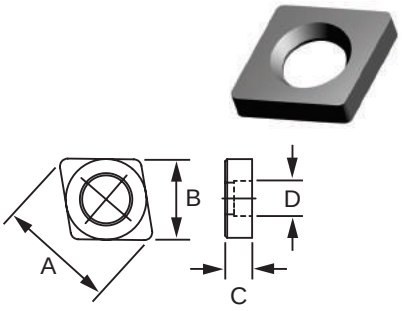
EDP	Item Description	A	B	C	D	E
		mm	mm	mm	mm	mm
		inch	inch	inch	inch	inch
033711	**1695**	8.4	-	20	M5x0,8	23.5
		0.33	-	0.787	-	0.925
033710	**1696**	9.8	-	25	M6x1	29
		0.385	-	0.984	-	1.141
034512	**1907**	10.7	-	14	M7X0.75	27.5
		0.421	-	0.551	-	1.083





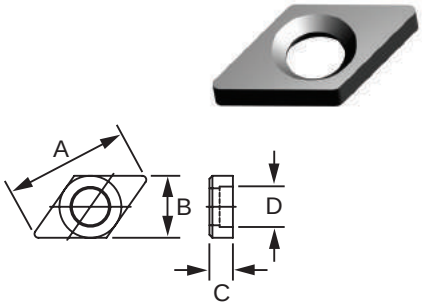
Clamp Spring

EDP	Item Description	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
033720	**4294**	3	11.20	5	6.50
		0.118	0.441	0.197	0.256
033719	**4295**	3.50	13	7	9.50
		0.138	0.512	0.276	0.374



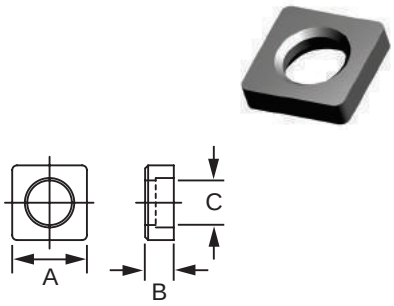
Anvils C-Style

EDP	Item Description	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
017456	PA3612	17.17	11.68	3.18	6.81
		0.676	0.460	0.125	0.268
029079	ICSN432	18.39	12.45	4.75	7.44
		0.724	0.490	0.187	0.293
033712	ICSN442	18.39	12.45	6.35	7.44
		0.724	0.490	0.250	0.293
001685	ICSN533	22.94	15.62	4.75	9.78
		0.903	0.615	0.187	0.385
001686	ICSN633	25.527	18.8	4.76	11.3
		1.005	0.740	0.187	0.445



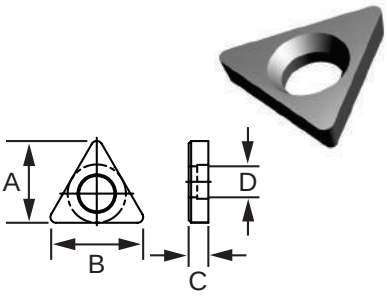
Anvils D-Style

EDP	Item Description	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
034496	IDSN-322	18.72	9.40	3.18	6.48
		0.737	0.370	0.125	0.255
001689	IDSN-433	25.66	12.57	4.76	7.40
		0.987	0.495	0.187	0.294



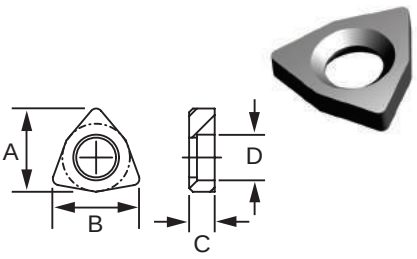
Anvils S-Style

EDP	Item Description	A	B	C
		mm	mm	mm
		inch	inch	inch
001704	ISSN433	12.45	4.75	7.49
		0.490	0.187	0.295
033715	ISSN442	12.45	6.35	7.49
		0.490	0.250	0.295
001707	ISSN533	15.65	4.76	9.83
		0.616	0.187	0.387
001709	ISSN633	18.72	4.76	11.38
		0.737	0.187	0.448

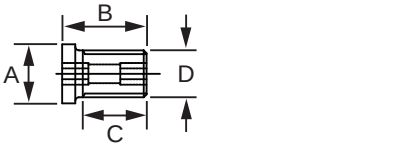


Anvils T-Style

EDP	Item Description	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
033714	ITSN342	12.93	14.63	3.18	5.99
		0.509	0.576	0.125	0.236



Anvils W-Style					
EDP	Item Description	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
030973	**IWSN323**	11.32	11.82	3.18	5.89
		0.445	0.465	0.125	0.228
009251	**IWSN433**	15.35	15.95	4.76	7.4
		0.604	0.628	0.187	0.291



Anvil Screw					
EDP	Item Description	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
034507	**1160**	8	13.5	9.5	M6x1
		0.315	0.531	0.374	
034508	**1161**	8	10.5	6.5	M6x1
		0.315	0.413	0.256	
033718	**1764**	6.20	9.00	7.60	M5x0,8
		0.244	0.354	0.299	
029095	**1765**	7.5	10	6	M6x0,75
		0.295	0.394	0.236	
033716	**1766**	7.8	13.0	10.6	1/4 -26
		0.307	0.511	0.417	
034509	**1768**	10.5	15.5	13.3	M8x1
		0.413	0.610	0.523	
033717	**1770**	11.90	15.00	12.80	3/8 -24
		0.486	0.590	0.503	



Keys		
EDP	Item Description	
		mm
		inch
018287	**KH5004**	4
018285	**KH5025**	2.5
029085	**KH5104**	5/32
018286	**KH5003**	3

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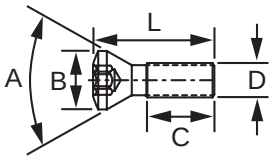
S - Screw Lock (Positive Inserts)



This innovated system was first introduced into the marketplace by Stellram as Posicut® S - Style. Its benefits are secure clamping, repeatability, minimal number of spare parts and no obstruction of the chip flow. Which make this ideal for internal boring bars and places were accessibility is limited.

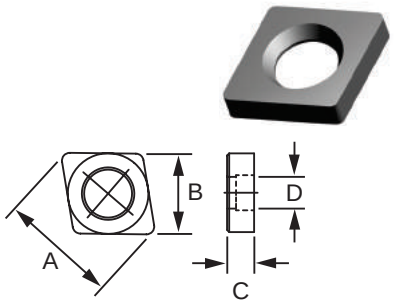




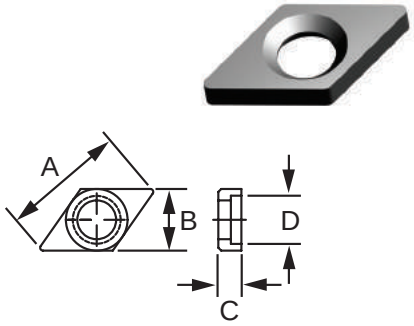


Insert Screws						
EDP	**Item Description**	A	B	C	L	D
		Ø°	mm inch	mm inch	mm inch	mm
017032	**A3006T**	48°	4.4 0.173	4 0.157	6 0.236	M3x0.5
023081	**A5025T**	43°	6.6 0.260	6.9 0.272	25 0.984	M5x0.8
015059	**F2004T**	43°	3 0.118	2.50 0.098	4.50 0.117	M2x0.4
015060	**F2505T**	43°	3.8 0.150	3.5 0.138	5 0.197	M2.5x0.45
015061	**F2507T**	43°	3.8 0.150	4 0.157	7 0.276	M2.5x0.45
015262	**D4010T**	43°	5.1 0.209	5.1 0.290	10 0.394	M4x0.7
034497	**1335**	55°	5.30 0.209	10.20 0.402	15 0.591	M3.5x0.6
034498	**1425**	55°	3.30 0.130	3 0.118	5.50 0.217	M2.5x0.45
034499	**1440**	55°	5.30 0.209	4 0.157	7 0.276	M4x0.7
034500	**1540**	60°	6.80 0.268	7.90 0.311	14.10 0.555	M4x0.7
015063	**F3008T**	48°	4.4 0.173	5 0.196	8 0.312	M3x0.5
018489	**55F1803T**	55°	2.75 0.108	1.60 0.063	3.30 0.130	M1.8x0.2

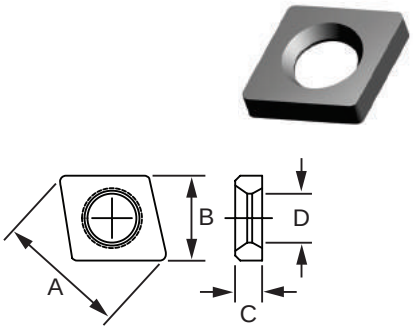
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Anvils C-Style					
EDP	**Item Description**	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
028571	**SA3614**	17.40	11.40	39.50	6.50
		0.685	0.453	1.555	0.255

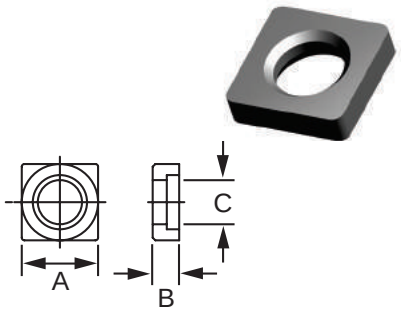


Anvils D-Style					
EDP	**Item Description**	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
028477	**SA3714**	17.48	8.50	3.18	6.60
		0.688	0.335	0.125	0.260

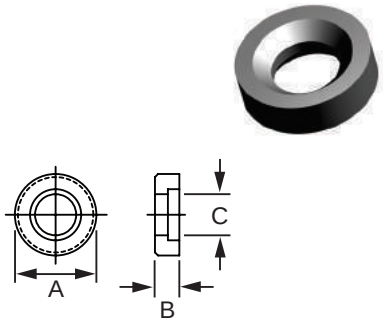


Anvils E-Style					
EDP	**Item Description**	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
029091	**SA3712**	16.9	11.0	3.18	6.5
		0.665	0.433	0.125	0.256

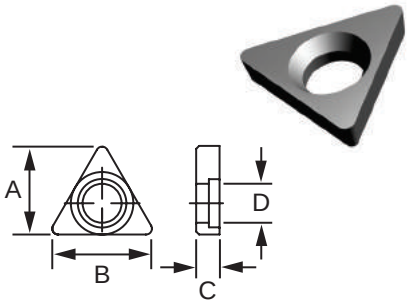
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Anvils S-Style				
EDP	Item Description	A	B	C
		mm	mm	mm
		inch	inch	inch
028738	SA3514	11.40	3.96	8.10
		.449	0.156	0.319

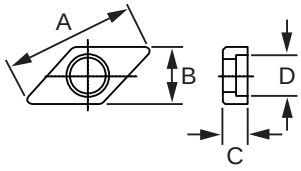


Anvils R-Style				
EDP	Item Description	A	B	C
		mm	mm	mm
		inch	inch	inch
034501	SA3811	8.80	3.18	6.60
		0.346	0.125	0.260
034502	SA3814	10.60	3.18	6.60
		0.417	0.125	0.260



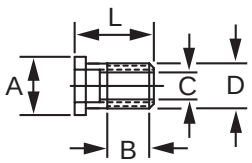
Anvils T-Style					
EDP	Item Description	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
028580	SA3414	11.95	13.55	3.18	6.60
		0.470	0.533	0.125	0.260





Anvils V-Style					
EDP	**Item Description**	A	B	C	D
		mm	mm	mm	mm
		inch	inch	inch	inch
028740	**SA3718**	26.4	8.4	3.18	5.5
		1.039	0.331	0.125	0.217





Anvil Screw						
EDP	**Item Description**	A	B	L	C	D
		mm	mm	mm	mm	mm
		inch	inch	inch	inch	inch
028478	**SAS1750**	6.25	5	8.5	M3.5x0.6	M5x0.5
		0.246	0.197	0.335		
028739	**SAS1760**	7.60	5.5	10	M4x0.5	M6x0.75
		0.299	0.217	0.394		
029095	**1765**	7.5	6	10	M4x0.5	M6x0.75
		0.295	0.236	0.394		



Torx Driver		
EDP	**Item Description**	Torx Number
018487	**T6**	T6
018488	**T7**	T7
013214	**T9**	T9
015240	**T15**	T15
028475	**K5516**	T16
034577	**K5517**	T17
015241	**T20**	T20



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All Kennametal's products are supported by a confident technical sales team backed by an extensive customer care policy.

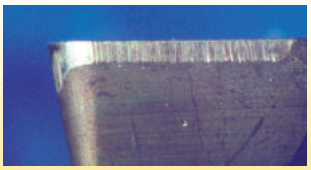
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CUSTOMER SERVICE & TECHNICAL HELPLINE

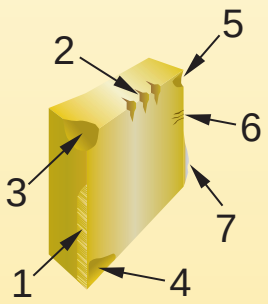
UNITED STATES
TEL: **800.232.1200**
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TEL: **800.668.6928**
FAX: **800.432.6227**

MEXICO
TEL: **011.877.756.0947**
FAX: **011.877.285.2505**

Cause	Correction	Failure
Intermittent heating of the cutting edge. High V_C and high volume metal removal.	**A** Use a heat resistant grade increased TaC. **B** Use positive rake tools. **C** Increase nose radius. **D** Reduce in the following order: surface speed, feed or depth of cut. **E** Avoid the use of intermittent coolant.	 **Thermal Cracking**
Cutting tool excessively brittle. Tool too hard for application conditions.	**A** Use a tougher grade. **B** Use negative rake angle inserts. **C** Increase nose radius. **D** Use increased edge land. **E** Increase cutting speed.	 **Chipping**
Grade not hard enough for application. High surface speed.	**A** Use a harder, more wear resistant grade. **B** Decrease surface speed. **C** Increase feed. **D** Use coolant.	 **Excessive Flank Wear**
Notching occurs at depth of cut line. Usually due to work hardened surface, scale or abrasion.	**A** Increase approach angle to maximum. **B** Increase nose radius for shallow cuts. **C** Reduce V_C surface speed and feed. **D** Vary the depth of cut.	 **Notching**
Surface speed too low for material being machined.	**A** Increase surface speed. **B** Use inserts that reduce friction. i.e. TiALN PVD Coated **C** Use high lubricity coolant.	 **Built-Up-Edge**
Heavy feed or high surface speed.	**A** Reduce surface speed. **B** Reduce feed. **C** Use a harder grade. **D** Use a more heat resistant grade.	 **Deformation**
Excessive heat and pressure causing chip to weld to rake angle.	**A** Use a harder grade. **B** Reduce surface speed. **C** Reduce feed. **D** Increase the rake angle.	 **Crater Wear**

N°	Failure type	
1	Flank wear	Physical
2	Chipping	
3	Partial fracture	
4	Crater wear	Chemical
5	Deformation	
6	Thermal Crack	
7	Built up edge	

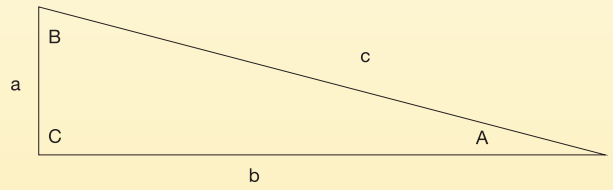


Formula

$V_c = 0.262 \times D \times n$	**Cutting speed (feet/min)**
$n = 3.82 \times \frac{V_c}{D}$	**Revolutions per minute (rev/min)**
$Q = 12 \times a_p \times f_r \times V_c$	**Metal removal rate (cu inch per min)**
$f_m = f_r \times n$	**Feed rate (inches/min, IPM)**
$t = \frac{L}{f_m}$	**Cutting time (min)**
$HPs = Q \times P$	**Horsepower required at spindle**
$HPm = \frac{Q \times P}{E}$	**Horsepower required at motor**

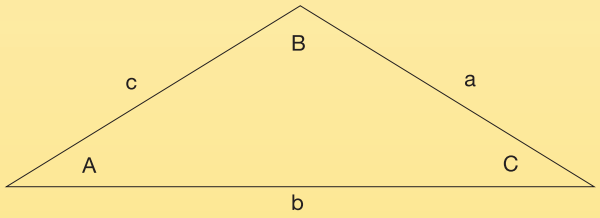
Terminology

D	=	Workpiece diameter	in
V_c	=	Cutting speed	SFM
n	=	RPM	rev/min
t	=	cutting time	min
Q	=	Metal removal rate	cm^3/min
L	=	Length of cut	in
P	=	Unit power factor, Horsepower per cubic inch per minute	
f_m	=	Feed rate	in/min
f_r	=	Feed	in/rev
E	=	Efficiency of spindle drive	
R_t	=	Profile depth	µin
r	=	Nose radius	in
a_p	=	Depth of cut	in
HPs	=	Horsepower at spindle	
HPm	=	Horsepower at motor	



Trigonometrical Equivalents

Dimension Given	Part to be Found				
	A	B	a	b	c
a & c	sin A = a ÷ c	cos B = a ÷ c		$b = \sqrt{c^2 - a^2}$	
a & b	tan A = a ÷ b	cos B = a ÷ b			$c = \sqrt{a^2 + b^2}$
c & b	cos A = b ÷ c	sin B = b ÷ c	$a = \sqrt{c^2 - b^2}$		
A & a		B = 90° - A		b = a x cot A	c = a ÷ sin A
A & b		B = 90° - A	a = b x tan A		c = b ÷ cos A
A & c		B = 90° - A	a = c x sin A	b= c x cos A	



Trigonometrical Equivalents

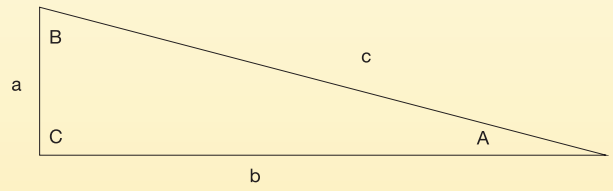
Dimension Given	Parts to be Found	Formula
a b c	A	cos A = $b^2+c^2-a^2 \div 2bc$
a b A	B	sin B = b x sin A ÷ a
a b A	C	C = 180 - (A + B)
a A B	b	b = a x sin B ÷ sin A
a A B	c	c = (a x sin C ÷ sin A) x (a x sin (180 - A - B) ÷ sin A)
a b C	B	B = 180 - (A + C)

Formula

V_c	=	$\frac{D_m \times \pi \times n}{1000}$	**Cutting speed (m/min)**
n	=	$\frac{V_c \times 1000}{Dm \times \pi}$	**Spindle speed (rev/min)**
P_c	=	$\frac{V_c \times a_p \times f_n \times k_c}{60 \times 1000 \times \eta}$	**Power demand (kW)**
Q_z	=	$V_c \times f_n \times a_p$	**Metal removal (cm^3/min)**
T_c	=	$\frac{l_m}{f_n \times n}$	**Period of engagement (min)**

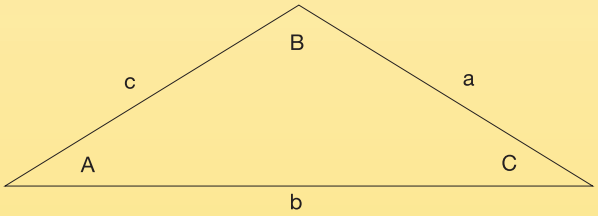
Terminology

D_m	=	Machined diameter	mm
V_c	=	Cutting speed	m/min
n	=	Spindle speed	rev/min
T_c	=	Period of engagement	min
Q_z	=	Metal removal	cm^3/min
l_m	=	Machined length	mm
P_c	=	Power demand	kW
K_c	=	Specific cutting force	N/mm^2
f_n	=	Feed per revolution	mm/rev
k_r	=	Cutting edge angle	degree
R max	=	Profile depth	µm
r_ε	=	Insert nose radius	mm
a_p	=	Depth of cut	mm
η	=	Efficiency	



Trigonometrical Equivalents

Dimension Given	Part to be Found				
	A	B	a	b	c
a & c	sin A = a ÷ c	cos B = a ÷ c		$b = \sqrt{c^2 - a^2}$	
a & b	tan A = a ÷ b	cos B = a ÷ b			$c = \sqrt{a^2 + b^2}$
c & b	cos A = b ÷ c	sin B = b ÷ c	$a = \sqrt{c^2 - b^2}$		
A & a		B = 90° - A		b = a x cot A	c = a ÷ sin A
A & b		B = 90° - A	a = b x tan A		c = b ÷ cos A
A & c		B = 90° - A	a = c x sin A	b= c x cos A	



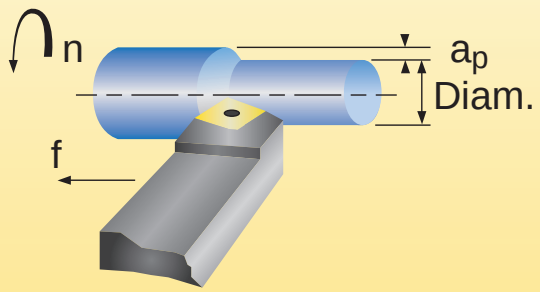
Trigonometrical Equivalents

Dimension Given	Parts to be Found	Formula
a b c	A	cos A = $b^2+c^2-a^2$ ÷ 2bc
a b A	B	sin B = b x sin A ÷ a
a b A	C	C = 180 - (A + B)
a A B	b	b = a x sin B ÷ sin A
a A B	c	c = (a x sin C ÷ sin A) x (a x sin (180 - A - B) ÷ sin A)
a b C	B	B = 180 - (A + C)

Cutting Data

In the turning operation we can distinguish three important elements:

- Work piece rotation at a determined speed of the spindle, “n”
- linear movement of the tool at a determined feed, “f”
- Cut depth, a_p



Terminology

Vc - Indicated in feet/min or meters/min and it refers to the speed at the insert edge removing the material at the periphery of the work piece. The cutting speed is related to the diameter of the workpiece.

F - Defined in inch/rev or mm/rev and it is the distance covered by the tool during every rotation of the work piece. “f”- refers to the distance covered by the tool in a one minute, that is the feed vf (in/rev or mm/min)

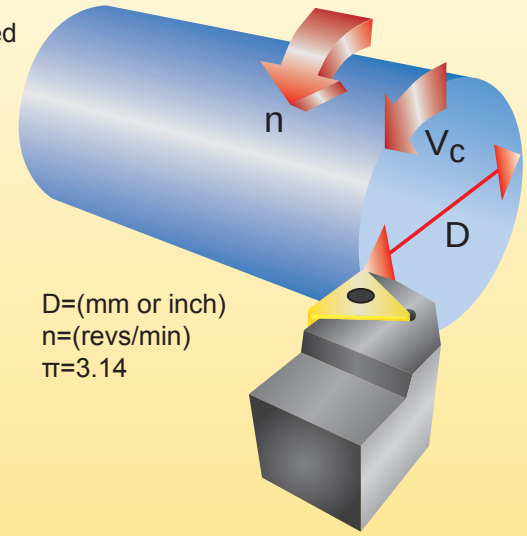
-a_p - Depth of Cut

Cutting Parameters

The spindle speed n is the number of rotations the work piece rotates in one minute and it is indicated in revolutions/minute.

The Surface Speed can be calculated with the following formula:

D=Diameter
n=Spindle speed
π=Constant



D=(mm or inch)
n=(revs/min)
π=3.14

Formula

Volume “Q”: Metal Removal Rate
This value takes into consideration Vc, ap and feed to calculate the amount of material removed.

$Q\ in^3/min = V_C \times f_p \times a_r$
$Q\ in^3/min = 12 \times a_r \times f \times V_C = 1$
$Q\ in^3/min = n \times IPR \times Doc = 4248\ (3)$

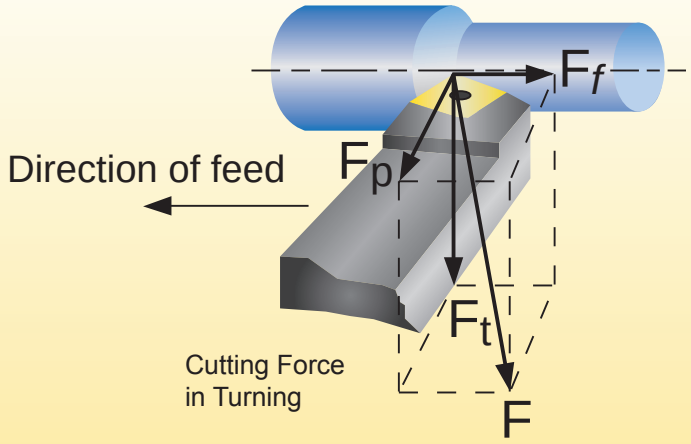
Metric

$Q_Z = V_C \times f_n \times a_p\ (cm^3/min)$

Inch

$Q = 12 \times a_p \times f_r\ V_C\ (in^3/min)$

Calculations of Cutting Forces



* The specific cutting force (kc) is constant for each material. It is unique for each material and it refers to the material machinability. See catalog page 261.

Calculations of Power

The availability for the power calculation for the material removal is particularly important for roughing, so it is necessary to verify if the machine's power is enough for the application.

The parameters for the power calculation are v_c and F_c.

The machine efficiency ŋ, is also a factor to be considered referring to the energy loss because of the drive and the motor efficiency. This value is between 0,7-0,9 depending on the machine.

Terminology

The main force **F** can be split into 3 different forces:

F_t(N)= Tangential force, downward and usually the largest

F_f (N)= Axial force or feed force, toward the longitudinal axis of the workpiece

F_p (N)= Radial force on the perpendicular of the center line of the workpiece

Formula

Values F_f and F_p are affected by the approach angle, the cutting depth and the nose radius of the tool. The following formula can be used for the tangential cutting force:

$$Fc = Kc \times a_p \times f$$

in which:
Kc = Specific cutting force(N/mm2)*
a_p = Cutting depth (mm)
f = Feed (mm/rev)

Formula

The formula for the net cutting power calculation is:

$$P = \frac{Vc \times F_c}{\eta \times 60 \times 1000} \quad (KW)$$

$$\text{Where } F_c = a_p \times f \times K_c$$

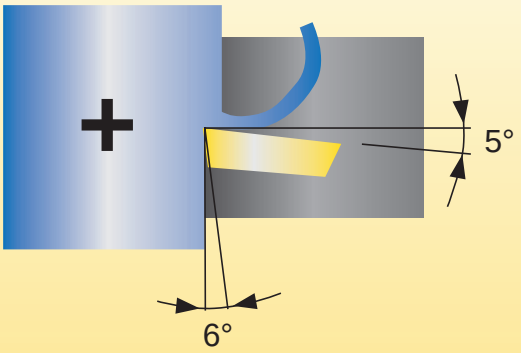
$$\text{then } P = \frac{Vc \times a_p \times f \times K_c}{\eta \times 60 \times 1000} \quad (KW)$$

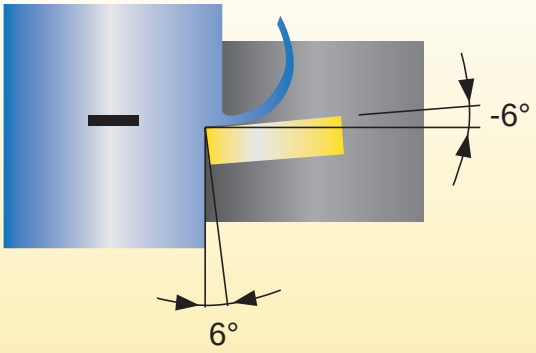
KW to HP conversion: 1 KW = 1.34102209 hp

Speed vc (feet/min)			
ISO	Materials	Rm	Kc:N/mm²
P	Unalloyed Steel	400-600 N/mm² 120-180 HBN	2050
		600-950 N/mm² 180-200 HBN	2300
	Alloyed Steel	700-950 N/mm² 200-280 HBN	2599
		950-1200 N/mm² 280-355 HBN	2851
		1200-1400 N/mm² 355-415 HBN	3172
	Tool Steel	1200-1400 N/mm² 355-415 HBN	3895
M	Stainless Steel	Austenitic + Ferritic 300 series	1847
		Martensitic 400 series	2599
	PH Stainless	Refractory P.H.	3199
K	Cast Iron	Grey GG-Ft	1200
		Spheroidal-Ductile GGG-FGS	1500
		Nodular GGGNi - L- N	1600
		Malleable GTS - MN/MP	1050
N	Aluminium & Alloys	Aluminium & Alloys < 16% 116 HBN	827
		Aluminium + Silicon > 16% 92 HBN	965
S	High Temperature Alloys	Iron Based	2999
		Cobalt Based	3799
		Nickel Based	3500
		Titanium Based 425-456 HBN	1500

Top Rake

Positive: Produces low shearing stress and may eliminate vibration during finish machining, machining of long workpieces, or poor workholding.



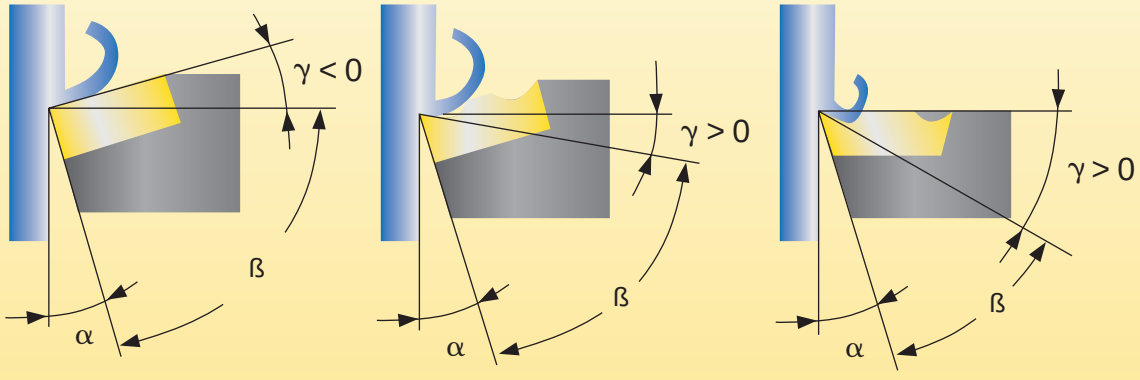


Negative: Produces larger shearing stress which causes a high chip strain. It is much stronger in comparison to the positive rake and requires good workpiece and tool stability.

Effective Cutting Angle

The position of the insert seat determines the cutting rake:

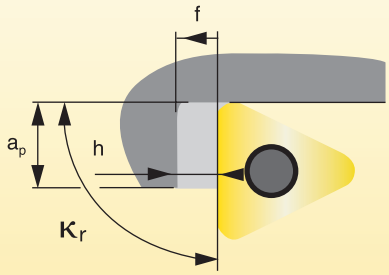
- This can be negative or 0°.
- The effective cutting angle is also determined by the insert geometry located on the seat, as this could be flat face or a chip breaker and it could change the effective cutting angle.
- The effective cutting angle is the sum of the angle in the insert seat and the geometry of the seated inserts.



The approach angle or attack angle is very important because it influences the tool life.

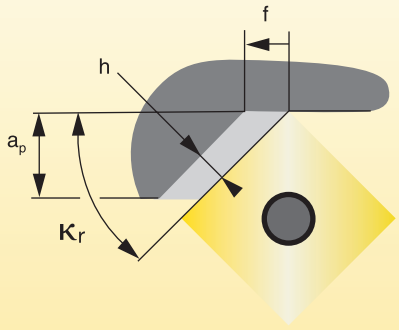
In the first picture we can see how it affects the chip thickness.

h = f



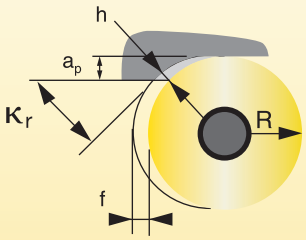
κ_r = 90°

h = f. sin [K_r]



κ_r < >90°

h = 2f. Root [(a_p/2R). (1-a_p/2R)]

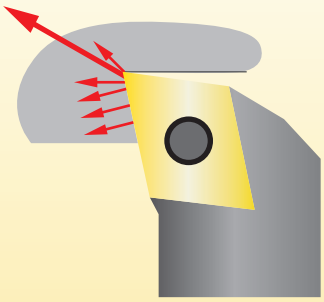


κ_r = cos-1. [1-a_p/R]

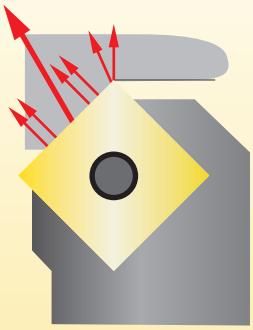
- h is the same as the feed f when the entering angle is 90°or equal to the sin of the approach angle * f
- A 45° approach angle will produce a lower chip thickness with a higher feed

In the second picture we can see the effect on cutting the force distribution.

κ_r = 95°



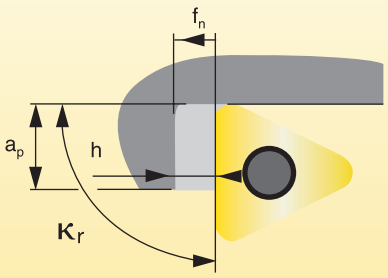
κ_r = 45°



- In the first case the first contact is between the workpiece and the insert point, and it is focused on the radius making the situation difficult
- On the second case, the approach angle on the workpiece is softer and the cutting forces, are distributed in a more uniform way, and not directly on the insert point.

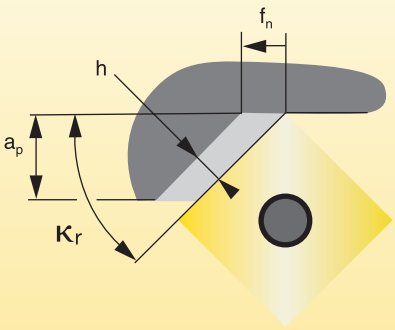
When deciding on the maximum depth of cut (a_p) for a given insert, the angle of the principal edge plays a significant role in the type of the chip formed. For an angle close to 90°, the thickness of the chip will be equal to the feed. In the other cases, it will be necessary to calculate it.

$h = f_n$



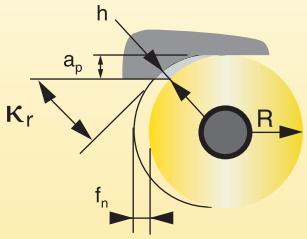
$\kappa_r = 90°$

$h = f_n \sin [\kappa_r]$



$\kappa_r < 90°$

$h = 2f_n \sqrt{[(a_p/2R).(1-a_p/2R)]}$



$\kappa_r = \cos\text{-}1.\ [1-a_p/R]$

The type of insert used plays a significant role in the rigidity of the cutting edge. A cutting edge angle of kr 75° or 45° allows for difficult machining operations, i.e. interrupted and heavy roughing, but reduces the capacity to machine profiles. The most robust insert shape is round and the most fragile standard insert is the 35°diamond (V).

The size and type of insert determines the maximum depth of cut. In general, it is advisable to select a cutting edge length in relation to the maximum depth of cut to be machined.

Cutting Edge Length for a given depth of cut (a_p) and κ_r angle

A low depth of cut can still generate a large edge engagement										
κ_r/a_p	0.040	0.080	0.120	0.160	0.200	0.240	0.275	0.315	0.355	0.400
90	0.040	0.080	0.120	0.160	0.200	0.240	0.275	0.315	0.355	0.400
75	0.041	0.082	0.125	0.163	0.205	0.250	0.285	0.326	0.367	0.410
60	0.045	0.090	0.136	0.182	0.227	0.275	0.318	0.364	0.410	0.455
45	0.056	0.110	0.167	0.223	0.278	0.340	0.390	0.445	0.500	0.560
30	0.080	0.160	0.240	0.320	0.400	0.480	0.550	0.630	0.710	0.800

Radius Value / Surface Finish

The radius of the insert has a significant role to play in the quality of the surface finish, which is directly in relation to the feed rate (fn). With a larger radius, better surface finishes can be maintained at higher feeds. The use of a larger radius gives a larger surface contact area and causes an increase in power and cutting force.

For roughing operations, it is preferable to choose a large radius to ensure corner strength of the insert. However, for some materials it is preferable to use a smaller radius to maintain a softer cut. The insert is more fragile but can qualify for operations that are sensitive to vibration.

Generally an insert is used with a maximum feed equal to half its radius. The minimum feed is related to edge preparation or to the start of its chip control. An increase in cutting speed can also contribute to surface quality.

Formula

The formula to calculate the feed rate:

$$f_n = \sqrt{\frac{r_e \times R_a}{50}}$$

$$R_{max} = \frac{f^2 \times 50}{8r_\varepsilon}$$

The mean value Ra, can be calculated with following formula:

$$R_a = \frac{f_n^2 \times 50}{r_\varepsilon}$$

Average value of feed for each radius

Radius (mm)	0.4	0.8	1.2	1.6	2.4
f (mm/turn)	0.12-0.25	0.25-0.5	0.36-0.7	0.5-1	0.7-1.6

In finishing operations the insert radius and the feed effect the superficial roughness and the dimensional accuracy.

Rmax = profile depth (inches)

r_ε = nose radius (inches)

f_n = feed (inches/rev)

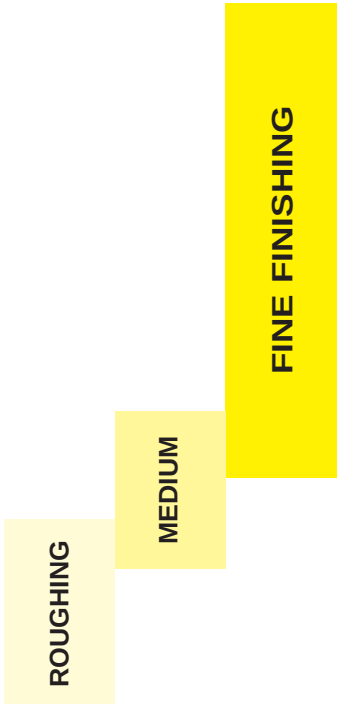
Surface finishing		Radius of insert				
Ra	Rt	0.4	0.8	1.2	1.6	2.4
µm	µm	f mm/r				
0.60	2	0.07	0.10	0.12	0.14	0.17
1.60	4	0.11	0.15	0.19	0.22	0.26
3.20	10	0.17	0.24	0.29	0.34	0.42
6.30	16	0.22	0.30	0.37	0.43	0.53
8.00	25	0.27	0.38	0.47	0.54	0.66

Surface finishing		Diameter of round inserts				
Ra	Rt	10	12	16	20	25
µm	µm	f mm/r				
0.60	2	0.25	0.28	0.32	0.36	0.40
1.60	4	0.40	0.44	0.51	0.57	0.63
3.20	10	0.63	0.69	0.80	0.89	1.00
6.30	16	0.80	0.83	1.01	1.13	1.26
8.00	25	1.00	1.10	1.26	1.42	1.51

Summary about value of Ra & Rt based on the radius value and feed.

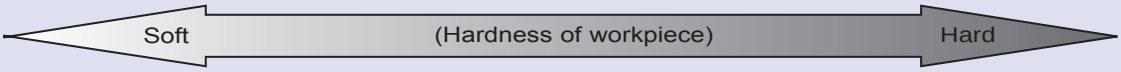
Conversion Value Chart for Surface Finishing

R_{max}	R_a = CLA = AA		RMS		Operation
µm	µm	µinch	µm	µinch	
1.6	0.30	11.8	0.33	13.1	
1.8	0.35	13.8	0.39	15.3	
2.0	0.40	15.7	0.44	17.4	
2.2	0.44	17.5	0.49	19.4	
2.4	0.49	19.2	0.54	21.3	
2.6	0.53	20.8	0.59	23.1	
2.8	0.58	22.7	0.64	25.2	
3.0	0.63	24.6	0.70	27.3	
3.5	0.71	27.8	0.79	30.9	
4.0	0.80	31.4	0.89	34.8	
4.5	0.90	35.2	1.00	39.1	
5.0	0.99	38.8	1.10	43.1	
6.0	1.20	47.2	1.30	52.4	
7.0	1.40	55.1	1.50	61.2	
8.0	1.60	63.0	1.80	70.0	
9.0	1.80	71.0	2.00	78.8	
10.0	2.00	79.0	2.20	87.7	
15.0	3.20	126.0	3.10	140.0	
20.0	4.40	173.0	4.90	192.0	
25.0	5.80	238.0	6.40	264.0	
27.0	6.30	247.0	7.00	274.0	
30.0	7.40	292.0	8.20	324.0	
35.0	8.80	346.0	9.80	384.0	
40.0	10.70	422.0	11.00	468.0	
45.0	12.50	485.0	13.90	538.0	
50.0	14.00	552.0	15.50	613.0	



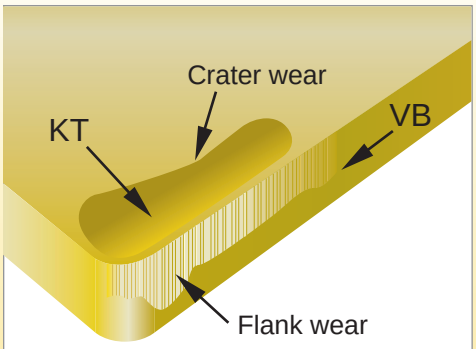
Difference of hardness (HBN):
When the hardness of a workpiece is different from the value shown in the grade speed charts, multiply the cutting speed you have obtained by the factor below to calculate a new cutting speed.

Workpiece hardness and cutting speeds



ISO/ANSI	120HBN	140HBN	160HBN	180HBN	200HBN	220HBN	240HBN	260HBN	280HBN	300HBN	320HBN	340HBN
P	1.42	1.25	1.13	1.0	0.93	0.86	0.75	0.71	0.66	-	-	-
M	1.40	1.22	1.10	1.0	0.93	0.86	0.80	0.70	0.69	-	-	-
K	1.40	1.34	1.30	1.25	1.20	1.10	1.05	1.0	0.94	0.90	0.85	0.82

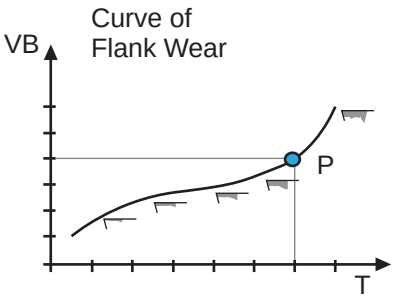
Types of Wear



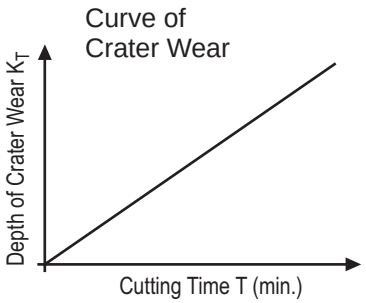
VB= Width of flank wear

KT= Depth of crater wear

Trend of Crater and Flank Wear Based on Cutting Time



P= Point where sudden wear starts and the limit of normal and safe use



Crater wear is more progressive and does not have a sudden breakdown

Factors that could Influence the Tool Life

Tool life depends on many factors, including the type of clamp, type of coolant, (percentage of mix) and type of machine tool. Following, you will see how the surface speed and other data can influence tool life.

Chart “A” below, shows how a different surface speed (Vc) can influence the tool life of the insert. The higher the Vc, the lower the acceptable time life is where V1>V2>V3>V4 you can see respectively that T4>T3>T2>T1.

Chart “B” shows how the wear is influenced by the higher machining data.

Tool Life Criteria

We change the insert when

- It does not create the requested finish or tolerances.
- When the wear under the cutting edge line is too high, causing premature failure
- When the crater depth on the insert face is excessive, causing premature failure
- When the power consumption increases suddenly during the cut

Chart A

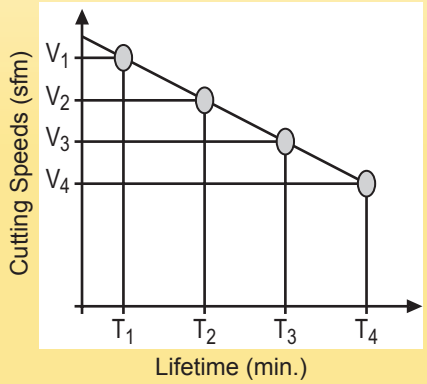
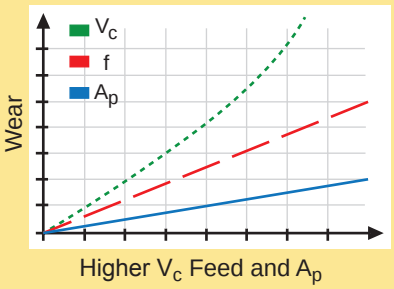


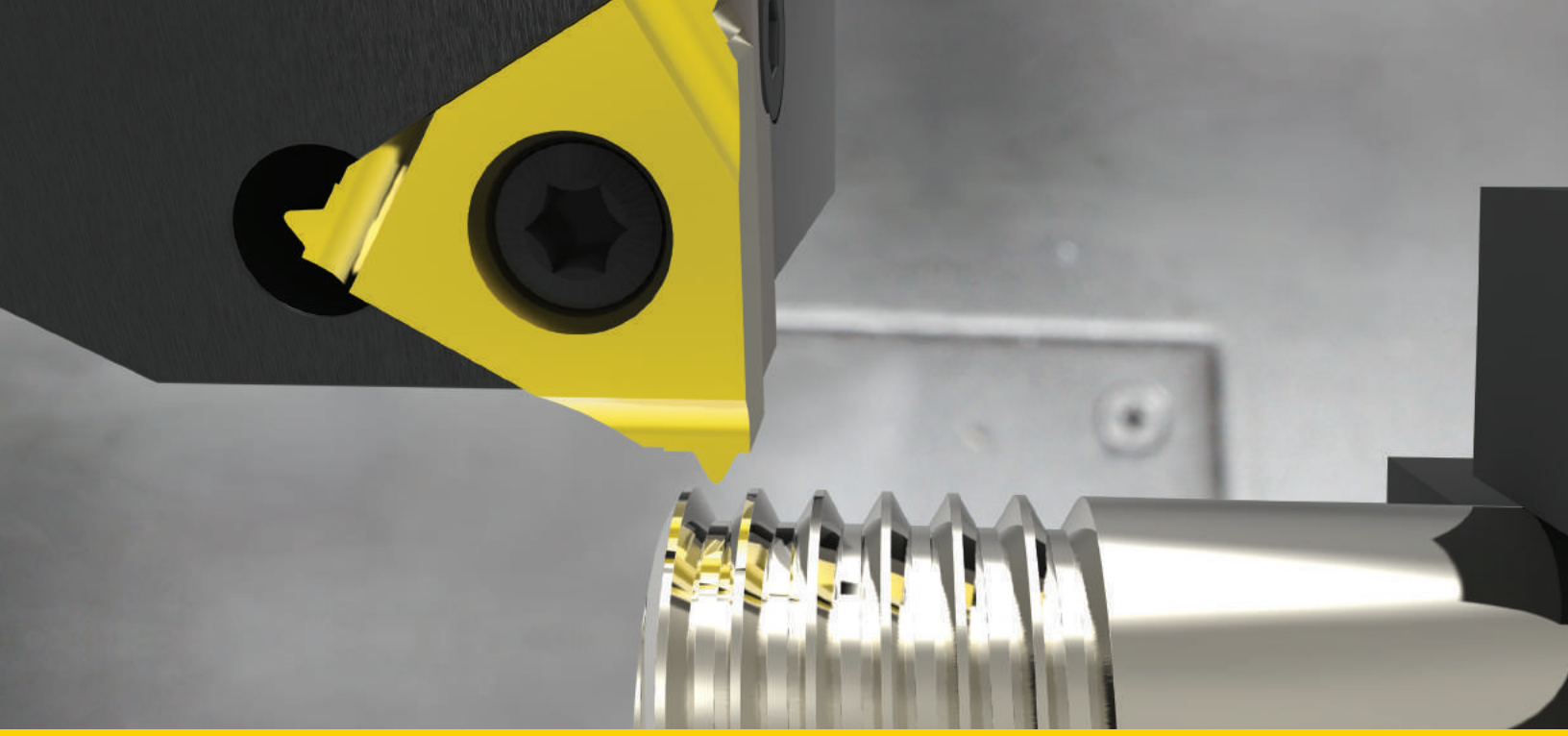
Chart B



Tensile strength	Vickers	Brinell	Rockwell	
N/mm²	HV	HBN	HRC	HRB
255	80	76.0	-	-
270	85	80.7	-	41.0
285	90	85.5	-	48.0
305	95	90.2	-	52.0
320	100	95.0	-	56.2
350	110	105	-	62.3
385	120	114	-	66.7
415	130	124	-	71.2
450	140	133	-	75.0
480	150	143	-	78.7
510	160	152	-	81.7
545	170	162	-	85.0
575	180	171	-	87.5
610	190	181	-	89.5
640	200	190	-	91.5
660	205	195	-	92.5
675	210	199	-	93.5
690	215	204	-	94.0
705	220	209	-	95.0
720	225	214	-	96.0
740	230	219	-	96.7
770	240	228	20.3	98.1
800	250	238	22.2	99.5
820	255	242	23.1	-
835	260	247	24.0	(101)
850	265	252	24.8	-
865	270	257	25.6	(102)
900	280	266	27.1	-
930	290	276	28.5	(105)
950	295	280	29.2	-
965	300	285	29.8	-
995	310	295	31.0	-

Tensile strength	Vickers	Brinell	Rockwell
N/mm²	HV	HBN	HRC
1030	320	304	32.2
1060	330	314	33.3
1095	340	323	34.4
1125	350	333	35.5
1155	360	342	36.6
1190	370	352	37.7
1220	380	361	38.8
1255	390	371	39.8
1290	400	380	40.8
1320	410	390	41.8
1350	420	399	42.7
1385	430	409	43.6
1420	440	418	44.5
1485	460	437	46.1
1555	480	450	47.7
1595	490	457	48.4
1630	500	465	49.1
1665	510	474	49.8
1700	520	482	50.5
1740	530	489	51.1
1775	540	496	51.7
1810	550	503	52.3
1845	560	511	53.0
1880	570	520	53.6
1920	580	527	54.1
1955	590	533	54.7
1995	600	538	55.2
2030	610	543	55.7
2070	620	549	56.3
2105	630	555	56.8
2145	640	561	57.3
2180	650	568	57.8

HV = Vickers hardness
HBN = Brinell hardness
HRC = Rockwell hardness, C scale
HRB = Rockwell hardness, B scale



STELLRAM®

THREADING

Threading

KENNAMETAL®



STELLRAM®

Kennametal's comprehensive threading program is available in a wide range of thread forms. Partial and full profile inserts are offered for thread turning.

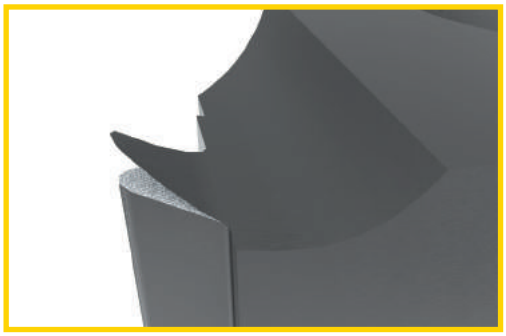
Kennametal offers high performance grades suitable for all machining applications, in a wide range of materials, for maximum productivity.

Kennametal offers both external toolholders and internal bars with through coolant. Internal holders to a minimum bore of 0.240". Anti vibration holders are also available for difficult applications.

STELLRAM

Threading Grade Descriptions

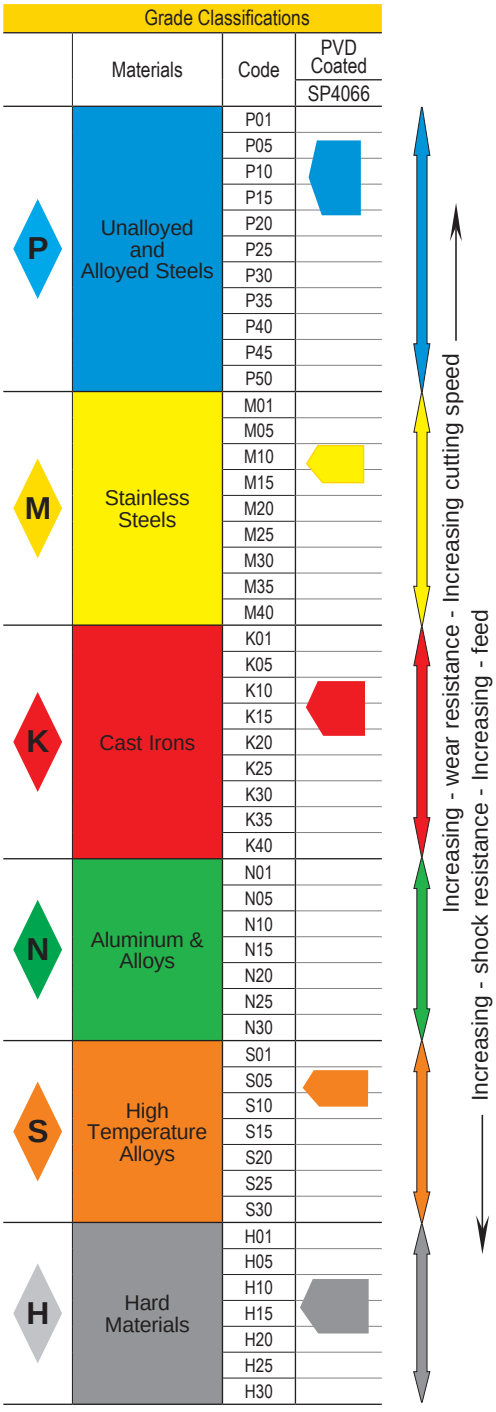
SP4066 has the perfect balance between wear resistance and toughness enabling multiple applications to be covered by one insert. This new grade also allows for longer tool life and is ideal for machining a variety of materials at elevated cutting speeds.



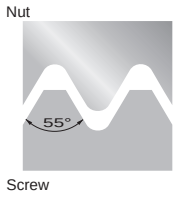
Optimum Grade Performance

Cutting Speed v_c

ISO	Materials	Rm and Hardness	PVD SP4066 SFM min. - max.	PVD SP4066 m/min min. - max.
P	Unalloyed Steel	<600 N/mm² <180 HBN	750 - 1595	230 - 485
		<950 N/mm² <280 HBN	485 - 1035	150 - 315
	Alloyed Steel	700-950 N/mm² 200-280 HBN	445 - 950	135 - 290
		950-1200 N/mm² 280-355 HBN	370 - 785	115 -240
		1200-1400 N/mm² 355-415 HBN	255 - 540	75 - 165
M	Stainless Steel	Austenitic + Ferritic 300 series	505 - 1070	155 - 330
		Martensitic 400 series	525 - 1125	160 - 340
	PH Stainless	Refractory P.H.	270 - 575	80 - 175
K	Cast Iron	Grey GG-Ft	740 - 1580	225 - 480
		Spheroidal-Ductile GGG-FGS	640 - 1565	195 - 415
		Malleable GTS - MN/MP	430- 920	130 - 280
S	High Temperature Alloys	Iron Based	110 - 230	35 - 70
		Cobalt Based	90 - 190	30 - 60
		Nickel Based	95 - 200	30 - 60
		Titanium Based	150 - 315	45 - 95



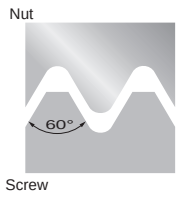
Partial Profile 55°



W, BSPT

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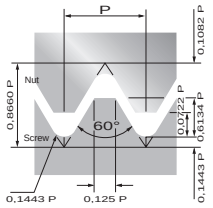
Partial Profile 60°



ISO, UN

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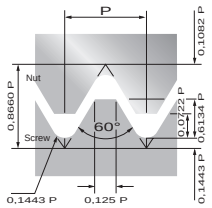
ISO Metric



ISO

PAGES C277 - C281

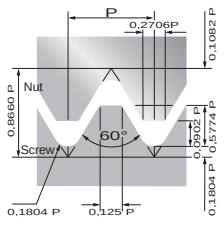
American Unified



UN

PAGES C282 - C284

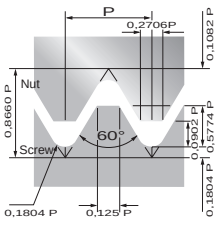
Unified J Form



UNJ

PAGE C285

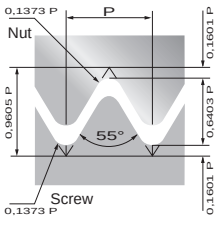
Metric J Form



MJ

PAGE C286

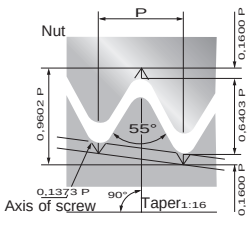
British Standard Whitworth



W

PAGES C287 - C288

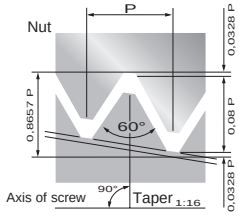
British Standard Pipe Taper Thread



BSPT

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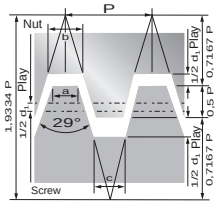
National Taper Pipe Thread



NPT

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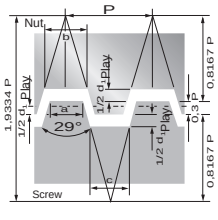
ACME



ACME

PAGES C291 - C292

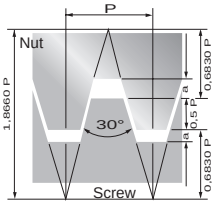
STUB ACME



STUBACME

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Trapezoidal (DIN 103)

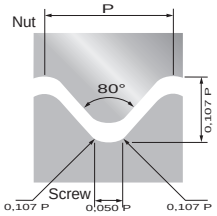


TR

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STELLRAM

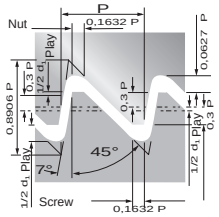
Panzer Gewinde (DIN 40431)



PG

PAGE C296

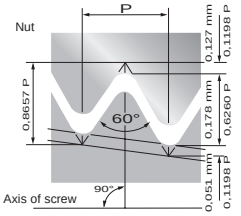
American Buttress 45/7°



ABUTT

PAGES C297 - C298

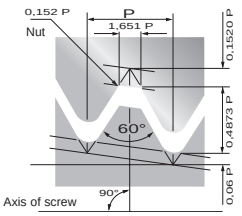
API Casing & Tubing Round



API RD

PAGE C299

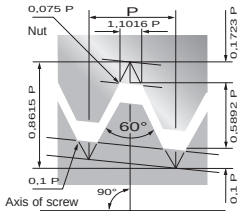
API V0.038



API 38

PAGES C300 - C301

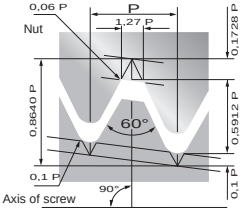
API V0.040



API 40

PAGES C300 - C301

API V0.050



API 50

PAGES C300 - C301

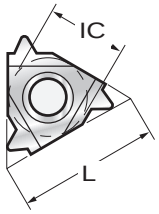
NOTE: Other thread forms available by quotation.

STELLRAM

16 E R 20

1 2 3 4

1 Size



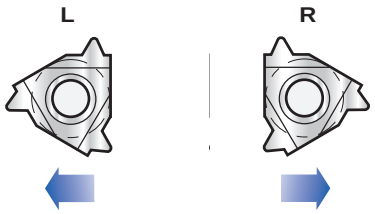
L mm	IC Inch
06	5/32
08	3/16
11	1/4
16	3/8
22	1/2
22U	1/2U
27	5/8
27U	5/8U

2 Utilisation



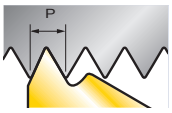
External Internal Neutral

3 Design



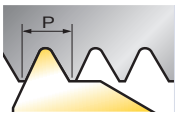
Left Hand Right Hand

4 Thread Pitch or TPI



Partial Profile 60° or 55°

	Thread Pitch mm			TPI		
A	0.5	-	1.5	48	-	16
G	1.75	-	3	14	-	8
AG	0.5	-	3	48	-	8
N	3.5	-	5	7	-	5
Q	5.5	-	6	4 1/2	-	4
U (22)	5.5	-	8	4 1/2	-	3 1/4
U (27)	6.5	-	9	2 3/4	-	4



Full Profile
0.35 to 8.0 mm (72-3 T.P.I)
Pitch sizes stated on all
thread form part numbers

STELLRAM

UN - GRADE

5 6 7

5 Thread Form

Partial Profile		
60°	60
55°	55

Full Profile		
45°/7°	ABUTT
29°	ACME
60°	API RD
60°	API
47.5°	BA
45°/7°	BBUTT
55°	BSPT
3°/10°	BUTT
12°	ELC
60°	ISO

Full Profile	
60°	MJ
60°	NPT
60°	NPTF
60°	PAC
80°	PG
30°	RD
3°/30°	SAGE
29°	STACME
30°	TR
60°	UN
60°	UNJ
3˚/10°	VAM
55°	W

6 Other

SC	M	T	Z
Swarf control style	Multi-tooth style and number of teeth		

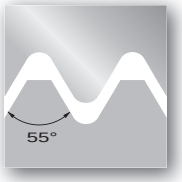
7 Type of Grade

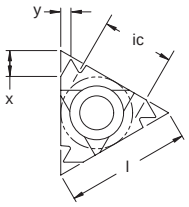
For grade descriptions, refer to page: **C269**

STELLRAM

External Partial Profile 55° Form

For British Standard Whitworth & British Standard Parallel Pipe

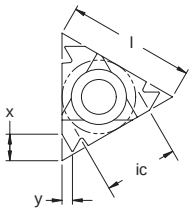




External *Right Hand*		**Partial Profile 55°**		Pitch Range	**TPI Range**	Nose Radius	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm		mm inch	mm inch	mm inch
033826	16 0.375"	**16ERA55**	SP4066	0.5 - 1.5	48 - 16	0.07 0.003	0.80 0.031	0.90 0.035
033828	16 0.375"	**16ERAG55**	SP4066	0.5 - 3.0	48 - 8	0.07 0.003	1.20 0.047	1.70 0.067
033830	16 0.375"	**16ERG55**	SP4066	1.75 - 3.0	14 - 8	0.25 0.010	1.20 0.047	1.70 0.067

Internal Partial Profile 55° Form

For British Standard Whitworth & British Standard Parallel Pipe

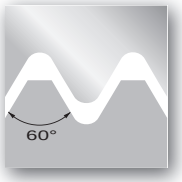


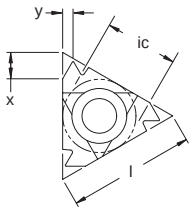
Internal *Right Hand*		**Partial Profile 55°**		Pitch Range	**TPI Range**	Nose Radius	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm		mm inch	mm inch	mm inch
033763	8 0.187"	**08IRA55**	SP4066	0.5 - 1.5	48 - 16	0.07 0.003	0.60 0.024	0.70 0.028
032048	11 0.250"	**11IRA55**	SP4066	0.5 - 1.5	48 - 16	0.07 0.003	0.80 0.031	0.90 0.035
033865	16 0.375"	**16IRAG55**	SP4066	0.5 - 3.0	48 - 8	0.07 0.003	1.20 0.047	1.70 0.067
033867	16 0.375"	**16IRG55**	SP4066	1.75 - 3.0	14 - 8	0.13 0.005	1.20 0.047	1.70 0.067

STELLRAM

External Partial Profile 60° Form

For Unified & ISO metric thread forms





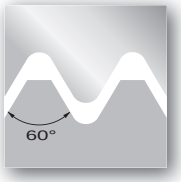
External *Right Hand*		**Partial Profile 60°**		Pitch Range	**TPI Range**	Nose Radius	X	Y
EDP	L (mm) / I/C (inch)	**Description**	Grade	mm		mm / inch	mm / inch	mm / inch
033827	16 / 0.375"	**16ERA60**	SP4066	0.5 - 1.5	48 - 16	0.09 / 0.004	1.20 / 0.047	1.70 / 0.067
033829	16 / 0.375"	**16ERAG60**	SP4066	0.5 - 3.0	48 - 8	0.10 / 0.004	1.20 / 0.047	1.70 / 0.067
033831	16 / 0.375"	**16ERG60**	SP4066	1.75 - 3.0	14 - 8	0.15 / 0.006	1.20 / 0.047	1.70 / 0.067
033884	22 / 0.500"	**22ERN60**	SP4066	3.5 - 5.0	7 - 5	0.48 / 0.019	1.70 / 0.067	2.50 / 0.098

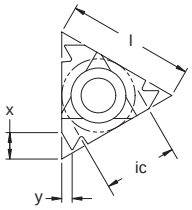
External *Left Hand*		**Partial Profile 60°**		Pitch Range	**TPI Range**	Nose Radius	X	Y
EDP	L (mm) / I/C (inch)	**Description**	Grade	mm		mm / inch	mm / inch	mm / inch
033772	16 / 0.375"	**16ELAG60**	SP4066	0.5 - 3.0	48 - 8	0.10 / 0.004	1.20 / 0.047	1.70 / 0.067

STELLRAM

Internal Partial Profile 60° Form

For Unified & ISO metric thread forms





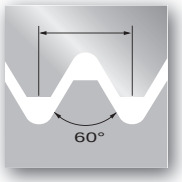
Internal Right Hand		Partial Profile 60°		Pitch Range	TPI Range	Nose Radius	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm		mm inch	mm inch	mm inch
033739	6 0.156"	**06IRA60**	SP4066	0.5 - 1.25	48 - 20	0.70 0.028	0.60 0.023	0.80 0.031
033764	8 0.187"	**08IRA60**	SP4066	0.5 - 1.5	48 - 16	0.09 0.004	0.60 0.023	0.70 0.027
032045	11 0.250"	**11IRA60**	SP4066	0.5 - 1.5	48 - 16	0.15 0.006	0.80 0.031	0.90 0.035
033864	16 0.375"	**16IRA60**	SP4066	0.5 - 1.5	48 - 16	0.10 0.004	1.20 0.047	1.70 0.067
033866	16 0.375"	**16IRAG60**	SP4066	0.5 - 3.0	48 - 8	0.10 0.004	1.20 0.047	1.70 0.067
033868	16 0.375"	**16IRG60**	SP4066	1.75 - 3.0	14 - 8	0.15 0.006	1.20 0.047	1.70 0.067
033899	22 0.500'	**22IRN60**	SP4066	3.5 - 5.0	7 - 5	0.32 0.013	1.70 0.067	2.50 0.098

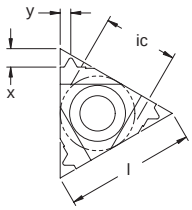
Internal Left Hand		Partial Profile 60°		Pitch Range	TPI Range	Nose Radius	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm		mm inch	mm inch	mm inch
033766	11 0.250"	**11ILA60**	SP4066	0.5 - 1.5	48 - 16	0.15 0.006	0.80 0.031	0.90 0.035

STELLRAM

External ISO Metric

Standard reference: ISO 262 (DIN 13)
Tolerance class: 6g / 6H



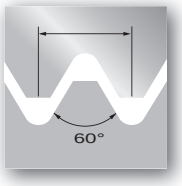


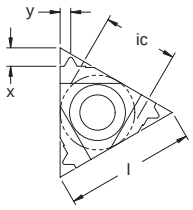
External Right Hand		ISO Metric		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch	mm inch
033773	16 0.375"	**16ER0.35ISO**	SP4066	0.35 0.014	-	0.06 0.002	0.80 0.031	0.40 0.016
033775	16 0.375"	**16ER0.4ISO**	SP4066	0.40 0.016	-	0.07 0.003	0.70 0.028	0.40 0.016
033774	16 0.375"	**16ER0.45ISO**	SP4066	0.45 0.018	-	0.08 0.003	0.70 0.028	0.40 0.016
033776	16 0.375"	**16ER0.5ISO**	SP4066	0.50 0.020	-	0.08 0.003	0.60 0.024	0.60 0.024
033777	16 0.375"	**16ER0.6ISO**	SP4066	0.60 0.024	-	0.09 0.004	0.60 0.024	0.60 0.024
033779	16 0.375"	**16ER0.7ISO**	SP4066	0.70 0.028	-	0.10 0.004	0.60 0.024	0.60 0.024
033778	16 0.375"	**16ER0.75ISO**	SP4066	0.75 0.030	-	0.10 0.004	0.60 0.024	0.60 0.024
033780	16 0.375"	**16ER0.8ISO**	SP4066	0.80 0.031	-	0.13 0.005	0.60 0.024	0.60 0.024
031999	16 0.375"	**16ER1.0ISO**	SP4066	1.00 0.039	-	0.14 0.006	0.70 0.028	0.70 0.028
032000	16 0.375"	**16ER1.25ISO**	SP4066	1.25 0.049	-	0.18 0.007	0.80 0.031	0.90 0.035
032001	16 0.375"	**16ER1.5ISO**	SP4066	1.50 0.059	-	0.22 0.009	0.80 0.031	1.00 0.039
032002	16 0.375"	**16ER1.75ISO**	SP4066	1.75 0.069	-	0.25 0.010	0.90 0.035	1.20 0.047
032003	16 0.375"	**16ER2.0ISO**	SP4066	2.00 0.079	-	0.29 0.011	1.00 0.039	1.30 0.051
033799	16 0.375"	**16ER2.5ISO**	SP4066	2.50 0.098	-	0.36 0.014	1.10 0.043	1.50 0.059
033813	16 0.375"	**16ER3.0ISO**	SP4066	3.00 0.118	-	0.46 0.018	1.20 0.047	1.60 0.063
033814	16 0.375"	**16ER3.5ISO**	SP4066	3.50 0.138	-	0.53 0.021	1.60 0.063	2.30 0.091

STELLRAM

External ISO Metric

Standard reference: ISO 262 (DIN 13)
Tolerance class: 6g / 6H





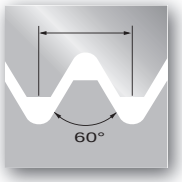
External Right Hand		ISO Metric		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm) / I/C (inch)	**Description**	Grade	mm / inch		mm / inch	mm / inch	mm / inch
033870	16 / 0.375"	**22ER3.5ISO**	SP4066	3.50 / 0.138	-	0.53 / 0.021	1.60 / 0.063	2.30 / 0.091
033871	16 / 0.375"	**22ER4.0ISO**	SP4066	4.00 / 0.157	-	0.61 / 0.024	1.60 / 0.063	2.30 / 0.091
033872	16 / 0.375"	**22ER4.5ISO**	SP4066	4.50 / 0.177	-	0.68 / 0.027	1.70 / 0.067	2.40 / 0.094
033877	16 / 0.375"	**22ER5.0ISO**	SP4066	5.00 / 0.197	-	0.76 / 0.030	1.70 / 0.067	2.50 / 0.098
033880	16 / 0.375"	**22ER6.0ISO**	SP4066	6.00 / 0.236	-	0.89 / 0.035	1.80 / 0.071	2.70 / 0.106

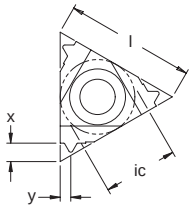
External Left Hand		ISO Metric		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm) / I/C (inch)	**Description**	Grade	mm / inch		mm / inch	mm / inch	mm / inch
033767	16 / 0.375"	**16EL1.0ISO**	SP4066	1.00 / 0.039	-	0.14 / 0.006	0.70 / 0.028	0.70 / 0.028
033768	16 / 0.375"	**16EL1.5ISO**	SP4066	1.50 / 0.059	-	0.22 / 0.009	0.80 / 0.031	1.00 / 0.039
033770	16 / 0.375"	**16EL2.5ISO**	SP4066	2.50 / 0.098	-	0.36 / 0.014	1.10 / 0.043	1.50 / 0.059

STELLRAM

Internal ISO Metric

Standard reference: ISO 262 (DIN 13)
Tolerance class: 6g / 6H



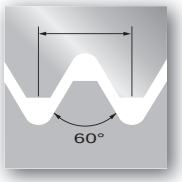


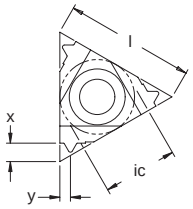
Internal Right Hand		ISO Metric		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm) I/C (inch)	Description	Grade	mm inch		mm inch	mm inch	mm inch
033735	6 0.156"	**06IR0.5ISO**	SP4066	0.50 0.020	-	0.04 0.002	0.60 0.024	0.50 0.020
033736	6 0.156"	**06IR0.75ISO**	SP4066	0.75 0.030	-	0.06 0.002	0.60 0.024	0.50 0.020
033737	6 0.156"	**06IR1.0ISO**	SP4066	1.00 0.039	-	0.80 0.031	0.60 0.024	0.60 0.024
033738	6 0.156"	**06IR1.25ISO**	SP4066	1.25 0.049	-	0.10 0.004	0.60 0.024	0.70 0.028
033741	8 0.187"	**08IR0.5ISO**	SP4066	0.50 0.020	-	0.04 0.002	0.60 0.024	0.50 0.020
033742	8 0.187"	**08IR0.75ISO**	SP4066	0.75 0.030	-	0.06 0.002	0.60 0.024	0.50 0.020
033743	8 0.187"	**08IR1.0ISO**	SP4066	1.00 0.039	-	0.11 0.004	0.60 0.024	0.60 0.024
033744	8 0.187"	**08IR1.25ISO**	SP4066	1.25 0.049	-	0.10 0.004	0.60 0.024	0.70 0.028
033745	8 0.187"	**08IR1.5ISO**	SP4066	1.50 0.059	-	0.11 0.004	0.60 0.024	1.00 0.039
033746	8 0.187"	**08IR1.75ISO**	SP4066	1.75 0.069	-	0.13 0.005	0.60 0.024	1.00 0.039
032067	11 0.250"	**11IR0.4ISO**	SP4066	0.40 0.016	-	0.04 0.002	0.80 0.031	0.40 0.016
032064	11 0.250"	**11IR0.5ISO**	SP4066	0.50 0.020	-	0.04 0.002	0.60 0.024	0.60 0.024
032057	11 0.250"	**11IR0.75ISO**	SP4066	0.75 0.030	-	0.06 0.002	0.60 0.024	0.60 0.024
032042	11 0.250"	**11IR1.0ISO**	SP4066	1.00 0.039	-	0.08 0.003	0.60 0.024	0.70 0.028
032043	11 0.250"	**11IR1.5ISO**	SP4066	1.50 0.059	-	0.11 0.004	0.80 0.031	1.00 0.039
032062	11 0.250"	**11IR1.75ISO**	SP4066	1.75 0.069	-	0.13 0.005	0.80 0.031	1.00 0.039
032051	11 0.250"	**11IR2.0ISO**	SP4066	2.00 0.079	-	0.14 0.006	0.80 0.031	1.10 0.043
032059	11 0.250"	**11IR2.5ISO**	SP4066	2.50 0.098	-	0.18 0.007	0.80 0.031	1.30 0.051

STELLRAM

Internal ISO Metric

Standard reference: ISO 262 (DIN 13)
Tolerance class: 6g / 6H



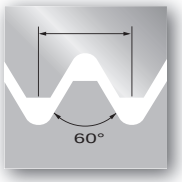


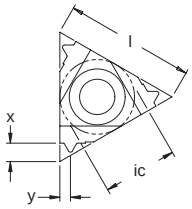
Internal Right Hand		ISO Metric		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch	mm inch
033833	16 0.375"	**16IR0.5ISO**	SP4066	0.50 0.020	-	0.04 0.002	0.60 0.024	0.60 0.024
033834	16 0.375"	**16IR0.6ISO**	SP4066	0.60 0.024	-	0.05 0.002	0.60 0.024	0.60 0.024
033836	16 0.375"	**16IR0.7ISO**	SP4066	0.70 0.028	-	0.06 0.002	0.60 0.024	0.60 0.024
033835	16 0.375"	**16IR0.75ISO**	SP4066	0.75 0.030	-	0.06 0.002	0.60 0.024	0.60 0.024
033837	16 0.375"	**16IR0.8ISO**	SP4066	0.80 0.031	-	0.06 0.002	0.60 0.024	0.60 0.024
032004	16 0.375"	**16IR1.0ISO**	SP4066	1.00 0.039	-	0.08 0.003	0.60 0.024	0.70 0.028
032005	16 0.375"	**16IR1.25ISO**	SP4066	1.25 0.049	-	0.10 0.004	0.80 0.031	0.90 0.035
032006	16 0.375"	**16IR1.5ISO**	SP4066	1.50 0.059	-	0.11 0.004	0.80 0.031	1.00 0.039
032007	16 0.375"	**16IR1.75ISO**	SP4066	1.75 0.069	-	0.13 0.005	0.90 0.035	1.20 0.047
032008	16 0.375"	**16IR2.0ISO**	SP4066	2.00 0.079	-	0.14 0.006	1.00 0.039	1.30 0.051
033849	16 0.375"	**16IR2.5ISO**	SP4066	2.50 0.098	-	0.18 0.007	1.10 0.043	1.50 0.059
033856	16 0.375"	**16IR3.0ISO**	SP4066	3.00 0.118	-	0.23 0.009	1.10 0.043	1.50 0.059
033857	16 0.375"	**16IR3.5ISO**	SP4066	3.50 0.138	-	0.25 0.010	1.20 0.047	1.80 0.071

STELLRAM

Internal ISO Metric

Standard reference: ISO 262 (DIN 13)
Tolerance class: 6g / 6H





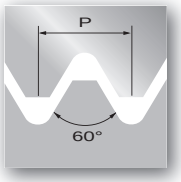
Internal Right Hand		ISO Metric		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch	mm inch
033885	22 0.500"	**22IR3.5ISO**	SP4066	3.50 0.138	-	0.25 0.010	1.60 0.063	2.30 0.091
033886	22 0.500"	**22IR4.0ISO**	SP4066	4.00 0.157	-	0.33 0.013	1.60 0.063	2.30 0.091
033887	22 0.500"	**22IR4.5ISO**	SP4066	4.50 0.177	-	0.36 0.014	1.60 0.063	2.40 0.094
033892	22 0.500"	**22IR5.0ISO**	SP4066	5.00 0.197	-	0.39 0.015	1.60 0.063	2.60 0.102

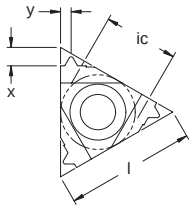
Internal Left Hand		ISO Metric		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch	mm inch
033740	8 0.187"	**08IL1.0ISO**	SP4066	1.00 0.039	-	0.11 0.004	0.60 0.024	0.60 0.024
033832	16 0.375"	**16IL1.5ISO**	SP4066	1.50 0.059	-	0.11 0.004	0.80 0.031	1.00 0.039

STELLRAM

External American Unified (UN)

Standard reference: ANSI B1.1:74
Tolerance class: 2A / 2B



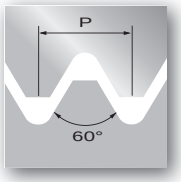


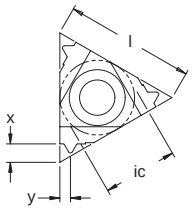
External Right Hand		American Unified (UN)		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch	mm inch
031995	16 0.375"	**16ER8UN**	SP4066	3.18 0.125	8	0.48 0.019	1.20 0.047	1.60 0.063
033824	16 0.375"	**16ER9UN**	SP4066	2.82 0.111	9	0.38 0.015	1.20 0.047	1.70 0.067
033782	16 0.375"	**16ER10UN**	SP4066	2.54 0.100	10	0.38 0.015	1.10 0.043	1.50 0.059
033784	16 0.375"	**16ER11UN**	SP4066	2.31 0.091	11	0.33 0.013	1.10 0.043	1.50 0.059
031996	16 0.375"	**16ER12UN**	SP4066	2.12 0.083	12	0.29 0.011	1.10 0.043	1.40 0.055
033787	16 0.375"	**16ER13UN**	SP4066	1.95 0.077	13	0.28 0.011	1.00 0.039	1.30 0.051
033788	16 0.375"	**16ER14UN**	SP4066	1.81 0.071	14	0.25 0.010	1.00 0.039	1.20 0.047
033793	16 0.375"	**16ER16UN**	SP4066	1.59 0.063	16	0.22 0.009	0.90 0.035	1.10 0.043
033796	16 0.375"	**16ER18UN**	SP4066	1.41 0.056	18	0.20 0.008	0.80 0.031	1.00 0.039
033802	16 0.375"	**16ER20UN**	SP4066	1.27 0.050	20	0.18 0.007	0.80 0.031	0.90 0.035
033805	16 0.375"	**16ER24UN**	SP4066	1.06 0.042	24	0.17 0.007	0.70 0.028	0.80 0.031
033809	16 0.375"	**16ER27UN**	SP4066	0.94 0.037	27	0.15 0.006	0.70 0.028	0.80 0.031
033810	16 0.375"	**16ER28UN**	SP4066	0.91 0.036	28	0.14 0.006	0.60 0.024	0.70 0.028
033815	16 0.375"	**16ER32UN**	SP4066	0.79 0.031	32	0.13 0.005	0.60 0.024	0.60 0.024
034611	16 0.375"	**16ER36UN**	SP4066	0.71 0.028	36	0.11 0.004	0.60 0.024	0.60 0.024
033819	16 0.375"	**16ER40UN**	SP4066	0.64 0.025	40	0.09 0.004	0.60 0.024	0.60 0.024
033879	22 0.500"	**22ER5UN**	SP4066	5.08 0.200	5	0.76 0.030	1.70 0.067	2.50 0.098
033882	22 0.500"	**22ER6UN**	SP4066	4.23 0.167	6	0.64 0.025	1.60 0.063	2.30 0.091
033883	22 0.500"	**22ER7UN**	SP4066	3.63 0.143	7	0.53 0.021	1.60 0.063	2.30 0.091

STELLRAM

Internal American Unified (UN)

Standard reference: ANSI B1.1:74
Tolerance class: 2A / 2B



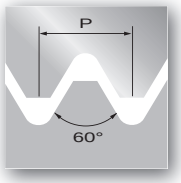


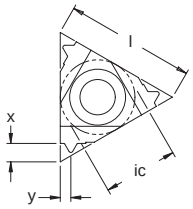
Internal Right Hand		American Unified (UN)		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch	mm inch
033747	08 0.187"	**08IR14UN**	SP4066	1.81 0.071	14	0.15 0.006	0.60 0.024	0.80 0.031
033748	08 0.187"	**08IR16UN**	SP4066	1.59 0.063	16	0.11 0.004	0.60 0.024	0.70 0.028
033751	08 0.187"	**08IR18UN**	SP4066	1.41 0.056	18	0.11 0.004	0.60 0.024	0.70 0.028
033754	08 0.187"	**08IR20UN**	SP4066	1.27 0.050	20	0.11 0.004	0.60 0.024	0.70 0.028
033756	08 0.187"	**08IR24UN**	SP4066	1.06 0.042	24	0.09 0.004	0.60 0.024	0.60 0.024
033761	08 0.187"	**08IR28UN**	SP4066	0.91 0.036	28	0.09 0.004	0.60 0.024	0.60 0.024
032056	11 0.250"	**11IR32UN**	SP4066	0.79 0.031	32	0.09 0.004	0.60 0.024	0.60 0.024
032068	11 0.250"	**11IR28UN**	SP4066	0.91 0.036	28	0.09 0.004	0.60 0.024	0.70 0.028
032055	11 0.250"	**11IR27UN**	SP4066	0.94 0.037	27	0.09 0.004	0.70 0.028	0.80 0.031
032060	11 0.250"	**11IR24UN**	SP4066	1.06 0.042	24	0.09 0.004	0.70 0.028	0.80 0.031
032044	11 0.250"	**11IR20UN**	SP4066	1.27 0.050	20	0.10 0.004	0.80 0.031	0.90 0.035
032049	11 0.250"	**11IR18UN**	SP4066	1.41 0.056	18	0.11 0.004	0.80 0.031	1.00 0.039
032053	11 0.250"	**11IR16UN**	SP4066	1.59 0.063	16	0.11 0.004	0.09 0.004	1.10 0.043
032058	11 0.250"	**11IR12UN**	SP4066	2.12 0.083	12	0.18 0.007	0.90 0.035	1.10 0.043

STELLRAM

Internal American Unified (UN)

Standard reference: ANSI B1.1:74
Tolerance class: 2A / 2B



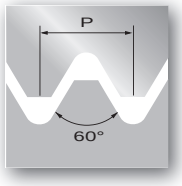


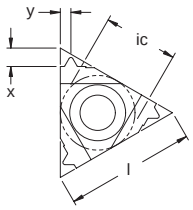
Internal Right Hand		American Unified (UN)		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch	mm inch
031997	16 0.375"	**16IR8UN**	SP4066	3.18 0.125	8	0.24 0.009	1.10 0.043	1.50 0.059
033863	16 0.375"	**16IR9UN**	SP4066	2.82 0.111	9	0.20 0.008	1.20 0.047	1.70 0.067
033839	16 0.375"	**16IR10UN**	SP4066	2.54 0.100	10	0.20 0.008	1.10 0.043	1.50 0.059
033840	16 0.375"	**16IR11UN**	SP4066	2.31 0.091	11	0.18 0.007	1.10 0.043	1.50 0.059
031998	16 0.375"	**16IR12UN**	SP4066	2.12 0.083	12	0.18 0.007	1.10 0.043	1.40 0.055
033842	16 0.375"	**16IR13UN**	SP4066	1.95 0.077	13	0.17 0.007	1.00 0.039	1.30 0.051
033843	16 0.375"	**16IR14UN**	SP4066	1.81 0.071	14	0.15 0.006	0.90 0.035	1.10 0.043
033846	16 0.375"	**16IR16UN**	SP4066	1.59 0.063	16	0.11 0.004	0.90 0.035	1.10 0.043
033848	16 0.375"	**16IR18UN**	SP4066	1.41 0.056	18	0.11 0.004	0.80 0.031	1.00 0.039
033852	16 0.375"	**16IR20UN**	SP4066	1.27 0.050	20	0.10 0.004	0.80 0.031	0.90 0.035
033853	16 0.375"	**16IR24UN**	SP4066	1.06 0.042	24	0.09 0.004	0.70 0.028	0.80 0.031
033855	16 0.375"	**16IR28UN**	SP4066	0.91 0.036	28	0.09 0.004	0.60 0.024	0.60 0.024
033858	16 0.375"	**16IR32UN**	SP4066	0.79 0.031	32	0.06 0.002	0.60 0.024	0.60 0.024
033859	16 0.375"	**16IR36UN**	SP4066	0.71 0.028	36	0.05 0.002	0.60 0.024	0.60 0.024
033860	16 0.375"	**16IR40UN**	SP4066	0.64 0.025	40	0.05 0.002	0.60 0.024	0.60 0.024
033895	22 0.500"	**22IR5UN**	SP4066	5.08 0.200	5	0.37 0.015	1.60 0.063	2.30 0.091
033897	22 0.500"	**22IR6UN**	SP4066	4.23 0.167	6	0.33 0.013	1.60 0.063	2.30 0.091
033898	22 0.500"	**22IR7UN**	SP4066	3.63 0.143	7	0.29 0.011	1.60 0.063	2.30 0.091

STELLRAM

External Unified J Form (UNJ)

Standard reference: MIL-S8879C
Tolerance class: 3A / 3B



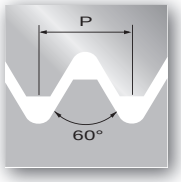


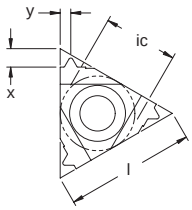
External *Right Hand*		**Unified J Form (UNJ)**		Pitch	**TPI**	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch
032345	16 0.375"	**16ER32UNJ**	SP4066	0.79 0.031	32	0.60 0.024	0.60 0.024
032346	16 0.375"	**16ER28UNJ**	SP4066	0.91 0.036	28	0.60 0.024	0.60 0.024
032347	16 0.375"	**16ER24UNJ**	SP4066	1.06 0.042	24	0.70 0.028	0.80 0.031
032348	16 0.375"	**16ER20UNJ**	SP4066	1.27 0.050	20	0.80 0.031	0.90 0.035
032349	16 0.375"	**16ER18UNJ**	SP4066	1.41 0.056	18	0.80 0.031	1.00 0.039
032350	16 0.375"	**16ER16UNJ**	SP4066	1.59 0.063	16	0.80 0.031	1.00 0.039
032351	16 0.375"	**16ER14UNJ**	SP4066	1.81 0.071	14	1.00 0.039	1.20 0.047
032352	16 0.375"	**16ER12UNJ**	SP4066	2.12 0.083	12	1.10 0.043	1.40 0.055

STELLRAM

External Unified J Form (UNJ)

Standard reference: ISO 5855
Tolerance class: 4h/6h - 4H/5H



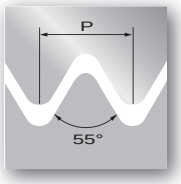


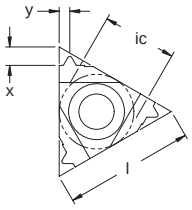
External Right Hand		Metric J Form (MJ)		Pitch	TPI	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch
032353	16 0.375"	**16ER0.8MJ**	SP4066	0.80 0.031	-	0.60 0.024	0.70 0.028
032354	16 0.375"	**16ER1.0MJ**	SP4066	1.00 0.039	-	0.60 0.024	0.70 0.028
032355	16 0.375"	**16ER1.25MJ**	SP4066	1.25 0.049	-	0.70 0.028	0.90 0.035
032356	16 0.375"	**16ER1.5MJ**	SP4066	1.50 0.059	-	0.80 0.031	1.00 0.039
032357	16 0.375"	**16ER2.0MJ**	SP4066	2.00 0.079	-	1.00 0.039	1.30 0.051
032358	16 0.375"	**16ER2.5MJ**	SP4066	2.50 0.098	-	1.10 0.043	1.50 0.059
032359	16 0.375"	**16ER3.0MJ**	SP4066	3.00 0.118	-	1.20 0.047	1.60 0.063

STELLRAM

External British Standard Whitworth (W)

Standard reference: ISO 228/1: 1982,
B.S. 84:1956, DIN 259
Tolerance class: Medium Class A



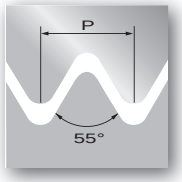


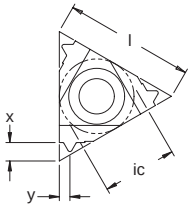
External Right Hand		British Standard Whitworth (W)		Pitch	TPI	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch
033823	16 0.375"	**16ER8W**	SP4066	3.18 0.125	8	1.20 0.047	1.50 0.059
033825	16 0.375"	**16ER9W**	SP4066	2.82 0.111	9	1.20 0.047	1.70 0.067
033783	16 0.375"	**16ER10W**	SP4066	2.54 0.100	10	1.10 0.043	1.50 0.059
031982	16 0.375"	**16ER11W**	SP4066	2.31 0.091	11	1.10 0.043	1.50 0.059
033786	16 0.375"	**16ER12W**	SP4066	2.12 0.083	12	1.10 0.043	1.40 0.055
031981	16 0.375"	**16ER14W**	SP4066	1.81 0.071	14	1.00 0.039	1.20 0.047
033794	16 0.375"	**16ER16W**	SP4066	1.59 0.063	16	0.90 0.035	1.10 0.043
033797	16 0.375"	**16ER18W**	SP4066	1.41 0.056	18	0.80 0.031	1.00 0.039
031980	16 0.375"	**16ER19W**	SP4066	1.34 0.053	19	0.80 0.031	1.00 0.039
033803	16 0.375"	**16ER20W**	SP4066	1.27 0.050	20	0.80 0.031	0.90 0.035
033804	16 0.375"	**16ER22W**	SP4066	1.15 0.045	22	0.80 0.031	0.90 0.035
033806	16 0.375"	**16ER24W**	SP4066	1.06 0.042	24	0.70 0.028	0.80 0.031
033807	16 0.375"	**16ER26W**	SP4066	0.98 0.038	26	0.70 0.028	0.80 0.031
031979	16 0.375"	**16ER28W**	SP4066	0.91 0.036	28	0.60 0.024	0.70 0.028
033816	16 0.375"	**16ER32W**	SP4066	0.79 0.031	32	0.60 0.024	0.60 0.024
033818	16 0.375"	**16ER36W**	SP4066	0.71 0.028	36	0.60 0.024	0.60 0.024
033820	16 0.375"	**16ER40W**	SP4066	0.64 0.025	40	0.60 0.024	0.60 0.024

STELLRAM

Internal British Standard Whitworth (W)

Standard reference: ISO 228/1: 1982,
B.S. 84:1956, DIN 259
Tolerance class: Medium Class A



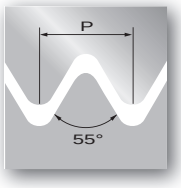


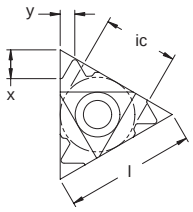
Internal *Right Hand*		**British Standard Whitworth (W)**		Pitch	**TPI**	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch
033749	08 0.187"	**08IR16W**	SP4066	1.59 0.063	16	0.60 0.024	0.70 0.028
033752	08 0.187"	**08IR18W**	SP4066	1.41 0.056	18	0.60 0.024	0.70 0.028
033753	08 0.187"	**08IR19W**	SP4066	1.34 0.053	19	0.60 0.024	0.70 0.028
033755	08 0.187"	**08IR20W**	SP4066	1.27 0.050	20	0.60 0.024	0.70 0.028
033757	08 0.187"	**08IR24W**	SP4066	1.06 0.042	24	0.60 0.024	0.70 0.028
033759	08 0.187"	**08IR26W**	SP4066	0.98 0.038	26	0.60 0.024	0.60 0.024
033762	08 0.187"	**08IR28W**	SP4066	0.91 0.036	28	0.60 0.024	0.60 0.024
032069	11 0.250"	**11IR28W**	SP4066	0.91 0.036	28	0.60 0.024	0.70 0.028
032063	11 0.250"	**11IR26W**	SP4066	0.98 0.038	26	0.70 0.028	0.80 0.031
032046	11 0.250"	**11IR19W**	SP4066	1.34 0.053	19	0.80 0.031	1.00 0.039
032047	11 0.250"	**11IR14W**	SP4066	1.81 0.071	14	0.90 0.035	1.10 0.043
032066	11 0.250"	**11IR11W**	SP4066	2.31 0.091	11	0.90 0.035	1.20 0.047
031983	16 0.375"	**16IR28W**	SP4066	0.91 0.036	28	0.60 0.024	0.70 0.028
031984	16 0.375"	**16IR19W**	SP4066	1.34 0.053	19	0.80 0.031	1.00 0.039
031985	16 0.375"	**16IR14W**	SP4066	1.81 0.071	14	1.00 0.039	1.20 0.047
031986	16 0.375"	**16IR11W**	SP4066	2.31 0.091	11	1.10 0.043	1.50 0.059

STELLRAM

External British Standard Pipe Taper Thread (BSPT)

Standard reference: B.S 21: 1985
Tolerance class: Standard BSPT

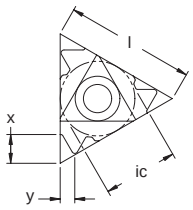




External *Right Hand*		British Standard Pipe Taper Thread (BSPT)		Pitch	TPI	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch
031987	16 0.375"	**16ER28BSPT**	SP4066	0.91 0.036	28	0.70 0.028	0.80 0.031
031988	16 0.375"	**16ER19BSPT**	SP4066	1.34 0.053	19	0.80 0.031	1.00 0.039
031989	16 0.375"	**16ER14BSPT**	SP4066	1.81 0.071	14	0.90 0.035	1.20 0.047
031990	16 0.375"	**16ER11BSPT**	SP4066	2.31 0.091	11	1.10 0.043	1.50 0.059

Internal British Standard Pipe Taper Thread (BSPT)

Standard reference: B.S 21: 1985
Tolerance class: Standard BSPT

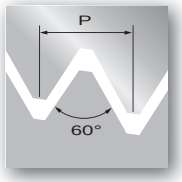


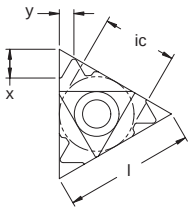
Internal *Right Hand*		British Standard Pipe Taper Thread (BSPT)		Pitch	TPI	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch
032050	11 0.250"	**11IR19BSPT**	SP4066	1.34 0.053	19	0.80 0.031	1.00 0.039
032061	11 0.250"	**11IR14BSPT**	SP4066	1.81 0.071	14	0.80 0.031	1.00 0.039
031991	16 0.375"	**16IR28BSPT**	SP4066	0.91 0.036	28	0.70 0.028	0.80 0.031
031992	16 0.375"	**16IR19BSPT**	SP4066	1.34 0.053	19	0.80 0.031	1.00 0.039
031993	16 0.375"	**16IR14BSPT**	SP4066	1.81 0.071	14	0.90 0.035	1.20 0.047
031994	16 0.375"	**16IR11BSPT**	SP4066	2.31 0.091	11	1.10 0.043	1.50 0.059

STELLRAM

External National Taper Thread (NPT)

Standard reference: USAS B2:1: 1968
Tolerance class: Standard NPT

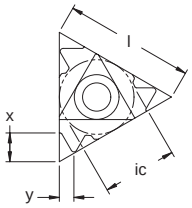




External Right Hand		National Taper Thread (NPT)		Pitch	TPI	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch
031971	16 0.375"	**16ER18NPT**	SP4066	1.41 0.056	18	0.80 0.031	1.00 0.039
031972	16 0.375"	**16ER14NPT**	SP4066	1.81 0.071	14	0.90 0.035	1.20 0.047
031973	16 0.375"	**16ER11.5NPT**	SP4066	2.21 0.087	11.5	1.10 0.043	1.50 0.059
031974	16 0.375"	**16ER8NPT**	SP4066	3.18 0.125	8	1.30 0.051	1.80 0.071

Internal National Taper Thread (NPT)

Standard reference: USAS B2:1: 1968
Tolerance class: Standard NPT

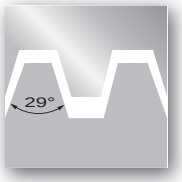


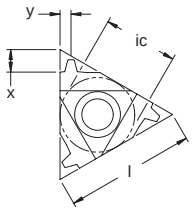
Internal Right Hand		National Taper Thread (NPT)		Pitch	TPI	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch
033760	08 0.187"	**08IR27NPT**	SP4066	0.94 0.037	27	0.60 0.024	0.60 0.024
033750	08 0.187"	**08IR18NPT**	SP4066	1.41 0.056	18	0.60 0.024	0.60 0.024
032054	11 0.250"	**11IR18NPT**	SP4066	1.41 0.056	18	0.80 0.031	1.00 0.039
032052	11 0.250"	**11IR14NPT**	SP4066	1.81 0.071	14	0.80 0.031	1.00 0.039
031975	16 0.375"	**16IR18NPT**	SP4066	1.41 0.056	18	0.80 0.031	1.00 0.039
031976	16 0.375"	**16IR14NPT**	SP4066	1.81 0.071	14	0.90 0.035	1.20 0.047
031977	16 0.375"	**16IR11.5NPT**	SP4066	2.21 0.087	11.5	1.10 0.043	1.50 0.059
031978	16 0.375"	**16IR8NPT**	SP4066	3.18 0.125	8	1.30 0.051	1.80 0.071

STELLRAM

External ACME

Standard reference: ANSI B 1.5: 1988
Tolerance class: 3G



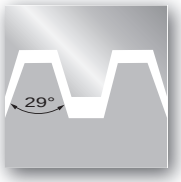


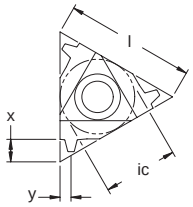
External Right Hand		ACME		Pitch	TPI	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch
032011	16 0.375"	**16ER12ACME**	SP4066	2.12 0.083	12	1.10 0.043	1.20 0.047
032010	16 0.375"	**16ER10ACME**	SP4066	2.54 0.100	10	1.30 0.051	1.30 0.051
032009	16 0.375"	**16ER8ACME**	SP4066	3.18 0.125	8	1.50 0.059	1.50 0.059
032022	22 0.500"	**22ER6ACME**	SP4066	4.23 0.167	6	1.80 0.071	2.10 0.083
032021	22 0.500"	**22ER5ACME**	SP4066	5.08 0.200	5	2.00 0.079	2.30 0.091
032029	27 0.625"	**27ER4ACME**	SP4066	6.35 0.250	4	2.30 0.091	2.70 0.106

STELLRAM

Internal ACME

Standard reference: ANSI B 1.5: 1988
Tolerance class: 3G



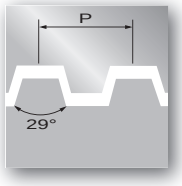


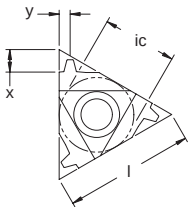
Internal *Right Hand*		ACME		Pitch	TPI	X	Y
EDP	L (mm) / I/C (inch)	**Description**	Grade	mm / inch		mm / inch	mm / inch
032014	16 / 0.375"	**16IR12ACME**	SP4066	2.12 / 0.083	12	1.10 / 0.043	1.20 / 0.047
032013	16 / 0.375"	**16IR10ACME**	SP4066	2.54 / 0.100	10	1.30 / 0.051	1.30 / 0.051
032012	16 / 0.375"	**16IR8ACME**	SP4066	3.18 / 0.125	8	1.50 / 0.059	1.50 / 0.059
032024	22 / 0.500"	**22IR6ACME**	SP4066	4.23 / 0.167	6	1.80 / 0.071	2.10 / 0.083
032023	22 / 0.500"	**22IR5ACME**	SP4066	5.08 / 0.200	5	2.00 / 0.079	2.30 / 0.091
032031	27 / 0.625"	**27IR4ACME**	SP4066	6.35 / 0.250	4	2.30 / 0.091	2.70 / 0.106

STELLRAM

External Stub ACME (STACME)

Standard reference: ANSI B1.8:1988
Tolerance class: 2G



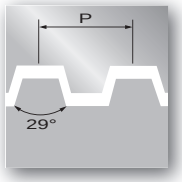


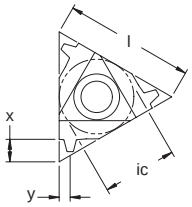
External *Right Hand*		Stub ACME (STACME)		Pitch	TPI	X	Y
EDP	L (mm) I/C (inch)	Description	Grade	mm inch		mm inch	mm inch
032017	16 0.375"	**16ER12STACME**	SP4066	2.12 0.083	12	1.20 0.047	1.20 0.047
032016	16 0.375"	**16ER10STACME**	SP4066	2.54 0.100	10	1.30 0.051	1.30 0.051
032015	16 0.375"	**16ER8STACME**	SP4066	3.18 0.125	8	1.50 0.059	1.50 0.059
033821	16 0.375"	**16ER6STACME**	SP4066	4.23 0.167	6	1.50 0.059	1.80 0.071
032026	22 0.500"	**22ER6STACME**	SP4066	4.23 0.167	6	1.80 0.071	1.80 0.071
032025	22 0.500"	**22ER5STACME**	SP4066	5.08 0.200	5	2.00 0.079	2.30 0.091
032030	27 0.625"	**27ER4STACME**	SP4066	6.35 0.250	4	2.30 0.091	2.40 0.094

STELLRAM

Internal Stub ACME (STACME)

Standard reference: ANSI B1.8:1988
Tolerance class: 2G



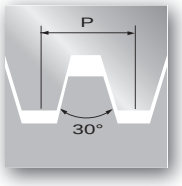


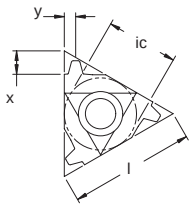
Internal *Right Hand*		Stub ACME (STACME)		Pitch	TPI	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch
032020	16 0.375"	**16IR12STACME**	SP4066	2.12 0.083	12	1.20 0.047	1.20 0.047
032019	16 0.375"	**16IR10STACME**	SP4066	2.54 0.100	10	1.30 0.051	1.30 0.051
032018	16 0.375"	**16IR8STACME**	SP4066	3.18 0.125	8	1.50 0.059	1.50 0.059
033861	16 0.375"	**16IR6STACME**	SP4066	4.23 0.167	6	1.50 0.059	1.80 0.071
032028	22 0.500"	**22IR6STACME**	SP4066	4.23 0.167	6	1.80 0.071	1.80 0.071
032027	22 0.500"	**22IR5STACME**	SP4066	5.08 0.200	5	2.00 0.079	2.30 0.091
032032	27 0.625"	**27IR4STACME**	SP4066	6.35 0.250	4	2.30 0.091	2.40 0.094

STELLRAM

External Trapezoidal (TR)

Standard reference: DIN 103
Tolerance class: 7e/7H

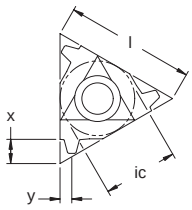




External *Right Hand*		Trapezoidal (TR)		Pitch	TPI	X	Y
EDP	L (mm) / I/C (inch)	**Description**	Grade	mm / inch		mm / inch	mm / inch
033876	22 / 0.500"	**22ER4TR**	SP4066	4.00 / 0.157	-	1.80 / 0.071	1.90 / 0.075
033878	22 / 0.500"	**22ER5TR**	SP4066	5.00 / 0.197	-	2.00 / 0.079	2.40 / 0.094
033881	22 / 0.500"	**22ER6TR**	SP4066	6.00 / 0.236	-	2.10 / 0.083	2.70 / 0.106

Internal Trapezoidal (TR)

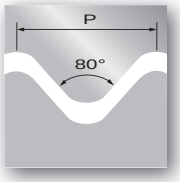
Standard reference: DIN 103
Tolerance class: 7e/7H

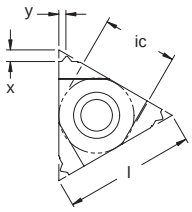


Internal *Right Hand*		Trapezoidal (TR)		Pitch	TPI	X	Y
EDP	L (mm) / I/C (inch)	**Description**	Grade	mm / inch		mm / inch	mm / inch
033891	22 / 0.500"	**22IR4TR**	SP4066	4.00 / 0.157	-	1.80 / 0.071	1.90 / 0.075
033894	22 / 0.500"	**22IR5TR**	SP4066	5.00 / 0.197	-	2.00 / 0.079	2.40 / 0.094
033896	22 / 0.500"	**22IR6TR**	SP4066	6.00 / 0.236	-	2.10 / 0.083	2.70 / 0.106

External Panzer Gerwinde (PG)

Standard reference: DIN 40430
Tolerance class: Standard



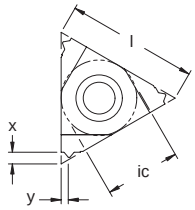


External Right Hand		Panzer Gerwinde (PG) DIN40430		Pitch	TPI Range	Nominal Thread	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm	mm inch	mm inch
033792	16 0.375"	**16ER16PG**	SP4066	1.59 0.063	16	Pg 21-29-36-42-48	0.80 0.031	1.00 0.039
033795	16 0.375"	**16ER18PG**	SP4066	1.41 0.056	18	Pg 9-11-13.5-16	0.80 0.031	0.90 0.035
033801	16 0.375"	**16ER20PG**	SP4066	1.27 0.050	20	Pg 7	0.70 0.028	0.80 0.031

External Left Hand		Panzer Gerwinde (PG) DIN40430		Pitch	TPI Range	Nominal Thread	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm	mm inch	mm inch
033769	16 0.375"	**16EL16PG**	SP4066	1.59 0.063	16	Pg 21-29-36-42-48	0.80 0.031	1.00 0.039

Internal Panzer Gerwinde (PG)

Standard reference: DIN 40430
Tolerance class: Standard

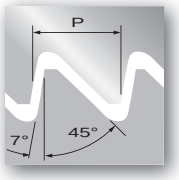


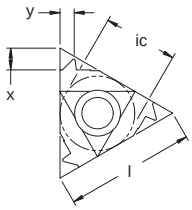
Internal Right Hand		Panzer Gerwinde (PG) DIN40430		Pitch	TPI Range	Nominal Thread	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm	mm inch	mm inch
032065	11 0.250"	**11IR18PG**	SP4066	1.41 0.056	18	Pg 9-11-13.5-16	0.80 0.031	0.90 0.035
033845	16 0.375"	**16IR16PG**	SP4066	1.59 0.063	16	Pg 21-29-36-42-48	0.80 0.031	1.00 0.039
033847	16 0.375"	**16IR18PG**	SP4066	1.41 0.056	18	Pg 9-11-13.5-16	0.80 0.031	0.90 0.035
033851	16 0.375"	**16IR20PG**	SP4066	1.27 0.050	20	Pg 7	0.70 0.028	0.80 0.031

STELLRAM

External American Buttress

Standard reference: ANSI B1.9 :1973
Tolerance class: Class 2



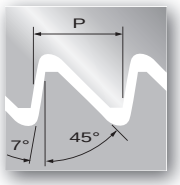


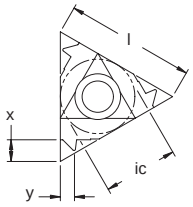
External Right Hand		American Buttress		Pitch	TPI	X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		mm inch	mm inch
034604	16 0.375"	**16ER10ABUTT**	SP4066	2.54 0.100	10	1.50 0.059	2.30 0.091
033785	16 0.375"	**16ER12ABUTT**	SP4066	2.12 0.083	12	1.40 0.055	2.00 0.079
033791	16 0.375"	**16ER16ABUTT**	SP4066	1.59 0.063	16	1.00 0.039	1.50 0.059
033800	16 0.375"	**16ER20ABUTT**	SP4066	1.27 0.050	20	1.00 0.039	1.30 0.051
034605	22 0.500"	**22ER8ABUTT**	SP4066	3.18 0.125	8	2.10 0.083	3.30 0.130
034606	22 0.500"	**22ER12ABUTT**	SP4066	2.12 0.083	12	1.60 0.063	2.10 0.083

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Internal American Buttress

Standard reference: ANSI B1.9 :1973
Tolerance class: Class 2



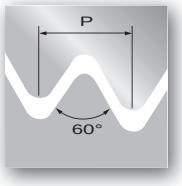


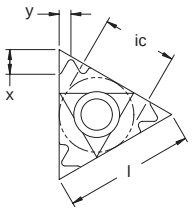
Internal Right Hand		American Buttress		Pitch	TPI	X	Y
EDP	L (mm)	**Description**	Grade	mm		mm	mm
	I/C (inch)			inch		inch	inch
034608	16	**16IR10ABUTT**	SP4066	2.54	10	1.50	2.30
	0.375"			0.100		0.059	0.091
033841	16	**16IR12ABUTT**	SP4066	2.12	12	1.40	2.00
	0.375"			0.083		0.055	0.079
033844	16	**16IR16ABUTT**	SP4066	1.59	16	1.00	1.30
	0.375"			0.063		0.039	0.051
033850	16	**16IR20ABUTT**	SP4066	1.27	20	1.00	1.30
	0.375"			0.050		0.039	0.051
034609	22	**22IR8ABUTT**	SP4066	3.18	8	2.10	3.30
	0.500"			0.125		0.827	0.130
034610	22	**22IR12ABUTT**	SP4066	2.12	12	1.60	2.10
	0.500"			0.083		0.063	0.083

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External API Round (APIRD)

Standard reference: API Standard 5B :1979
Tolerance class: Standard API Round

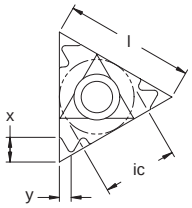




External Right Hand		API Round (APIRD)		Pitch	TPI	X	Y
EDP	L (mm) / I/C (inch)	**Description**	Grade	mm / inch		mm / inch	mm / inch
033822	16 / 0.375"	**16ER8APIRD**	SP4066	3.18 / 0.125	8	1.30 / 0.051	1.50 / 0.059
033781	16 / 0.375"	**16ER10APIRD**	SP4066	2.54 / 0.100	10	1.20 / 0.047	1.40 / 0.055
032035	22 / 0.500"	**22ER8APIRD**	SP4066	3.18 / 0.125	8	1.60 / 0.063	2.10 / 0.083

Internal API Round (APIRD)

Standard reference: API Standard 5B :1979
Tolerance class: Standard API Round

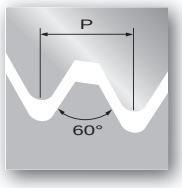


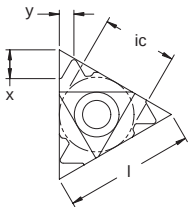
Internal Right Hand		API Round (APIRD)		Pitch	TPI	X	Y
EDP	L (mm) / I/C (inch)	**Description**	Grade	mm / inch		mm / inch	mm / inch
033862	16 / 0.375"	**16IR8APIRD**	SP4066	3.18 / 0.125	8	1.30 / 0.051	1.50 / 0.059
033838	16 / 0.375"	**16IR10APIRD**	SP4066	2.54 / 0.100	10	1.20 / 0.047	1.40 / 0.055
032036	22 / 0.500"	**22IR8APIRD**	SP4066	3.18 / 0.125	8	1.60 / 0.063	2.10 / 0.083

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External API (Oilfield)

Standard reference: API Specification 7: 1990
Tolerance class: Standard API



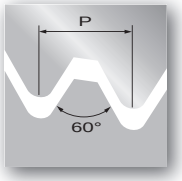


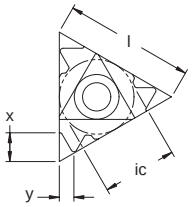
External *Right Hand*		API (Oilfield)		Pitch	TPI	Taper		X	Y
EDP	L (mm) I/C (inch)	**Description**	Grade	mm inch		IPF	Angle	mm	mm inch
032039	22 0.500"	**22ER5API403**	SP4066	5.08 0.200	5	3	7° - 1'	1.80 0.071	2.50 0.098
032034	22 0.500"	**22ER4API383**	SP4066	6.35 0.250	4	3	7° - 1'	2.10 0.083	2.80 0.110
032033	22 0.500"	**22ER4API382**	SP4066	6.35 0.250	4	2	4° - 43'	2.10 0.083	2.80 0.110
033874	22 0.500"	**22ER4API502**	SP4066	6.35 0.250	4	2	4° - 43'	2.00 0.079	3.00 0.118
033875	22 0.500"	**22ER4API503**	SP4066	6.35 0.250	4	3	7° - 1'	2.00 0.079	3.00 0.118
032037	27 0.625"	**27ER4API382**	SP4066	6.35 0.250	4	2	4° - 43'	2.10 0.083	2.80 0.110
032038	27 0.625"	**27ER4API383**	SP4066	6.35 0.250	4	3	7° - 1'	2.10 0.083	2.80 0.110
032040	27 0.625"	**27ER4API502**	SP4066	6.35 0.250	4	2	4° - 43'	2.00 0.079	3.00 0.118
032041	27 0.625"	**27ER4API503**	SP4066	6.35 0.250	4	3	7° - 1'	2.00 0.079	2.00 0.079

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Internal API (Oilfield)

Standard reference: API Specification 7: 1990
Tolerance class: Standard API



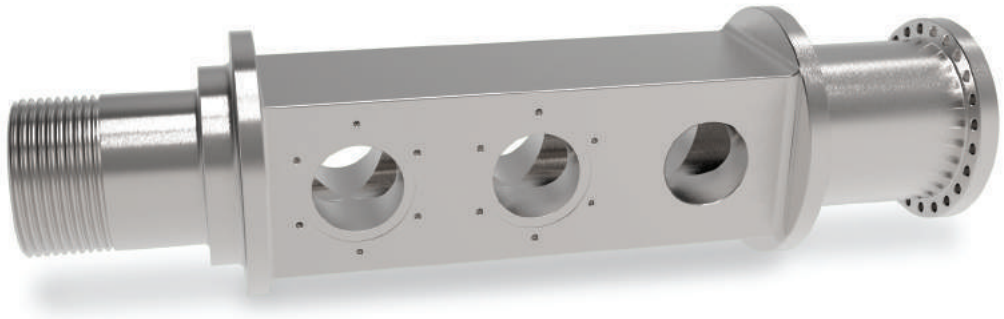


Internal Right Hand		API (Oilfield)		Pitch	TPI	Taper		X	Y
EDP	L (mm) / I/C (inch)	**Description**	Grade	mm / inch		IPF	Angle	mm	mm / inch
033132	22 / 0.500"	**22IR5API403**	SP4066	5.08 / 0.200	5	3	7° - 1'	1.80 / 0.071	2.50 / 0.098
033133	22 / 0.500"	**22IR4API383**	SP4066	6.35 / 0.250	4	3	7° - 1'	2.10 / 0.083	2.80 / 0.110
033134	22 / 0.500"	**22IR4API382**	SP4066	6.35 / 0.250	4	2	4° - 43'	2.10 / 0.083	2.80 / 0.110
033888	22 / 0.500"	**22IR4API502**	SP4066	6.35 / 0.250	4	2	4° - 43'	2.00 / 0.079	3.00 / 0.118
033889	22 / 0.500"	**22IR4API503**	SP4066	6.35 / 0.250	4	3	7° - 1'	2.00 / 0.079	3.00 / 0.118
033135	27 / 0.625"	**27IR4API382**	SP4066	6.35 / 0.250	4	2	4° - 43'	2.10 / 0.083	2.80 / 0.110
033136	27 / 0.625"	**27IR4API383**	SP4066	6.35 / 0.250	4	3	7° - 1'	2.10 / 0.083	2.80 / 0.110
033137	27 / 0.625"	**27IR4API502**	SP4066	6.35 / 0.250	4	2	4° - 43'	2.00 / 0.079	3.00 / 0.118
033138	27 / 0.625"	**27IR4API503**	SP4066	6.35 / 0.250	4	3	7° - 1'	2.00 / 0.079	2.00 / 0.079

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Threading

OILFIELD CONNECTORS			
Reference to Part Number	TPI	Taper I.P.F	Connector No. or size
API V 0.038R	4	2	NC23, NC28, NC31, NC35, NC38, NC40, NC44, NC46 NC50, 4 FH, 2 3/8" IF, 3 1/2" IF, 4 1/2" IF, 5 1/2" IF
API V 0.038R	4	3	NC56, NC61, NC70, NC77
API V 0.040	5	3	2 3/8" REG, 2 7/8" REG, 3 1/2" REG, 4 1/2" REG 3 1/2" FH, 4 1/2" FH
API V 0.050	4	3	5 1/2" REG, 7 5/8" REG, 8 5/8" REG
API V 0.050	4	2	6 5/8" REG, 5 1/2" FH, 6 5/8" FH
API V 0.055	6	1.5	NC10, NC12, NC13, NC16
API V 0.065	4	2	Superceded by API V 0.038R

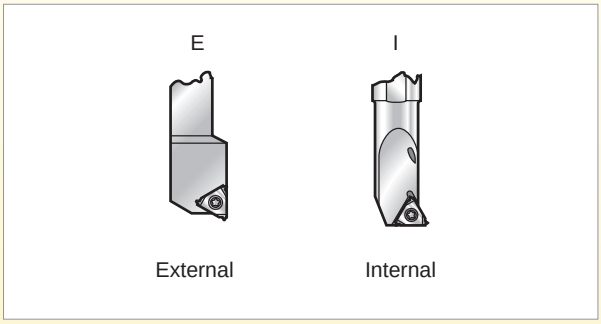


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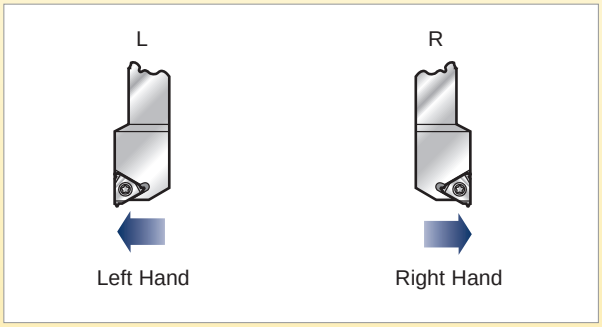
API Rotary Connections					
API Connections	TPI	TPF	API Code	Stellram Part Number	Catalog Page Number
API Number					
NC10 - NC16	6.0	1.5	V-0.055	**6API551.5**	-
NC23 - NC50	4.0	2.0	V-0.038R	**4API382**	302 - 303
NC56 -NC77	4.0	3.0	V-0.038R	**4API383**	302 - 303
API Regular					
2 3/8 REG - 4 1/2 REG	5.0	3.0	V-0.040	**5API403**	302 - 303
5 1/2 REG - 7 5/8 REG, 8 5/8 REG	4.0	3.0	V-0.050	**4API503**	302 - 303
6 5/8 REG	4.0	2.0	V-0.050	**4API502**	302 - 303
Internal Flush					
2 3/8 IF - 6 5/8 IF	4.0	2.0	V-0.038R	**4API382**	302 - 303
Full Hole					
3 1/2 FH, 4 1/2 FH	5.0	3.0	V-0.040	**5API403**	302 - 303
4FH	4.0	2.0	V-0.038R	**4API382**	302 - 303
5 1/2 FH, 6 5/8 FH	4.0	2.0	V-0.050	**4API502**	302 - 303
Hughes External Flush					
2 3/8, 2 7/8	6.0	2.0	Drawing On Request		-
3 1/2, 4 1/2	4.0	2.0	V-0.038R	**4API382**	302 - 303
Hughes Xtra Hole					
2 7/8 -5	4.0	2.0	V-0.038R	**4API382**	302 - 303
Hughes Slim Hole					
2 3/8 - 4 1/2	4.0	2.0	V-0.038R	**4API382**	302 - 303
Hughes Double Streamline					
3 1/2 - 5 1/2	4.0	2.0	V-0.038R	**4API382**	302 - 303
Hughes H90					
3 1/2 - 6 5/8	3.5	2.0	Drawing On Request		-
7 - 8 5/8	3.5	3	Drawing On Request		-
Hughes Slimline H90					
2 3/8 - 3 1/2	3.0	1.25	Drawing On Request		-
PAC					
2 3/8 PAC - 2 7/8 PAC	4.0	1.5	-	**4 PAC**	-

	1	2	3	4	5	6	7
External	E	R	07	50	K	16	-
Internal	I	R	0750	083	Q	16	-

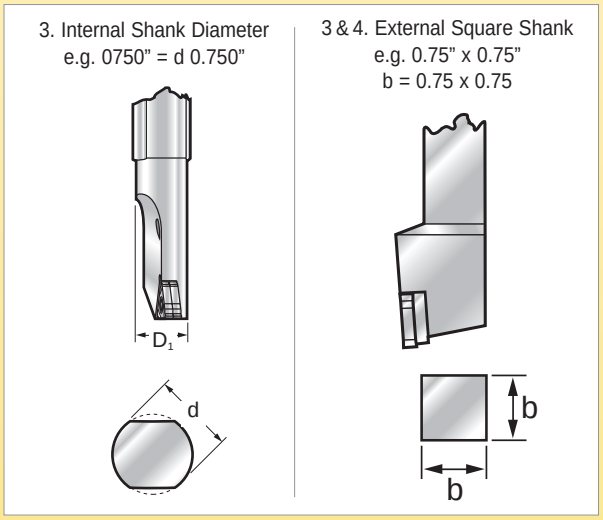
1 Utilisation



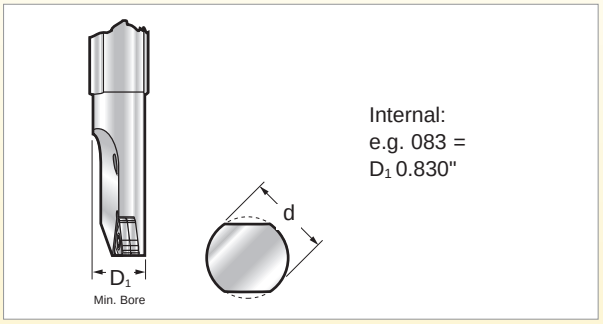
2 Hand



3 Shank Size or Tool Diameter

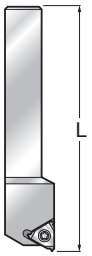


4 Minimum Bore Size (Internal)



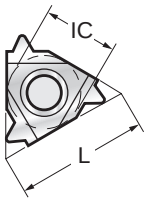
5 Tool Length inch

D	= 2.5	P	= 7
F	= 3.25	R	= 8
H	= 4	S	= 10
K	= 5	T	= 12
L	= 5.5	U	= 14
M	= 6	V	= 16

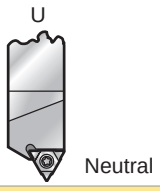


6 Insert Size

L mm	IC Inch
06	5/32
08	3/16
08U	3/16
11	1/4
16	3/8
22	1/2
22U	1/2U
27	5/8
27U	5/8U

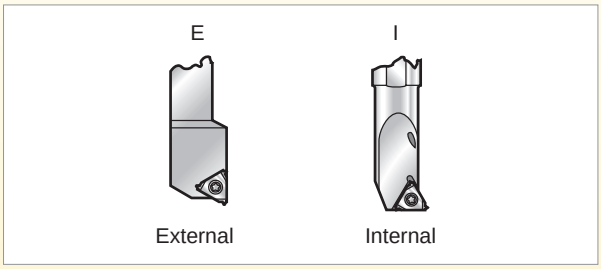


7 Option

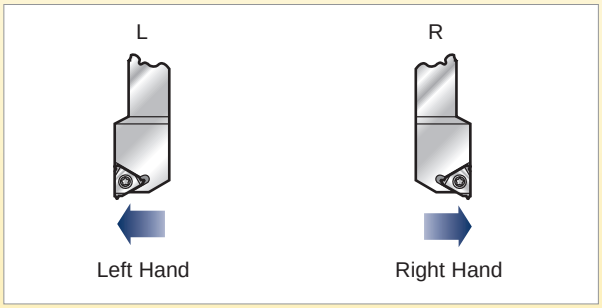


External	E	R	-	20	20	K	16	-
	1	2	3	4	5	6	7	8
Internal	I	R	-	16	08	K	08	-

1 Utilisation



2 Hand

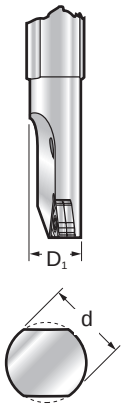


3 Option

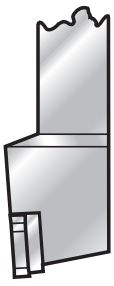
N = No Anvil

4 Shank Size or Tool Diameter

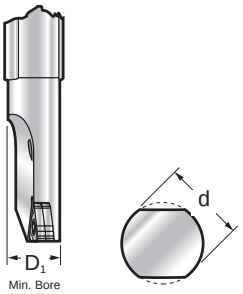
4. Internal Shank Diameter
e.g. 16 = d 16 mm



4 & 5. External Square Shank
e.g. 2020 = 20 x 20mm



5 Minimum Bore Size (Internal)



Internal:
e.g. 08 =
D_1 8mm

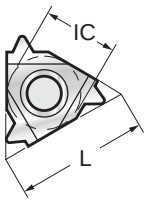
6 Tool Length inch

D	=	60	Q	=	180
F	=	80	R	=	200
H	=	100	S	=	250
K	=	125	T	=	300
L	=	140	U	=	350
M	=	150	V	=	400
P	=	170			



7 Insert Size

L mm	IC Inch
06	5/32
08	3/16
08U	3/16
11	1/4
16	3/8
22	1/2
22U	1/2U
27	5/8
27U	5/8U



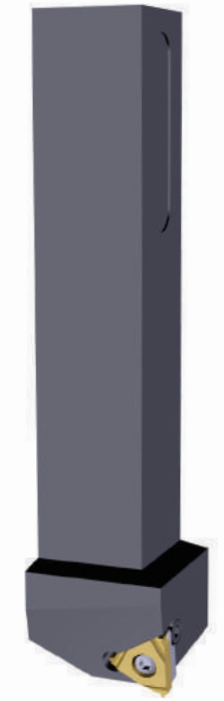
8 Option

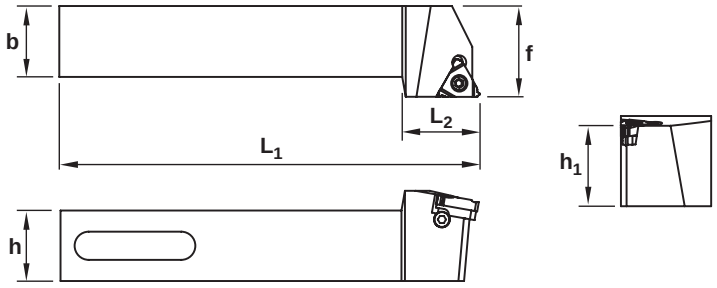


STELLRAM

ER/EL 90°

(INCH)





LH & RH External Square Shank Toolholders										
EDP	**Item Description**	Hand	Insert Sizes & Types	Dimensions (inch)					Anvil Type	
				h = h1	b	f	L1	L2	Anvil	Anvil Hand
014800	**EL0500F16**	LH	EL16	0.500	0.500	0.500	6.000	0.875	YI3	LH
014802	**EL0625H16**	LH	EL16	0.625	0.625	0.625	6.000	0.875		
014804	**EL0750K16**	LH	EL16	0.750	0.750	1.000	6.000	1.060		
014806	**EL1000M16**	LH	EL16	1.000	1.000	1.250	6.000	1.060		
014808	**EL1250Q16**	LH	EL16	1.250	1.250	1.570	7.000	1.180		
021362	**ER0500F16**	RH	ER16	0.500	0.500	0.500	6.000	0.875	YE3	RH
014801	**ER0625H16**	RH	ER16	0.625	0.625	0.625	6.000	0.875		
014803	**ER0750K16**	RH	ER16	0.750	0.750	1.000	6.000	1.060		
014805	**ER1000M16**	RH	ER16	1.000	1.000	1.250	6.000	1.060		
014807	**ER1250Q16**	RH	ER16	1.250	1.250	1.570	7.000	1.180		
014810	**EL1000M22**	LH	EL22	1.000	1.000	1.250	6.000	1.180	YI4	LH
014812	**EL1250Q22**	LH	EL22	1.250	1.250	1.570	7.000	1.180		
016981	**EL1500R22**	LH	EL22	1.500	1.500	2.000	8.000	-		
014809	**ER1000M22**	RH	ER22	1.000	1.000	1.250	6.000	1.180	YE4	RH
014811	**ER1250Q22**	RH	ER22	1.250	1.250	1.570	7.000	1.180		
016982	**ER1500R22**	RH	ER22	1.500	1.500	2.000	8.000	-		
014815	**EL1250Q27**	LH	EL27	1.250	1.250	1.570	7.000	1.380	YI5	LH
016970	**EL1500R27**	LH	EL27	1.500	1.500	2.000	8.000	1.380		
014814	**ER1250Q27**	RH	ER27	1.250	1.250	1.570	7.000	1.380	YE5	RH
016984	**ER1500R27**	RH	ER27	1.500	1.500	2.000	8.000	1.380		

Right Hand Toolholders and Inserts, Specify R = RH | Left Hand Toolholders and Inserts, Specify L = LH

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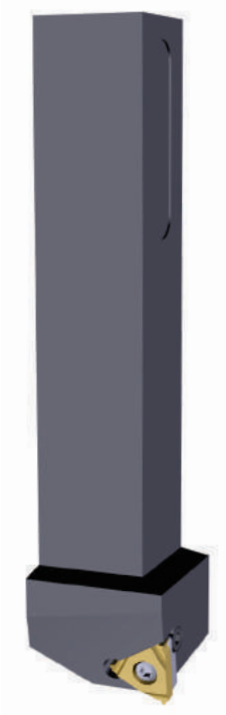


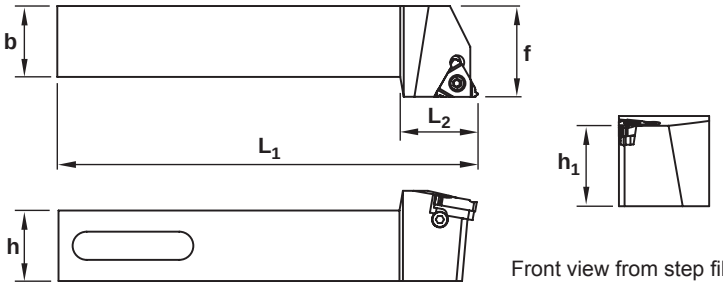



ER/EL 90° L/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
EL0500M16	*015560*	SA3T	*023379*	T10F	*015389*	YI3	*015551*	SY3T
EL0625M16								
EL0750M16								
EL1000M16								
EL1250P16								
ER0500M16	*015560*	SA3T	*023379*	T10F	*015447*	YE3	*015551*	SY3T
ER0625M16								
ER0750M16								
ER1000M16								
ER1250P16								
EL1000M22	*015561*	SA4T	*015556*	T20F	*015483*	YI4	*015552*	SY4T
EL1250P22								
EL1500R22								
ER1000M22	*015561*	SA4T	*015556*	T20F	*015463*	YE4	*015552*	SY4T
ER1250P22								
ER1500R22								
EL1250P27	*015562*	SA5T	*015557*	T25F	*015523*	YI5	*015553*	SY5T
EL1500R27								
ER1250P27	*015562*	SA5T	*015557*	T25F	*015503*	YE5	*015553*	SY5T
ER1500R27								

ER/EL 90°

(METRIC)





Front view from step file

LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes & Types	Dimensions (mm)					Anvil Type	
				h = h1	b	f	L1	L2	Anvil	Anvil Hand
021548	**ERNM1010H11**	RH	ER11	10	10	14	100	13	-	-
025179	**ERN1010M16**	RH	ER16	10	10	13	150	19	-	-
021361	**EL1212F16**	LH	EL16	12	12	16	80	22	YI3	LH
021363	**EL1616H16**	LH	EL16	16	16	20	100	22		
021365	**EL2020K16**	LH	EL16	20	20	25	125	27		
021367	**EL2525M16**	LH	EL16	25	25	32	150	27		
021369	**EL3232Q16**	LH	EL16	32	32	40	180	27		
021362	**ER1212F16**	RH	ER16	12	12	16	80	22	YE3	RH
021364	**ER1616H16**	RH	ER16	16	16	20	100	22		
021366	**ER2020K16**	RH	ER16	20	20	25	125	27		
021368	**ER2525M16**	RH	ER16	25	25	32	150	27		
021370	**ER3232Q16**	RH	ER16	32	32	40	180	27		
021371	**EL2525M22**	LH	EL22	25	25	32	150	30	YI4	LH
021373	**EL3232Q22**	LH	EL22	32	32	40	180	30		
021375	**EL4040R22**	LH	EL22	40	40	50	200	30		
021372	**ER2525M22**	RH	ER22	25	25	32	150	30	YE4	RH
021374	**ER3232Q22**	RH	ER22	32	32	40	180	30		
021376	**ER4040R22**	RH	ER22	40	40	50	200	30		
021381	**EL3232Q27**	LH	EL27	32	32	40	180	35	YI5	LH
021383	**EL4040R27**	LH	EL27	40	40	50	200	35		
021382	**ER3232Q27**	RH	ER27	32	32	40	180	35	YE5	RH
021384	**ER4040R27**	RH	ER27	40	40	50	200	35		

Right Hand Toolholders and Inserts, Specify R = RH | Left Hand Toolholders and Inserts, Specify L = LH

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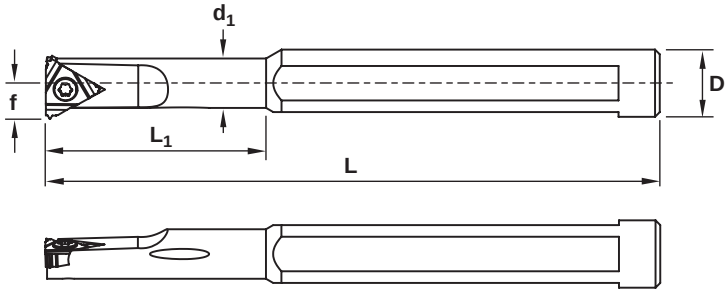

ER/EL 90° L/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
ERNM1010H11	*015558*	SN2T	*015554*	T8F	-	-	-	-
ERN1010M16	*015560*	SA3T	*023379*	T10F	-	-	-	-
EL 1212F16	*015560*	SA3T	*023379*	T10F	*015389*	YI3	*015551*	SY3T
EL 1616H16								
EL 2020K16								
EL 2525M16								
EL 3232Q16								
ER 1212F16	*015560*	SA3T	*023379*	T10F	*015447*	YE3	*015551*	SY3T
ER 1616H16								
ER 2020K16								
ER 2525M16								
ER 3232Q16								
EL2525M22	*015561*	SA4T	*015556*	T20F	*015483*	YI4	*015552*	SY4T
EL3232Q22								
EL4040R22								
ER2525M22	*015561*	SA4T	*015556*	T20F	*015463*	YE4	*015552*	SY4T
ER3232Q22								
ER4040R22								
EL3232Q27	*015562*	SA5T	*015557*	T25F	*015523*	YI5	*015553*	SY5T
EL4040R27								
ER3232Q27	*015562*	SA5T	*015557*	T25F	*015503*	YE5	*015553*	SY5T
ER4040R27								

STELLRAM

IR 90°

(INCH)





IR LH & RH Internal Threading Bars

EDP	Item Description	Hand	Insert Sizes & Types	Dimensions (inch)						
				Min Bore Thread Ø A	ØD	d_1	f	L	L_1	Through Coolant
014851	**IRN0500024H06**	IR	06IR	0.240	0.500	0.230	0.170	4.000	51.000	
014817	**IRN0625031K08**	IR	08IR	0.310	0.625	0.250	0.200	5.000	0.670	
016821	**IRN0625039K08**	IR	08IR	0.390	0.625	0.310	0.240	5.000	0.670	
014818	**IRN0375051K11**	IR	11IR	0.510	0.375	0.370	0.290	5.000	1.000	
014821	**IRN0625063M11**	IR	11IR	0.630	0.625	0.490	0.350	6.000	1.570	
014820	**IRN0750051M11**	IR	11IR	0.510	0.750	0.390	0.290	6.000	1.000	
014822	**IRN0625071M16**	IR	16IR	0.710	0.625	0.470	0.370	6.000	1.570	
014823	**IRN0750083Q16**	IR	16IR	0.830	0.750	0.620	0.490	7.000	1.570	
014824	**IR0750095Q16**	IR	16IR	0.950	0.750	0.730	0.510	7.000	2.000	
014825	**IR1000114R16**	IR	16IR	1.140	1.000	0.940	0.630	8.000	2.360	
014826	**IR1250142S16**	IR	16IR	1.420	1.250	1.240	0.770	10.000	2.360	
014827	**IR1500173T16**	IR	16IR	1.730	1.500	1.570	0.940	12.000	-	
014828	**IRN0750106Q22**	IR	221R	1.060	0.750	0.750	0.610	7.000	-	
014829	**IR1000126R22**	IR	221R	1.260	1.000	0.960	0.700	8.000	-	
014830	**IR1250153S22**	IR	221R	1.530	1.250	1.250	0.770	10.000	-	
017001	**IR1500185T22**	IR	221R	1.850	1.500	1.570	1.020	12.000	-	
014831	**IR1250157S27**	IR	27IR	1.570	1.250	1.250	0.880	10.000	-	
017008	**IR1500189T27**	IR	27IR	1.890	1.500	1.570	1.040	12.000	-	

IL = Left Hand Tooling is available on request

STELLRAM





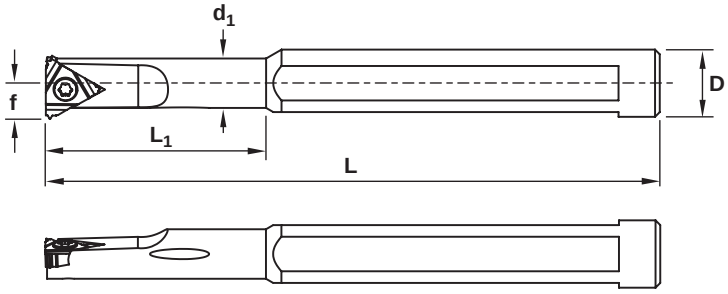

IR 90° L/R Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
IRN0500024H06	*015563*	S6T	*018487*	T6	-	-	-	-
IR0625031K08	*015564*	S8T	*018487*	T6	-	-	-	-
IRN0625039K08								
IRN0375051K11	*015558*	SN2T	*015554*	T8F	-	-	-	-
IRN0625063M11								
IRN0750051M11								
IRN0625071M16	*015560*	SA3T	*023379*	T10F	-	-	-	-
IRN0750083Q16								
IR0750095Q16	*015560*	SA3T	*023379*	T10F	*015389*	YI3	*015551*	SY3T
IR1000114R16								
IR1250142S16								
IR1500173T16								
IRN0750106Q22	*015561*	SA4T	*015556*	T20F	-	-	-	-
IR1000126R22	*015561*	SA4T	*015556*	T20F	*015483*	YI4	*015552*	SY4T
IR1250153S22								
IR1500185T22								
IR1250157S27	*015562*	SA5T	*015557*	T25F	*015523*	YI5	*015553*	SY5T
IR1500189T27								

STELLRAM

IR 90°

(METRIC)





IR LH & RH Internal Threading Bars										
EDP	**Item Description**	Hand	Insert Sizes & Types	Dimensions (mm)						
				Min Bore Thread Ø A	ØD	d_1	f	L	L_1	Through Coolant
021394	**IRN1206H06**	IR	06IR	6	12.00	5.80	4.20	100.00	13.00	💧
021396	**IRN1608K08**	IR	08IR	8	16.00	6.30	5.10	125.00	17.00	💧
021400	**IRN1610K08**	IR	08IR	10	16.00	7.80	6.00	125.00	17.00	💧
021402	**IRN1013K11**	IR	11IR	13	10.00	9.50	7.30	125.00	25.00	💧
023231	**IRN2013M11**	IR	11IR	13	20.00	10.00	7.30	150.00	25.00	💧
021406	**IRN1616M11**	IR	11IR	16	16.00	12.50	8.90	150.00	40.00	💧
021408	**IRN1618M16**	IR	16IR	18	16.00	12.00	9.40	150.00	40.00	💧
021410	**IRN2021Q16**	IR	16IR	21	20.00	15.80	12.40	180.00	40.00	💧
021412	**IR2024Q16**	IR	16IR	24	20.00	18.50	13.00	180.00	50.00	💧
021414	**IR2529R16**	IR	16IR	29	25.00	24.00	16.00	200.00	60.00	💧
021416	**IR3236S16**	IR	16IR	36	32.00	31.50	19.60	250.00	60.00	💧
021418	**IR4044T16**	IR	16IR	44	40.00	40.00	23.80	300.00	-	🚫
021422	**IRN2027Q22**	IR	22IR	27	20.00	20.00	15.60	180.00	-	💧
021424	**IR2532R22**	IR	22IR	32	25.00	24.50	17.80	200.00	-	💧
021426	**IR3239S22**	IR	22IR	39	32.00	32.00	21.50	250.00	-	💧
021428	**IR4047T22**	IR	22IR	47	40.00	40.00	25.80	300.00	-	🚫
021446	**IR3240S27**	IR	27IR	40	32.00	32.00	22.40	250.00	-	💧
021448	**IR4048T27**	IR	27IR	48	40.00	40.00	26.40	300.00	-	🚫

IL = Left Hand Tooling is available on request

STELLRAM





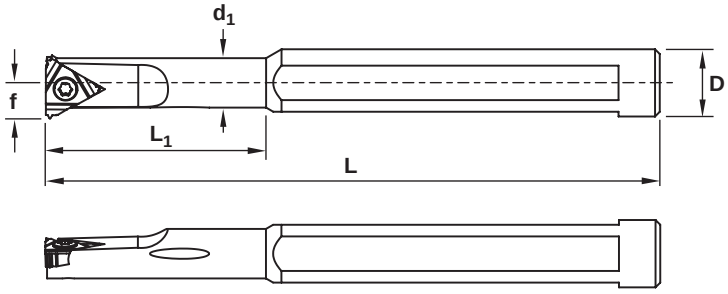

IR 90° L/R Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
IR1206H06	*015563*	S6T	*018487*	T6	-	-	-	-
IRN1608K08	*015564*	S8T	*018487*	T6	-	-	-	-
IRN1610K08								
IRN1013K11	*015558*	SN2T	*015554*	T8F	-	-	-	-
IRN2013M11								
IRN1616M11								
IRN1618M16	*015560*	SA3T	*023379*	T10F	-	-	-	-
IRN2021Q16								
IR2024Q16	*015560*	SA3T	*023379*	T10F	*015389*	YI3	015551	SY3T
IR2529R16								
IR3236S16								
IR4044T16								
IRN2027Q22	*015561*	SA4T	*015556*	T20F	*015483*	YI4	015552	SY4T
IR2532R22								
IR3239S22								
IR4047T22								
IR3240S27	*015562*	SA5T	*015557*	T25F	*015523*	YI5	015553	SY5T
IR4048T27								

STELLRAM

IR 90° CF Anti Vibration

(INCH)





IR LH & RH Internal Threading Bars										
EDP	**Item Description**	Hand	Insert Sizes & Types	Dimensions (inch)						
				Min Bore Thread Ø A	ØD	d_1	f	L	L_1	Through Coolant
017012	**IRN0500024H06CF**	IR	06IR	0.240	0.500	0.230	0.170	4.000	51.000	💧
017013	**IRN0625031H08CF**	IR	08IR	0.310	0.625	0.250	0.200	4.000	0.610	💧
017015	**IRN0625039H08CF**	IR	08IR	0.390	0.625	0.320	0.240	4.000	0.910	💧
017016	**IRN0375051H11CF**	IR	11IR	0.510	0.375	0.370	0.290	4.000	1.300	💧
017017	**IRN0625063M11CF**	IR	11IR	0.630	0.625	0.490	0.350	6.000	2.090	💧
017018	**IRN0625071M16CF**	IR	16IR	0.710	0.625	0.470	0.370	6.000	2.090	💧
017019	**IRN0750082M16CF**	IR	16IR	0.820	0.750	0.620	0.490	6.000	2.090	💧
017020	**IR0750094R16CF**	IR	16IR	0.940	0.750	0.730	0.510	8.000	2.640	💧

IL = Left Hand Tooling is available on request | CF = Chatter Free

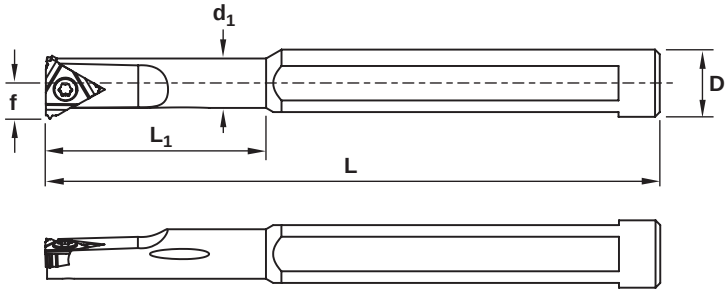
IR 90° CF Spare Parts (INCH)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
IRN0500024H06CF	*015563*	S6T	*018487*	T6	-	-	-	-
IRN0625031H08CF	*015564*	S8T	*018487*	T6	-	-	-	-
IRN0625039H08CF								
IRN0375051H11CF	*015558*	SN2T	*015554*	T8F	-	-	-	-
IRN0625063M11CF								
IRN0625071M16CF	*015560*	SA3T	*023379*	T10F	-	-	-	-
IRN0750082M16CF								
IR0750094R16CF	*015560*	SA3T	*023379*	T10F	*015389*	YI3	*015551*	SY3T

STELLRAM

IR 90° CF Anti Vibration

(METRIC)





IR LH & RH Internal Boring Bars										
EDP	**Item Description**	Hand	Insert Sizes & Types	Dimensions (imm)						
				Min Bore Thread Ø A	ØD	d_1	f	L	L_1	Through Coolant
021540	**IRN1206H06CF**	IR	06IR	6	12.00	5.80	4.20	100.00	18.00	💧
021498	**IRN1608H08CF**	IR	08IR	8	16.00	6.30	5.10	100.00	23.00	💧
021502	**IRN1610H08CF**	IR	08IR	10	16.00	8.10	6.00	100.00	23.00	💧
021504	**IRN1013H11CF**	IR	11IR	13	10.00	9.50	7.30	100.00	33.00	💧
021506	**IRN1616M11CF**	IR	11IR	16	16.00	12.50	8.90	150.00	53.00	💧
021508	**IRN1618M16CF**	IR	16IR	18	16.00	12.00	9.40	150.00	53.00	💧
021510	**IRN2021M16CF**	IR	16IR	21	20.00	15.80	12.40	150.00	53.00	💧
021512	**IR2024R16CF**	IR	16IR	24	20.00	18.50	13.00	200.00	67.00	💧

IL = Left Hand Tooling is available on request | CF = Chatter Free

IR 90° CF Spare Parts (METRIC)								
Item Description	*Insert Screw EDP*		*Insert Key EDP*		*Anvil EDP*		*Anvil Screw EDP*	
IRN1206H06CF	*015563*	S6T	*018487*	T6	-	-	-	-
IRN1608H08CF	*015564*	S8T	*018487*	T6	-	-	-	-
IRN1610H08CF								
IRN1013H11CF	*015558*	SN2T	*015554*	T8F	-	-	-	-
IRN1616M11CF								
IRN1618M16CF	*015560*	SA3T	*023379*	T10F	-	-	-	-
IRN2021M16CF								
IR2024R16CF	*015560*	SA3T	*023379*	T10F	*015389*	YI3	*015551*	SY3T

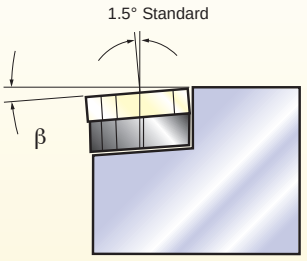
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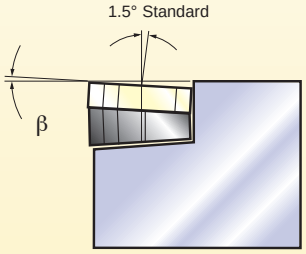
With the Stellram threading system, a wide range of thread helix angles can be obtained without changing or modifying toolholders. This is obtained by simply changing the carbide anvil.

Most toolholders are produced with 1.5° helix machined into the body. These tools are supplied with this angle as standard.

Interchangeable anvils allow helix variations between +4.5° and -1.5° with the insert cutting edge remaining constant.

Negative helix angles are used for producing right hand threads with left hand holders or left hand threads with right hand holders.





Negative Helix

Insert size		Toolholder	ß Helix Angle							
			4.5°	3.5°	2.5°	1.5°	0.5°	0°	-0.5°	-1.5°
mm	Inch		Anvil Part Numbers							
16	3/8"	EX RH / IN LH	YE33P	YE32P	YE31P	YE3	YE31N	YE31.5N	YE32N	YE33N
		EX LH / IN RH	YI33P	YI32P	YI31P	YI3	YI31N	YI31.5N	YI32N	YI33N
22	1/2"	EX RH / IN LH	YE43P	YE42P	YE41P	YE4	YE41N	YE41.5N	YE42N	YE43N
		EX LH / IN RH	YI43P	YI42P	YI41P	YI4	YI41N	YI41.5N	YI42N	YI43N
22U	1/2"	EX RH / IN LH	YE4U3P	YE4U2P	YE4U1P	YE4U	YE4U1N	YE4U1.5N	YE4U2N	YE4U3N
		EX LH / IN RH	YI4U3P	YI4U2P	YI4U1P	YI4U	YI4U1N	YI4U1.5N	YI4U2N	YI4U3N
27	5/8"	EX RH / IN LH	YE53P	YE52P	YE51P	YE5	YE51N	YE51.5N	YE52N	YE53N
		EX LH / IN RH	YI53P	YI52P	YI51P	YI5	YI51N	YI51.5N	YI52N	YI53N
27U	5/8"	EX RH / IN LH	YE5U3P	YE5U2P	YE5U1P	YE5U	YE5U1N	YE5U1.5N	YE5U2N	YE5U3N
		EX LH / IN RH	YI5U3P	YI5U2P	YI5U1P	YI5U	YI5U1N	YI5U1.5N	YI5U2N	YI5U3N

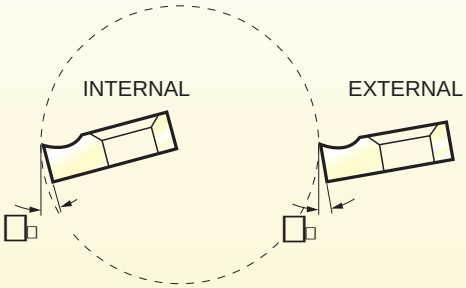
Note: Standard toolholders are supplied with 1.5° helix angle as standard.

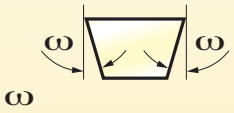
Calculation of thread helix angle for a given thread

$$\text{Helix angle - } \tan^{-1}\theta = \frac{\text{Lead of the Thread}}{\text{Pitch/Effective Diameter x } \pi}$$

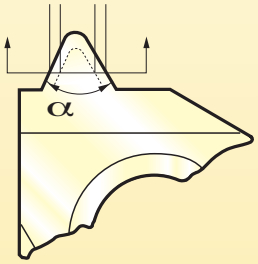
STELLRAM

Flank Clearance Angle Selection

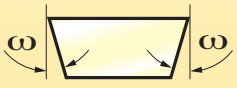




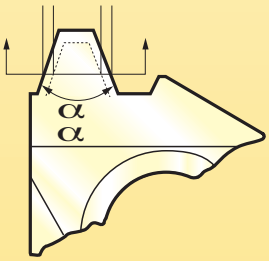
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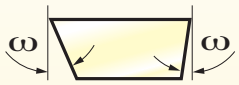
ISO
UN
PARTIAL 60˚
NPT



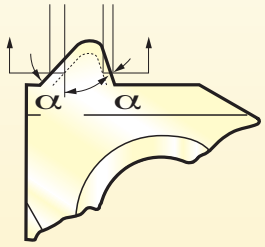
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TRAPEZOIDAL
ACME
STUB ACME



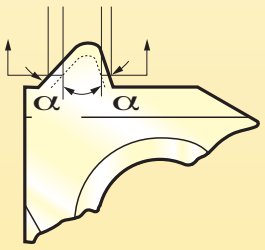
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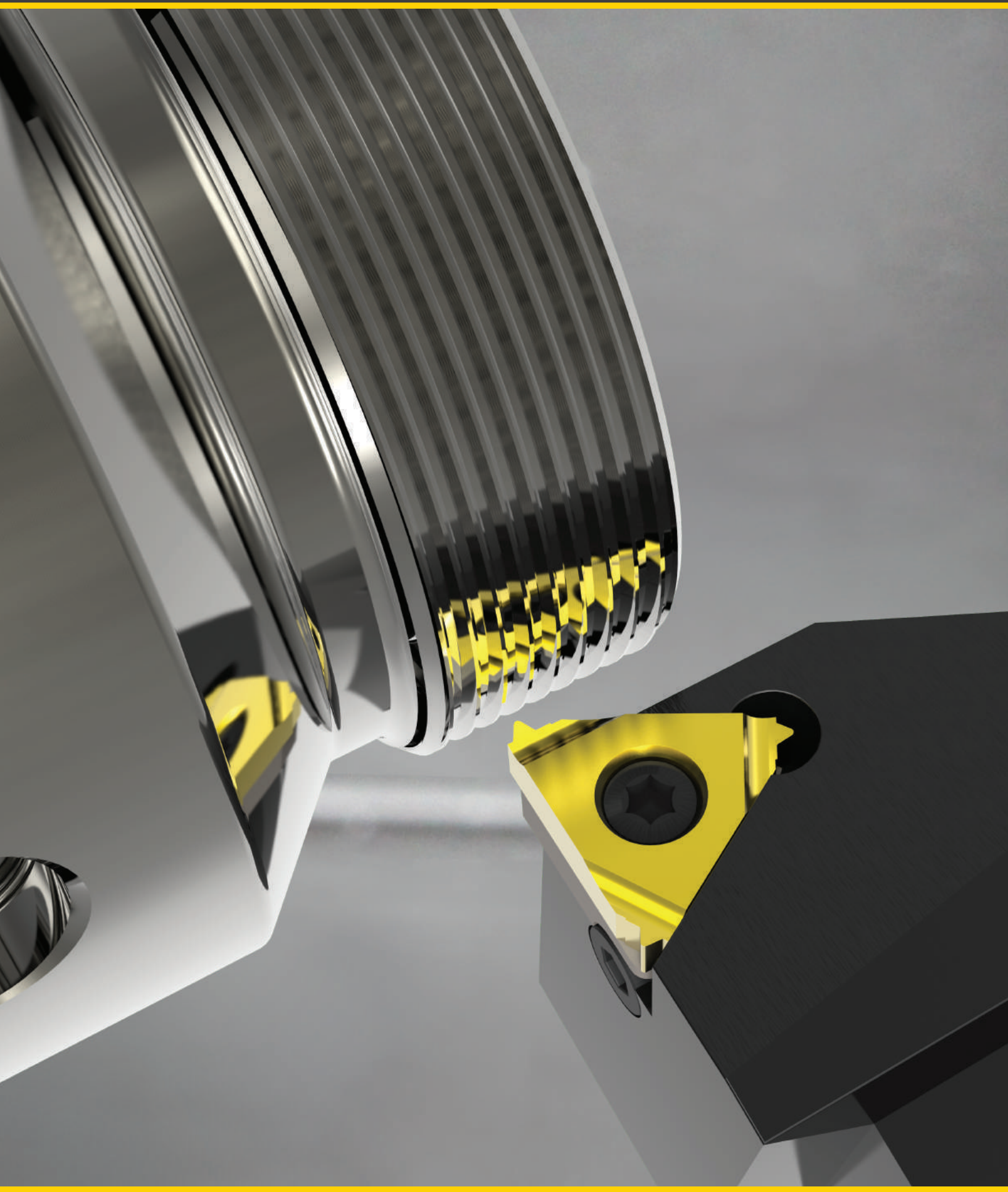
AMERICAN BUTTRESS

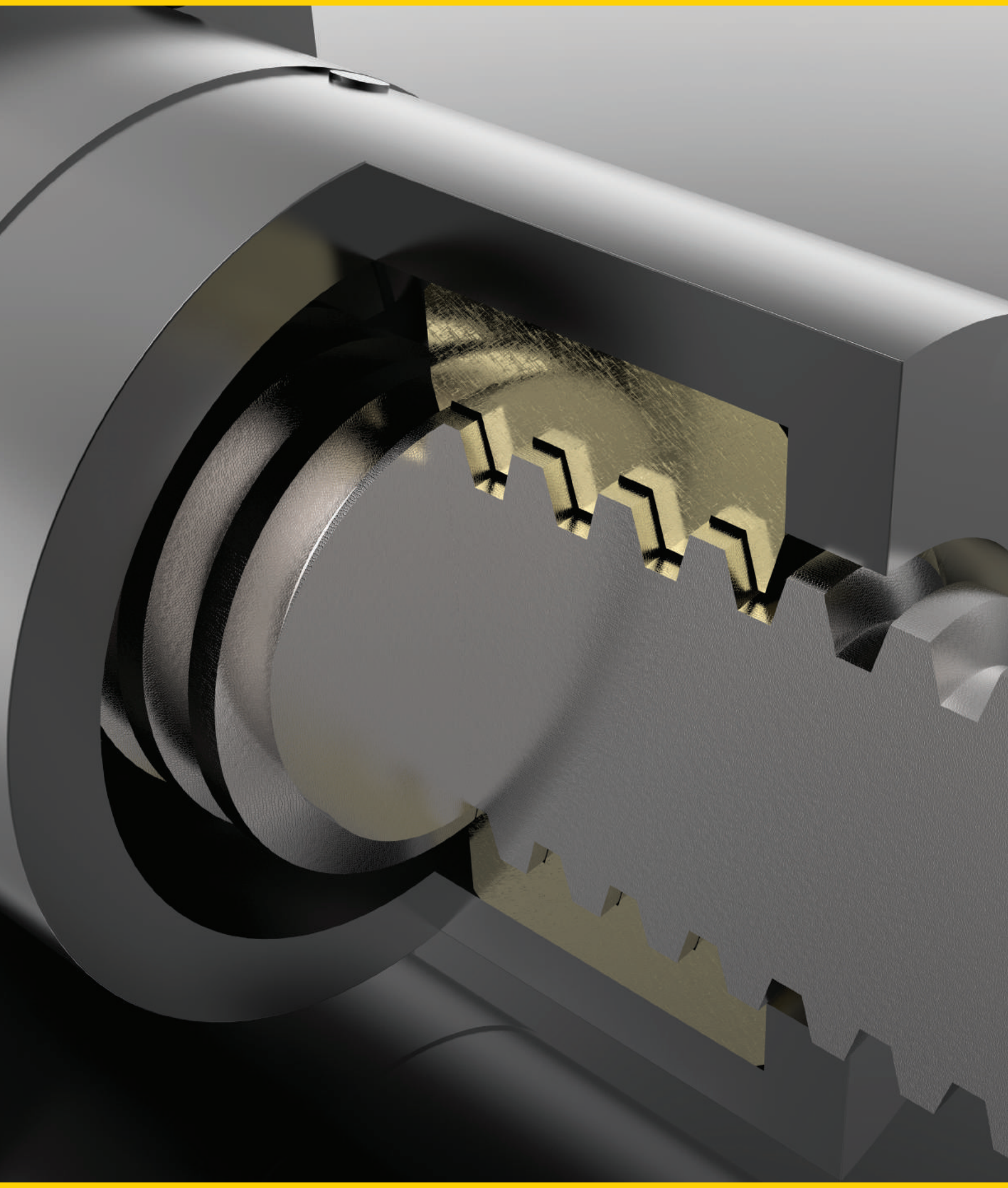


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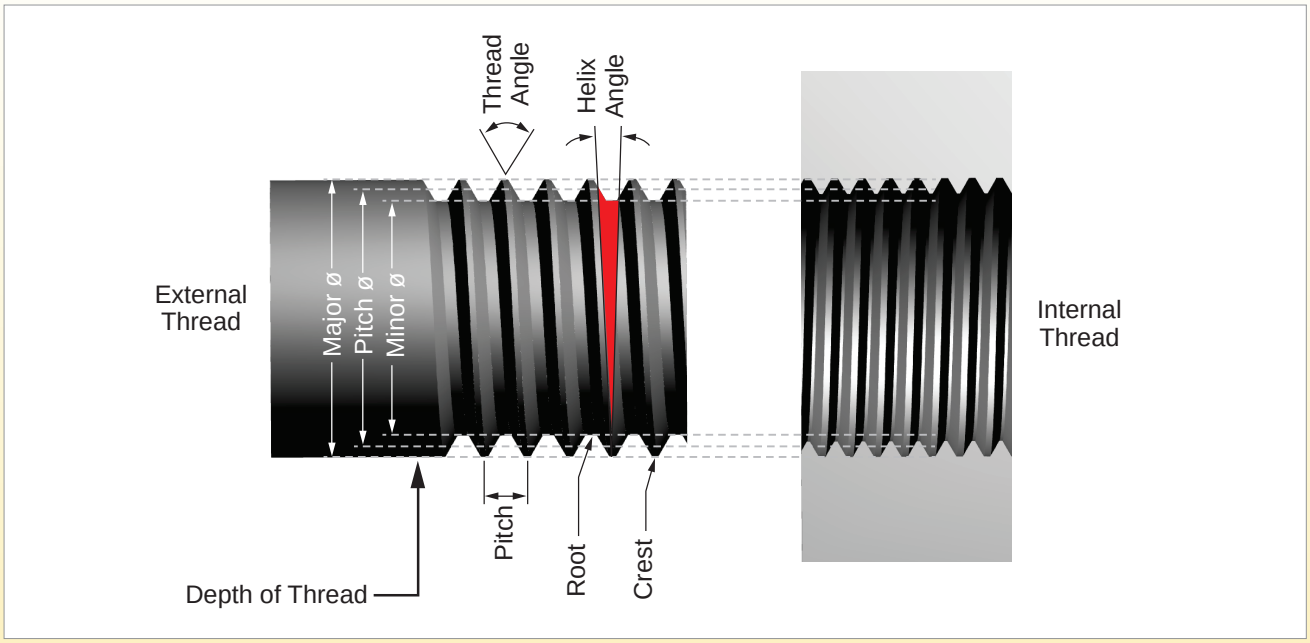


SAGE (DIN 513)





Depth of Thread



Depth of Thread
The distance between the Crest and Root.

Pitch
The distance between two thread form peaks, defined as TPI (thread per inch) in millimeters or as an inch decimal.

Pitch or Effective Diameter
Is where the theoretical cylinder diameter cuts the thread form, when the thread form width and groove depth are equal, applies to parallel/straight threads forms only.

Helix Angle: (Parallel/Straight Thread Forms)
Where the lead of the thread and the pitch diameter cylinder form a right angle triangle. The helix angle is the angle opposite the lead.

Major Diameter
The largest diameter of the thread form.

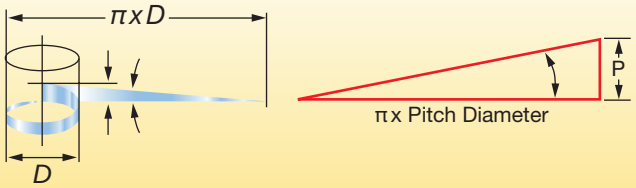
Minor or Root Diameter
The smallest diameter of the thread form.

Thread Angle
The included angle between the individual flanks.

Root
The inner most surface of the thread, connecting the flanks.

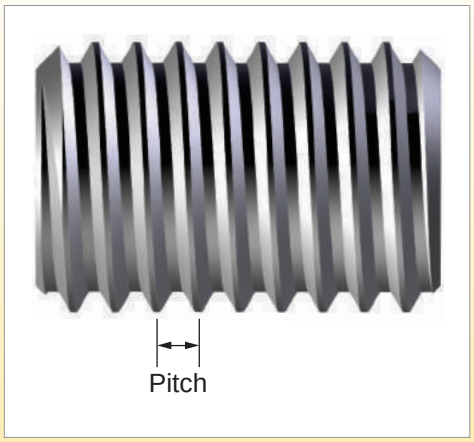
Crest
The outer most surface of the thread, connecting the flanks.

Helix Angle

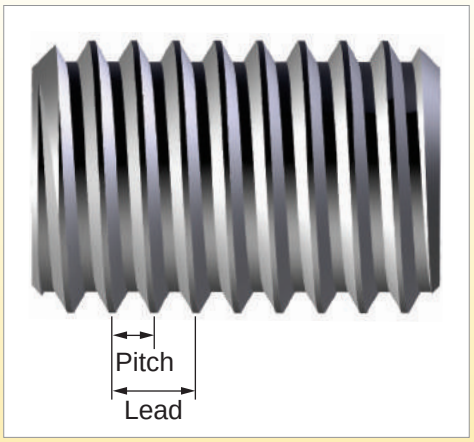


Helix Angle

Pitch & Lead with Multi Start Thread



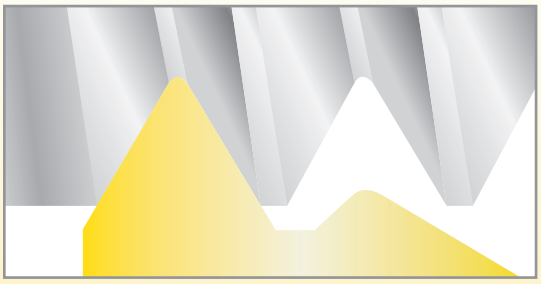
Pitch =
Axial distance from one thread point to the corresponding point on the next form



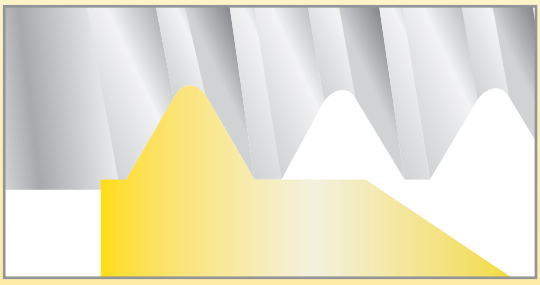
Lead =
Pitch x Number of starts Or the distance travelled in one rotation of the work-piece

Example for two start thread

Threading Insert Profile Types

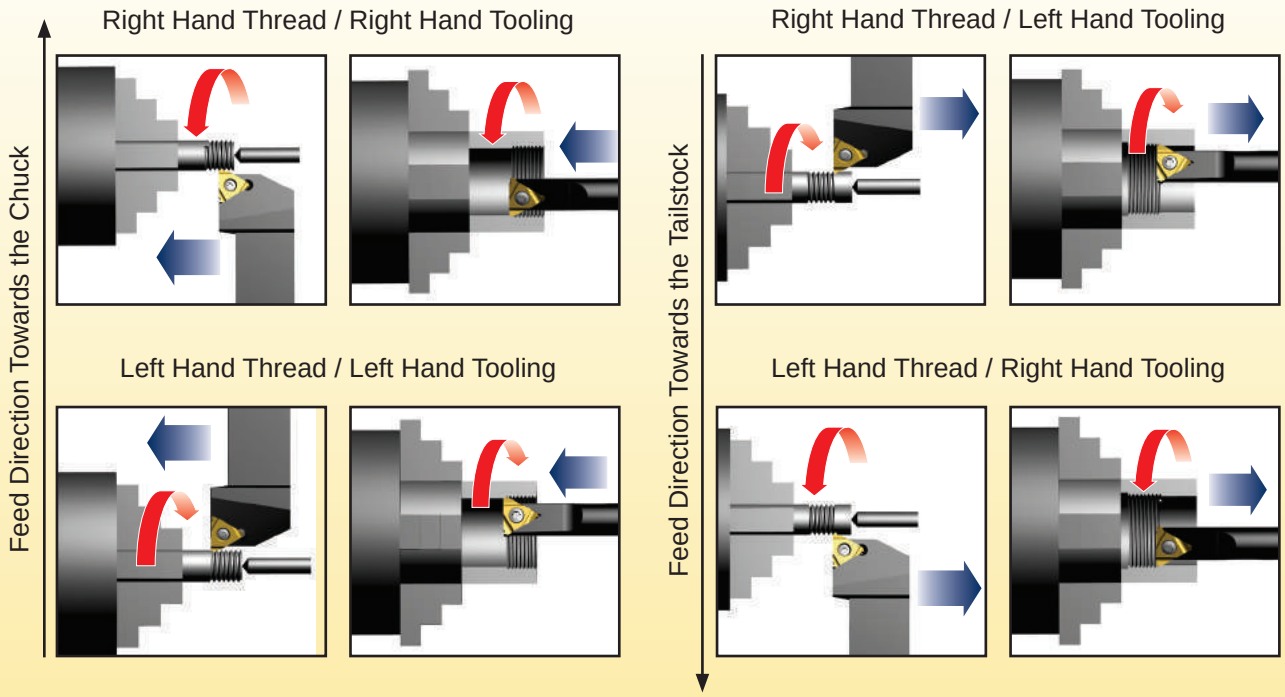


Partial Profile
The partial profile insert does not crest or top the outer diameter of the thread profile but, can be used on multi thread pitches with the same thread angle.

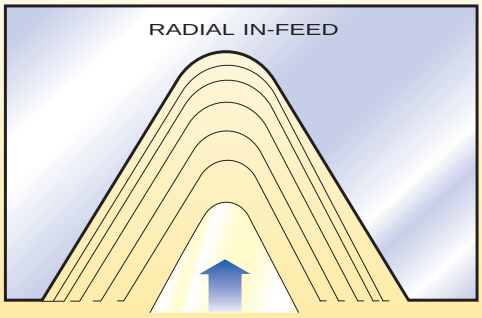


Full Profile
The full form insert controls the complete thread profile by cresting/topping the form. A different insert is required for each pitch.

Direction of cut using LH & RH Tooling

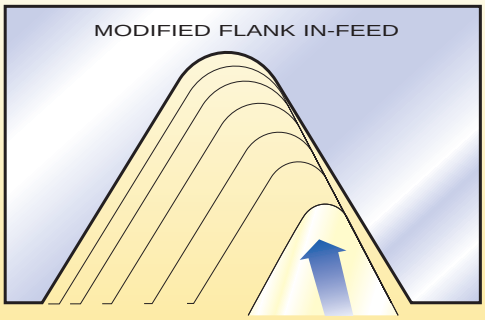


Radial In-Feed



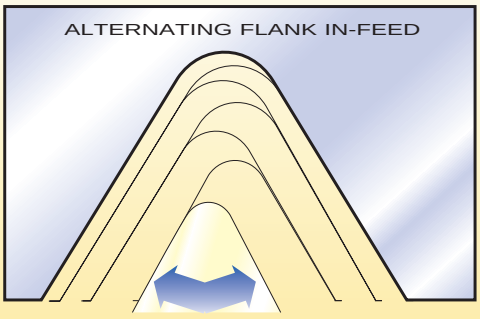
- Most commonly used method on manual lathes.
- Equal wear on leading and trailing edge.
- Good surface finish on trailing edge.
- Use on work hardening materials.
- Use on short chipping materials.
- For pitches of less than 1,5mm or 16 T.P.I.

Modified Flank In-Feed



- For threads greater than 1,5mm or 16 T.P.I.
- Reduced cutting pressure on larger pitches.
- Reduced chatter.
- Directs chip away from the cutting edge.
- Displaced in-feed angle improves surface finish.
- First choice for internal threading.

Alternating Flank In-Feed



- Recommended for large pitches, square ACME and trapezoidal forms.
- Recommended for long chipping materials.
- Method divides the work between both flanks.
- Results in equal wear.
- Less cutting pressure.
- Not available on all lathes.

Helix Angle Calculation (Inch)

Outside Diameter (inch)	Pitch								
	1	1.25	1.5	1.75	2	3	4	5	6
	Helix Angles (Degrees and Minutes)								
0.200	3° - 38'	4° - 33'	5° - 27'	-	-	-	-	-	-
0.236	3° - 2'	3° - 48'	4° - 33'	5° - 18'	6° - 33'	-	-	-	-
0.315	2° - 17'	2° - 51'	3° - 25'	3° - 59'	4° - 33'	6° - 49'	-	-	-
0.395	1° - 49'	2° - 16'	2° - 44'	3° - 11'	3° - 39'	5° - 27'	-	-	-
0.500	1° - 31'	1° - 54'	2° - 17'	2° - 39'	3° - 2'	4° - 33'	-	-	-
0.550	1° - 18'	1° - 38'	1° - 57'	2° - 17'	2° - 36'	3° - 54'	-	-	-
0.630	1° - 8'	1° - 42'	1° - 42'	2° - 0'	2° - 17'	3° - 25'	-	-	-
0.710	1° - 1'	1° - 16'	1° - 31'	1° - 46'	2° - 2'	3° - 2'	4° - 3'	-	-
0.790	55´	1° - 8'	1° - 22'	1° - 36'	1° - 49'	2° - 44'	3° - 39'	-	-
1.000	44´	55´	1° - 6'	1° - 16'	1° - 28'	2° - 11'	2° - 55'	-	-
1.180	36´	46´	55´	1° - 4'	1° - 13'	1° - 49'	2° - 26'	3° - 2'	3° - 39'
1.375	31´	39´	47´	55´	1° - 3'	1° - 33'	2° - 5'	2° - 36'	3° - 8'
1.575	27´	34´	41´	48´	55´	-	1° - 49'	2° - 17'	2° - 44'
1.750	24´	30´	36´	43´	48´	1° - 13'	1° - 37'	2° - 2'	2° - 26'
2.000	-	-	-	38´	44´	1° - 6'	1° - 28'	1° - 49'	2° - 11'
2.350	-	-	-	-	36´	55´	1° - 13'	1° - 31'	1° - 49'
2.750	-	-	23´	-	31´	47´	1° - 3'	1° - 18'	1° - 34'
3.150	-	-	-	-	-	41´	55´	1° - 8'	1° - 22'
3.500	-	-	-	21´	24´	36´	48´	1° - 1'	1° - 13'
4.000	-	-	17´	19´	-	33´	-	55´	1° - 6'

Calculation of thread helix angle for a given thread

$$\text{Helix angle - } \text{Tan}^{-1}\,\theta = \frac{\text{Lead of the Thread}}{\text{Pitch / Effective Diameter x } \pi}$$

Helix Angle Calculation (mm)

Outside Diameter mm	Pitch								
	1	1.25	1.5	1.75	2	3	4	5	6
	Helix Angles (Degrees and Minutes)								
5	3° - 38'	4° - 33'	5° - 27'	-	-	-	-	-	-
6	3° - 2'	3° - 48'	4° - 33'	5° - 18'	6° - 33'	-	-	-	-
8	2° - 17'	2° - 51'	3° - 25'	3° - 59'	4° - 33'	6° - 49'	-	-	-
10	1° - 49'	2° - 16'	2° - 44'	3° - 11'	3° - 39'	5° - 27'	-	-	-
12	1° - 31'	1° - 54'	2° - 17'	2° - 39'	3° - 2'	4° - 33'	-	-	-
14	1° - 18'	1° - 38'	1° - 57'	2° - 17'	2° - 36'	3° - 54'	-	-	-
16	1° - 8'	1° - 42'	1° - 42'	2° - 0'	2° - 17'	3° - 25'	-	-	-
18	1° - 1'	1° - 16'	1° - 31'	1° - 46'	2° - 2'	3° - 2'	4° - 3'	-	-
20	55´	1° - 8'	1° - 22'	1° - 36'	1° - 49'	2° - 44'	3° - 39'	-	-
25	44´	55´	1° - 6'	1° - 16'	1° - 28'	2° - 11'	2° - 55'	-	-
30	36´	46´	55´	1° - 4'	1° - 13'	1° - 49'	2° - 26'	3° - 2'	3° - 39'
35	31´	39´	47´	55´	1° - 3'	1° - 33'	2° - 5'	2° - 36'	3° - 8'
40	27´	34´	41´	48´	55´	-	1° - 49'	2° - 17'	2° - 44'
45	24´	30´	36´	43´	48´	1° - 13'	1° - 37'	2° - 2'	2° - 26'
50	-	-	-	38´	44´	1° - 6'	1° - 28'	1° - 49'	2° - 11'
60	-	-	-	-	36´	55´	1° - 13'	1° - 31'	1° - 49'
70	-	-	23´	-	31´	47´	1° - 3'	1° - 18'	1° - 34'
80	-	-	-	-	-	41´	55´	1° - 8'	1° - 22'
90	-	-	-	21´	24´	36´	48´	1° - 1'	1° - 13'
100	-	-	17´	19´	-	33´	-	55´	1° - 6'

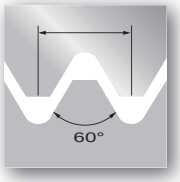
Calculation of thread helix angle for a given thread

$$\text{Helix angle - } \text{Tan}^{-1}\,\theta = \frac{\text{Lead of the Thread}}{\text{Pitch / Effective Diameter x } \pi}$$

STELLRAM

Threading

The table below provides recommendations for depths of cut for the different passes. These recommendations are intended as starting values for machining in steel and include stock 0.001" - 0.003" (0,020mm - 0,075mm) above crest. The suitable number of passes must be determined by optimum trials.



I.S.O Metric (ISO) 60°, External (Inch)

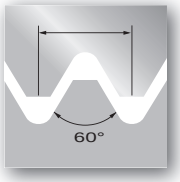
Number of Passes	Pitch (mm)															
	0.5	0.75	0.8	1.0	1.25	1.5	1.75	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
	Radial infeed per pass (inch)															
1	0.004	0.007	0.007	0.007	0.007	0.009	0.009	0.010	0.011	0.011	0.013	0.013	0.015	0.016	0.017	0.018
2	0.004	0.006	0.006	0.007	0.007	0.008	0.008	0.009	0.010	0.010	0.012	0.013	0.013	0.015	0.016	0.017
3	0.003	0.004	0.005	0.005	0.006	0.007	0.006	0.007	0.008	0.008	0.010	0.010	0.011	0.013	0.013	0.014
4	0.003	0.003	0.003	0.004	0.005	0.006	0.006	0.006	0.007	0.007	0.008	0.009	0.009	0.011	0.011	0.012
5	**0.014**	**0.020**	**0.021**	0.003	0.004	0.005	0.005	0.006	0.006	0.006	0.007	0.007	0.009	0.009	0.009	0.011
6				**0.026**	0.003	0.003	0.004	0.005	0.005	0.006	0.007	0.007	0.008	0.009	0.009	0.009
7					**0.032**	**0.038**	0.004	0.004	0.005	0.005	0.006	0.006	0.007	0.008	0.008	0.009
8							0.003	0.003	0.004	0.005	0.006	0.006	0.007	0.007	0.007	0.008
9							**0.045**	**0.050**	0.004	0.005	0.006	0.006	0.006	0.007	0.007	0.008
10									0.003	0.004	0.005	0.005	0.006	0.007	0.007	0.007
11									**0.063**	0.004	0.004	0.005	0.006	0.006	0.006	0.007
12										0.003	0.003	0.005	0.005	0.006	0.006	0.006
13										**0.074**	**0.087**	0.004	0.005	0.005	0.005	0.006
14												0.003	0.004	0.004	0.005	0.006
15												**0.099**	**0.111**	**0.123**	0.005	0.005
16															0.004	0.004
															0.135	**0.147**

Last pass equals total depth of thread.

I.S.O Metric (ISO) 60°, External (mm)

Number of Passes	Pitch (mm)															
	0.5	0.75	0.8	1.0	1.25	1.5	1.75	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
	Radial in-feed per pass (mm)															
1	0.102	0.178	0.178	0.178	0.178	0.229	0.229	0.254	0.279	0.279	0.330	0.330	0.381	0.406	0.432	0.457
2	0.102	0.152	0.152	0.178	0.178	0.203	0.203	0.229	0.254	0.254	0.305	0.330	0.330	0.381	0.406	0.432
3	0.076	0.102	0.127	0.127	0.152	0.178	0.152	0.178	0.203	0.203	0.254	0.254	0.279	0.330	0.330	0.356
4	0.076	0.076	0.076	0.102	0.127	0.152	0.152	0.152	0.178	0.178	0.203	0.229	0.229	0.279	0.279	0.305
5	**0.356**	**0.508**	**0.533**	0.076	0.102	0.127	0.127	0.152	0.152	0.152	0.178	0.178	0.229	0.229	0.229	0.279
6				**0.660**	0.076	0.076	0.102	0.127	0.127	0.152	0.178	0.178	0.203	0.229	0.229	0.229
7					**0.813**	**0.965**	0.102	0.102	0.127	0.127	0.152	0.152	0.178	0.203	0.203	0.229
8							0.076	0.076	0.102	0.127	0.152	0.152	0.178	0.178	0.178	0.203
9							**1.143**	**1.270**	0.102	0.127	0.152	0.152	0.152	0.178	0.178	0.203
10									0.076	0.102	0.127	0.127	0.152	0.178	0.178	0.178
11									**1.600**	0.102	0.102	0.127	0.152	0.152	0.152	0.178
12										0.076	0.076	0.127	0.127	0.152	0.152	0.152
13										**1.880**	**2.210**	0.102	0.127	0.127	0.127	0.152
14												0.076	0.102	0.102	0.127	0.152
15												**2.515**	**2.819**	**3.124**	0.127	0.127
16															0.102	0.102
															3.429	**3.734**

Last pass equals total depth of thread.



I.S.O Metric (ISO) 60°, Internal (Inch)

Number of Passes	Pitch (mm)														
	0.5	0.75	1.0	1.25	1.5	1.75	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
	Radial in-feed per pass (inch)														
1	0.004	0.007	0.007	0.008	0.010	0.009	0.010	0.011	0.011	0.012	0.013	0.014	0.015	0.015	0.016
2	0.004	0.005	0.006	0.007	0.008	0.008	0.009	0.009	0.009	0.011	0.012	0.013	0.014	0.014	0.016
3	0.003	0.004	0.004	0.005	0.006	0.006	0.007	0.007	0.008	0.009	0.009	0.011	0.012	0.012	0.014
4	0.003	0.003	0.004	0.004	0.004	0.005	0.006	0.006	0.006	0.008	0.008	0.009	0.010	0.010	0.011
5	**0.014**	**0.019**	0.003	0.004	0.004	0.004	0.005	0.006	0.006	0.007	0.007	0.008	0.009	0.009	0.009
6			**0.024**	0.003	0.003	0.004	0.004	0.005	0.006	0.006	0.006	0.007	0.008	0.008	0.009
7				**0.031**	**0.035**	0.004	0.004	0.004	0.005	0.006	0.006	0.006	0.007	0.007	0.008
8						0.003	0.003	0.004	0.004	0.006	0.006	0.006	0.006	0.007	0.007
9						**0.043**	**0.048**	0.004	0.004	0.005	0.005	0.006	0.006	0.006	0.007
10								0.003	0.004	0.004	0.005	0.006	0.006	0.006	0.006
11								**0.059**	0.004	0.004	0.004	0.005	0.006	0.006	0.006
12									0.003	0.003	0.004	0.005	0.006	0.006	0.006
13									**0.070**	**0.081**	0.004	0.004	0.005	0.006	0.006
14											0.003	0.004	0.004	0.005	0.006
15											**0.092**	**0.104**	**0.114**	0.005	0.005
16														0.004	0.004
														0.126	**0.136**

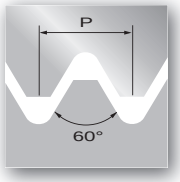
Last pass equals total depth of thread.

I.S.O Metric (ISO) 60°, Internal (mm)

Number of Passes	Pitch (mm)														
	0.5	0.75	1.0	1.25	1.5	1.75	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
	Radial in-feed per pass (mm)														
1	0.102	0.178	0.178	0.203	0.254	0.229	0.254	0.279	0.279	0.305	0.330	0.356	0.381	0.381	0.406
2	0.102	0.127	0.152	0.178	0.203	0.203	0.229	0.229	0.229	0.279	0.305	0.330	0.356	0.356	0.406
3	0.076	0.102	0.102	0.127	0.152	0.152	0.178	0.178	0.203	0.229	0.229	0.279	0.305	0.305	0.356
4	0.076	0.076	0.102	0.102	0.102	0.127	0.152	0.152	0.152	0.203	0.203	0.229	0.254	0.254	0.279
5	**0.356**	**0.483**	0.076	0.102	0.102	0.102	0.127	0.152	0.152	0.178	0.178	0.203	0.229	0.229	0.229
6			**0.610**	0.076	0.076	0.102	0.102	0.127	0.152	0.152	0.152	0.178	0.203	0.203	0.229
7				**0.787**	**0.889**	0.102	0.102	0.102	0.127	0.152	0.152	0.152	0.178	0.178	0.203
8						0.076	0.076	0.102	0.102	0.152	0.152	0.152	0.152	0.178	0.178
9						**1.092**	**1.219**	0.102	0.102	0.127	0.127	0.152	0.152	0.152	0.178
10								0.076	0.102	0.102	0.127	0.152	0.152	0.152	0.152
11								**1.499**	0.102	0.102	0.102	0.127	0.152	0.152	0.152
12									0.076	0.076	0.102	0.127	0.152	0.152	0.152
13									**1.778**	**2.057**	0.102	0.102	0.127	0.152	0.152
14											0.076	0.102	0.102	0.127	0.152
15											**2.337**	**2.642**	**2.896**	0.127	0.127
16														0.102	0.102
														3.200	**3.454**

Last pass equals total depth of thread.

STELLRAM



UNIFIED (UN) 60°, External (Inch)

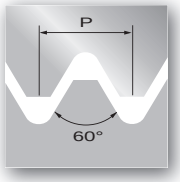
Number of Passes	T.P.I.																	
	32	28	24	20	18	16	14	13	12	11	10	9	8	7	6	5	4.5	4
	Radial in-feed per pass (inch)																	
1	0.007	0.007	0.007	0.008	0.009	0.009	0.009	0.010	0.011	0.011	0.011	0.011	0.012	0.014	0.014	0.017	0.016	0.019
2	0.006	0.006	0.007	0.007	0.008	0.008	0.009	0.009	0.009	0.010	0.009	0.009	0.010	0.013	0.013	0.016	0.015	0.017
3	0.005	0.005	0.006	0.006	0.006	0.006	0.007	0.007	0.008	0.008	0.008	0.008	0.009	0.010	0.010	0.013	0.013	0.014
4	0.003	0.004	0.005	0.005	0.006	0.006	0.006	0.006	0.006	0.007	0.007	0.007	0.007	0.009	0.009	0.011	0.011	0.013
5	**0.021**	0.003	0.003	0.004	0.005	0.005	0.005	0.006	0.006	0.006	0.006	0.006	0.007	0.007	0.008	0.009	0.010	0.012
6		**0.025**	**0.028**	0.003	0.003	0.004	0.004	0.005	0.006	0.006	0.006	0.006	0.006	0.007	0.007	0.009	0.009	0.010
7				**0.033**	**0.037**	0.003	0.004	0.004	0.005	0.005	0.006	0.006	0.006	0.006	0.007	0.008	0.008	0.009
8						**0.041**	0.003	0.003	0.003	0.004	0.005	0.005	0.006	0.006	0.006	0.007	0.008	0.009
9							**0.047**	**0.05**	**0.054**	0.003	0.004	0.005	0.005	0.006	0.006	0.007	0.007	0.009
10										**0.059**	0.003	0.004	0.005	0.005	0.006	0.007	0.007	0.008
11											**0.065**	0.003	0.004	0.004	0.006	0.007	0.006	0.007
12												**0.07**	0.003	0.003	0.005	0.006	0.006	0.007
13													**0.08**	**0.09**	0.004	0.005	0.006	0.006
14															0.004	0.004	0.006	0.006
15															**0.105**	**0.126**	0.006	0.005
16																	0.005	0.004
																	0.139	**0.155**

Last pass equals total depth of thread.

UNIFIED (UN) 60°, External (mm)

Number of Passes	T.P.I.																	
	32	28	24	20	18	16	14	13	12	11	10	9	8	7	6	5	4.5	4
	Radial in-feed per pass (mm)																	
1	0.178	0.178	0.178	0.203	0.229	0.229	0.229	0.254	0.279	0.279	0.279	0.279	0.305	0.356	0.356	0.432	0.406	0.483
2	0.152	0.152	0.178	0.178	0.203	0.203	0.229	0.229	0.229	0.254	0.229	0.229	0.254	0.330	0.330	0.406	0.381	0.432
3	0.127	0.127	0.152	0.152	0.152	0.152	0.178	0.178	0.203	0.203	0.203	0.203	0.229	0.254	0.254	0.330	0.330	0.356
4	0.076	0.102	0.127	0.127	0.152	0.152	0.152	0.152	0.152	0.178	0.178	0.178	0.178	0.229	0.229	0.279	0.279	0.330
5	**0.533**	0.076	0.076	0.102	0.127	0.127	0.127	0.152	0.152	0.152	0.152	0.152	0.178	0.178	0.203	0.229	0.254	0.305
6		**0.635**	**0.711**	0.076	0.076	0.102	0.102	0.127	0.152	0.152	0.152	0.152	0.152	0.178	0.178	0.229	0.229	0.254
7				**0.838**	**0.940**	0.076	0.102	0.102	0.127	0.127	0.152	0.152	0.152	0.152	0.178	0.203	0.203	0.229
8						**1.041**	0.076	0.076	0.076	0.102	0.127	0.127	0.152	0.152	0.152	0.178	0.203	0.229
9							**1.194**	**1.270**	**1.372**	0.076	0.102	0.127	0.127	0.152	0.152	0.178	0.178	0.229
10										**1.499**	0.076	0.102	0.127	0.127	0.152	0.178	0.178	0.203
11											**1.651**	0.076	0.102	0.102	0.152	0.178	0.152	0.178
12												**1.778**	0.076	0.076	0.127	0.152	0.152	0.178
13													**2.032**	**2.286**	0.102	0.127	0.152	0.152
14															0.102	0.102	0.152	0.152
15															**2.667**	**3.200**	0.152	0.127
16																	0.127	0.102
																	3.531	**3.937**

Last pass equals total depth of thread.



UNIFIED (UN) 60°, Internal (Inch)

Number of Passes	T.P.I																	
	32	28	24	20	18	16	14	13	12	11	10	9	8	7	6	5	4.5	4
	Radial in-feed per pass (inch)																	
1	0.007	0.007	0.007	0.008	0.009	0.009	0.009	0.010	0.011	0.011	0.011	0.011	0.012	0.013	0.014	0.016	0.016	0.018
2	0.006	0.006	0.006	0.007	0.007	0.007	0.008	0.009	0.009	0.009	0.009	0.009	0.011	0.012	0.013	0.014	0.016	0.017
3	0.004	0.004	0.006	0.005	0.006	0.006	0.006	0.006	0.007	0.007	0.006	0.007	0.008	0.009	0.009	0.012	0.013	0.014
4	0.003	0.004	0.004	0.004	0.005	0.005	0.006	0.006	0.006	0.006	0.006	0.006	0.007	0.008	0.008	0.010	0.010	0.012
5	**0.02**	0.003	0.003	0.004	0.004	0.004	0.004	0.005	0.005	0.006	0.006	0.006	0.006	0.007	0.007	0.009	0.009	0.010
6		**0.024**	**0.026**	0.003	0.003	0.004	0.004	0.004	0.004	0.005	0.005	0.006	0.006	0.006	0.006	0.008	0.008	0.009
7				**0.031**	**0.034**	0.003	0.004	0.004	0.004	0.004	0.004	0.005	0.005	0.006	0.006	0.007	0.007	0.009
8						**0.037**	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.006	0.006	0.007	0.007	0.007
9							**0.044**	**0.047**	**0.049**	0.003	0.004	0.004	0.004	0.005	0.006	0.006	0.007	0.007
10										**0.055**	0.003	0.004	0.004	0.005	0.005	0.006	0.006	0.007
11											**0.059**	0.003	0.004	0.004	0.005	0.006	0.006	0.007
12												**0.065**	0.003	0.003	0.004	0.006	0.006	0.006
13													**0.074**	**0.084**	0.004	0.005	0.006	0.006
14															0.004	0.004	0.005	0.006
15															**0.097**	**0.116**	0.005	0.005
16																	0.004	0.004
																	0.129	**0.144**

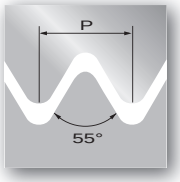
Last pass equals total depth of thread.

UNIFIED (UN) 60°, Internal (mm)

Number of Passes	T.P.I.																	
	32	28	24	20	18	16	14	13	12	11	10	9	8	7	6	5	4.5	4
	Radial in-feed per pass (mm)																	
1	0.178	0.178	0.178	0.203	0.229	0.229	0.229	0.254	0.279	0.279	0.279	0.279	0.305	0.330	0.356	0.406	0.406	0.457
2	0.152	0.152	0.152	0.178	0.178	0.178	0.203	0.229	0.229	0.229	0.229	0.229	0.279	0.305	0.330	0.356	0.406	0.432
3	0.102	0.102	0.152	0.127	0.152	0.152	0.152	0.152	0.178	0.178	0.152	0.178	0.203	0.229	0.229	0.305	0.330	0.356
4	0.076	0.102	0.102	0.102	0.127	0.127	0.152	0.152	0.152	0.152	0.152	0.152	0.178	0.203	0.203	0.254	0.254	0.305
5	**0.508**	0.076	0.076	0.102	0.102	0.102	0.102	0.127	0.127	0.152	0.152	0.152	0.152	0.178	0.178	0.229	0.229	0.254
6		**0.610**	**0.660**	0.076	0.076	0.102	0.102	0.102	0.102	0.127	0.127	0.152	0.152	0.152	0.152	0.203	0.203	0.229
7				**0.787**	**0.864**	0.076	0.102	0.102	0.102	0.102	0.102	0.127	0.127	0.152	0.152	0.178	0.178	0.229
8						**0.940**	0.076	0.076	0.076	0.102	0.102	0.102	0.102	0.152	0.152	0.178	0.178	0.178
9							**1.118**	**1.194**	**1.245**	0.076	0.102	0.102	0.102	0.127	0.152	0.152	0.178	0.178
10										**1.397**	0.076	0.102	0.102	0.127	0.127	0.152	0.152	0.178
11											**1.499**	0.076	0.102	0.102	0.127	0.152	0.152	0.178
12												**1.651**	0.076	0.076	0.102	0.152	0.152	0.152
13													**1.880**	**2.134**	0.102	0.127	0.152	0.152
14															0.102	0.102	0.127	0.152
15															**2.464**	**2.946**	0.127	0.127
16																	0.102	0.102
																	3.277	**3.658**

Last pass equals total depth of thread.

STELLRAM



Whitworth (Inch)

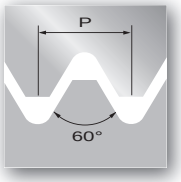
Number of Passes	T.P.I																
	28	26	20	19	18	16	14	12	11	10	9	8	7	6	5	4.5	4
	Radial in-feed per pass (inch)																
1	0.008	0.008	0.008	0.009	0.009	0.008	0.010	0.011	0.011	0.012	0.011	0.012	0.014	0.014	0.015	0.016	0.018
2	0.007	0.006	0.008	0.008	0.008	0.008	0.009	0.010	0.010	0.010	0.009	0.011	0.012	0.012	0.015	0.016	0.017
3	0.005	0.006	0.006	0.006	0.007	0.006	0.007	0.008	0.008	0.008	0.009	0.009	0.011	0.011	0.014	0.014	0.014
4	0.004	0.004	0.005	0.005	0.006	0.006	0.006	0.007	0.007	0.007	0.008	0.008	0.009	0.01	0.012	0.012	0.013
5	0.003	0.003	0.004	0.005	0.005	0.005	0.005	0.006	0.006	0.006	0.007	0.007	0.008	0.008	0.011	0.011	0.013
6	**0.025**	**0.027**	0.003	0.003	0.004	0.005	0.005	0.006	0.006	0.005	0.006	0.006	0.008	0.008	0.010	0.010	0.011
7			**0.034**	**0.036**	0.003	0.004	0.004	0.005	0.005	0.005	0.006	0.006	0.007	0.008	0.009	0.009	0.011
8					**0.042**	0.003	0.003	0.003	0.005	0.005	0.005	0.006	0.006	0.007	0.008	0.009	0.010
9						**0.045**	**0.049**	**0.056**	0.003	0.005	0.005	0.005	0.006	0.006	0.008	0.008	0.010
10									**0.061**	0.003	0.005	0.005	0.006	0.006	0.008	0.007	0.009
11										**0.066**	0.003	0.005	0.005	0.006	0.007	0.007	0.008
12											**0.074**	0.003	0.003	0.006	0.006	0.006	0.008
13												**0.083**	**0.095**	0.005	0.005	0.006	0.007
14														0.004	0.004	0.006	0.006
15														**0.111**	**0.132**	0.006	0.005
16																0.004	0.004
																0.146	**0.164**

Last pass equals total depth of thread.

Whitworth (mm)

Number of Passes	T.P.I.																
	28	26	20	19	18	16	14	12	11	10	9	8	7	6	5	4.5	4
	Radial in-feed per pass (mm)																
1	0.203	0.203	0.203	0.229	0.229	0.203	0.254	0.279	0.279	0.305	0.279	0.305	0.356	0.356	0.381	0.406	0.457
2	0.178	0.152	0.203	0.203	0.203	0.203	0.229	0.254	0.254	0.254	0.229	0.279	0.305	0.305	0.381	0.406	0.432
3	0.127	0.152	0.152	0.152	0.178	0.152	0.178	0.203	0.203	0.203	0.229	0.229	0.279	0.279	0.356	0.356	0.356
4	0.102	0.102	0.127	0.127	0.152	0.152	0.152	0.178	0.178	0.178	0.203	0.203	0.229	0.254	0.305	0.305	0.330
5	0.076	0.076	0.102	0.127	0.127	0.127	0.127	0.152	0.152	0.152	0.178	0.178	0.203	0.203	0.279	0.279	0.330
6	**0.635**	**0.686**	0.076	0.076	0.102	0.127	0.127	0.152	0.152	0.127	0.152	0.152	0.203	0.203	0.254	0.254	0.279
7			**0.864**	**0.914**	0.076	0.102	0.102	0.127	0.127	0.127	0.152	0.152	0.178	0.203	0.229	0.229	0.279
8					**1.067**	0.076	0.076	0.076	0.127	0.127	0.127	0.152	0.152	0.178	0.203	0.229	0.254
9						**1.143**	**1.245**	**1.422**	0.076	0.127	0.127	0.127	0.152	0.152	0.203	0.203	0.254
10									**1.549**	0.076	0.127	0.127	0.152	0.152	0.203	0.178	0.229
11										**1.676**	0.076	0.127	0.127	0.152	0.178	0.178	0.203
12											**1.880**	0.076	0.076	0.152	0.152	0.152	0.203
13												**2.108**	**2.413**	0.127	0.127	0.152	0.178
14														0.102	0.102	0.152	0.152
15														**2.819**	**3.353**	0.147	0.127
16																0.102	0.102
																3.708	**4.166**

Last pass equals total depth of thread.



UNIFIED "J" for Aircraft (UNJ), External (Inch)

Number of Passes	T.P.I.									
	32	28	24	20	18	16	14	12	10	8
	Radial in-feed per pass (inch)									
1	0.007	0.007	0.007	0.008	0.009	0.009	0.009	0.011	0.011	0.012
2	0.006	0.006	0.006	0.007	0.008	0.008	0.008	0.009	0.009	0.011
3	0.005	0.004	0.006	0.006	0.006	0.006	0.006	0.008	0.008	0.008
4	0.003	0.004	0.004	0.004	0.005	0.005	0.005	0.006	0.006	0.007
5	**0.021**	0.003	0.003	0.004	0.004	0.004	0.005	0.006	0.006	0.006
6		**0.024**	**0.026**	0.003	0.003	0.004	0.004	0.004	0.005	0.006
7				**0.032**	**0.035**	0.003	0.004	0.004	0.005	0.005
8						**0.039**	0.003	0.003	0.004	0.005
9							**0.044**	**0.051**	0.004	0.005
10									0.003	0.004
11									**0.061**	0.004
12										0.003
										0.076

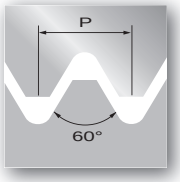
Last pass equals total depth of thread.

UNIFIED "J" for Aircraft (UNJ), External (mm)

Number of Passes	T.P.I.									
	32	28	24	20	18	16	14	12	10	8
	Radial in-feed per pass (mm)									
1	0.178	0.178	0.178	0.203	0.229	0.229	0.229	0.279	0.279	0.305
2	0.152	0.152	0.152	0.178	0.203	0.203	0.203	0.229	0.229	0.279
3	0.127	0.102	0.152	0.152	0.152	0.152	0.152	0.203	0.203	0.203
4	0.076	0.102	0.102	0.102	0.127	0.127	0.127	0.152	0.152	0.178
5	**0.533**	0.076	0.076	0.102	0.102	0.102	0.127	0.152	0.152	0.152
6		**0.610**	**0.660**	0.076	0.076	0.102	0.102	0.102	0.127	0.152
7				**0.813**	**0.889**	0.076	0.102	0.102	0.127	0.127
8						**0.991**	0.076	0.076	0.102	0.127
9							**1.118**	**1.295**	0.102	0.127
10									0.076	0.102
11									**1.549**	0.102
12										0.076
										1.930

Last pass equals total depth of thread.

STELLRAM



Metric "J" for Aircraft (MJ), External (Inch)

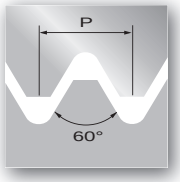
Number of Passes	Ptich (mm)			
	1.0	1.5	1.75	2.0
	Radial in-feed per pass (inch)			
1			0.009	0.010
2			0.008	0.009
3			0.006	0.007
4			0.006	0.006
5			0.005	0.005
6			0.003	0.005
7			**0.037**	0.004
8				0.003
				0.049

Last pass equals total depth of thread.

Metric "J" for Aircraft (MJ), External (mm)

Number of Passes	Ptich (mm)			
	1.0	1.5	1.75	2.0
	Radial in-feed per pass (mm)			
1			0.2286	0.254
2			0.2032	0.2286
3			0.1524	0.1778
4			0.1524	0.1524
5			0.127	0.127
6			0.0762	0.127
7			**0.9398**	0.1016
8				0.0762
				1.2446

Last pass equals total depth of thread.



National Pipe Taper Dryseal (NPTF) External and Internal (Inch)

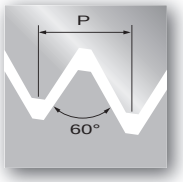
Number of Passes	T.P.I.				
	27	18	14	11.5	8
	Radial in-feed per pass (inch)				
1	0.007	0.009	0.010	0.010	0.010
2	0.006	0.008	0.009	0.010	0.009
3	0.005	0.006	0.006	0.008	0.009
4	0.004	0.005	0.006	0.006	0.008
5	0.004	0.004	0.005	0.006	0.007
6	0.003	0.004	0.005	0.005	0.006
7	**0.029**	0.004	0.004	0.004	0.006
8		0.003	0.004	0.004	0.006
9		**0.043**	0.004	0.004	0.005
10			0.003	0.004	0.005
11			**0.056**	0.004	0.005
12				0.003	0.005
13				**0.068**	0.004
14					0.004
15					0.004
16					0.004
					0.097

Last pass equals total depth of thread.

National Pipe Taper Dryseal (NPTF) External and Internal (mm)

Number of Passes	T.P.I.				
	27	18	14	11.5	8
	Radial in-feed per pass (mm)				
1	0.178	0.229	0.254	0.254	0.254
2	0.152	0.203	0.229	0.254	0.229
3	0.127	0.152	0.152	0.203	0.229
4	0.102	0.127	0.152	0.152	0.203
5	0.102	0.102	0.127	0.152	0.178
6	0.076	0.102	0.127	0.127	0.152
7	**0.737**	0.102	0.102	0.102	0.152
8		0.076	0.102	0.102	0.152
9		**1.092**	0.102	0.102	0.127
10			0.076	0.102	0.127
11			**1.422**	0.102	0.127
12				0.076	0.127
13				**1.727**	0.102
14					0.102
15					0.102
16					0.102
					2.464

Last pass equals total depth of thread.



National Pipe Taper (NPT) External & Internal (Inch)

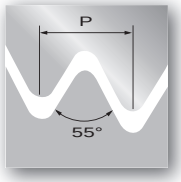
Number of Passes	T.P.I.				
	27	18	14	11.5	8
	Radial in-feed per pass (inch)				
1	0.008	0.009	0.009	0.009	0.01
2	0.006	0.007	0.008	0.008	0.009
3	0.005	0.006	0.007	0.007	0.008
4	0.004	0.006	0.006	0.006	0.008
5	0.004	0.005	0.006	0.006	0.007
6	0.003	0.005	0.005	0.006	0.007
7	**0.030**	0.004	0.005	0.006	0.007
8		0.003	0.004	0.005	0.007
9		**0.045**	0.004	0.005	0.006
10			0.003	0.004	0.006
11			**0.057**	0.004	0.006
12				0.003	0.005
13				**0.069**	0.005
14					0.004
15					0.003
					0.098

Last pass equals total depth of thread.

National Pipe Taper (NPT) External & Internal (mm)

Number of Passes	T.P.I.				
	27	18	14	11.5	8
	Radial in-feed per pass (mm)				
1	0.203	0.229	0.229	0.229	0.254
2	0.152	0.178	0.203	0.203	0.229
3	0.127	0.152	0.178	0.178	0.203
4	0.102	0.152	0.152	0.152	0.203
5	0.102	0.127	0.152	0.152	0.178
6	0.076	0.127	0.127	0.152	0.178
7	**0.762**	0.102	0.127	0.152	0.178
8		0.076	0.102	0.127	0.178
9		**1.143**	0.102	0.127	0.152
10			0.076	0.102	0.152
11			**1.448**	0.102	0.152
12				0.076	0.127
13				**1.753**	0.127
14					0.102
15					0.076
					2.489

Last pass equals total depth of thread.



British Standard Pipe Taper (BSPT) External & Internal (Inch)

Number of Passes	T.P.I.				
	27	18	14	11.5	8
	Radial in-feed per pass (inch)				
1	0.007	0.009	0.010	0.010	0.011
2	0.006	0.008	0.008	0.009	0.011
3	0.005	0.006	0.007	0.008	0.009
4	0.004	0.005	0.006	0.007	0.008
5	0.003	0.005	0.005	0.006	0.007
6	**0.026**	0.003	0.005	0.006	0.006
7		**0.036**	0.004	0.005	0.006
8			0.003	0.005	0.006
9			**0.048**	0.003	0.005
10				**0.059**	0.005
11					0.005
12					0.003
					0.082

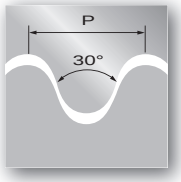
Last pass equals total depth of thread.

British Standard Pipe Taper (BSPT) External & Internal (mm)

Number of Passes	T.P.I.				
	27	18	14	11.5	8
	Radial in-feed per pass (mm)				
1	0.178	0.229	0.254	0.254	0.279
2	0.152	0.203	0.203	0.229	0.279
3	0.127	0.152	0.178	0.203	0.229
4	0.102	0.127	0.152	0.178	0.203
5	0.076	0.127	0.127	0.152	0.178
6	**0.660**	0.076	0.127	0.152	0.152
7		**0.914**	0.102	0.127	0.152
8			0.076	0.127	0.152
9			**1.219**	0.076	0.127
10				**1.499**	0.127
11					0.127
12					0.076
					2.083

Last pass equals total depth of thread.

STELLRAM



Round DIN 405, External & Internal (Inch)

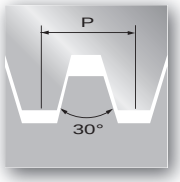
Number of Passes	Ptich (mm)			
	10	8	6	4
	Radial in-feed per pass (inch)			
1	0.009	0.009	0.011	0.014
2	0.009	0.009	0.010	0.013
3	0.008	0.008	0.009	0.012
4	0.008	0.008	0.009	0.011
5	0.006	0.007	0.008	0.011
6	0.005	0.006	0.008	0.010
7	0.004	0.006	0.007	0.010
8	0.003	0.005	0.006	0.009
9	**0.052**	0.004	0.006	0.008
10		0.003	0.005	0.007
11		**0.065**	0.004	0.006
12			0.003	0.005
13			**0.086**	0.005
14				0.004
				0.126

Last pass equals total depth of thread.

Round DIN 405, External & Internal (mm)

Number of Passes	T.P.I.			
	10	8	6	4
	Radial in-feed per pass (mm)			
1	0.229	0.229	0.279	0.356
2	0.229	0.229	0.254	0.330
3	0.203	0.203	0.229	0.305
4	0.203	0.203	0.229	0.279
5	0.152	0.178	0.203	0.279
6	0.127	0.152	0.203	0.254
7	0.102	0.152	0.178	0.254
8	0.076	0.127	0.152	0.229
9	**1.321**	0.102	0.152	0.203
10		0.076	0.127	0.178
11		**1.651**	0.102	0.152
12			0.076	0.127
13			**2.184**	0.127
14				0.102
				3.200

Last pass equals total depth of thread.



Trapezoidal DIN 103 (Inch)

Number of Passes	Ptich (mm)							
	1,5	2	3	4	5	6	7	8
	Radial in-feed per pass (inch)							
1	0.009	0.010	0.011	0.011	0.012	0.014	0.014	0.015
2	0.008	0.009	0.009	0.009	0.012	0.013	0.013	0.013
3	0.006	0.007	0.008	0.009	0.010	0.012	0.012	0.013
4	0.005	0.006	0.006	0.008	0.009	0.011	0.011	0.013
5	0.004	0.005	0.006	0.007	0.008	0.010	0.010	0.011
6	0.003	0.005	0.005	0.007	0.008	0.010	0.010	0.011
7	**0.035**	0.004	0.005	0.006	0.008	0.008	0.010	0.010
8		0.003	0.004	0.006	0.008	0.008	0.009	0.010
9		**0.049**	0.004	0.006	0.007	0.008	0.008	0.009
10			0.004	0.006	0.006	0.008	0.008	0.009
11			0.004	0.005	0.006	0.007	0.008	0.009
12			0.003	0.005	0.005	0.006	0.008	0.008
13			**0.069**	0.004	0.005	0.006	0.007	0.008
14				**0.089**	0.004	0.006	0.007	0.007
15					**0.108**	0.006	0.007	0.007
16						0.005	0.005	0.007
17						**0.138**	**0.147**	0.006
18								0.006
19								0.005
								0.177

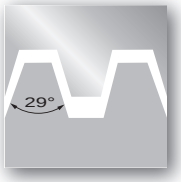
Last pass equals total depth of thread.

Trapezoidal DIN 103 (mm)

Number of Passes	Ptich (mm)							
	1.5	2	3	4	5	6	7	8
	Radial in-feed per pass (mm)							
1	0.229	0.254	0.279	0.279	0.305	0.356	0.356	0.381
2	0.203	0.229	0.229	0.229	0.305	0.330	0.330	0.330
3	0.152	0.178	0.203	0.229	0.254	0.305	0.305	0.330
4	0.127	0.152	0.152	0.203	0.229	0.279	0.279	0.330
5	0.102	0.127	0.152	0.178	0.203	0.254	0.254	0.279
6	0.076	0.127	0.127	0.178	0.203	0.254	0.254	0.279
7	**0.889**	0.102	0.127	0.152	0.203	0.203	0.254	0.254
8		0.076	0.102	0.152	0.203	0.203	0.229	0.254
9		**1.245**	0.102	0.152	0.178	0.203	0.203	0.229
10			0.102	0.152	0.152	0.203	0.203	0.229
11			0.102	0.127	0.152	0.178	0.203	0.229
12			0.076	0.127	0.127	0.152	0.203	0.203
13			**1.753**	0.102	0.127	0.152	0.178	0.203
14				**2.261**	0.102	0.152	0.178	0.178
15					**2.743**	0.152	0.178	0.178
16						0.127	0.127	0.178
17						**3.505**	**3.734**	0.152
18								0.152
19								0.127
								4.496

Last pass equals total depth of thread.

STELLRAM



ACME (Inch)

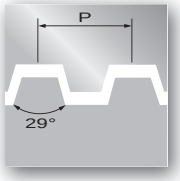
Number of Passes	T.P.I.								
	16	14	12	10	8	6	5	4	3
	Radial in-feed per pass (inch)								
1	0.009	0.009	0.010	0.010	0.011	0.013	0.014	0.014	0.015
2	0.008	0.008	0.008	0.009	0.010	0.011	0.013	0.013	0.014
3	0.007	0.007	0.007	0.008	0.008	0.009	0.010	0.012	0.013
4	0.006	0.006	0.006	0.007	0.007	0.008	0.009	0.011	0.011
5	0.005	0.005	0.005	0.006	0.006	0.007	0.009	0.010	0.011
6	0.003	0.004	0.005	0.005	0.005	0.007	0.008	0.010	0.011
7	**0.038**	0.003	0.004	0.005	0.005	0.006	0.008	0.008	0.011
8		**0.042**	0.004	0.004	0.005	0.006	0.008	0.008	0.010
9			**0.049**	0.004	0.005	0.006	0.007	0.008	0.009
10				0.004	0.004	0.006	0.006	0.007	0.009
11				**0.062**	0.004	0.006	0.006	0.007	0.009
12					0.004	0.005	0.006	0.006	0.008
13					**0.074**	0.004	0.005	0.006	0.008
14						**0.099**	0.004	0.006	0.007
15							**0.112**	0.006	0.007
16								0.005	0.007
17								**0.137**	0.007
18									0.006
19									0.005
									0.178

Last pass equals total depth of thread.

ACME (mm)

Number of Passes	T.P.I.								
	16	14	12	10	8	6	5	4	3
	Radial in-feed per pass (mm)								
1	0.229	0.229	0.254	0.254	0.279	0.330	0.356	0.356	0.381
2	0.203	0.203	0.203	0.229	0.254	0.279	0.330	0.330	0.356
3	0.178	0.178	0.178	0.203	0.203	0.229	0.254	0.305	0.330
4	0.152	0.152	0.152	0.178	0.178	0.203	0.229	0.279	0.279
5	0.127	0.127	0.127	0.152	0.152	0.178	0.229	0.254	0.279
6	0.076	0.102	0.127	0.127	0.127	0.178	0.203	0.254	0.279
7	**0.965**	0.076	0.102	0.127	0.127	0.152	0.203	0.203	0.279
8		**1.067**	0.102	0.102	0.127	0.152	0.203	0.203	0.254
9			**1.245**	0.102	0.127	0.152	0.178	0.203	0.229
10				0.102	0.102	0.152	0.152	0.178	0.229
11				**1.575**	0.102	0.152	0.152	0.178	0.229
12					0.102	0.127	0.152	0.152	0.203
13					**1.880**	0.102	0.127	0.152	0.203
14						**2.515**	0.102	0.152	0.178
15							**2.845**	0.152	0.178
16								0.127	0.178
17								**3.480**	0.178
18									0.152
19									0.127
									4.521

Last pass equals total depth of thread.



STUB-ACME (Inch)

Number of Passes	T.P.I.								
	16	14	12	10	8	6	5	4	3
	Radial in-feed per pass (inch)								
1	0.008	0.009	0.009	0.009	0.010	0.011	0.011	0.012	0.014
2	0.006	0.007	0.007	0.008	0.008	0.008	0.010	0.011	0.011
3	0.005	0.006	0.006	0.007	0.008	0.008	0.008	0.010	0.011
4	0.004	0.005	0.005	0.006	0.007	0.007	0.008	0.008	0.009
5	0.004	0.004	0.004	0.006	0.006	0.006	0.007	0.008	0.008
6	**0.027**	**0.031**	0.004	0.005	0.006	0.006	0.006	0.007	0.008
7			**0.035**	0.004	0.005	0.006	0.006	0.006	0.008
8				**0.045**	0.004	0.005	0.006	0.006	0.008
9					**0.054**	0.004	0.005	0.005	0.007
10						**0.061**	0.004	0.005	0.006
11							**0.071**	0.004	0.005
12								0.004	0.005
13								**0.086**	0.005
14									0.004
15									0.004
									0.122

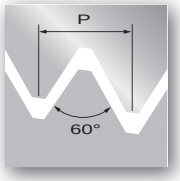
Last pass equals total depth of thread.

STUB-ACME (mm)

Number of Passes	T.P.I.								
	16	14	12	10	8	6	5	4	3
	Radial in-feed per pass (mm)								
1	0.203	0.229	0.229	0.229	0.254	0.279	0.279	0.305	0.356
2	0.152	0.178	0.178	0.203	0.203	0.203	0.254	0.279	0.279
3	0.127	0.152	0.152	0.178	0.203	0.203	0.203	0.254	0.279
4	0.102	0.127	0.127	0.152	0.178	0.178	0.203	0.203	0.229
5	0.102	0.102	0.102	0.152	0.152	0.152	0.178	0.203	0.203
6	**0.686**	**0.787**	0.102	0.127	0.152	0.152	0.152	0.178	0.203
7			**0.889**	0.102	0.127	0.152	0.152	0.152	0.203
8				**1.143**	0.102	0.127	0.152	0.152	0.203
9					**1.372**	0.102	0.127	0.127	0.178
10						**1.549**	0.102	0.127	0.152
11							**1.803**	0.102	0.127
12								0.102	0.127
13								**2.184**	0.127
14									0.102
15									0.102
									3.099

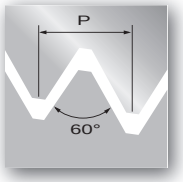
Last pass equals total depth of thread.

STELLRAM



API Thread Forms (Inch)

API Thread Forms	No. of passes/radial in-feed per pass (Inch)															
	Total In-Feed	Passes														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
API Rd																
16ER10APIRD 16IR10APIRD	0.057	0.011	0.008	0.006	0.006	0.005	0.005	0.005	0.004	0.004	0.003	-	-	-	-	-
16ER8APIRD 16IR8APIRD	0.073	0.011	0.009	0.008	0.006	0.006	0.006	0.005	0.005	0.005	0.005	0.004	0.003	-	-	-
API-V-0.038R																
22ER4API382 22IR4API382	0.125	0.018	0.015	0.015	0.013	0.012	0.012	0.01	0.01	0.008	0.005	0.004	0.003	-	-	-
22ER4API383 22IR4API383	0.125	0.018	0.015	0.015	0.013	0.012	0.012	0.01	0.01	0.008	0.005	0.004	0.003	-	-	-
API-V-0.050																
27ER4API502 27IR4API502	0.152	0.018	0.015	0.014	0.013	0.012	0.012	0.011	0.01	0.01	0.009	0.008	0.008	0.005	0.004	0.003
27ER4API503 27IR4API503	0.151	0.018	0.015	0.014	0.013	0.012	0.011	0.011	0.01	0.01	0.009	0.008	0.008	0.005	0.004	0.003
API-V-0.040																
22ER5API403 22IR5API403	0.121	0.017	0.015	0.015	0.013	0.011	0.011	0.01	0.01	0.007	0.005	0.004	0.003	-	-	-



API Thread Forms (mm)

API Thread Forms	No. of passes/radial in-feed per pass (mm)															
	Total In-Feed	Passes														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
API Rd																
16ER10APIRD 16IR10APIRD	1.448	0.279	0.203	0.152	0.152	0.127	0.127	0.127	0.102	0.102	0.076	-	-	-	-	-
16ER8APIRD 16IR8APIRD	1.854	0.279	0.229	0.203	0.152	0.152	0.152	0.127	0.127	0.127	0.127	0.102	0.076	-	-	-
API-V-0.038R																
22ER4API382 22IR4API382	3.175	0.457	0.381	0.381	0.330	0.305	0.305	0.254	0.254	0.203	0.127	0.102	0.076	-	-	-
22ER4API383 22IR4API383	3.175	0.457	0.381	0.381	0.330	0.305	0.305	0.254	0.254	0.203	0.127	0.102	0.076	-	-	-
API-V-0.050																
27ER4API502 27IR4API502	3.861	0.457	0.381	0.356	0.330	0.305	0.305	0.279	0.254	0.254	0.229	0.203	0.203	0.127	0.102	0.076
27ER4API503 27IR4API503	3.835	0.457	0.381	0.356	0.330	0.305	0.279	0.279	0.254	0.254	0.229	0.203	0.203	0.127	0.102	0.076
API-V-0.040																
22ER5API403 22IR5API403	3.073	0.432	0.381	0.381	0.330	0.279	0.279	0.254	0.254	0.178	0.127	0.102	0.076	-	-	-

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Multi-Tooth Inserts (Inch)

External	Metric 60° (I.S.O) Pitch (mm)					Unified 60° (UN) T.P.I					Whitworth (W) T.P.I			NPT T.P.I
	1.0	1.5	2.0	2.5	3.0	20	18	16	14	12	19	14	11	11.5
Number of Passes	Radial in-feed per pass (inch)					Radial in-feed per pass (inch)					Radial in-feed per pass (inch)			
1	0.014	0.014	0.019	0.018	0.022	0.017	0.019	0.015	0.017	0.021	0.019	0.019	0.018	0.02
2	0.013	0.013	0.019	0.017	0.021	0.015	0.017	0.014	0.016	0.019	0.017	0.017	0.017	0.019
3	**0.027**	0.011	0.013	0.016	0.019	**0.032**	**0.036**	0.011	0.013	0.014	**0.036**	0.013	0.015	0.017
4		**0.038**	**0.051**	0.011	0.013			**0.04**	**0.046**	**0.054**		**0.049**	0.011	0.01
				0.062	**0.075**								**0.061**	**0.066**

Internal	Metric 60° (I.S.O) Pitch (mm)					Unified 60° (UN) T.P.I					Whitworth (W) T.P.I			NPT T.P.I
	1.0	1.5	2.0	2.5	3.0	20	18	16	14	12	19	14	11	11.5
Number of Passes	Radial in-feed per pass (inch)					Radial in-feed per pass (inch)					Radial in-feed per pass (inch)			
1	0.013	0.013	0.018			0.014	0.019				0.014	0.019	0.018	0.02
2	0.012	0.012	0.017			0.013	0.017				0.012	0.017	0.017	0.019
3	**0.025**	0.01	0.013			0.01	0.013				0.01	0.013	0.015	0.017
4		**0.035**	**0.048**			**0.037**	**0.049**				**0.036**	**0.049**	0.011	0.01
													0.061	**0.066**

Last pass equals total depth of thread.

Multi-Tooth Inserts (mm)

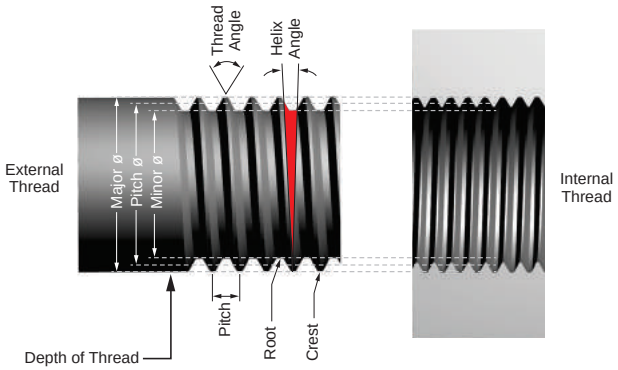
External	Metric 60° (I.S.O) Pitch (mm)					Unified 60° (UN) T.P.I					Whitworth (W) T.P.I			NPT T.P.I
	1.0	1.5	2.0	2.5	3.0	20	18	16	14	12	19	14	11	11.5
Number of Passes	Radial in-feed per pass (mm)					Radial in-feed per pass (mm)					Radial in-feed per pass (mm)			
1	0.356	0.356	0.483	0.457	0.559	0.432	0.483	0.381	0.432	0.533	0.483	0.483	0.457	0.508
2	0.330	0.330	0.483	0.432	0.533	0.381	0.432	0.356	0.406	0.483	0.432	0.432	0.432	0.019
3	**0.686**	0.279	0.330	0.406	0.483	**0.813**	**0.914**	0.279	0.330	0.356	**0.914**	0.330	0.381	0.432
4		**0.965**	**1.295**	0.279	0.330			**1.016**	**1.168**	**1.372**		**1.245**	0.279	0.254
				1.575	**1.905**								**1.549**	**1.676**

Internal	Metric 60° (I.S.O) Pitch (mm)					Unified 60° (UN) T.P.I					Whitworth (W) T.P.I			NPT T.P.I
	1.0	1.5	2.0	2.5	3.0	20	18	16	14	12	19	14	11	11.5
Number of Passes	Radial in-feed per pass (mm)					Radial in-feed per pass (mm)					Radial in-feed per pass (mm)			
1	0.330	0.330	0.457			0.356	0.483				0.356	0.483	0.457	0.508
2	0.305	0.305	0.432			0.330	0.432				0.305	0.432	0.432	0.483
3	**0.635**	0.254	0.330			0.254	0.330				0.254	0.330	0.381	0.432
4		**0.889**	**1.219**			**0.940**	**1.245**				**0.914**	**1.245**	0.279	0.254
													1.549	**1.676**

Last pass equals total depth of thread.

1 What's the Application

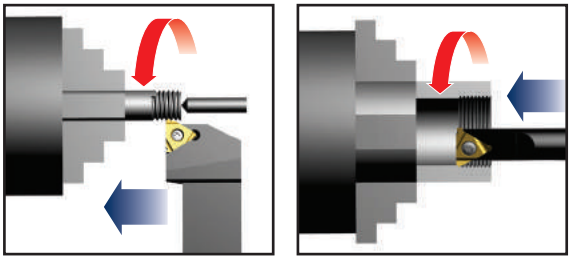
A) Internal or External
B) Type of thread form
C) Material being machined



2 Machine Set-Up

D) LH or RH thread form
E) Machine Set-Up

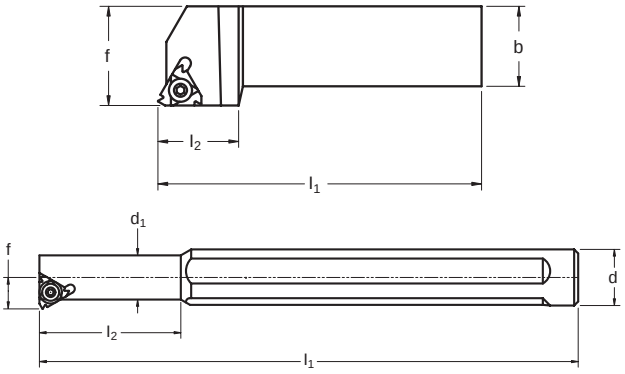
Right Hand Thread / Right Hand Tooling



See page C322

3 Select Tooling

F) External
G) Internal



See pages C306 – C315

4 Check Helix Angle

Note: The 1.5°

Calculation of thread helix angle for a given thread

$$\text{Helix angle - } \tan^{-1}\theta = \frac{\text{Lead of the Thread}}{\text{Pitch/Effective Diameter} \times \pi}$$

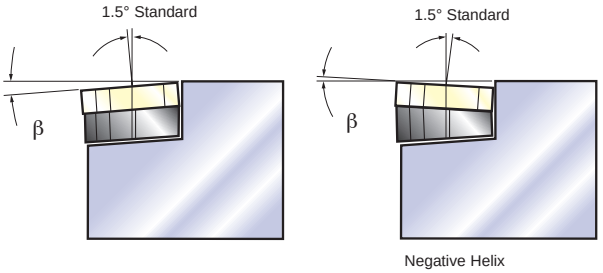
Helix Angle Calculation (Inch)

Outside Diameter (inch)	Pitch					
	1	1,25	1,5	1,75	2	
	Helix Angles (Degrees and Minu					
0.200	3° - 38'	4° - 33'	5° - 27'	-	-	
0.236	3° - 2'	3° - 48'	4° - 33'	5° - 18'	6° - 33'	
0.315	2° - 17'	2° - 51'	3° - 25'	3° - 59'	4° - 33'	
0.395	1° - 49'	2° - 16'	2° - 44'	3° - 11'	3° - 39'	
0.500	1° - 31'	1° - 54'	2° - 17'	2° - 39'	3° - 2'	
0.550	1° - 18'	1° - 38'	1° - 57'	2° - 17'	2° - 36'	
0.630	1° - 8'	1° - 42'	1° - 42'	2° - 0'	2° - 17'	
0.710	1° - 1'	1° - 16'	1° - 31'	1° - 46'	2° - 2'	
0.790	55´	1° - 8'	1° - 22'	1° - 36'	1° - 49'	
1.000	44´	55´	1° - 6'	1° - 16'	1° - 28'	

See page C324

5 Select Anvil

Note: The 1.5° angle is
Standard with all toolholders



Insert size		Toolholder	ß H			
			4.5°	3.5°	2.5°	1.5°
mm	Inch		Anvil F			
16	3/8"	EX RH / IN LH	YE33P	YE32P	YE31P	YE3
		EX LH / IN RH	YI33P	YI32P	YI31P	YI3
22	1/2"	EX RH / IN LH	YE43P	YE42P	YE41P	YE4
		EX LH / IN RH	YI43P	YI42P	YI41P	YI4
22U	1/2"	EX RH / IN LH	YE4U3P	YE4U2P	YE4U1P	YE4U
		EX LH / IN RH	YI4U3P	YI4U2P	YI4U1P	YI4U
27	5/8"	EX RH / IN LH	YE53P	YE52P	YE51P	YE5
		EX LH / IN RH	YI53P	YI52P	YI51P	YI5
27U	5/8"	EX RH / IN LH	YE5U3P	YE5U2P	YE5U1P	YE5U
		EX LH / IN RH	YI5U3P	YI5U2P	YI5U1P	YI5U

See page C316

6 Select Cutting Speed

ISO	Materials	Rm	K
P	Unalloyed Steel	400-600 N/mm² 120-180 HBN	
		600-950 N/mm² 180-200 HBN	
	Alloyed Steel	700-950 N/mm² 200-280 HBN	
		950-1200 N/mm² 280-355 HBN	
		1200-1400 N/mm² 355-415 HBN	
	Tool Steel	1200-1400 N/mm² 355-415 HBN	
M	Stainless Steel	Austenitic + Ferritic 300 series	
		Martensitic 400 series	
	PH Stainless	Refractory P.H.	

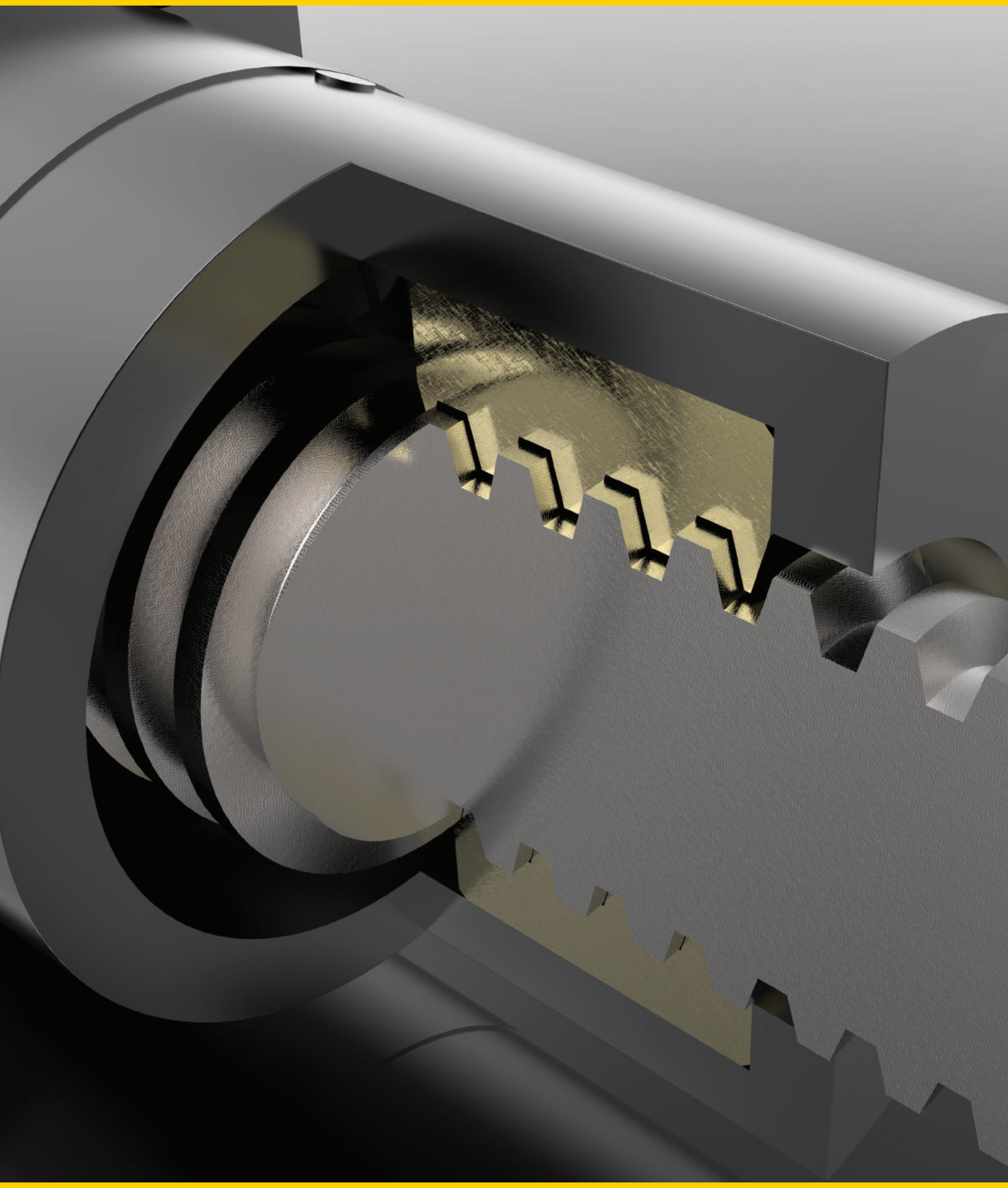
See page C269

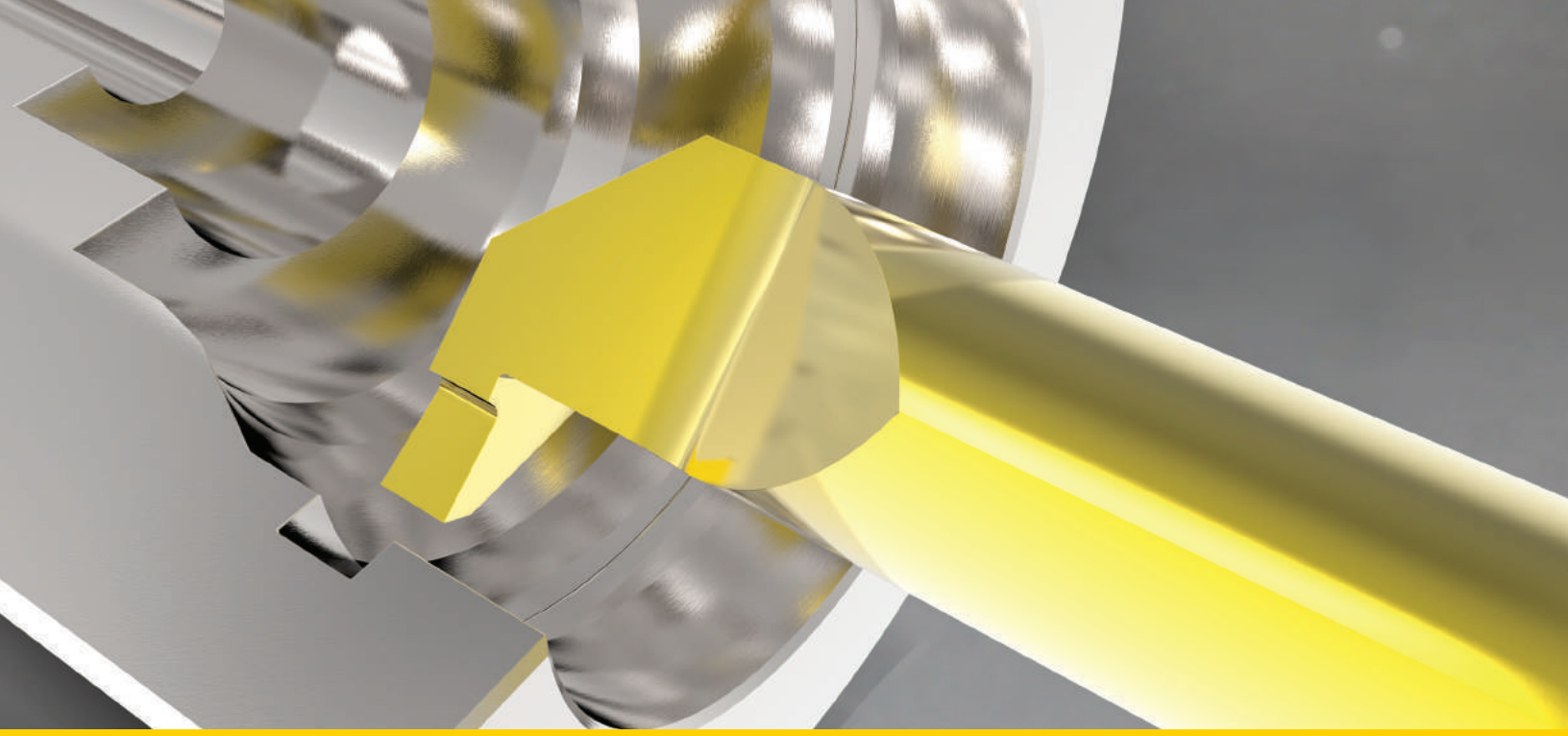
7 Select Number and Depth of Passes

I.S.O Metric (ISO) 60°, External (Inch)

Number of Passes	Pitch (mm)								
	0,5	0,75	0,8	1,0	1,25	1,5	1,75	2,0	
	Radial infeed per								
1	0.004	0.007	0.007	0.007	0.007	0.009	0.009	0.010	0
2	0.004	0.006	0.006	0.007	0.007	0.008	0.008	0.009	0
3	0.003	0.004	0.005	0.005	0.006	0.007	0.006	0.007	0
4	0.003	0.003	0.003	0.004	0.005	0.006	0.006	0.006	0
5	**0.014**	**0.020**	**0.021**	0.003	0.004	0.005	0.005	0.006	0
6				**0.026**	0.003	0.003	0.004	0.005	0
7					**0.032**	**0.038**	0.004	0.004	0
8							0.003	0.003	0
9							**0.045**	**0.050**	0
10									0
11									0
12									
13									
14									
15									
16									

See pages C325 – C341





STELLRAM®

GROOVING

Grooving

KENNAMETAL®

STELLRAM

Grooving Grades

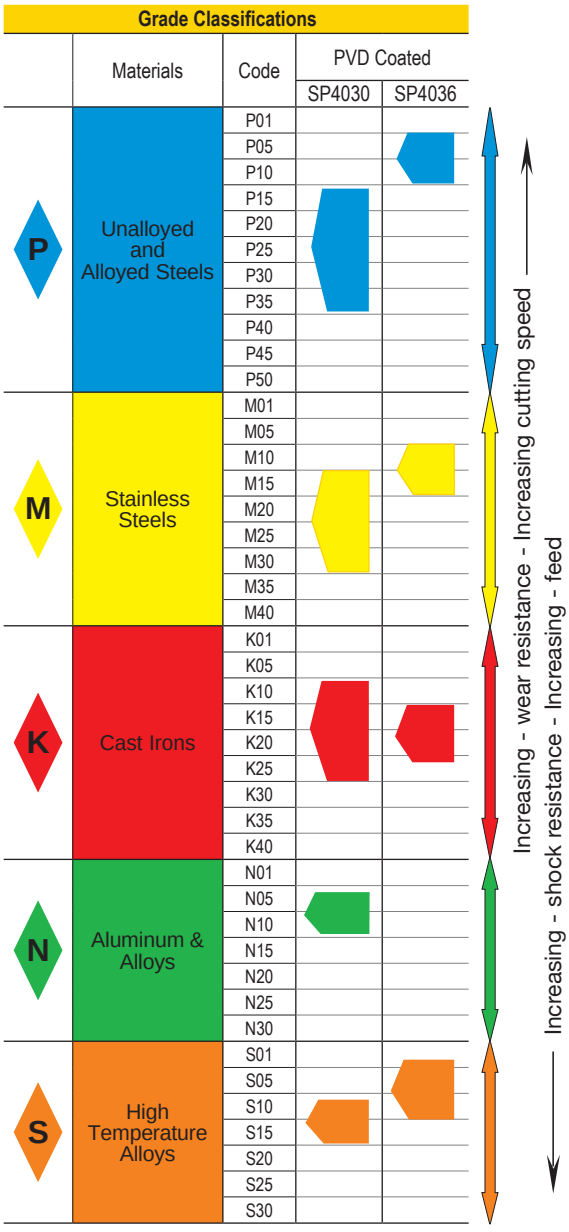
SP4030 and SP0436 are PVD coated grades with a micrograin substrate for machining at higher speeds with lower feed. Ideal for Stainless Steels and Ductile materials.

Optimum Grade Performance

Cutting Speed v_c

ISO	Materials	Rm and Hardness	PVD			
			SP4030		SP4036	
			SFM	m/min	SFM	m/min
			min. - max.	min. - max.	min. - max.	min. - max.
P	Unalloyed Steel	<600 N/mm² <180 HBN	444 - 888	135 - 271	533 - 1066	162 - 325
		<950 N/mm² <280 HBN	288 - 576	88- 176	346 - 691	105- 211
	Alloyed Steel	700-950 N/mm² 200-280 HBN	264 - 528	80 - 161	317 - 634	97 - 193
		950-1200 N/mm² 280-355 HBN	240 - 480	73 - 146	288 -576	88 - 176
		1200-1400 N/mm² 355-415 HBN	164 - 328	50 - 100	197 - 394	60 - 120
M	Stainless Steel	Austenitic + Ferritic 300 series	350 - 750	107 - 229	420 - 900	128 - 274
		Martensitic 400 series	336 - 720	102 - 220	403 - 864	123 - 263
	PH Stainless	Refractory P.H.	187 - 400	57 - 122	224 - 480	68 - 146
K	Cast Iron	Grey GG-Ft	440 - 880	134 - 268	528 - 1056	161 - 322
		Spheroidal-Ductile GGG-FGS	380 -760	116 - 232	456 -912	139 - 278
		Malleable GTS - MN/MP	256 - 512	78 - 156	307 - 614	94 - 187
N	Aluminium & Alloys	Aluminium & Alloys < 16% 116 HB	1200 - 3000	366 - 915	1440 - 3600	439 - 1098
		Aluminium + Silicon > 16% 92 HB	800 - 2000	244 - 610	960 - 2400	293 - 732
S	High Temperature Alloys	Iron Based	64 - 128	20 - 39	77 - 154	23 - 47
		Cobalt Based	52 - 104	16 - 32	62 - 125	19 - 38
		Nickel Based	56 - 112	17 - 34	67 - 134	20 - 41
		Titanium Based	88 - 176	27 - 54	106 - 211	32 - 64

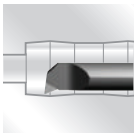
Grade Classifications

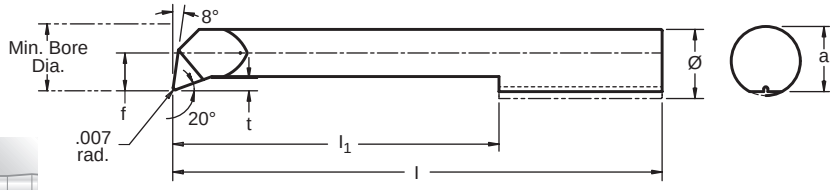


STELLRAM

050...







Type 050... Boring and Profiling Operation

EDP	Description	Grade	Dimensions (inch)								
			b	f	a	l	l_1	t	D min	Ø	Toolholder
026372	**R050310**	SP4030	-	0.024	0.138	0.945	0.394	0.008	0.110	0.157	645...
026376	**R050316**			0.024	0.138	1.181	0.630	0.008	0.110	0.157	
026380	**R050320**			0.024	0.138	1.339	0.787	0.008	0.110	0.157	
026384	**R050410**			0.059	0.138	0.945	0.394	0.012	0.157	0.157	
026388	**R050416**			0.059	0.138	1.181	0.630	0.012	0.157	0.157	
026392	**R050420**			0.059	0.138	1.339	0.787	0.012	0.157	0.157	
026396	**R050510**			0.075	0.173	0.984	0.394	0.020	0.197	0.197	
026400	**R050515**			0.075	0.173	1.181	0.591	0.020	0.197	0.197	
026404	**R050520**			0.075	0.173	1.378	0.787	0.020	0.197	0.197	
026407	**R050525**			0.075	0.173	1.575	0.984	0.020	0.197	0.197	
026411	**R050530**			0.075	0.173	1.772	1.181	0.020	0.197	0.197	
026414	**R050615**			0.091	0.209	1.181	0.591	0.020	0.236	0.236	676...
026418	**R050622**			0.091	0.209	1.457	0.866	0.020	0.236	0.236	
026422	**R050625**			0.091	0.209	1.575	0.984	0.020	0.236	0.236	
026426	**R050630**			0.091	0.209	1.772	1.181	0.020	0.236	0.236	
026430	**R050720**			0.106	0.248	1.378	0.787	0.024	0.268	0.276	
026434	**R050725**			0.106	0.248	1.575	0.984	0.024	0.268	0.276	
026438	**R050730**			0.106	0.248	1.772	1.181	0.024	0.268	0.276	

For Toolholders See page C354

Type 050... Boring and Profiling Operation

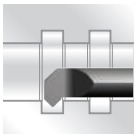
EDP	Description	Grade	Dimensions (mm)								
			b	f	a	l	l_1	t	D min	Ø	Toolholder
026360	**R050205**	SP4030	-	-	3.5	19	5	0.1	2	4	645...
026364	**R050210**			-	3.5	24	10	0.1	2	4	
026368	**R050215**			-	3.5	29	15	0.1	2	4	
026372	**R050310**			0.6	3.5	24	10	0.2	2.8	4	
026376	**R050316**			0.6	3.5	30	16	0.2	2.8	4	
026380	**R050320**			0.6	3.5	34	20	0.2	2.8	4	
026384	**R050410**			1.5	3.5	24	10	0.3	4	4	
026388	**R050416**			1.5	3.5	30	16	0.3	4	4	
026392	**R050420**			1.5	3.5	34	20	0.3	4	4	
026396	**R050510**			1.9	4.4	25	10	0.5	5	5	
026400	**R050515**			1.9	4.4	30	15	0.5	5	5	
026404	**R050520**			1.9	4.4	35	20	0.5	5	5	
026407	**R050525**			1.9	4.4	40	25	0.5	5	5	
026411	**R050530**			1.9	4.4	45	30	0.5	5	5	
026414	**R050615**			2.3	5.3	30	15	0.5	6	6	676...
026418	**R050622**			2.3	5.3	37	22	0.5	6	6	
026422	**R050625**			2.3	5.3	40	25	0.5	6	6	
026426	**R050630**			2.3	5.3	45	30	0.5	6	6	
026430	**R050720**			2.7	6.3	35	20	0.6	6.8	7	
026434	**R050725**			2.7	6.3	40	25	0.6	6.8	7	
026438	**R050730**			2.7	6.3	45	30	0.6	6.8	7	

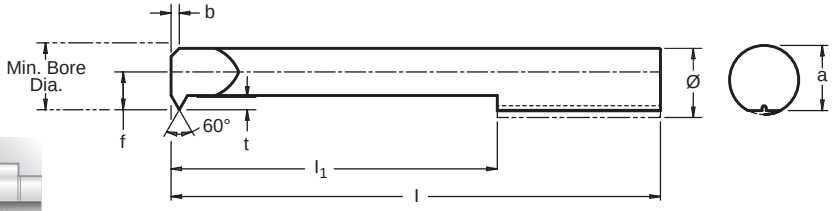
For Toolholders See page C354

STELLRAM

060...







Type 060... Boring, Profiling and Chamfering Operation

EDP	Description	Grade	Dimensions (inch)								
			b	f	a	l	l_1	t	D min	Ø	Toolholder
026446	**R060520**	SP4030	0.008	0.075	0.173	1.378	0.787	0.028	0.197	0.197	645...
026450	**R060720**			0.110	0.248				0.268	0.276	676...

For Toolholders See page C354

Type 060... Boring, Profiling and Chamfering Operation

EDP	Description	Grade	Dimensions (mm)								
			b	f	a	l	l_1	t	D min	Ø	Toolholder
026446	**R060520**	SP4030	0.2	1.9	4.4	35	20	0.7	5	5	645...
026450	**R060720**			2.8	6.3				6.8	7	676...

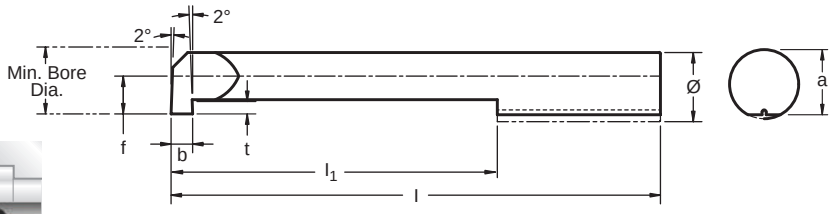
For Toolholders See page C354

STELLRAM

004...







Type 004... Grooving Internal Boring Operation

EDP	Description	Grade	Dimensions (inch)								
			b	f	a	l	l_1	t	D min	Ø	Toolholder
026168	**R004010010**	SP4030	0.039	0.059	0.138	0.945	0.394	0.031	0.157	0.157	645...
026172	**R004010016**					1.181	0.630	0.031			
026176	**R004010020**					1.339	0.787	0.031			

For Toolholders See page C354

Type 004... Grooving Internal Boring Operation

EDP	Description	Grade	Dimensions (mm)								
			b	f	a	l	l_1	t	D min	Ø	Toolholder
026168	**R004010010**	SP4030	1	1.5	3.5	24	10	0.8	4	4	645...
026172	**R004010016**					30	16				
026176	**R004010020**					34	20				

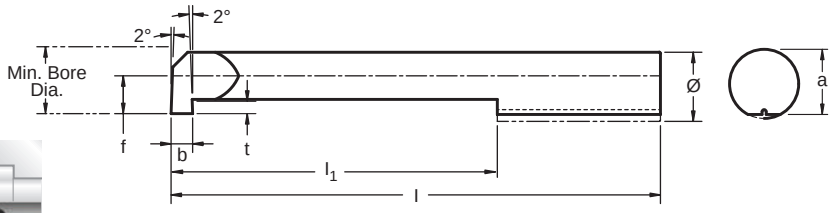
For Toolholders See page C354

STELLRAM

005...







Type 005... Grooving Internal Boring Operation

EDP	Description	Grade	Dimensions (inch)								
			b	f	a	l	l_1	t	D min	Ø	Toolholder
026180	**R005010010**	SP4030	0.039	0.075	0.173	0.984	0.394	0.039	0.197	0.197	645...
026184	**R005010015**		0.039			1.181	0.591				
026188	**R005010020**		0.039			1.378	0.787				
026192	**R005010025**		0.039			1.575	0.984				
026204	**R005015015**		0.059			1.181	0.591				
026208	**R005015020**		0.059			1.378	0.787				
026220	**R005020010**		0.079			0.984	0.394				
026224	**R005020015**		0.079			1.181	0.591				
026228	**R005020020**		0.079			1.378	0.787				
026232	**R005020025**		0.079			1.575	0.984				
023301	**R005051015**		0.079			1.772	1.181				

For Toolholders See page C354

Type 005... Grooving Internal Boring Operation

EDP	Description	Grade	Dimensions (mm)								
			b	f	a	l	l_1	t	D min	Ø	Toolholder
026180	**R005010010**	SP4030	1	1.9	4.4	25	10	1	5	5	645...
026184	**R005010015**		1			30	15				
026188	**R005010020**		1			35	20				
026192	**R005010025**		1			40	25				
026204	**R005015015**		1.5			30	15				
026208	**R005015020**		1.5			35	20				
026220	**R005020010**		2			25	10				
026224	**R005020015**		2			30	15				
026228	**R005020020**		2			35	20				
026232	**R005020025**		2			40	25				
023301	**R005051015**		2			45	30				

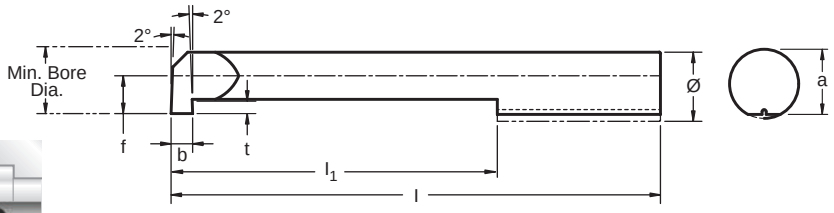
For Toolholders See page C354

STELLRAM

006...







Type 006... Grooving Internal Boring Operation

EDP	Description	Grade	Dimensions (inch)								
			b	f	a	l	l_1	t	D min	Ø	Toolholder
026240	**R006010010**	SP4030	0.039	0.091	0.209	0.984	0.394	0.071	0.236	0.236	676...
026244	**R006010015**		0.039			1.181	0.591				
026248	**R006010022**		0.039			1.457	0.866				
026252	**R006010025**		0.039			1.575	0.984				
026260	**R006015010**		0.059			0.984	0.394				
026264	**R006015015**		0.059			1.181	0.591				
026268	**R006015022**		0.059			1.457	0.866				
026272	**R006015025**		0.059			1.575	0.984				
026280	**R006020010**		0.079			0.984	0.394				
026284	**R006020015**		0.079			1.181	0.591				
026292	**R006020025**		0.079			1.575	0.984				

For Toolholders See page C354

Type 006... Grooving Internal Boring Operation

EDP	Description	Grade	Dimensions (mm)								
			b	f	a	l	l_1	t	D min	Ø	Toolholder
026240	**R006010010**	SP4030	1	2.3	5.3	25	10	1.8	6	6	676...
026244	**R006010015**		1			30	15				
026248	**R006010022**		1			37	22				
026252	**R006010025**		1			40	25				
026260	**R006015010**		1.5			25	10				
026264	**R006015015**		1.5			30	15				
026268	**R006015022**		1.5			37	22				
026272	**R006015025**		1.5			40	25				
026280	**R006020010**		2			25	10				
026284	**R006020015**		2			30	15				
026292	**R006020025**		2			40	25				

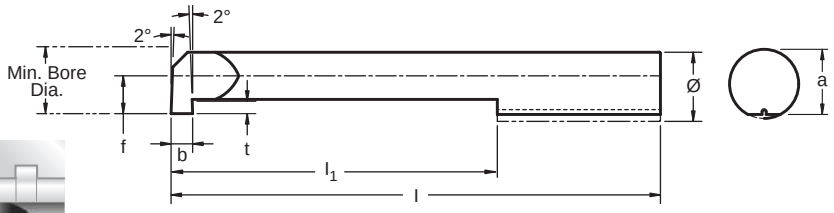
For Toolholders See page C354

STELLRAM

007...







Type 007... Grooving Internal Boring Operation

EDP	Description	Grade	Dimensions (inch)								
			b	f	a	l	l_1	t	D min	Ø	Toolholder
026300	**R007010010**	SP4030	0.039	0.106	0.248	0.984	0.394	0.098	0.268	0.276	676...
026304	**R007010015**		0.039			1.181	0.591				
026312	**R007010025**		0.039			1.575	0.984				
026320	**R007015010**		0.059			0.984	0.394				
026324	**R007015015**		0.059			1.181	0.591				
026332	**R007015025**		0.059			1.575	0.984				
026336	**R007015030**		0.059			1.772	1.181				
026340	**R007020010**		0.079			0.984	0.394				
026344	**R007020015**		0.079			1.181	0.591				
026352	**R007020025**		0.079			1.575	0.984				
026356	**R007020030**		0.079			1.772	1.181				

For Toolholders See page C354

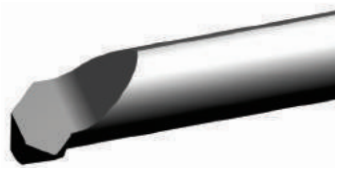
Type 007... Grooving Internal Boring Operation

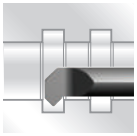
EDP	Description	Grade	Dimensions (mm)								
			b	f	a	l	l_1	t	D min	Ø	Toolholder
026300	**R007010010**	SP4030	1	2.7	6.3	25	10	2.5	6.8	7	676...
026304	**R007010015**		1			30	15				
026312	**R007010025**		1			40	25				
026320	**R007015010**		1.5			25	10				
026324	**R007015015**		1.5			30	15				
026332	**R007015025**		1.5			40	25				
026336	**R007015030**		1.5			45	30				
026340	**R007020010**		2			25	10				
026344	**R007020015**		2			30	15				
026352	**R007020025**		2			40	25				
026356	**R007020030**		2			45	30				

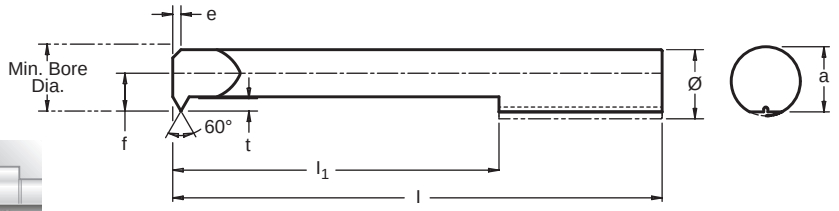
For Toolholders See page C354

STELLRAM

004 / 5 / 6 / 7...







Type 004/5/6/7... Metric ISO Thread Partial Profile 60°

EDP	Description	Grade	Dimensions (inch)									
			Pitch	e	f	a	l	l_1	t	D min	Ø	Toolholder
Standard pitch												
026467	**R006051015**	SP4030	0.039	0.022	0.075	0.173	1.181	0.591	0.022	0.189	0.197	645...
026469	**R006061215**		0.049	0.026	0.091	0.209			0.027	0.236	0.236	676...
026471	**R006081515**		0.059	0.030	0.091	0.209			0.032	0.236	0.236	
026473	**R007081515**		0.059	0.030	0.106	0.248			0.032	0.276	0.276	
Fine pitch												
026460	**R004020515**	SP4030	0.020	0.014	0.059	0.138	1.181	0.591	0.011	0.157	0.157	645...
026462	**R005020515**		0.020	0.014	0.075	0.173			0.011	0.197	0.197	
026464	**R005040715**		0.030	0.018	0.075	0.173			0.016	0.197	0.197	

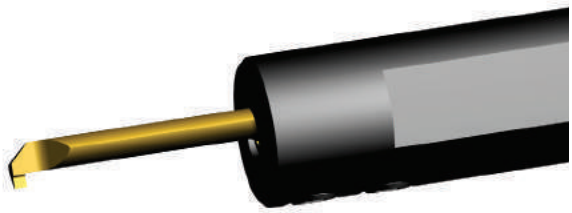
For Toolholders See page C354

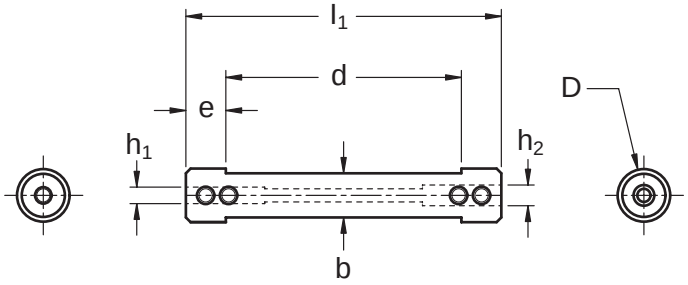
Type 004/5/6/7... Metric ISO Thread Partial Profile 60°

EDP	Description	Grade	Dimensions (mm)									
			Pitch	e	f	a	l	l_1	t	D min	Ø	Toolholder
Standard pitch												
026467	**R006051015**	SP4030	1	0.55	1.9	4.4	30	15	0.55	4.8	5	645...
026469	**R006061215**		1.25	0.65	2.3	5.3			0.68	6	6	676...
026471	**R006081515**		1.5	0.75	2.3	5.3			0.81	6	6	
026473	**R007081515**		1.5	0.75	2.7	6.3			0.81	7	7	
Fine pitch												
026460	**R004020515**	SP4030	0.5	0.35	1.5	3.5	30	15	0.27	4	4	645...
026462	**R005020515**		0.5	0.35	1.9	4.4			0.27	5	5	
026464	**R005040715**		0.75	0.45	1.9	4.4			0.4	5	5	

For Toolholders See page C354

645 - 676





Toolholder for Ultra Mini								
EDP	**Description**	Dimensions (inch)						
		D	b	d	e	l_1	h_1	h_2
025251	**6450000D**	0.500	0.430	2.188	0.406	3.000	0.157	0.196
025252	**6456250D**	0.625	0.551				0.157	0.196
025253	**6766250D**	0.625	0.551				0.236	0.275

For Inserts See pages C347 - C353

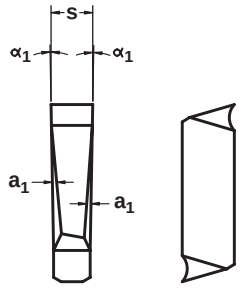
Toolholder for Ultra Mini								
EDP	**Description**	Dimensions (mm)						
		D	b	d	e	l_1	h_1	h_2
026475	**6450012D**	12	10.3	55	10	75	4	5
026476	**6450016D**	16	14	55		75	4	5
026477	**6450020D**	20	18	70		90	4	5
026478	**6760016D**	16	14	55		75	6	7
026479	**6760020D**	20	18	70		90	6	7

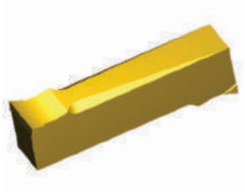
For Inserts See pages C347 - C353

Spare Parts		
Description	*EDP*	Screw
6450012D to 6760020D	**024516**	110645

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G217

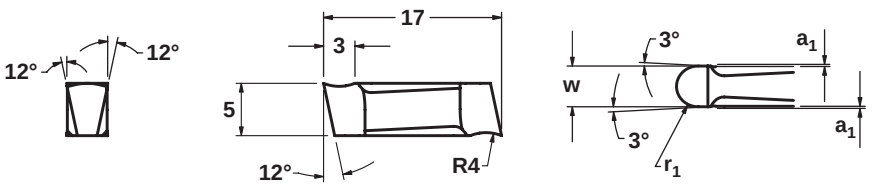


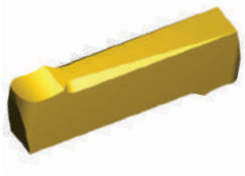


G217 Standard Groove Widths						
EDP	Description	Grade	Dimensions (mm)			Grooving Width
			s	α_1	a_1	
026530	G217005000	SP4036	0.57	1°	0.06	1
026532	G217006000		0.67			
026534	G217007000		0.77			
026536	G217008000		0.87			
026538	G217009000		0.97			
026540	G217010000		1.07			
026542	G217011000		1.24	3°	1	
026544	G217013000		1.44			
026546	G217016000		1.74			
026548	G217018500		1.99			2
026550	G217021500		2.29			
026552	G217026500		2.79			
026554	G217031500		3.29			3
026556	G217041500		4.29			4
026558	G217051500		5.29			

For Toolholders See pages C356 - C357

G217 Full Radius



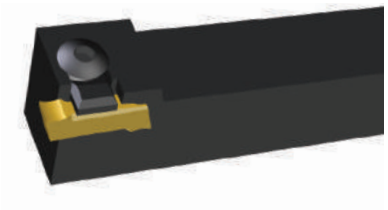


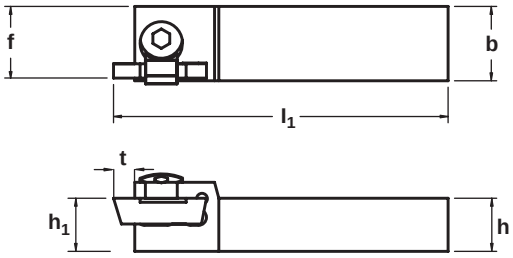
G217 Full Radius Inserts							
EDP	Description	Grade	Dimensions (mm)				Toolholder Width
			w	r_1	a_1	t max	
034397	G217001020	SP4036	2	1.00	0.2	3 or 4*	2
034398	G217001530		3	1.50			3
034399	G217002040		4	2.00			4

* In combination with toolholder, 3mm for internal operation and 4mm for external operation

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GR240





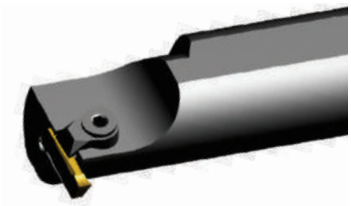
External Toolholder GR240 for Insert Type G217									
EDP	Version	**Description**	Dimensions (mm)						Grooving Width
			b	h	h_1	l_1	f	t	
025124	Left hand	**GL2401212M01**	12	12	12	150	11.50	4	0.50 - 1.74
025123	Right hand	**GR2401212M01**							
025126	Left hand	**GL2401212M02**	12	12	12	150	11.50	4	1.74 - 2.74
025125	Right hand	**GR2401212M02**							
025132	Left hand	**GL2401616M01**	16	16	16	150	14.50	4	0.50 - 1.74
025131	Right hand	**GR2401616M01**							
025134	Left hand	**GL2401616M02**	16	16	16	150	14.50	4	1.74 - 2.74
025133	Right hand	**GR2401616M02**							
025136	Left hand	**GL2401616M03**	16	16	16	150	14.50	4	2.74 - 3.74
025135	Right hand	**GR2401616M03**							
025140	Left hand	**GL2402020K01**	20	20	20	125	18.50	4	0.50 - 1.74
025139	Right hand	**GR2402020K01**							
025142	Left hand	**GL2402020K02**	20	20	20	125	18.50	4	1.74 - 2.74
025141	Right hand	**GR2402020K02**							
025144	Left hand	**GL2402020K03**	20	20	20	125	18.50	4	2.74 - 3.74
025143	Right hand	**GR2402020K03**							
025146	Left hand	**GL2402020K04**	20	20	20	125	18.50	4	3.74 - 5.29
025145	Right hand	**GR2402020K04**							

For Inserts See page C355

Spare Parts for External GR240 Toolholder					
Description	*EDP*	Screw	*EDP*	Clamp	Insert Type
G_2401212M0.. To G_2401616M0	*025385*	SN135	*025387*	SG24083	G217
G_2402020M0…			*025388*	SG24084	

STELLRAM

GR233 / GR253





Internal Toolholder GR233/GR253 for Insert Type G217

EDP	Description	Dimensions (mm)					Grooving Width W
		D	L_2	L_1	f	t max	
024170	**GR233002001**	20	25	130	13.30	3.00	0.50 - 1.74
024171	**GR233002002**	20	25	130	13.30	3.00	1.74 - 2.74
034424	**GR233002003**	20	25	130	13.30	3.00	2.74 - 3.74
024172	**GR253002501**	25	30	150	17.50	4.70	0.50 - 1.74
034425	**GR253002502**	25	30	150	17.50	4.70	1.74 - 2.74
024173	**GR253002503**	25	30	150	17.50	4.70	2.74 - 3.74
034426	**GR253002504**	25	30	150	17.50	4.70	3.74 - 5.29
034427	**GR253003202**	32	30	150	21.00	4.70	1.74 - 2.74
024686	**GR253003203**	32	30	150	21.00	4.70	2.74 - 3.74
034428	**GR253003204**	32	30	150	21.00	4.70	3.74 - 5.29

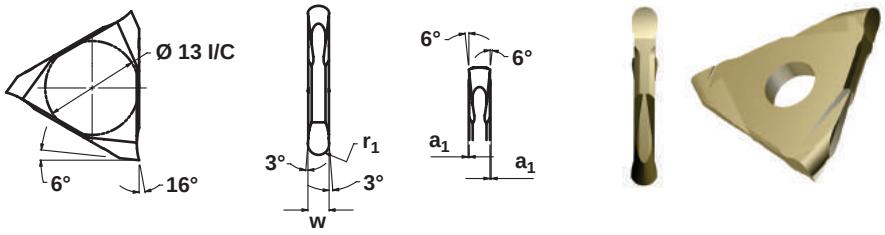
For Inserts See page C355

Spare parts for Internal GR233/GR253 Toolholder

Description	*EDP*	Clamp	*EDP*	Screw	Insert Type
GR233.. 01-03	*025387*	SG24083	*025385*	SN135	G217
GR253.. 01-03					
GR253.. 04	*025388*	SG24084			

STELLRAM

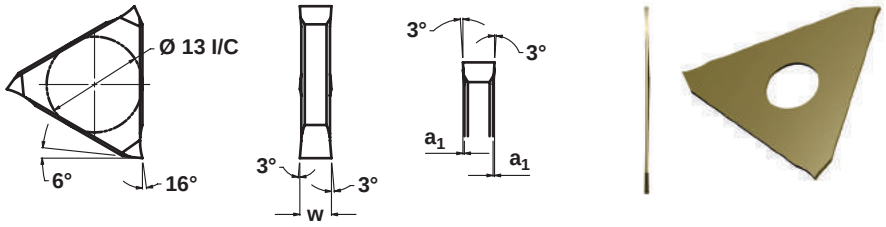
G312



G312 Inserts Full Radius

EDP	Description	Grade	Dimensions (mm)				Toolholder Type
			w	r_1	a_1	t max*	
034401	**G312001020**	SP4030	2	1.00	0.3	6*	G360...02
024174	**G312001530**		3	1.50	0.3	6*	G360...03
024175	**G312002040**		4	2.00	0.3	6*	G360...04

* In combination with toolholder See page C359



G312 Inserts for Grooving to DIN 471/472 and DIN 983/894

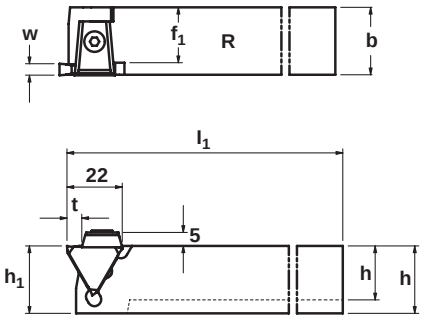
EDP	Description	Grade	Nominal Width of Groove	Dimensions (mm)			Toolholder Type
				w	a_1	t max*	
034402	**G312005000**	SP4030	0.50	0.57	0.06	4*	G360...01
024176	**G312006000**		0.60	0.67	0.06	4*	
024177	**G312007000**		0.70	0.77	0.08	4*	
034392	**G312008000**		0.80	0.87	0.08	4*	
034393	**G312009000**		0.90	0.97	0.08	4*	
024178	**G312010000**		1.00	1.07	0.09	4*	
024179	**G312011000**		1.10	1.24	0.20	4*	
024180	**G312013000**		1.30	1.44	0.22	4*	
024181	**G312016000**		1.60	1.74	0.22	4*	
034394	**G312018500**		1.85	1.99	0.22	6*	G360...02
034395	**G312021500**		2.15	2.30	0.22	6*	
024182	**G312026500**		2.65	2.80	0.22	6*	
024183	**G312031500**		3.15	3.29	0.22	6*	G360...03
034396	**G312041500**		4.15	4.30	0.22	6*	G360...04

* In combination with toolholder See page C359

STELLRAM

GR / L360





External Toolholder GR360 for Insert Type G312

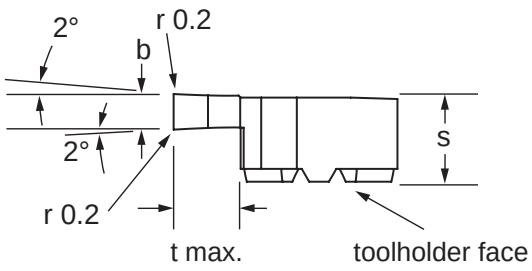
EDP	Description	Dimensions (mm)						Grooving Width W
		b	h	h_1	l_1	f_1	t	
034403	**GL360121201**	12	12	12	100	10.50	4	0.5 - 1.74
024184	**GR360121201**							
034404	**GL360121202**	12	12	12	100	9.50	6	1.74 - 2.74
034405	**GR360121202**							
034406	**GL360121203**	12	12	12	100	8.50	6	2.74 - 3.74
024186	**GR360121203**							
034407	**GL360161601**	16	16	16	125	14.50	4	0.5 - 1.74
034408	**GR360161601**							
034409	**GL360161602**	16	16	16	125	13.50	6	1.74 - 2.74
034410	**GR360161602**							
034411	**GL360161603**	16	16	16	125	12.50	6	2.74 - 3.74
034412	**GR360161603**							
034413	**GL360161604**	16	16	16	125	11.50	6	3.74 - 5.29
034414	**GR360161604**							
034415	**GL360202001**	20	20	20	125	18.50	4	0.5 - 1.74
024187	**GR360202001**							
034416	**GL360202002**	20	20	20	125	17.50	6	1.74 - 2.74
024188	**GR360202002**							
034417	**GL360202003**	20	20	20	125	16.50	6	2.74 - 3.74
024189	**GR360202003**							
034418	**GL360202004**	20	20	20	125	15.50	6	3.74 - 5.29
024190	**GR360202004**							
024191	**GL360252501**	25	25	25	150	23.50	4	0.5 - 1.74
024192	**GR360252501**							
034419	**GL360252502**	25	25	25	150	22.50	6	1.74 - 2.74
024193	**GR360252502**							
034420	**GL360252503**	25	25	25	150	21.50	6	2.74 - 3.74
034421	**GR360252503**							
034422	**GL360252504**	25	25	25	150	19.80	6	3.74 - 5.29
034423	**GR360252504**							

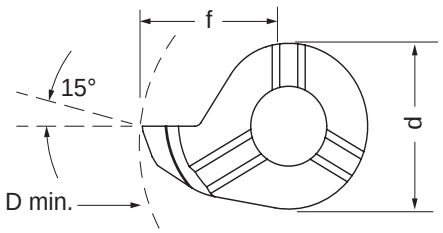
For Inserts See page C358

Spare parts for External GR360 Toolholder

Description	EDP	Clamp	EDP	Screw	Insert Type
G_360121201/02/03	*025385*	G113	*034391*	6-25	G312
G_360161601/02/03					
G_360161604	*034390*	G134			
G_360202001/02/03/04	*024522*	G164			
G_360252501/02/03/04					

STELLRAM



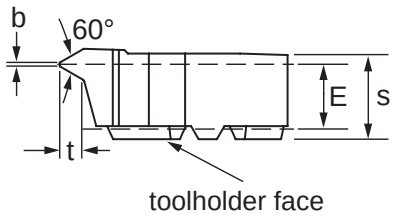


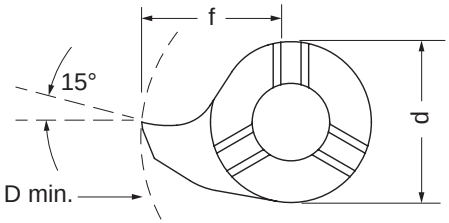


Mini-Cut Groove & Profile

EDP	Description	Grade	Dimensions						Type of Holder
			b	f	s	d	t max	D min.	
			mm	mm	mm	mm	mm	mm	
			inch	inch	inch	inch	inch	inch	
034433	**LS0815002**	SP4036	1.50	4.80	3.30	6.00	1.00	8.00	608
			0.059	0.189	0.130	0.236	0.039	0.315	
034434	**LS1115002**		1.50	6.70	4.20	8.00	2.30	11.00	611
			0.059	0.264	0.165	0.315	0.091	0.433	
034435	**LS1420002**		2.00	9.00	5.30	9.00	4.00	14.00	614
			4.724	4.724	2.205	0.264	0.413	0.413	
034430	**RS0815002**	SP4036	1.50	4.80	3.30	6.00	1.00	8.00	608
			0.059	0.189	0.130	0.236	0.039	0.315	
034431	**RS1115002**		1.50	6.70	4.20	8.00	2.30	11.00	611
			0.059	0.264	0.165	0.315	0.091	0.433	
034432	**RS1420002**		2.00	9.00	5.30	9.00	4.00	14.00	614
			0.079	0.354	0.209	0.354	0.157	0.551	

STELLRAM



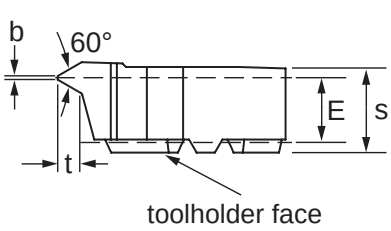


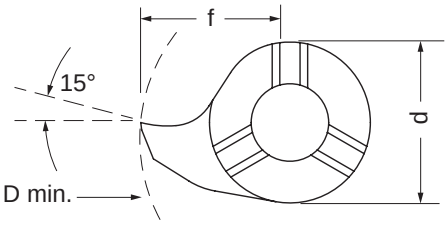


Mini-Cut 60° Threading Partial Profile

EDP	Description	Grade	Dimensions								Type of Holder
			Pitch	t	b	f	s	d	E	D min.	
			mm	mm	mm	mm	mm	mm	mm	mm	
			inch	inch	inch	inch	inch	inch	inch	inch	
034446	**LS08081501**	SP4036	1.5 - 1.75	0.95	0.18	4.80	3.50	6.00	2.50	8.00	608
			16 -14	0.037	0.007	0.189	0.138	0.236	0.098	0.315	
034447	**LS11102001**		2	1.08	2.25	6.70	4.30	8.00	3.00	11.00	611
			11	0.043	0.089	0.264	0.169	0.315	0.118	0.433	
034448	**LS14102001**		2	1.08	0.25	9.00	5.40	9.00	4.20	14.00	614
			11	0.043	0.010	0.354	0.213	0.354	0.165	0.551	
034449	**LS14132501**		2.5	1.35	0.31	9.00	5.40	9.00	4.70	14.00	614
			10	0.053	0.012	0.354	0.213	0.354	0.185	0.551	
034450	**LS08020501**		0.5 - 0.75	0.43	0.06	4.80	3.50	6.00	2.70	8.00	608
			48 -32	0.017	0.002	0.189	0.138	0.236	0.106	0.315	
034451	**LS08051001**		1.0 - 1.25	0.55	0.12	4.80	3.50	6.00	2.70	8.00	608
			24 -20	0.022	0.005	0.189	0.138	0.236	0.106	0.315	
034452	**LS11051001**		1.0 - 1.25	0.55	0.12	6.70	4.30	8.00	3.50	11.00	611
			24 -20	0.022	0.005	0.264	0.169	0.315	0.138	0.433	
034453	**LS11081501**		1.5 - 1.75	0.81	0.18	6.70	4.30	8.00	3.50	11.00	611
			16 -14	0.032	0.007	0.264	0.169	0.315	0.138	0.433	
034454	**LS14051001**		1.0 - 1.25	0.55	0.12	9.00	5.40	9.00	4.70	14.00	614
			24 -20	0.022	0.005	0.354	0.213	0.354	0.185	0.551	
034455	**LS14081501**		1.5 - 1.75	0.81	0.18	9.00	5.40	9.00	4.50	14.00	614
			16 -14	0.032	0.007	0.354	0.213	0.354	0.177	0.551	

For Toolholders See page C363







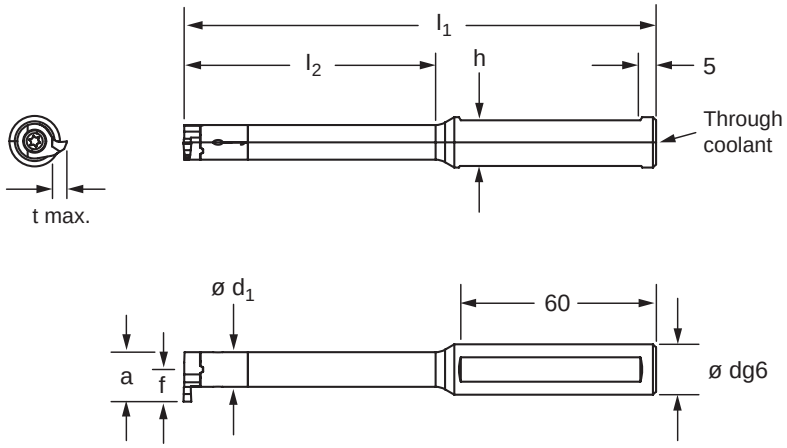
Mini-Cut 60° Threading Partial Profile

EDP	Description	Grade	Dimensions								Type of Holder
			Pitch	t	b	f	s	d	E	D min.	
			mm	mm	mm	mm	mm	mm	mm	mm	
			inch	inch	inch	inch	inch	inch	inch	inch	
034436	**RS08081501**	SP4036	1.5 - 1.75	0.95	0.18	4.80	3.50	6.00	2.50	8.00	608
			16 -14	0.037	0.007	0.189	0.138	0.236	0.098	0.315	
034437	**RS11102001**		2	1.08	2.25	6.70	4.30	8.00	3.00	11.00	611
			11	0.043	0.089	0.264	0.169	0.315	0.118	0.433	
034438	**RS14102001**		2	1.08	0.25	9.00	5.40	9.00	4.20	14.00	614
			11	0.043	0.010	0.354	0.213	0.354	0.165	0.551	
034439	**RS14132501**		2.5	1.35	0.31	9.00	5.40	9.00	4.70	14.00	614
			10	0.053	0.012	0.354	0.213	0.354	0.185	0.551	
034440	**RS08020501**		0.5 - 0.75	0.43	0.06	4.80	3.50	6.00	2.70	8.00	608
			48 -32	0.017	0.002	0.189	0.138	0.236	0.106	0.315	
034441	**RS08051001**		1.0 - 1.25	0.55	0.12	4.80	3.50	6.00	2.70	8.00	608
			24 -20	0.022	0.005	0.189	0.138	0.236	0.106	0.315	
034442	**RS11051001**		1.0 - 1.25	0.55	0.12	6.70	4.30	8.00	3.50	11.00	611
			24 -20	0.022	0.005	0.264	0.169	0.315	0.138	0.433	
034443	**RS11081501**		1.5 - 1.75	0.81	0.18	6.70	4.30	8.00	3.50	11.00	611
			16 -14	0.032	0.007	0.264	0.169	0.315	0.138	0.433	
034444	**RS14051001**		1.0 - 1.25	0.55	0.12	9.00	5.40	9.00	4.70	14.00	614
			24 -20	0.022	0.005	0.354	0.213	0.354	0.185	0.551	
034445	**RS14081501**		1.5 - 1.75	0.81	0.18	9.00	5.40	9.00	4.50	14.00	614
			16 -14	0.032	0.007	0.354	0.213	0.354	0.177	0.551	

For Toolholders See page C363

STELLRAM





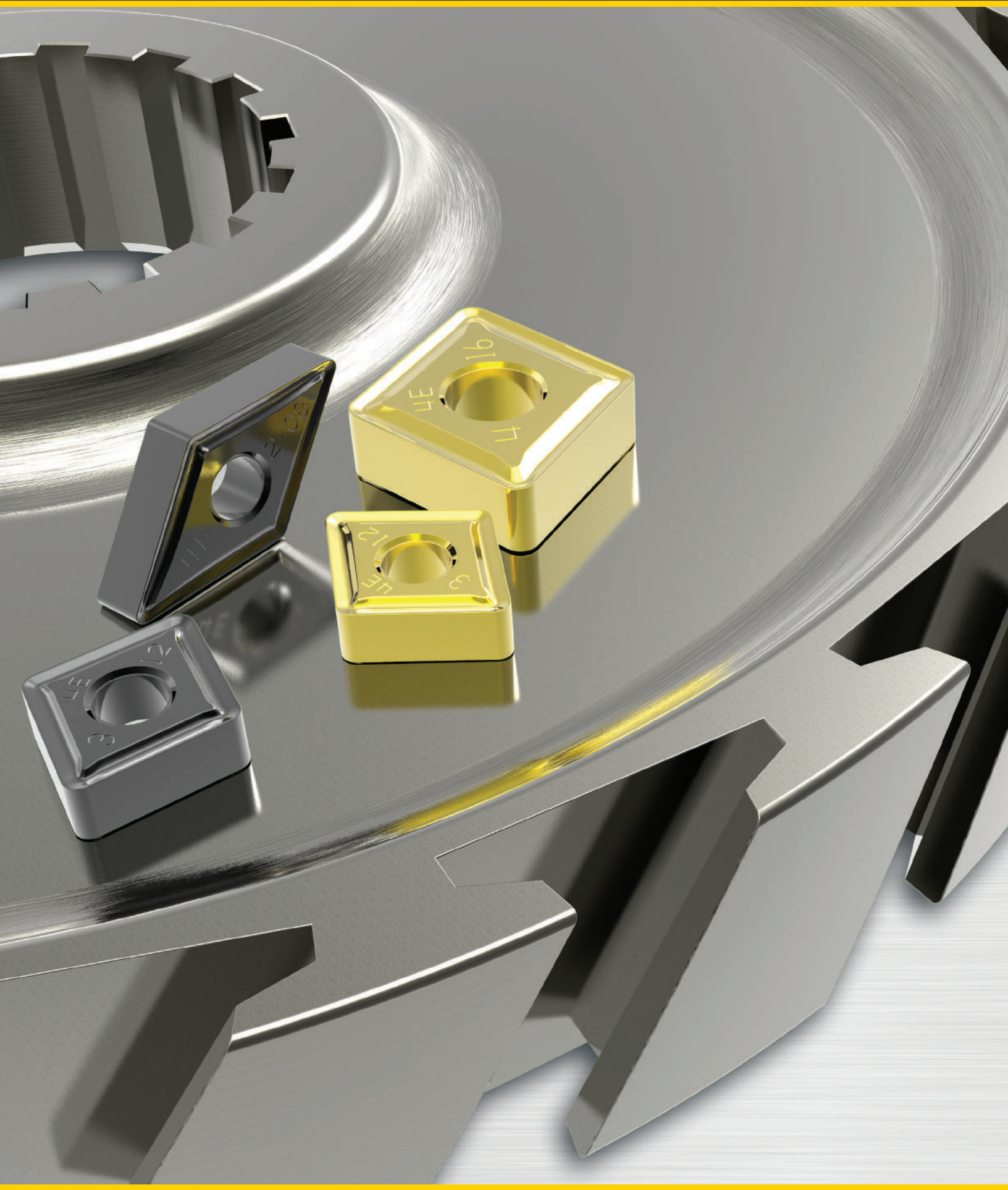
Mini-Cut Carbide Toolholders

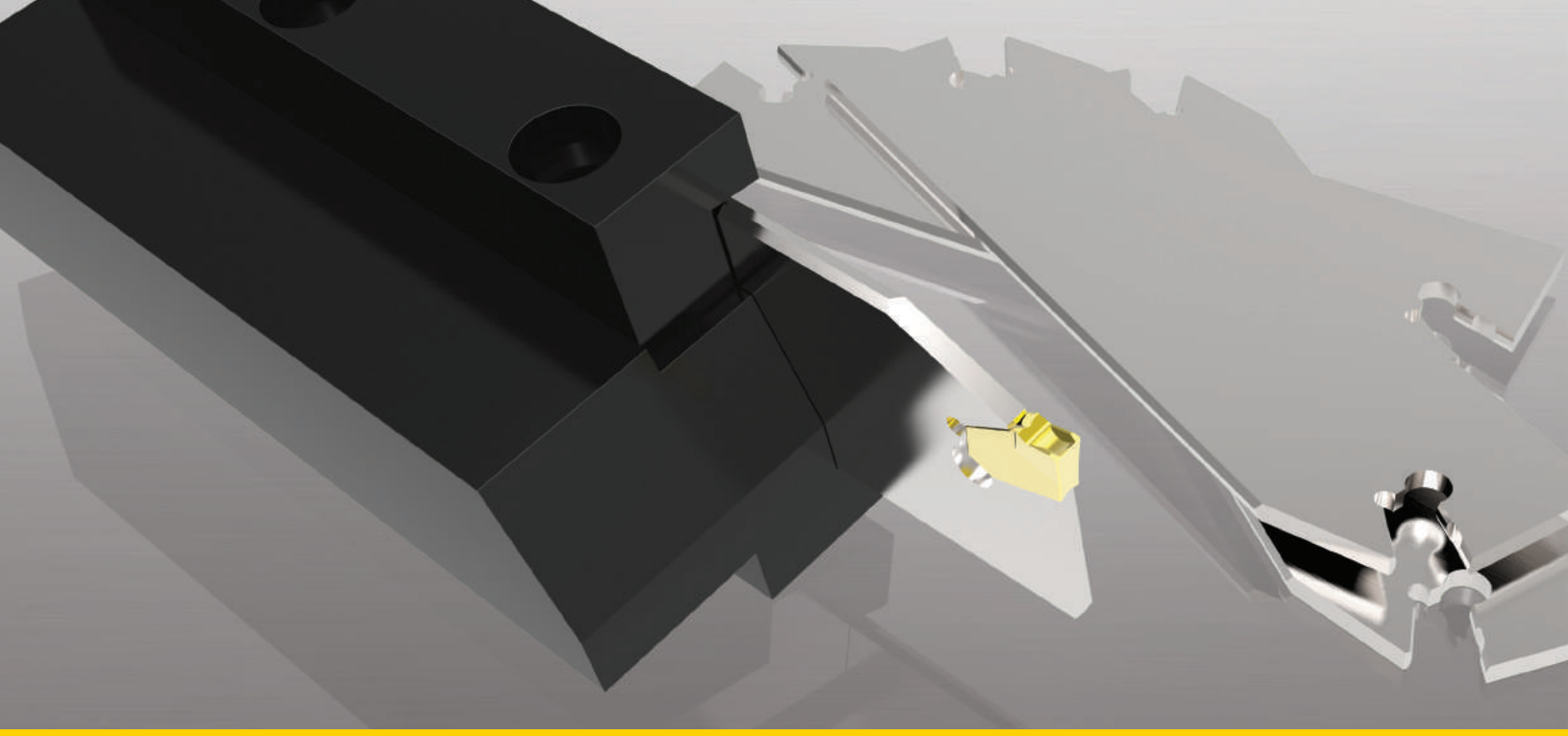
EDP	Description	Dimensions							Insert Type	t max	Min Bore
		Ø dg6	d1	l1	l2	f	a	h			
		mm	mm	mm	mm	mm	mm	mm		mm	mm
			inch	inch	inch	inch	inch	inch		inch	inch
034466	**GHM60800122**	12.00	6.00	90.00	30.00	4.80	7.80	11.00	R/L S08	1.00	8.00
			0.236	3.543	1.181	0.189	0.307	0.433		0.039	0.315
034467	**GHM60800124**		6.00	115.00	50.00	4.80	7.80	11.00	R/L S08	1.00	8.00
			0.236	4.528	1.969	0.189	0.307	0.433		0.039	0.315
034468	**GHM61100123**		8.00	120.00	56.00	6.70	10.70	10.50	R/L S11	2.30	11.00
			0.315	4.724	2.205	0.264	0.421	0.413		0.091	0.433
034469	**GHM61400162**	16.00	9.50	110.00	45.00	8.75	13.50	14.50	R/L S14	4	14
			0.374	4.331	1.772	0.344	0.531	0.571		0.157	0.551
034470	**GHM61400164**		9.50	145.00	75.00	8.75	13.50	15.00	R/L S14	4	14
			0.370	5.709	2.953	0.344	0.531	0.591		0.157	0.551

For Inserts See pages C360 - C362

* dimension as per insert

KENNAMETAL





STELLRAM®

PART-OFF

Part-Off

KENNAMETAL®

STELLRAM

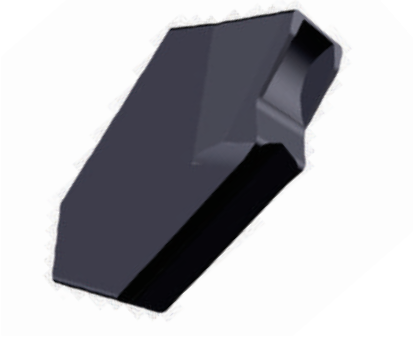
Part-Off Grade Description

MP91M CVD Coated grade offering good wear, and shock resistance. Ideal for Steels and Cast Irons

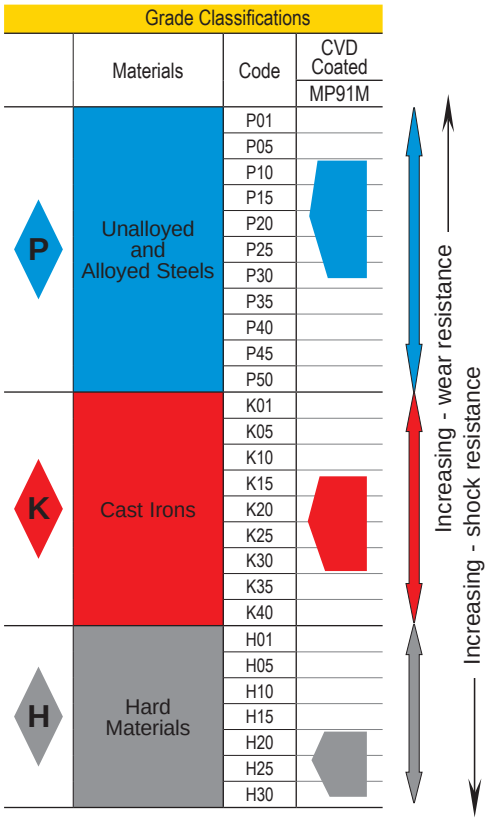


Cutting Speed v_c

ISO	Materials	Rm and Hardness	CVD MP91M SFM min. - max.	CVD MP91M m/min min. - max.
P	Unalloyed Steel	<600 N/mm² <180 HBN	455 - 1135	140- 345
		<950 N/mm² <280 HBN	400 - 1000	125 - 300
	Alloyed Steel	700-950 N/mm² 200-280 HBN	350 - 880	105 - 270
		950-1200 N/mm² 280-355 HBN	265 - 665	80 - 205
		1200-1400 N/mm² 355-415 HBN	170 - 425	50 - 130
K	Cast Iron	Grey GG-Ft	480 - 1200	145 - 365
		Spheroidal-Ductile GGG-FGS	375 - 935	115 - 285
		Malleable GTS - MN/MP	340 - 855	105 - 260
H	Hard Materials	Hard Steel >1400 N/mm² >415 HBN	160 - 260	50 - 80
		Chilled Cast Iron² 1400 N/mm² 400 HBN	135 - 215	40 - 65

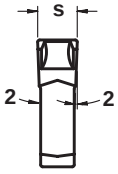


Optimum Grade Performance

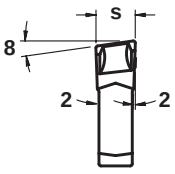


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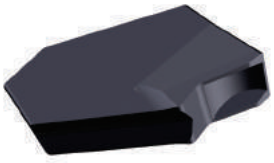
TGT Inserts



TGTN



TGTR/L

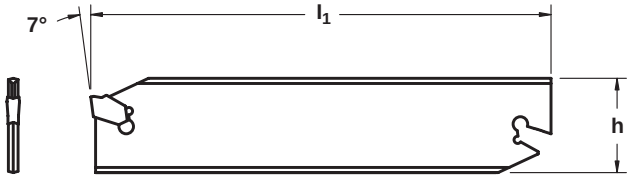


TGT Inserts				
EDP	**Description**	Grade	Dimensions	
			s (mm)	s (inch)
012958	**TGTN2**	MP91M	2.21	0.087
012959	**TGTN2.4**	MP91M	2.39	0.094
012960	**TGTN3**	MP91M	3.1	0.122
012961	**TGTN4**	MP91M	4.09	0.160
012962	**TGTN4.8**	MP91M	4.78	0.187
012963	**TGTN5**	MP91M	5.08	0.199
012964	**TGTN6**	MP91M	6.35	0.249
014091	**TGTR38**	MP91M	3.1	0.122
014092	**TGTL38**	MP91M	3.1	0.122

STELLRAM

Hardened Steel Blades





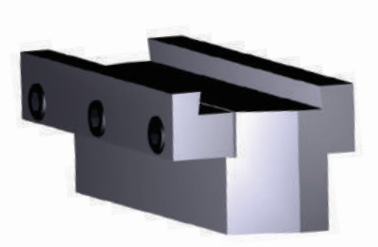
Blade					
EDP	**Description**	Dimensions (inch)			
		h	l_1	Ø Max	Inserts
015199	**SGIH26.2PSHD**	1.02	4.33	3.00	TGT 2/2,4
015200	**SGIH26.3PSHD**	1.02	4.33	3.00	TGT 3
015201	**SGIH26.4PSHD**	1.02	4.33	3.00	TGT 4
017232	**SGIH26.5PSHD**	1.02	4.33	3.00	TGT 4,8/5
015202	**SGIH32.3PSHD**	1.26	5.91	4.00	TGT 3
015203	**SGIH32.4PSHD**	1.26	5.91	4.00	TGT 4
017234	**SGIH32.5PSHD**	1.26	5.91	5.00	TGT 4,8/5
017235	**SGIH32.6PSHD**	1.26	5.91	5.00	TGT 6

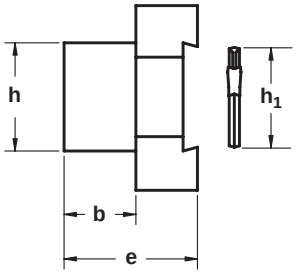
Blade					
EDP	**Description**	Dimensions (mm)			
		h	l_1	Ø Max	Inserts
015199	**SGIH26.2PSHD**	26	110	75	TGT 2/2,4
015200	**SGIH26.3PSHD**	26	110	75	TGT 3
015201	**SGIH26.4PSHD**	26	110	75	TGT 4
017232	**SGIH26.5PSHD**	26	110	75	TGT 4,8/5
015202	**SGIH32.3PSHD**	32	150	100	TGT 3
015203	**SGIH32.4PSHD**	32	150	100	TGT 4
017234	**SGIH32.5PSHD**	32	150	125	TGT 4,8/5
017235	**SGIH32.6PSHD**	32	150	125	TGT 6

Spare Part		
Extracting Key	**Description**	*EDP*
SGIH26.2PSHD - SGIH32.6PSHD	**E219EXTKEY**	*017031*

STELLRAM

Tool Blocks





Block								
EDP	**Description**	Dimensions (inch)			Spare Parts			
		h1	b	h	*EDP*	Screw	*EDP*	Key
013221	**TGTBN195**	1.024	0.750	0.750	-	1/4 x 28 UNF 0.75 lg	*018288*	K5005
013223	**TGTBN255**	1.024	1.000	1.000				
013222	**TGTBN196**	1.260	0.750	0.750	-	1/4 x 28 UNF 1.0 lg		
013224	**TGTBN256**	1.260	1.000	1.000				
013225	**TGTBN326**	1.260	1.250	1.250				

Block								
EDP	**Description**	Dimensions (mm)			Spare Parts			
		h1	b	h	*EDP*	Screw	*EDP*	Key
030659	**SGTB2620**	26	20	20	*034612*	1076	*018288*	K5005
030660	**SGTB2625**	26	25	25				
030661	**SGTB3220**	32	20	20				
030662	**SGTB3225**	32	25	25				
030663	**SGTB3232**	32	32	32				



STELLRAM®

CUTTING TOOLS

Materials Cross Reference

KENNAMETAL®

STELLRAM

Materials Cross Reference

P
UNALLOYED STEELS ..... D2 - D7
ALLOYED STEELS ..... D8 - D11

M
STAINLESS STEELS ..... D12 - D15
PH STAINLESS ..... D16 - D17

K
CAST IRONS ..... D18 - D19

N
ALUMINUM & ALLOYS ..... D20 - D23

S
HIGH TEMPERATURE ALLOYS ..... D22 - D33

H
HARD MATERIALS (42-45 HRC) ..... D34 - D35

Commercial Name	UNS Number	UK: BS,EN	Sweden: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
Unalloyed Steels										
1006 / Fd5			1160	1006	1.0201	St36	Fd5			
1010 / XC10		045M10	1265	1010	1.1121	Ck10	XC10	C10	F.1510	
1015 / CC12		080M15	1350	1015	1.0401	C15	CC12	C15C16	F.111	
1020 / CC20		050A20	1450	1020	1.0402	C22	CC20	C20C21	F.112	
1022 / 20M5		120M19	1410	1022	1.1133	GS.20Mn5	20M5	G22Mn3	F.1515	
1025 /				1025	1.1158	Ck25				S25C
1035 / CC35		060A35	1550	1035	1.0501	C35	CC35	C35	F.113	
1035 / XC38TS		060A35	1572	1035	1.1183	Ck35	XC38TS	C36		S35C
1039 / 35M5		150M36		1039	1.1157	40Mn4	35M5			
1040 / 1C40		080M40		1040	1.0511	C40	1C40/AF60C40	C40/1C40	F.114.A	
1043 / CC45							CC45			
1045 / CC45		080M46	1650	1045	1.0503	C45	CC45	C45	F.114	
1045 / XC42		080M46	1672	1045	1.1191	Ck45	XC42	C45	C45K	S45C
1049 / XC42H1		080M46	1660	1049	1.1201	Cm45	3C45/XC42H1/XC48H1		F.1145.C45k-1/F.1147-C48k-1	S50C
1049 / XC48H1		080M50		1049/1050	1.1206	Ck50	2C50/XC48H1			
1050 / XC48TS		060A52	1674	1050	1.1213	Cf53	XC48TS	C53		S50C
1055 / XC55		070M55		1055	1.1203	Ck55	XC55	C50	C55K	S55C
105WC13		BO1	2140	O1	1.2510	105WCr6	105WC13	10WCr6-107WCr5KU	105WCr5	SKS31-SKS2-SKS3
1060 / CC55		080A62		1060	1.0601	C60	CC55	C60		
1070 / XC68		070A72	1770	1070	1.1231	Ck67	XC68	C70	F.5103	
1080 / XC75		060A78	1774	1080	1.1248	Ck75	XC75		F.5107	
1086 / XC90				1086	1.1269	Ck85	XC90	C90		
1095 / XC100		060A96	1870	1095	1.1274	Ck101	XC100		F.5117	SUP4
10PbF2					1.0722	10SPb20	10PbF2	CF10SPb20	10SPb20	
1108 / 10F1		(210M15)		1108/1109	1.0721	10S20	10F1	CF10S20	F.2121-10S20	
1140 / 35MF4		212M36	1957	1140	1.0726	35S20	35MF4		F210G	
1151 / 45MF4		212M44	1973	1151	1.0727	45S20	45MF4			
120WV10		BF1			1.2516	120WV4	120WV10	110W4KU		
1213 / S250		230M07	1912	1213	1.0715	9SMn28	S250	CF9SMn28	11SMn28	SUM22
1215 / S300		240M07		1215	1.0736	9SMn36	S300	CF9SMn36	12SMn35	
12L13 / S250Pb			1914	12L13	1.0718	9SMnPb28	S250Pb	CF9SMnPb28	11SMnPb28	SUM22L
12L14 / S300Pb			1926	12L14	1.0737	9SMnPb36	S300Pb	CF9SMnPb36	12SMnP35	
18NCD6		820A16			1.6587	17CrNiMo6	18NCD6		14NiCrMo13	
20MC5					1.7139	16MnSCr5	20MC5	20MnCr5	F.150.D	SMnC420H
2515 / Z18N5				2515	1.5680	12Ni19	Z18N5			
30CD12		722M24	2240		1.8515	32CrMo12	30CD12	32CrMo12	F.124.A	
3115 / 16NC6				3115	1.5919	15CrNi6	16NC6			
3415 / 12NC15		655M13-655A12		3415-3310	1.5752	14NiCr14	12NC15			SNC815(H)
38C2					1.7003	38Cr2	38C2/38Cr2	38Cr2/41Cr2KB	F.1200-38Cr3	
40CrMnNiMo8					1.2738	40CrMnNiMo8				
4130 / 25CD4		1717CDS110	2225	4130	1.7218	25CrMo4	25CD4	25CrMo4(KB)	55Cr3AM26CrMo4	SCM420-SCM430

Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

Hardness HRB HRC HB	Rm N/mm²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Unalloyed Steels																			
	390																		
	390																		
	590-780																		
	500-650																		
	500-650																		
	500-650																		
	550-750																		
	540-730																		
	690-930																		
	580-800																		
	630-800																		
	630-800																		
	630-800																		
	620-850																		
	650-900																		
	640-830																		
	640-830																		
	750-850																		
	750-900																		
	810																		
	630																		
	670																		
	1000-1100																		
	390-710																		
	350-780																		
	510-740																		
	650																		
	775																		
	410-710																		
	430-740																		
	410-710																		
	430-740																		
	980-1320																		
	480-640																		
	510-710																		
	980-1420																		
	500-850																		
	880-1230																		
	800-950																		
	785																		
	650-950																		

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Unalloyed Steels										
4137-4135 / 35CD4		708A37	2234	4137-4135	1.7220	34CrMo4	35CD4	35CrMo4	34CrMo4	SCM432;SCCRM3
4140 / 42CD4		708M40	2244	4140	1.7225	42CrMo4	42CD4	42CrMo4	42CrMo4	SCM440(H)
4140 / 42CD4(HT)		708M40	2244	4140	1.7225	42CrMo4	42CD4	42CrMo4	42CrMo4	SCM440(H)
4140-4142 / 42CD4TS		708M40	2244	4140-4142	1.7223	41CrMo4	42CD4TS	41CrMo4	42CrMo4	SCM440
4150 / 50CrMo4		708A47		4150	1.7228	50CrMo4	50CrMo4			SCM445(H)
4340 / 35NCD6		817M40	2541	4340	1.6582	35CrNiMo6	35NCD6	35NiCrMo6(KB)	F.1280	
4419 /		1503-243-430	2512	4419	1.5419	22Mo4		G20Mo5/G22Mo5		SCPH11
5015 / 12C3		523M15		5015	1.7015	15Cr3	12C3			SCr415(H)
5045 / 45Cr2				5045-5046	1.7006	46Cr2	42C2/46Cr2	45Cr2		
5130 /		530A30		5130	1.7030	28Cr4				
5132 / 32C4		530A32		5132	1.7033	34Cr4	32C4	34Cr4(KB)	35Cr4	SCr430(H)
5135 / 37Cr4		530A36/530H36		5135	1.7034	37Cr4	37Cr4/38C4	36CrMn4/36CrMn5/38 Cr4KB/38CrMn4KB	F.1210-38Cr4DF/ F.1201-38Cr4	SCr435H
5140 / 42C4		530M40		5140	1.7035	41Cr4	42C4	41Cr4	42Cr4	SCr440(H)
5155 / 55C3		524A60	2253	5155	1.7176	55Cr3	55C3			SUP9(A)
55NCDV6					1.2711	54NiCrMoV6	55NCDV6			
57NiCrMoV77					1.2744	57NiCrMoV77				
6150 / 50CV4		735A50	2230	6150	1.8159	50CrV4	50CV4	50CrV4	51CrV4	SUP10
6F3 / 55NCDV7				6F3	1.2714	56NiCrMoV7	55NCDV7			
6F5 / 55NC10				6F5	1.2718	55NiCr10	55NC10			
75CrMoNiW67					1.2762	75CrMoNiW67				
8620 / 20NCD2		805M20	2506	8620	1.6523	21NiCrMo2	20NCD2	20NiCrMo2	20NiCrMo2	SNCM220(H)
90MCV8		BO2		2	1.2842	90MnCrV8	90MCV8	90MnCr8KU		
9310 / 16NCD13		832H13/832M13/S157		9310	1.6657	14NiCrMo134	16NCD13	15NiCrMo13	F.1560-14NiCrMo13/F.1569-14NiCrMo131	
A105 / A48CP	K03501			A105		C22-8	A48CP			
A106GB / TUE250B						P235GH	TUE250B			
A182 / 12CD9		1501-622	2218	ASTMA182F22	1.7380	10CrMo910	12CD9.10	12CrMo910	TU.H	
A182 / 15CD3.5		1501-620Gr27		ASTMA182F11-F12	1.7335	13CrMo44	15CD3.5-15CD4.5	14CrMo45	14CrMo45	
A204Gr.A / 15D3		1501-240	2912	ASTMA204Gr.A	1.5415	15Mo3	15D3	16Mo3KW	16Mo3	
A234WPB / AE250B							AE250B			
A234WPL6 / 42BT	K03006						42BT			
A27 65.35 / E23.45M		A1	1305	A27 65.35	1.0443	GS.45	E23.45M		F.221	
A33		Fe310-0/144915HR,HS	1300		1.0035	Fe310.0 (St33)	A33	Fe320	A310-0/FE310-0	
A333G6 / TU42BT						P265GH	TU42BT			
A34-2					1.0028	Ust34-2	A34-2	Fe330Fe/330BFU		SS330
A34-2NE		144934/20HR,HS,CR,CS			1.0034	RSt34-2	A34-2NE	Fe330BFN		
A350LF2 / A48FP	K03504						A48FP			
A36 / E28				A36			E28			
A515.65 / A37CP		1501 161	1330	A515 65	1.0345	H I	A37CP		F.1110	
A516 / A48CP				A516Gr.70	1.0481	17Mn4/ A515Gr.70/ A414Gr.F	A48CP	Fe510-1KG;KT;KW/ Fe510-2KG;KT;KW	A47RCI/RAII	SG365/SGV410/ SGV450/SGV480
A516G60 / E24-2						P265GH	E24-2			
A516G70 / E36-4						P295GH	E36-4			

Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

Hardness HRB HRC HB	Rm N/mm²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Unalloyed Steels																			
	750-1100																		
	740-1080																		
	800-1200																		
	750-1100																		
	1100-1300																		
241-277HB	890																		
	440-590																		
	690-880																		
	900-1100																		
	530-860																		
	700-950																		
	950-1150																		
	700-750																		
	1050-1100																		
	800																		
	850																		
	780-1180																		
	850																		
	800																		
	705																		
	510-710																		
	740																		
	560-1200																		
187HB	600		0.4	0.3		0.12		0.15-0.35	0.6-1.05	0.35				0.035	0.04			0.4	Nb 0.4
			0.4	0.4		0.15		0.10 min	0.29-1.06	0.3				0.048	0.058			0.4	Nb 0.4
	440-590																		
	440-590																		
	440-570																		
197HB	660		0.4	0.4		0.15		0.10 min	0.29-1.06	0.3				0.05	0.058			0.4	Nb 0.4
			0.4	0.3				0.10 min	0.6-1.35	0.3				0.035	0.04			0.4	
	750																		
	290-540																		
				0.4				0.10 min	0.29-1.06	0.3				0.025	0.025				
	300-500																		
	460-500																		
197HB	660		0.4	0.3		0.12		0.15-0.30	0.6-1.35	0.3				0.035	0.04			0.4	Nb 0.4
	750																		
	750																		
	460-580																		
								0.1-0.35	1.4	0.2				0.05	0.05				
								0.1-0.35	1.6	0.22				0.04	0.04				

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STELLRAM

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Unalloyed Steels										
A537 / A52CP			2101/2102	A537Cl.1/ A414Gr.G/A612	1.0473	19Mn6	A52CP		A52RCl/RAII	SGV410/SGV450/ SGV480
A570 / A50-2		Fe490-2FN/4360-50B	1550/2172	A570Gr.50/ A572Gr.50	1.0050	Fe490-2 (St50-2)	A50-2	Fe490	A490-2/Fe490-2FN	SS490
A570 / E24-2		Fe360B/4360-40B	1311/1312	A570Gr.33,36	1.0036	Fe360B (Ust37-2)	E24-2	Fe360BFU	AE235B/Fe360B	
A570 / E28-2		Fe430BFN/144943/25HR, HS/4360-43B	1411/1412	A570Gr.40	1.0044	Fe430B (St44-2)	E28-2	FE430B/Fe430BFN	AE275B/Fe430BFN	SM400A;B;C
A570.36 / E24.2Ne		4360 40 C	1311	A570 36	1.0038	RSt37.2	E24.2Ne			
A572 / A60-2		Fe590-2FN/4360-55E;55C	1650	A572Gr.65	1.0060	Fe590-2 (St60-2)	A60-2	Fe60-2/Fe590	A590-2/Fe590-2FN	SM570
A572.60 / E36							E36			
A573 / E38-3		Fe430D1FF/4360-43C;43D	1411/1412/1414	A573Gr.70/ A611Gr.D	1.0144	Fe430D1 (St44-3)	E28-3/E28-4	Fe430B/Fe430C(FN)/ Fe430D(FF)	AE275D/Fe430D1FF	SM400A;B;C
A573.81.65 / E24.U			1312	A573.81 65	1.0116	St37.3	E24.U	Fe37.3		
A619		14493CR		A619(1008)	1.0347	RRSt3	E	FeP02		
A633 / FeE355KGN		A588		A633Gr.C	1.0562	StE355	FeE355KGN/ E335R/FP	FeE355KG;KW	AE355KG;DD	SM490A;B;C;YA;YB
A70-2		Fe690-2FN	1655		1.0070	Fe690-2 (St70-2)	A70-2	Fe70-2/Fe690	A690-2/Fe690-2FN	
A738 / A52FP		Fe510D2FF/1501Gr.224-460/1501Gr.224-490		A738	1.0577	Fe510D2 (Ast52)	A52FP		A52RBII	
C25		070M26		(M)1025	1.0406	C25	C25/1C25	C25/1C25		
E24-2		Fe360B/144937/23HR	1311		1.0037	Fe360B (St37-2)	E24-2	Fe360B;C;D	AE235B/Fe360B	STKM12A;C
E36-3		Fe510D1FF/144950/35HR, HS/4360-50D	2132/2133/2134		1.0570	Fe510D1 (St52-3)	E36-3/E36-4	Fe510CFN/ Fe510510B;C;D/ Fe510BFN	AE355D/Fe510D1FF	SM490A;B;C;YA;YB
L6 / 55NCDV07			2550	L6	1.2713	55NiCrMoV6	55NCDV7		F.520.S	SKT4
P2 / 20MC5				P2	1.2162	21MnCr5	20MC5			SCR420H
P20 / 40CMD8		P20		P20	1.2311	40CrMnMo7	40CMD8			
P20+S / 40CMD8+S		P20+S		P20+S	1.2312	40CrMnMoS86	40CMD8+S			
S1 / 55WC20		BS1	2710	S1	1.2542	45WCrV7	55WC20	45WCrV8KU	45WCrSi8	
S4				S4	1.2826	60MnSiCr4				
W110 / Y1105							Y1105			
W112 / Y2120				W112	1.1663	C125W	Y2120	C120KU	C120	SK2
W210 / Y1105V		BW2		W210	1.2833	100V1	Y1105V	102V2KUSKS43		
Alloyed Steels										
12CD4		1501620	2216	A38712-2	1.7262	15CrMo5	12CD4	12CrMo910	12CrMo4	SCM415(H)
1330 / 20M5		150M28		1330	1.1170	28Mn6	20M5	C28Mn		SCMn1
1335 / 40M5			2120	1335	1.1167	36Mn5	40M5		36Mn5	SMn438(H)
20AP										
22CMSD4							22CMS4			
3135 / 35NC6		640A35		3135	1.5710	36NiCr6	35NC6			SNC236
3415 / 14NC11				3415	1.5732	14NiCr10	14NC11	16NiCr11	15NiCr11	SNC415(H)
35NCD14							35NCD14			
40CMD8							40CMD8			
420 / Z40C14			2314	420	1.2083	X42Cr13	Z40C14			SUS420J2
429				429						
4340 / 35NCD6				4340			35NCD6			
440C / Z100CD17				440C	1.4125	X105CrMo17	Z100CD17			
4520				4520						

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Hardness HRB HRC HB	Rm N/mm²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Unalloyed Steels																			
	480-650																		
	470-800																		
	340-690																		
	410-790																		
	750																		
	570-920																		
	750																		
	790																		
	750																		
	210-690																		
	490-800																		
	670-1000																		
	450-680																		
	470-650																		
	340-690																		
	490-800																		
	800-850																		
	705																		
	790																		
	790																		
	750-800																		
	740																		
	640-830																		
	650-750																		
	675																		
Alloyed Steels																			
	640-1080																		
	640-840																		
	600																		
	720-950							0.3	0.25-0.50	1				0.035	0.045				Pb0.2
255-300HB	970																		
	690-930																		
	830-1180																		
	1100-1350																		
	1100-1300																		
	770																		
	600																		
	900-1200																		
	870																		
	450-590																		

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Alloyed Steels										
45NCD17 / 6F7		EN30B		6F7	1.2767	X45NiCrMo4	45NCD17	KV		
5115 / 16MC5		527M20	2511	5115	1.7131	16MnCr5	16MC5	16MnCr5	16MnCr5	
5120 / 20MC5		150M19	2172	5120	1.0841	St52-3	20MC5	Fe52BFN/Fe52CFN	F.431	
5140 / 42C4 (HT)		530M40		5140	1.7035	41Cr4	42C4	41Cr4	42Cr4	SCr440(H)
52100 / 100C6		534A99	2258	52100	1.3505	100Cr6	100C6	100Cr6	F.131	SUJ2
55MnSi4-4							55MS4-4			
55W1							XC55			
8630				8630						
8740 / 40NiCrMo22		311Type7		8740	1.6546	40NiCrMo22		40NiCrMo2(KB)	40NiCrMo2	SNCM240
9255 / 55S7		250A53	2090	9254	1.0904	55Si7	55S7	55Si8	F.144	
9262 / 60SC7				9262	1.0961	60SiCr7	60SC7	60SiCr8	60SiCr8	
9840 / 40NCD3		816M40		9840	1.6511	36CrNiMo4	40NCD3	38NiCrMo4(KB)	35NiCrMo4	
A128.75 / Z120M12		BW10	2183	A12875	1.3401	GX120Mn12	Z120M12	XG120Mn12	X120Mn12	
A2 / Z100CDV5		BA2	2260	A2	1.2363	X100CrMoV51	Z100CDV5	X100CrMoV51KU	X100CrMoV5F5227	SKD12
A350LF5 / 16N6				ASTMA350LF5	1.5622	14Ni6	16N6	14Ni6	15Ni6	
A355A / 40CAD06.12				A335A			40CAD0612			
A6				A6						
A7				A7						
Aermet 100	UNSK92580									
Aermet 310										
Aermet 340										
D2 / Z160CDV12		BD2	2310	D2	1.2601	X165CrMoV12	Z160CDV12	X165CrMoW12KU	X160CrMoV12	
D2 / Z210CW12		BD2		D2	1.2379	X155CrVMo12.1	Z210CW12			
D3 / Z200Cr12		BD3		D3	1.2080	X210Cr12	Z200Cr12	X210Cr13KU / X250Cr12KU	X210Cr12	SKD1
D4(D6) / Z200CD12		BD6	2312	D4(D6)	1.2436	X210CrW12	Z200CD12	X215CrW121KU	X210CrW12	SKD2
FV535										
H10 / 30CDV12-28		BH10		H10	1.2365	X32CrMoV33	30CDV12-28	30CrMoV1227KU	F.5313	
H10A / 30CKDV28		BH10A		H10A	1.2885	X32CrMoCoV33.3	30CKDV28			
H11 / Z38CDV5		BH11		H11	1.2343	X38CrMoV51	Z38CDV5	X37CrMoV51KU	F.5137	SKD6
H13 / Z40CDV5		BH13	2242	H13	1.2344	X40CrMoV51	Z40CDV5	X35CrMoV05KU / X40CrMoV511KU	X40CrMoV5	SKD61
H21 / Z30WCV9-3		BH21		H21	1.2581	X30WCrV93	Z30WCV9-3	X30WCrV93KU	F.5323	SKD5
Hardox400										
HardoxHiTuf										
HW3 / Z45CS9		401S45		HW3	1.4718	X45GrSi93	Z45CS9	X45GrSi8	F.322	SUH1
L1				L1						
L3 / Y100C6		BL3		L3	1.2067	100Cr6	Y100C6		100Cr6	
M2 / Z85WDCV06050402				M2			Z85WDCV06050402			
M3				M3						
M35 / Z85WDKCV			2723	M35	1.3243	S6/5/2/5	Z85WDKCV	HS6.5.2.5	F.5613	SKH55
M7 / Z100WCV09040202							Z100WCV09040202			
O1				O1						
P21				P21	1.2764	X19NiCrMo4				
P4				P4	1.2341	X6CrMo4				
S7				S7						
T1 / Z80WCV180401		BT1		T1	1.3355	S18.0.1	Z80WCV180401	X75W18KU	HS18.0.1	SKH2

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Hardness HRB HRC HB	Rm N/mm²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Alloyed Steels																			
	880																		
	640-1080																		
	650																		
	800-1100																		
	650-750																		
269-302HB	970																		
248-285HB	900																		
	690-930																		
	690-930																		
	950-1050																		
	1050-1100																		
	800-1100																		
	780-1080																		
	750-850																		
	490-640																		
	700																		
	720-775																		
	795-910																		
40HRC	1250	71	11.1	3	13.4	1.2				0.23									
40HRC	1250	70	11	2.4	15	1.4				0.25									
37-42HRC	1330	68	12	2.25	15.6	1.85				0.33									
	850-900																		
	850																		
	850-900																		
	850-900																		
34HRC	1070		0.2-0.8	9.8-11.2		0.5-1.0	0.7	0.1-0.7	0.6-1.15	0.06-0.11									
	770																		
	770																		
	770																		
	1180-1620																		
	850																		
400HBW	1300																		
350HBW	1130																		
	970																		
	630																		
	750-850																		
	775-990																		
	795-870																		
	775-990																		
	775-990																		
	640-670																		
	850																		
	400																		
	640-720																		
	800-1050																		

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Alloyed Steels										
T4 / Z80WKCV18050401		BT4		T4	1.3255	S18.1.2.5	Z80WKCV18050401	X78WCo1805KU	HS18.1.1.5	SKH3
Z2NKDT18-10-5					1.2709	X3NiCoMoTi18.9.5	Z2NKDT18-10-5			
Z38CDV5-3					1.2367	X40CrMoV53	Z38CDV5-3	Z155CVD12-1		
Stainless Steels										
50	UNS S20910									
202		284S16		202	1.4371	X3CrMnNiN18-8-7	Z8CMN18.08.05			
215										
284										
301			2331	301	1.4310	X12CrNi17-7	Z12CN17.07	X12CrNi17 07	F.3517	SUS301
302		302S31	2330	302	1.4319	X12CrNi18-9	Z10CN18.09	X10CrNi18 09	F.314	
303		303S21, 58M	2346	303	1.4305	X8CrNiS18-9	Z10CNF18.09	X10CrNiS 18.09	F.3508	SUS303
304		304S31, 58E	2332/2333	304	1.4350	X5CrNi18-9	Z6CN18.09	X5CrNi18 10	F.3551;F.3541;F.3504	SUS304
305		305S19		305	1.4312	X8CrNi18-12		X8CrNi1910	F.3503	
311										
315										
316		316S33, 58J	2343	316	1.4401	X5CrNiMo17-13-3	Z6CND19.12.03	X5CrNiMo1713	F.3543	SUS316
317		317S16		317	1.4449	X5CrNiMo17-13				
318				318	1.4583	X10CrNiMoNb18-12	Z6CNDNb17.13B	X6CrNiMoNb17 13		
320										
321	UNS S32100	321S12, 58B	2337	321	1.4541	X10CrNiTi18-9	Z6CNT18.10	X6CrNiTi18 11	F.3553;F.3523	SUS321
325										
326										
329			2324	329	1.4460	X8CrNiMo27-5	Z5CND27.05AZ			SUS329L
331										
332										
334				70334		X8CrNiAlTi20-20				
347	UNS S34700	347S17, 58F	2338	347	1.4550	X10CrNiNb18-9	Z6CNNb18.10	X6CrNiNb18 11	F.3552;F.3524	SUS347
348	UNS S34800				1.4546	X5CrNiNb18-10	Z10CrNiNb18 10			
394										
403		403S17	2301	403	1.4000	X7Cr13	Z6C13	X6Cr13	F.3110	SUS403
409		409S19		409	1.4510	X6CrTi12	Z6CT12	X6CrTi12		
410		410S21, 56A	2302	410	1.4006	X10Cr13	Z10C14	X12Cr13	F.3401	SUS410
416		416S21	2380	41600	1.4005	X12CrS13	Z11CF13	X12CrS13	F.3411	SUS416
420		420S37	2303	420	1.4021	X20Cr13	Z20C13	X20Cr13	F.5261	
425										
430		430S15, 60	2320	430	1.4016	X8Cr17	Z8C17	X8Cr17	F.3113	SUS430
431		431S29, 57	2321	431	1.4057	X22CrNi17	Z15CNi16.02	X16CrNi16	F.3427	SUS431
433										
434		434S17	2325	434	1.4113	X6CrMo17	Z8CD17.01	X8CrMo17		SUS434
441										
444	UNS S44400		2326	444	1.4521		Z3CDT18 02			
452										
455	UNS S45500									

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Hardness HRB HRC HB	Rm N/mm²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Alloyed Steels																			
	820-1050																		
	1125																		
	785																		
Stainless Steels																			
		63.7	6	21					9										
			4.0/6.0	17.0/19.0		-		1	7.5/10.0	0.15				0.06	0.03				
			9.00/11.00	14.0/16.0		0.08/1.20		0.20/1.00	5.50/7.00	0.06/0.15				0.04	0.03				
			4.00/6.50	16.5/18.5		-		1	7.00/10.0	0.07				0.06	0.03				
	700-950		7.00	17.00				1.00	2.00	0.14				0.05	0.03				
			6.0/10.0	17.0/22.0		1.5		2	2	0.2/0.4				0.05	0.05				
	500-700		10.50	19.50		0.60		2.00	1.50	0.16				0.04	0.30				
	500-700		9.00	19.50				2.00	1.50	0.08				0.04	0.04				
	490-690		11.50	18.00				1.00	2.00	0.12				0.04	0.03				
			23.0/28.0	17.0/23.0		1.5		3	2	0.5				0.05	0.05				
			9.0/11.0	16.5/18.5		1.25/1.75		1	2	0.07				0.045	0.03				
	510-710		13.00	17.00		1.50		0.75	2.00	0.08				0.04	0.03				Cu 0.5
	490-690		13.00	19.00		3.50		1.00	1.00	0.02				0.02	0.02				
	490-740		9.0 min	17.0/21.0		2.0/3.0		1.5	2	0.08				0.04	0.04				
			10.5/13.5	16.5/18.5		2.00/2.50		1	2	0.08		5C/0.80		0.045	0.03				
	500-730		9.50	18.00				1.00	2.00	0.08		0.40		0.04	0.03				
			8.0/11.0	17.0/19.0		0.7		1	2	0.12		5C/0.90		0.06	0.15/0.35				
			10.0/13.0	16.5/18.5		2.25/3.00		1	2	0.12				0.06	0.06				
	640-900		3.50	25.50		1.00				0.10				0.04	0.03				
			36.0/46.0	15.0/25.0		1.5		3	2	0.75				0.05	0.05				
			4.0/7.00	21.0/27.0		1.75/3.00		1.5	1.5	0.08				0.04	0.04				
			55.0/65.0	10.0/20.0		1.5		3	2	0.75				0.05	0.05				
	510-740		9.0/13.0	17.0/19.0				0.75	2.00	0.08				0.05	0.03				
	510-740		9.0/13.0	17.0/19.0	0.2			0.75	2.00	0.08				0.05	0.03				Ta 0.10
			8.0/10.5	17.0/19.0		-		1	2	0.07				0.045	0.03				Cu 3.00/4.00
	400-600		0.50	12.00				0.50	0.50	0.15				0.02	0.01				
			1	10.5/12.5		-		1	1	0.08		6C/1.0		0.04	0.03				
	450-650		1.00	12.00		0.50		0.50	0.50	0.15				0.02	0.01				Cu 0.5
	590-780		1.00	13.00		0.60		1.00	1.25	0.15				0.07	0.07				
	750-950		1.00	12.50				1.00	1.00	0.20				0.04	0.04				
			3.5/4.5	11.5/14.0		0.40/1.0		1	1	0.06				0.04	0.03				
	450-650		1.00	16.00				1.00	1.00	0.08				0.04	0.03				
	950		2.00	16.00				1.00	1.00	0.20				0.04	0.03				
79HRB	510	78	0.25	20.00				0.39	0.30	0.01				0.02	0.00			0.50	Nb 0.8
	450-650		1.00	17.00		0.75				0.08									
			2.0/3.0	15.0/18.0		0.6		1	1.5	0.12/0.20				0.04	0.03				
80HRB	500		0.5	18.2		1.9		0.45	0.3	0.013		0.13		0.03	0.002				
			4	25.0/30.0		1.5		2	1	1.0/2.0				0.05	0.05				
40-49HRC	1270-1650		7.5/9.5	11.0/12.5		0.5		0.5	0.5	0.05		0.8/1.4		0.04	0.03			1.5/2.5	

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Stainless Steels										
610	UNS S30600									
611	UNS S30601									
0Cr19Ni9										
1Cr12Ni3Mo2VN-5										
201LN	UNS S20153									
304 L		304S11	2352	304L	1.4306		Z2CN1810	X2CrNi18 11		
304 LN		304S62	2371	304LN	1.4311	X2CrNiN18-10	Z2CN18.10	X2CrNiN1811		SUS304LN
316 L	UNS S31603 & S31673	316S13	2348	316L	1.4404	X2CrNiMo18-12	Z2CND17.12	X2CrNiMo17 12		SCS16;SUS316L
316 LN		316S63	2375	316LN	1.4429	X2CrNiMoN18-13	Z2CND17.13			SUS316LN
316 LXN					1.4429	X2CrNiMoN17-13-3	Z2CND17 13	X2CrNiMoN17-13-3		
316 Ti		320S31		316Ti	1.4571	X8CrNiMoTi17-12-2		X6CrNiTi18 11	F.3535	
316L (S+Cu)						X2CrNiMo17-12-2+S+Cu				
316L Decolletage						X2CrNiMo17-12-2 improved				
317 L	UNS S31703	317S12	2367	317L	1.4438	X2CrNiMo18-16	Z2CND19.15	X2CrNiMo18 16		SUS317L
321 H						X8CrNiTi18-10				
403Cb				403Cb						
403Cb+					1.4914	X19CrMoVNb11-1	Z20CDNbV11			SUH600
409 Cb										
409 HP	UNS S40930									
410 S	UNS S41008									
420 F	UNS S42020	420S45	2304	420F	1.4028	X30Cr13	Z29CF13 / Z40C14	X40Cr14	F.3404 / X40Cr13	SUS420J2
430 F			2383	430F	1.4104	X12CrMoS17	Z10CF17	X10CrS17	F.3117	SUS430F
431 (HT)				431	1.4057	X17CrNi16-2				
436 S										
439 HP	UNS S43035									
440 A					1.4109	X70CrMo15				
440 C				440C		X105CrMo17	Z100CD17	X102CrMo17KU		SUS 440C
441 HP										
904 L	UNS N08904		2562		1.4539	X1CrNiMoCu25-20-5				
A286	UNS S66286	HR5152		ASTM 638		X5NiCrTi26-15	Z06NCT25			
AL 29-4C	UNS S44735									
AL-6XN	UNS N08367									
AL-6XN Plus	UNS N08367									
AM 350										
Bioline 4C27A				420F						
CF-8		304C15	2333	CF-8	1.4308	X6CrNi18-9	Z6CN18.10M			SCS13
CF-8M		316C6 ANC4B	2343	CF-8M	1.4408	X6CrNiMo18-10		X2CrNiMoN17-12	F.8414-AM-X7CrNiMo20-10	SCS14
Custom 465										
Datalloy 2										
Duplex 2003	UNS S32003									
Duplex 2102	UNS S80211									

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Stainless Steels																			
HRB86	560	58.9/65.3	14/15.5	17/18.5		2		3.7/4.3	2	0.018				0.02	0.02			0.5	
HRB91	620	58/60	17/18	17/18.5		0.2		5.0/5.6	0.5/0.8	0.015				0.03	0.013			0.35	
			9.00	19.00															
			3.00	12.00		2.00													
217-241HB	840	67.7	5.5	18				1	7.5	0.15				0.06	0.03				
	460-680		10.00	19.00				0.50	1.00	0.02				0.02	0.02				
	550-760		10.00	18.00				1.00	2.00	0.03				0.05	0.03				
	490-690		12.00	17.00		2.50		0.50	1.00	0.02				0.02	0.02				
	490-600		12.00	17.00		2.50		0.50	1.00	0.02				0.02	0.02				Nitrogene 0.14
	580-800		13.00	17.50		2.75		1.00	2.00	0.03				0.05	0.03				
	500-730		12.00	17.50		2.25		1.00	2.00	0.08		5.00		0.05	0.03				
	600-980																		
	600-980																		
HB217	900	63	11.0/15.0	18.0/20.0		3.0/4.0		0.75	2.00	0.03				0.04	0.03				
			9.0/12.0	17.0/19.0		-		1	2	0.04/0.10		5C/0.80		0.04	0.03				
	800-950		0.50	12.00				0.35	0.50	0.14									Nb 0.18
	930-1080		0.55	11.10		0.60		0.35	0.70	0.17									V 0.3 Nb 0.28
84-97HRB	700	86	0.25	12.3		0.04		0.35	0.35	0.15	0.1	0.005		0.025	0.005				Nb 0.45
71HRB	430																		
75HRB	450	87	0.60	12.00				1.00	1.00	0.08				0.04	0.03				
300-500HB	1050-1300			12/14		0.60		1.00	1.25	0.15				0.06	0.15				
	640-840		1.00	17.00		0.50		1.00	1.25	0.12				0.06	0.15				
45/56HRc	1270-1650																		
			-	16.0/18.0		0.75/1.25		1	1	0.12				0.04	0.03				
	568-818	81	0.23	17.0/19.0				0.55	0.45	0.012		0.4		0.02	0.001				
31-54HRC	1000-1800	81	0.5	16.0/18.0		0.75		1	1	0.07				0.04	0.03				
		82		16.5						1									
HRB82	520	79	0.3	18				0.34	0.35	0.009	0.05	0.29		0.023	0.002				Nb 0.71
	620		24.50	20.50		4.50		0.50	1.60	0.02				0.04					Cu 1.5
	620		25.00	14.50		1.25		0.20	0.20	0.04		2.10		0.02	0.00				
90HRB	610	65	0.3	29		4		0.35	0.5	0.02				0.03	0.01				Nb 0.6
183HB	600	48	24	20.5		6.3		0.4	0.4	0.02								0.2	N 0.22
183HB	600	45	25.3	21.8		6.7		0.3	0.3	0.02				0.02				0.2	N 0.24
	1175		4.30	16.50		2.80		0.30	0.80	0.09				0.02					
350-575HV	1130-1860	82.4	< 0.8	13		1.2		0.6	1.6	0.22				0.03	0.18				
	440-640																		
	440-640																		
	1300-1700		10.8/11.3	11/12		0.8/1.2						1.5/1.8							
300-350HB	1100		2.30	15.30		2.10		0.30	15.10	0.03									N 0.4
31HRC	1000	73.8	3.5	21		1.7													
246HB	800		1.5	22		0.55		0.75	2.5	0.03				0.04	0.02			0.4	

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Stainless Steels										
Duplex 2205	UNS S31803 & S32205			ASTM A240						
Duplex 2304	UNS S32304									
Duplex 255	UNS S32550									
Duplex F51		318S13	2377	F51	1.4462	X2CrNiMoN22-5-3	Z2CND22.05.03			
Duplex F55										
Duplex LDX2101										
E-Brite Alloy				ASTM B625						
FV607										
H46										
Jethete M152	UNS S64152			5718.9	1.4939	X12CrNiMoV12-3	Z12CND12			
Jethete M448										
Jethete X19						X19CrMoNbVN11-1				
Jethete X20					1.4923	X21CrMoV12-1	Z21CDV12			
Nitronic 50										
Nitronic 60										
REX 734	UNS S31675			ASTM F1586						
S240										
Staballoy AG17										
Staybrite® 4435NCu						X2CrNi18-13-3				
Super duplex 2507						X2CrNiMoCuN25-6-3				
Super Duplex 4565	UNS S34565									
Super Duplex Zeron 100				ASTM 32760						
Uranus 35N	UNS S32304					X2CrNiN23-4				
Uranus 45N+	UNS S31803		2377		1.4462	X2CrNiMoN22-5-3	Z3CND2205Az			
Uranus 45N22CrMo						X2CrNiMoN22-5-3				
Uranus 47N+						X2CrNiMoN25-6-3				
Uranus 52N+						X2CrNiMoCuN25-6-3				
Uranus 65						X1CrNi25-21				
Uranus B25 6Mo						X1NiCrMoCuN20-18-7				
Uranus B26 6Mo	UNS N08926					X1NiCrMoCuN25-20-7				
Uranus B28	UNS N08028					X1NiCrMoCu31-27-4				
Uranus B6	UNS N08904		2562		1.4539	X1NiCrMoCuN25-20-5				
Uranus B66						X1NiCrMoCu22-24-6				
Uranus S1 4%Si	UNS S30600					X1CrNiSi18-15-4				
X12CrNiMoS18-11					1.4427	X12CrNiMoS18-11	Z3CNDF17.13			
X12CrNiWTi16-3						X12CrNiWTi16-3				
X17CrNi16-02					1.4057	X17CrNi16-02				
X20CrNi17-2						X20CrNi17-2				
X20CrNiMo22-5-3						X20CrNiMo22-5-3				
X20CrNiMoS13-1						X20CrNiMoS13-1				
X22CrMoV12.1				ASTM A437-76 Grade B4B		X22CrMoV12-1 = ST12T				
X2CrNiMo18-15-3						X2CrNiMo18-15-3				
X30Cr13						X30Cr13				
X30CrMoN15-1		420S45	2304		1.4028	X30CrMoN15-1	Z33C13			
X3CrNiCuTiNb12-9						X3CrNiCuTiNb12-9				

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Hardness HRB HRC HB	Rm N/mm²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Stainless Steels																			
	1000	68.9	5.8	22		3.3													
	950		4.50	22.50				1.00	2.00	0.03				0.04	0.02				
HRC32	1000	57.0/64.0	4.5/6.5	24.0/27.0		2.9/3.9		1	1.5	0.04				0.04	0.03			1.5/2.5	
225-290HB	900	72.6	4.5/6.5	21.0/23.0		2.50/3.5		1	2	0.03				0.035	0.015				
335HB	1100	58.7	4.5/6.5	24.0/26.0		3.0/4.0	0.08/0.2	1	2	0.03				0.03	0.02				N 2.5/3.5
248HB	850																		
	550			26.00		1.00				0.00									
290-349HV	930-1130		0.62	11.6		0.89		0.4	0.77	0.13									
304HB	1050	86	0.60	11.00		0.75		0.45	0.65	0.16				0.01	0.01			0.20	
	1100		2.60	16.80		1.80		0.18	0.70	0.12				0.03	0.02				
	> 930		1.00	10.50		0.60		0.40	1.00	0.13									Nb 0.4
	980		0.40	10.80		0.70		0.30	0.60	0.20									
			0.60	11.80		1.00		0.30	0.60	0.20									
260HB	860		13.50	23.50		3.00		1.00	6.00	0.06									
260HB	860		9.00	18.00		0.75		4.50	9.00	0.10									
22HRC	780	62	10.00	20.80		2.50		0.38	3.12	0.04				0.01	0.01			0.12	
32-34HRC	1070	69.2	10.75	12.5		1.75	1.5	0.25	0.25	0.03	1.5	0.7		0.01	0.01			1.5	
			0.50	17.00		0.05		0.30	20.00	0.03									N 0.5
	490-690		13	18		2.5		0.7	1.3	0.02								0.5	N 0.12
			7.50	25.00		4.00		0.70	2.00	0.03					0.02			2.50	
180HB	600		16.0/18.0	23.0/25.0		4.0/5.0			5.0/7.0	0.03									
284HB	1000		7	25		3.5		0.75	1	0.05				0.03	0.01			0.75	W 0.75
220HB	770	69.5	3.5/5.5	22.0/24.0		0.10/0.60		1	2	0.03				0.035	0.015				Cu 0.10/0.60
225HB	800	67.8	6	22.6		3.4				0.02					0.001				
225HB	800	72.6	4	23		2		1	2	0.03				0.035	0.015				
28HRC	1000	64.6	6.5	25		3.6				0.03									
28HRC	1000	63	6.5	25		3.5				0.03								1.5	
155HB	600	52.5	20.5	25		0.3			2	0.015									
230HV	810	55	18	20		6.1				0.01					0.001			0.7	
220HV	800	47	25	20.5		6.3				0.01					0.001			1	
300HB	1050	37.4	31	27		3.5		0.7	2	0.02				0.03	0.01			1	
200HB	620		24.50	20.50		4.50		0.50	1.60	0.02				0.04				1.5	
240HB	840	41.1	22	24		6	2		3									1.5	
		64.5	14.5	17				4		0.015									
	750-1000																		
			13.50	16.00				0.50	1.00	0.15		0.50		0.05	0.03				
296HB	950		1.5-2.5	16				1	1.5	0.12-0.22				0.04	0.03				
	750-950		2.00	17.00				0.80	0.80	0.20				0.04	0.03				
			5.00	22.00		3.00													
	1500																		
	980		0.60	11.80		1.00		0.30	0.60	0.21				0.04	0.04				
	900-1150																		
	1000		1	13				1	1	0.26-0.35				0.04	0.03				
53-57HRc																			
	1300-1700																		

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Stainless Steels										
X40CrMoVN16-2		420S25		ASTM F899	1.4123	X40CrMoVN16-2	Z40CDV16.02			
X46CrS13						X46CrS13				
X4CrNiMo16-5-1					1.4418	X4CrNiMo16-5-1	Z8CND17.04			
X8CrCoNiMo10-6										
X8CrMnMoN23-21-1						X8CrMnMoN23-21-1				
X8CrNiSCu18-9						X8CrNiSCu18-9				
X90CrMoV18						X90CrMoV18				
XM19	UNS S20910			ASTM F1314						
Stainless Steel Refractory PH										
13-8PH	UNS S13800									
15-5PH	UNS S15500				1.454	X4CrNiCuNb16.4	Z6CNU15.05			
15-7PH					1.4532	X7CrNiMoAl15.7	Z8CNDA15.07			
17-4PH	UNS S17400				1.4542	X5CrNiCuNb17-4 = 0Cr17Ni4Cu4Nb	Z6CNU17.04			
17-7PH		316S111		177PH	1.4568/1.4504	X7CrNiAl17.7	Z8CNA17.07	X2CrNiMo17 12		
309		309S24		309	1.4828	X15CrNiSi20-12	Z15CNS20.12			SUH309
309 S		309S24		309 S	1.4833	X7CrNi23-14	Z20CN24-13	X6CrNi23-14		SUS309S
310 S		310S24	2361	310S	1.4845	X12CrNi25-20	Z12CN25.20	X6CrNi25 20	F.331	SUH310
314		314		30314	1.4841	X15CrNiSi25-20				
330		NA17		330	1.4864	X12NiCrSi36-16	Z12NCS35.16			SUH330
405		405S17		405	1.4724	X10CrAl13	Z10C13	X6CrAl112	F.311	SUS405
446			2322	446	1.4762	X10CrAl24	Z10CAS24	X16Cr26		SUH446
B163		NA15(H)		B163	1.4876	X10NiCrAlTi32-20	Z10NC32.21		F.3314-X10NiCrAlTi32-20	NCF800(TP)
EV8		349S54		EV8	1.4871	X53CrMnNiN21-9	Z52CMN21.09	X53CrMnNiN21-9	F.3217-X53CrMnNiN21-09	SUH35 / SUH36
HK		310C40 / 310C45		HK	1.4848	X40CrNiSi25-20		GX40CrNi26-20	F.8452-AM-X40CrNi2520	SCH21 / SCH22
HNV3		401S45		HNV3	1.4718	X45CrSi9-3	Z45CS9	X45CrSi8	F.3220-X4SCrSi09-03	SUH1
X10CrAl18					1.4742	X10CrAl18	Z10CAS18	X8Cr17	F.3153-X10CrAl18	SUH21
X40CrSiMo10-2					1.4731	X40CrSiMo10-2	Z40CSD10		F.3221-X40CrSiMo10-02	SUH3
X40NiCrSi38-18		330C11 / 330C40 / 331C40			1.4865	X40NiCrSi38-18		GX50NiCr39-19		SCH15 / SCH16
X45CrNiW18-9					1.4873	X45CrNiW18-9	Z35CNWS14.14	X45CrNiW18-9	F.3211-X45CrNiSiW18-09	SUH31

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Hardness HRB HRC HB	Rm N/mm²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Stainless Steels																			
58HRc																			
55HRc																			
	1200		6.00	15.50		1.50		1.00	1.50	0.05				0.04	0.02				
34HRC	1070		0.2-0.8	9.8-11.2		0.5-1.0	0.7	0.1-0.7	0.6-1.15	0.06-0.11									
	1300																		
	500-700																		
60HRC																			
90HRB	600	57	12.00	22.00		2.30		0.50	5.00	0.03				0.02	0.02				
Stainless Steel Refractory PH																			
	1300		8.00	13.00		2.20		0.10	0.20	0.05				0.01	0.01				
	<1400		4.50	14.80				0.50	0.50	0.03				0.02	0.02			3.50	
	<1620		7.00	15.00		2.50		0.50	0.50	0.05				0.02	0.02				
	<1380		4.00	16.30				0.50	0.50	0.04				0.02	0.02			4.00	
	<1560		7.00	17.00				0.50	0.50	0.05				0.02	0.02				
	500-750		14.00	23.50				2.00	1.50	0.20				0.04	0.04				
	500-700																		
	500-750		20.50	25.00				0.75	2.00	0.15				0.05	0.03				
			19.0/22.0	23.0/26.0		-		1.50/3.00	2.5	0.25				0.045	0.03				
	390-590		38.00	18.80				1.75	1.00	0.40				0.05	0.03				
	450-650		0.50	12.00				0.50	1.00	0.08				0.04	0.03				
	520-720			25.00				1.00	1.00	0.12				0.04	0.03				
	450-680																		
	950-1300																		
	440-640																		
	900-1100																		
	500-700																		
	130-1100																		
	400-600																		
	800-1300																		

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Gray Iron										
GG-30 / EN-GJL-300		Grade 300	130-00	A48-45B	0.6030	GG-30	Ft30D	G30	FG30	FC30
GG-35 / EN-GJL-350		Grade 350	135-00	A48-50B	0.6035	GG-35	Ft35D	G35	FG35	FC35
GG-40 / EN-GJL-400		Grade 400	140-00	A48-55B	0.6040	GG-40	Ft40D			
GG10 / EN-GJL-100		Grade 100	110-00	A48-20B	0.6010	GG10	Ft10D	G10	FG10	FC10
GG15 / EN-GJL-150		Grade 150	115-00	A48-25B	0.6015	GG15	Ft15D	G15	FG15	Fc15
GG20 / EN-GJL-200		Grade 200	120-00	A48-30B	0.6020	GG20	Ft20D	G20	FG20	FC20
GG25 / EN-GJL-250		Grade 250	125-00	A48-35B	0.6025	GG25	Ft25D	G25	FG25	FC25
Spheroidal-Ductile Iron										
GGG--40Mo0.5		500/7	0727-02	65-45-12	0.7050	GGG-50	FGS 500-7	GS 500/7	FGE 50-7	FCD 50
GGG--SiMo3.08										
GGG--SiMo4.10										
GGG--SiMo5.10										
GGG-35.3 / EN-GJS350-22			0717-15		0.7033	GGG-35.3				
GGG-40 / EN-GJS400-1		420/12	0717-02	60-40-18	0.7040	GGG-40	FGS 400-12	GS 400-12	FGE 38-17	FCD 40
GGG-50 / EN-GJS500-7										
GGG-60 / EN-GJS600-3		600/3	0732-03	80-55-06	0.7060	GGG-60	FGS 600-3	GS 600/3		FCD 60
GGG-70 / EN-GJS700-2		700/2	0737-01	100-70-03	0.7070	GGG-70	FGS 700-2	GS 700-2	FGS 70-2	FCD 70
GGG-80 / EN-GJS800-2		800/2		120-90-02	0.7080	GGG-80	FGS 800-2	GS 800-2		
GGG-Ni22 / EN-GJSAXNi22		S-Ni 22		A 439 Type D-2C	0.7670	GGG-Ni22	S-N 22			
GGG-Ni35 / EN-GJSAXNi35		S-Ni 35		A 439 Type D-5	0.7683	GGG-Ni35	S-N 35			
GGG-NiCr20.3		S-NiCr 20 3		A 439 Type D-2B	0.7661	GGG-NiCr20.3	S-NC 20 3			
GGG-NiCr202 / EN-GJSAXNiCr20-2		S-NiCr 20 2		A 439 Type D-2	0.7660	GGG-NiCr20.2	S-NC 20 2			
GGG-NiCr30.1		S-NiCr 30 1		A 439 Type D-3A	0.7677	GGG-NiCr30.1	S-NC 30 1			
GGG-NiCr303 / EN-GJSAXNiCr30-3		S-NiCr 30 3		A 439 Type D-3	0.7676	GGG-NiCr30.3	S-NC 30 3			
GGG-NiCr353 / EN-GJSAXNiCr35-3		S-NiCr 35 3		A 439 Type D-5B	0.7685	GGG-NiCr35.3	S-NC 35 3			
GGG-NiCrNb20.2					0.7659	GGG-NiCrNb20.2				
GGG-NiMn13.7		S-NiMn 13 7			0.7652	GGG-NiMn13.7	S-NM 13 7			
GGG-NiMn234 / EN-GJSAXNiMn23-4		S-NiMn 23 4		A 571 Type D-2M	0.7673	GGG-NiMn23.4	S-NM 23 4			
GGG-NiSi3055 / EN-GJSAXNiSiCr30-5-5		S-NiSiCr 30 5 5		A 439 Type D-4	0.7680	GGG-NiSiCr30.5.5	S-NSC 30 5 5			
GGG-NiSiCr20.5.2		S-NiSiCr 20 5 2			0.7665	GGG-NiSiCr20.5.2	S-NSC 20 5 2			
GGG-NiSiCr30.5.2					0.7679	GGG-NiSiCr30.5.2				
GGG-NiSiCr35.5.2					0.7688	GGG-NiSiCr35.5.2				
Malleable Iron										
GTS-35-10 / MN35-10		B 340/12	815	32510	0.8135	GTS-35-10	MN 35-10			
GTS-45-06 / MN450-6						GTS-45-06	MN450-6			
GTS-55-04 / MP50-5							MP50-5			
GTS-65-02 / MN650-3		P 570/3	858	70003	0.8165	GTS-65-02	MN650-3			
GTS-70-02 / MN700-2		P 690/2	862	A220-80002	0.8170	GTS-70-02	MN700-2	GMN 70		
GTW-35-04					0.8035	GTW-35-04				
GTW-40-05					0.8040	GTW-40-05				
GTW-45-07					0.8045	GTW-45-07				

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Hardness HRB HRC HB	Rm N/mm²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Gray Iron																			
230HB	760																		
235HB	770																		
250HB	810																		
175HB	570																		
185HB	620																		
205HB	660																		
220HB	730																		
Spheroidal-Ductile Iron																			
150-200HB	660																		
200-250HB	810																		
200-250HB	810																		
200-250HB	810																		
150-180HB	600																		
155-220HB	730																		
190-255HB	820																		
200-260HB	840																		
240-300HB	970																		
265-300HB	970																		
130-170HB	570																		
130-180HB	600																		
	390																		
140-200HB	660																		
	370																		
140-200HB	660																		
140-190HB	630																		
	370																		
	390																		
120-170HB	570																		
170-240HB	780																		
	370																		
	380																		
	370																		
Malleable Iron																			
150HB	350-500																		
175HB	580																		
205HB	670																		
230HB	650-880																		
265HB	700-950																		
	340-740																		
	360-740																		
	400-740																		

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Aluminum & Alloys <16% Si										
1050		1B			3.0255	Al99,5	A5	4507		
1070					3.0275	Al99,7		4508		
1080		1A			3.0128	Al99,8	A8	4509		
1100										
2011		FC1		2011	3.1655	AlCuBiPb	A-U5PbBi	6362		
2014		H15			3.1255	AlCuSiMn	A-U4SG	3581		
2017				2017	3.1325	AlCuMg1	A-U4G	3579		
2024		L97		2024	3.1355	AlCuMg2	A-U4G1			
2117										
2218						AlCuMgNi2				
2224										
3003					3.0517	AlMnCu	A-M1	3568		
3004					3.0526	AlMn1Mg1	A-M1G			
3005					3.0525	AlMn1Mg0.5	A-MG0.5			
3103		N3			3.0515	AlMn1		7780		
3105										
5005		N41		5005	3.3315	AlMg1	A-G0,6	5764-66		
5052		2L56		5052	3.3523	AlMg2,5	A-G2,5C	4574		
5056		N6		5056	3.3555	AlMg5	A-G5	3576		
5083		N8		5083	3.3547	ASlMg4,5Mn	A-G4,5MC	7790		
5086					3.3545	AlMg4Mn				
5154		N5			3.3535	AlMg3,5	A-G3	3575		
5251		N4			3.3525	AlMg2Mo3	A-G2M	3574		
5454		N51		5454	3.3537	AlMg2,5Mn	A-G2,5MC	7789		
5657						AlMg0,8Si				
5754		N5		5754	3.3535	AlMg3	A-G3M	3575		
6061		H20					A-GSUC	6170		
6063		H9		6063	3.3206	AlMgSi0,5	A-GS	3569		
6070										
6151										
6262										
6351		H30		6351	3.2315	AlMgSi1	A-SGM0,7	3571		
6463		91E			3.3207	EAlMgSi0,5		3570		
7001										
7003										
7020		H17			3.4335	AlZn4,5Mg1	A-Z5G	7791		
7022					3.4345	AlZnMgCu0,5				
7050										
7075		DTD5074		7075	3.4365	AlZnMgCu1,5	A-Z5GU	3735		
7175							AS5U3			
7178										
7475										
AS7G						AlSi7Mg				
Aluminum & Alloys >16% Si										
4032										

Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

Hardness HRB HRC HB	Rm N/mm²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Aluminum & Alloys <16% Si																			
	105	0.4		-				0.25	0.5		99.50min	-				0.05	0.05	0.05	-
	100	0.25						0.25	0.03		rem	0.03				0.03	0.04	0.04	
	100	0.15						0.25	0.02		rem	0.03				0.02	0.03	0.03	
	90	Si+Fe1.0max		-					0.05		99.00min	-				-	0.1	0.05~0.20	-
	310	0.7		-				0.4	-		rem	-				-	0.3	50.~60.	Pb,Bi 0.2~0.6
	430	0.7		0.1				0.5~1.2	0.4~1.2		rem	0.15				0.2~0.8	0.25	3.9~5.0	-
	390	0.7		0.1				0.2~0.8	0.4~1.0		rem	0.15				0.4~0.8	0.25	3.5~4.5	-
	465	0.5		0.1				0.5	0.3~0.9		rem	0.15				1.2~1.8	0.25	3.8~4.9	-
	296	0.7		0.1				0.8	0.2		rem					0.2-0.5	0.25	2.2-3.0	
	331	1	1.7~2.3	0.1				0.9	0.2		rem	-				1.2~1.8	0.25	3.5~4.5	
		0.15		0.1				0.12	0.30~0.9		rem	0.15				1.2~1.8	0.25	3.8~4.4	-
	140	0.7		-				0.6	1.0~1.5		rem	-				-	0.1	0.05~0.20	-
	200	0.7						0.3	0.51-1.0		rem					0.8-1.3	0.25	0.25	
	165	0.7		0.1				0.6	1.0-1.5		rem	0.1				0.2-0.6	0.25	0.3	
		0.7		0.1				0.5	0.9-1.5		rem	0.1+Zr				0.3	0.2	0.1	
	175	0.7		0.2				0.6	0.3-0.8		rem	0.1				0.2-0.8	0.4	0.3	
	159	0.7		0.1				0.3	0.2		rem					0.5-1.1	0.25	0.2	
	260	0.4		0.15~0.35				0.25	0.1		rem	-				2.2~2.8	0.1	0.1	-
	300	0.4		0.05~0.20				0.3	0.05~0.20		rem	-				4.5~5.6	0.1	0.1	-
	335	0.4		0.05~0.25				0.4	0.4~1.0		rem	0.15				4.0~4.9	0.25	0.1	-
	300	0.5		0.05~0.25				0.4	0.20~0.7		rem	0.15				3.5~4.5	0.25	0.1	-
	269	0.4						0.45	0.1		rem					3.1-3.9	0.2	0.1	
		0.7		0.1				0.5	0.2-0.7		rem	0.1				1.6-2.2	0.25	0.25	
	276	0.4		0.05-0.2				0.25	0.5-1.0		rem	0.05-0.2				2.4-3.0	0.25	0.1	
	193	0.1						0.08	0.03		rem					0.6-1.0		0.1	
		0.4		0.3				0.4	0.5		rem	0.15				2.6-3.6	0.2	0.1	
	300	0.7		0.04~0.35				0.4~0.8	0.15		rem	0.15				0.8~1.2	0.25	0.15~0.40	-
	200	0.35		0.1				0.2~0.6	0.1		rem	0.1				0.45~0.9	0.1	0.1	-
	379	0.5		0.1				1.0~1.7	0.40~1.0		rem	0.15				0.50~1.2	0.25	0.15~0.40	-
		1		0.15~0.35				0.6~1.2	0.2		rem	0.15				0.45~0.8	0.25	0.35	-
	400	0.7		0.04~0.14				0.4~0.8	0.15		rem	0.15				0.8~1.2	0.25	0.15~0.40	Pb, Bi 0.40~0.7
	310	0.5		-				0.7~1.3	0.4~0.8		rem	0.2				0.40~0.8	0.2	0.1	-
	241	0.15		-				0.20~0.6	0.05		rem	-				0.45~0.9	0.05	0.2	-
		0.4		0.18~0.35				0.35	0.2		rem	0.2				2.6~3.4	6.8~8.0	1.6~2.6	-
	400	0.35		0.2				0.3	0.3		rem	0.2				0.50~1.0	5.0~6.5	0.2	Zr0.05~0.25
		0.4		0.1-0.35				0.35	0.05-0.5		rem					1.0-1.4	4.0-5.0	0.2	Zr0.08-0.2
		0.5		0.1-0.3				0.5	0.1-0.4		rem					2.6-3.7	4.3-5.2	0.5-1.0	
	530	0.15		0.04				0.12	0.1		rem	0.06				1.9~2.6	5.7~6.7	2.0~2.6	Zr0.08~0.15
	570	0.5		0.18~0.28				0.4	0.3		rem	0.2				2.1~2.9	5.1~6.1	1.2~2.0	-
	590	0.2		0.18-0.28				0.15	0.1		rem	0.1				2.1-2.9	5.1-6.1	1.2-2.0	
	600	0.5		0.18~0.35				0.4	0.3		rem	0.2				2.4~3.1	6.3~7.3	1.6~2.4	-
	565	0.12		0.18~0.25				0.1	0.06		rem	0.06				1.9~2.6	5.2~6.2	1.2~1.9	-
50/90HB	250																		
Aluminum & Alloys >16% Si																			
	379	1	0.5~1.3	0.1				11.0~13.5	-		rem	-				0.8~1.3	0.25	0.5~1.3	

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STELLRAM®

Commercial Name	UNS Number	UK: BS,EN	Sweden: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
Aluminum Lithium										
2050										
2090										
2091										
2094										
2095										
2097										
2098										
2099										
2195										
2196										
2197										
2198										
2199										
2297										
2397										
8017										
8024										
8090										
8091										
8093										
HTA Iron Based Alloys										
20CB-3				ASTM B463						
21-6-9				ASTM A666						
AL 4750				ASTM B753						
Armco 18										
Armco 20-45-5										
RA 330				5592, 5716						
Crucible A-286	UNS S66286	HR 5152		ASTM 368	1.4980	X5NiCrTi2515	Z06 NCT 25			
Discaloy 16/25/6				5725			Z3NCT25			
Discaloy 24				ASTM A638			Z3NCT25			
Greek Ascoloy				5508						
Haynes 556				5768		X12CrCoNi2120	Z12CKNDWNb21.20.20			
Incoloy 800	UNS N08800	3082.76		ASME SB409		X10NiCrAlTi3220	Z10NC3221			
Incoloy 801	UNS N08801			5552	1.4868	G.X50CrNi3030	Z5NCT3220			
Incoloy 802							Z4NC3221			
Incoloy 803										
Incoloy DS		3072.76				X12NiCrSi3616				
Invar 36	UNS K93600 K93603			ASTM F1684						
Invar 42				ASTM F30						
Maraging C200	UNS K92810									
Maraging C250	UNS K92890			6501, 6512, 6520			Z2NKD18.8			
Maraging C300	UNS K93120			6514						
Maraging C350										
Maraging T200										

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Hardness HRB HRC HB	Rm N/mm²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Aluminum & Alloys >16% Si																			
	520			0.05				0.08	0.20-0.50		rem	0.1	0.70-1.30			0.20-0.60	0.25	3.20-3.90	Zr0.25
	510			0.05				0.1	0.05		rem	0.15	1.90-2.60			0.25	0.1	2.40-3.0	Zr0.08-0.15
	400			0.1				0.2	0.1		rem	0.1	1.70-2.3			1.10-1.90	0.25	1.80-2.50	Zr0.04-0.16
								0.12	0.25		rem	0.1	0.70-1.40			0.25-0.80	0.25	4.40-5.20	Zr0.04-0.18
								0.12	0.25		rem	0.1	0.70-1.40			0.25-0.80	0.25	3.90-4.60	Zr0.04-0.18
								0.12	0.10-0.60		rem	0.15	1.20-1.80			0.35	0.35	2.50-3.10	Zr0.08-0.16
								0.12	0.35		rem	0.1	0.80-1.30			0.25-0.80	0.35	3.20-3.80	Zr0.04-0.18
								0.05	0.10-0.50		rem	0.1	1.60-2.00			0.10-0.50	0.40-1.00	2.40-3.00	Zr0.05-0.12
								0.12	0.25		rem	0.1	0.08-0.16			0.25-0.80	0.25	3.70-4.30	Zr0.08-0.16
								0.12	0.35		rem	0.1	1.40-2.10			0.25-0.80	0.35	2.50-3.30	Zr0.04-0.18
								0.1	0.10-0.50		rem	0.12	1.20-1.70			0.25	0.05	2.50-3.10	Zr0.08-0.15
				0.05				0.08	0.5		rem	0.1	0.80-1.10			0.25-0.80	0.35	2.90-3.50	Zr0.04-0.18
								0.05	0.10-0.50		rem	0.1	1.40-1.80			0.050-0.40	0.20-0.90	2.30-2.90	Zr0.05-0.12
								0.1	0.10-0.50		rem	0.12	1.10-1.70			0.25	0.05	2.50-3.10	Zr0.08-0.15
								0.1	0.10-0.50		rem	0.12	1.10-1.70			0.25	0.05-0.15	2.50-3.10	Zr0.08-0.15
								0.1	0.01-0.05		rem		0.003				0.05	0.10-0.20	
								0.1			rem		3.40-4.20						Zr0.08-0.25
	450			0.1				0.2	0.1		rem	0.1	2.20-2.70			0.60-1.30	0.25	1.00-1.60	Zr0.04-0.16
				0.1				0.3	0.1		rem	0.1	2.40-2.80			0.50-1.20	0.25	1.60-2.20	Zr0.08-0.16
				0.1				0.1	0.1		rem	0.1	1.90-2.60			0.90-1.60	0.25	1.00-1.60	Zr0.04-0.14
HTA Iron Based Alloys																			
95HRB	690	41.0	33.0	20.0		2.2		1	2	0.07									Cu 3.3
93HRB	660	62.0	6.5	21.0				1	9	0.08									No 0.3
55HRB	350	50.0	48.0	0.1	0.5	0.3			0.3	0.01				0.03	0.01				Cu 0.3
		66.0	3.7	17.2				0.47	12.5	0.06									
		25.6	46.0	20.0		2.3		1	5	0.08									Nb 0.4
		43.8	35.5	18.5				1.13	1	0.04				0.01	0.01				Cu 0.5
250HB	810	56.0	25.0	14.5		1.3		0.2	0.2	0.05	0.2	2.1							
290HB	930	50.1	25.0	16.0		6.0		0.7	1.35	0.12		0.3							Nb 0.4
280HB	900	54.3	26.0	13.5		2.7		0.8	0.9	0.04	0.1	1.7							
300HB	970	80.0	2.0	12.0		0.2	2.5	0.3	0.4	0.15									
260HB	840	29.0	20.0	21.0	20.0	3.0	2.5	0.4	1.5	0.1	0.3								Nb + Ta
184HB	630	44.5	32.5	21.0				0.5	0.75	0.05	0.37	0.37			0.007				Cu 0.37
180HB	600	45.1	32.0	20.5				0.5	0.8	0.05		1.1							
180HB	600	44.4	32.5	21.5				0.4	0.8	0.4									
		39.0	35.0	25.0						0.08	0.15	0.15							
180HB	600	41.7	37.0	18.0				2.3	1	0.06									
75HRB	460	62.0	36.0		0.4	0.0		0.15	0.3	0.008	0.03				0.001				
55HRB	350	58.0	41.0	0.2	0.0				0.2	0.01	0.001			0.01	0.007				
43-48HRC	1360	69.0	18.5		8.5	3.3		0.05	0.05	0.01		0.2		0.005	0.005				
48-52HRC	1590	68.0	18.5		7.8	4.8		0.05	0.05	0.02	0.1	0.4		0.005	0.005				
50-55HRC	1700	67.0	18.5		8.8	4.8		0.05	0.05	0.02	0.1	0.73		0.005	0.005				
55-60HRC	2010	63.0	18.5		12.0	4.8		0.05	0.05	0.02	0.1	1.4		0.005	0.005				
43-47HRC	1400	77.6	18.5			3.0		0.05	0.05	0.01		0.7		0.005	0.005				

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Commercial Name	UNS Number	UK: BS,EN	Sweden: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
HTA Iron Based Alloys										
Maraging T250				6518, 6519, 6591						
Maraging T300										
Marval 18										
Marval X12										
Multimet N-155				5768	1.4971		Z12CNKDW20			
Multimet N-156										
S 590				5533		X40CoCrNi2020	Z42CKNDW			
Sanicro 30						X2NiCrAlTi3220				
Super Invar 32-5										
Udimet B-250										
Udimet B-300										
W-545				AISI:665			Z8NCTDA2613			
HTA Cobalt Based Alloys										
F 1537	UNS R31537 & R31538			ASTM F1537			CoCr28Mo			
Fe50Co50										
HS 21		3531		ASTM F-75		CoCr28Mo	KC27D5NFe			
HS 25				AISI 670		CoCr20W15Ni	KC20WN			
HS 30				5380		CoCr26Ni14Mo				
HS 31		3146		ASTM A567		CoCr25NiW	KC25NW			
HS 36						CoCr19W14NiB				
Jetalloy 209										
K13C20N126	UNS R3003 & R3008			ASTM F1058		K13C20N126Fe15D7	K13C20N126Fe15D7			
L 251										
L 605	UNS R30605			5759	2.4964	CoCr20W15Ni	KC20WN			
M 203										
M 204										
M 205										
MAR-M 247										
MAR-M 302						CoCrW10TaZrB	KC21W10Ta9			
MAR-M 322						CoCr22W9TaZrNb	KC21W9Ta			
MAR-M 509		3146.3				CoCr24Ni10WTaZrB	KC23N10W7Ta			
MAR-M 905							KC20N20Ta7			
MAR-M 918						CoCr20Ni20Ta	KC20N20Ta7			
MP159	UNS R30159									
MP35N	UNS R30035									
S 816				5534	2.4979	CoCr20Ni20W				
Stellite 1							KC33W13			
Stellite 100										
Stellite 12							KC28W8			
Stellite 151										
Stellite 188							KC22N22W14Fe			
Stellite 19										
Stellite 20										
Stellite 21										
Stellite 23										

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Hardness HRB HRC HB	Rm N/mm²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
HTA Iron Based Alloys																			
49-52HRC	1600	76.8	18.5			3.0		0.03	0.05	0.02	0.1	1.4		0.005	0.005				
52-55HRC	1800	76.8	18.5			3.0		0.03	0.05	0.02	0.1	1.4		0.005	0.005				
50HRC	1700	68.0	18.0		8.5	5.0		0.1		0.01	0.1	0.5							
32HRC	1000	75.0	9.4	12.0		2.0		0.05	0.02	0.01	0.7	0.3							
266HB	850	32.0	20.0	21.0	20.0	3.0				0.1									
260HB	840	19.7	33.0	17.0	24.0	3.0	2.0			0.33									
270HB	870	24.9	20.0	21.0	20.0	4.0	4.0	1.25	0.4	0.43									
150HB	510	14.6	34.0	22.0				0.55	0.55	0.03	0.3	0.5							Cu 0.1
	600	62.0	31.8	0.03	5.4			0.09	0.39	0.05	0.07							.08	
470HB	1590	68.6	18.0		7.9	4.9		0.1	0.1	0.08	0.1								
470HB	1590	67.0	18.0		9.0	5.0		0.1	0.1	0.08	0.1								
280HB	900	53.0	26.0	13.3		1.8		0.8	1.5	0.08	0.15								
HTA Cobalt Based Alloys																			
41HRC	1290	0.3	0.2	28.0	64.0	6.0		0.5	0.5	0.1									N 0.2
1050HV																			
		1.0	3.0	27.0	62.0	5.0		0.6	0.6	0.2		0.3							
		3.0	10.0	20.0	48.0		15.0	2.0	1.5			0.1							
		1.0	16.0	24.0	51.4	6.0		0.6	0.6			0.4							
		1.5	10.0	25.0	54.0		8.0	0.8	0.6			0.4							
		2.0	10.0	18.0	53.1		15.0		1.5			0.4							
180/230HB		1.0	10.0	20.0	52.0		15.0				2.0	0.0							
500/700HV	1450-1650																		
		1.0	10.0	19.0	55.6		14.0					0.4							
80HRB	510	0.5	10.0	20.0	52.0		15.0		1.7	0.1									
		1.0	24.5	19.5	38.0		12.0	1.0	0.8	2.2	0.7	0.1							
			24.5	18.5	43.0		12.0	1.0	1.0			0.1							
			24.5	18.5	42.0		12.0			2.8		0.1							
	800	0.5	59.0	8.3	10.0	0.7	10.0				5.5	1.0							Ta 3.0
				21.5	57.0		10.0					0.9							Ta 9.0
				21.5	60.0		9.0	0.1	0.1	1.0	0.8	1.0							Ta 4.5, Zr 2.25
		1.0	10.0	21.5	50.0		7.0	0.1	0.1		0.2	0.6							Ta 3.5, Zr 0.5
			20.0	20.0	55.0						0.5	0.1							Ta 7.5, Zr 0.1
		0.5	20.0	20.0	50.0			0.1	0.1			0.1							Ta 7.5, Zr 0.1
		9.0	25.5	19.0	35.7	7.0					0.2	3.0							Zr 0.6
28HRC	900		35.0	20.0	35.0	9.8				0.013									
		4.0	20.0	20.0	46.0	4.0	4.0	0.4	1.2			0.4							
				33.0	50.0		13.0			2.5									
				34.0	43.0		19.0			2.0									
463HB	1560	2.0	3.0	29.0	59.0		9.0			1.8									
		2.0	1.0	20.0	65.0		13.0			0.5									
		3.0	22.0	22.0	37.0		14.0			0.1									
52HRC	1800	3.0	3.0	31.0	52.0		10.5			1.7									
				33.0	45.0		18.0			2.5									
		3.0	2.5	27.0	60.0	5.5				0.3									
		2.0	1.5	25.0	65.0		5.0			0.4									

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STELLRAM®

Commercial Name	UNS Number	UK: BS,EN	Sweden: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
HTA Cobalt Based Alloys										
Stellite 25 (L605)				5759	2.4964	CoCr20W15Ni	KC20WN			
Stellite 3										
Stellite 30										
Stellite 31 (X40)		3146.2		ASTM A567		CoCr25NiW	KC25N10W7Fe			
Stellite 4										
Stellite 45										
Stellite 6							KC26NW			
Stellite 7										
Stellite 8 (F75)										
V-36						CoCr25Ni20MoWNb	KC25N20DFeWNb			
WI-52						CoCr21Mo11W	KC21W11ANbT			
X 40		3146.2		ASTM A567		CoCr25NiW	KC25N10W7Fe			
X 45							KC25N10W7Fe			
X 50										
X 63										
HTA Nickel Based Alloys										
200	UNS N02200									
201	UNS N02201									
718 Plus										
Allcorr										
Astroloy	UNS N13017						NK17C15D5AT			
Duraloy 22H										
Duraloy Super 22H										
GMR 235				AISI 686			NC15Fe10D5AT			
GMR 235-D						NiCr16MoAl	NC15D5FeAT			
Hastelloy B				5396A	2.48	S.NiMo30	ND27FeV			
Hastelloy B-2	UNS N10665									
Hastelloy C	UNS N10002			5388C		NiCr17Mo17FeW	NC17DWY			
Hastelloy C-22										
Hastelloy C-276	UNS N10276				2.4819	G-NiMo30	NC15D14KFe			
Hastelloy C-4	UNS N06455									
Hastelloy G	UNS N06007						NC22Fe19D6KTa			
Hastelloy G-3	UNS N06985				2.4619					
Hastelloy N	UNS N10003									
Hastelloy R235										
Hastelloy S	UNS N06635						NC15D14KFe			
Hastelloy W	UNS N10004									
Hastelloy X	UNS N06002	HR6, 204		5536	2.4603	NiCr22FeMo	NC22FeD			
Haynes 188	UNS R30188			5772			KC22N22W14Fe			
Haynes 25	UNS R30605			5759		LW2.4964	KC20WN			
Haynes 263	UNS N07263						NC20K20D6T			
Haynes 600	UNS N06600			5540	2.4816	NiCr15Fe				
Haynes 601	UNS N06601			5715	2.4851					
Haynes 625	UNS N06625			ASME SB443	2.4856	NiCr22Mo9Nb	NC22FeDNB			
Haynes 690	UNS N06690				2.4642	NiCr29Fe	NC30Fe			
Haynes 75										
Haynes X-750	UNS N07750			5542	2.4669		NC15TNbA			

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Hardness HRB HRC HB	Rm N/mm²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
HTA Cobalt Based Alloys																			
350HB	1130	2.0	10.0	20.0	52.0		15.0			0.2									
450HB	1490			30.0	52.0		13.0			2.4									
		2.0	15.0	26.0	50.0	6.0				0.5									
			10.0	25.0	56.0		7.0			0.3									
47HRC	1560	3.0	3.0	31.0	53.0		14.0			1.0									
		2.0	10.5	25.0	56.0	0.5	7.5			0.3									
300HB	970	3.0	3.0	26.0	66.0		5.0			1.0									Nb 6.0
				26.0	66.0		5.0			0.4									
				20.0	63.0	6.0				0.2									
		3.0	20.0	25.0	43.2	4.0	2.0	0.4	1.0			0.3							Nb 2.0
		2.0	1.0	21.0	62.6		11.0	0.3	0.3		0.3	0.5							Nb 2.0
		2.0	10.5	25.5	53.0		7.5	0.8	0.8			0.5							
		2.0	10.5	25.5	54.7		7.0		0.7			0.3							B 0.01
		4.0	20.5	22.5	40.3		12.0					0.8							
		1.0	10.0	25.0	57.6	6.0													
HTA Nickel Based Alloys																			
45HRB	310	0.4	99.8					0.35	0.35	0.15					0.01			0.25	
45HRB	310	0.4	99.9					0.35	0.35	0.2					0.01			0.25	
42HRC	1330	9.0	53.0	19.0	9.0	2.8	1	0.01	0.35	0.06	1.6	0.75		0.02	0.01				
85HRB	550		56.0	31.0			2			0.02	0.25	0.25							Nb 0.4
40HRC	1270		55.4	15.0	17.0	5.25				0.06	4	3.5							
			50.0	30.0															
			48.0	28.0	3.0														
	620	10.0	63.3	15.5		5.2		0.4	0.2	0.15	3	2							
	620	4.5	63.0	15.5		5				0.15	3.5	2.5							
90HRB	600	5.0	62.0	1.5	2.5	28		0.05	0.5	0.02									V 0.4
90HRB	600	1.0	81.0	0.5	0.5	16		0.05	0.5	0.01				0.02	0.015				
200HB	660	6.0	54.1	15.0	2.0	17	5			0.04									
94HRB	660	3.0	56.0	22.0	2.5														
191HV	630	5.5	56.0	15.0	2.5														
	750	3.0	58.0	16.0	2.0														
		20.0	46.0	22.0	2.5														
		20.0	40.0	22.0	5.0														
80HRB	510	4.0	72.5	7.0		16.5				0.02									
		10.0	61.0	15.5	2.5	5.5				0.15	2	2.5							
61HRA	780	3.0	67.0	16.0	2.0														
94HRB	660	4.0	66.5	5.0	1.3	24.5				0.02									
80HRB	510	18.5	48.6	21.8	1.5	9	0.6			0.1									
		3.0	22.0	22.0	37.0														
	1000	3.0	10.0	20.0	bal		15		1.5	0.1									
		0.7	51.4	20.0	20.0	6				0.06	1	1.5							
85HRB	550	8.0	72.0	15.5						0.08									
65HRB	430	14.0	60.5	23.0															
95HRB	660	5.0	61.4	21.5		9				0.1									
88HRB	570	9.0	58.0	29.0				0.2	0.2	0.25					0.007				Cu 0.2
		5.0	73.7	20.0						0.12	0.25	0.4							Cu 0.5
		7.0	74.9	16.0						0.08	0.8	0.25							

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HTA Nickel Based Alloys										
IN100	UNS N13100			5397	2.4674	NiCo15Cr10MoAlTi	NK15CAT			
Incoloy 020				ASTM B463	2.4660		20CB-3			
Incoloy 804							NC29Fe25			
Incoloy 825	UNS N08825	3072.76		ASME SB163	2.4858	NiCr21Mo	NC21FeDU			
Incoloy 901	UNS N09901			5660	2.4662	NiFe35Cr14MoTi	Z8NCDT42			
Incoloy 903	UNS N19903					NiFe42K15Nb	Z3NK28			
Incoloy 925	UNS N09925									
Inconel alloy 050										
Inconel alloy 182										
Inconel alloy 22				ASME SB575			NiMo16Cr15			
Inconel alloy 230										
Inconel alloy 600	UNS N06600	3072.76		5540	2.4640	NiCr15Fe	NC15Fe			
Inconel alloy 600SP										
Inconel alloy 601	UNS N06601			5715	2.4851		NC23Fe14A			
Inconel alloy 601GC										
Inconel alloy 603XL										
Inconel alloy 604										
Inconel alloy 606										
Inconel alloy 613										
Inconel alloy 617	UNS N06617				2.4663	NiCr23Co12Mo	NC22K12D9A			
Inconel alloy 62										
Inconel alloy 622					2.4602					
Inconel alloy 625	UNS N06625			ASME SB443.4	2.4856	NiCr22Mo9Nb	NC22FeDNB			
Inconel alloy 625LCF	UNS N06626									
Inconel alloy 657										
Inconel alloy 671										
Inconel alloy 672										
Inconel alloy 686										
Inconel alloy 690	UNS N06690				2.4642		NC30Fe			
Inconel alloy 691										
Inconel alloy 693										
Inconel alloy 702				5550			NC15A			
Inconel alloy 706	UNS N09706			AMS 5702			NFe10C16NbT			
Inconel alloy 718	UNS N07718	HR8		5383	2.4668	NiCr19Fe19NbMo	NC19FeNb			
Inconel alloy 718 DA										
Inconel alloy 718 OP	UNS N07718									
Inconel alloy 720										
Inconel alloy 721							NC16Fe8TM			
Inconel alloy 722	UNS N07722			5541		NiCr16FeTi	NC16FeTi			
Inconel alloy 725										
Inconel alloy 725HS										
Inconel alloy 738										
Inconel alloy 740										
Inconel alloy 783	UNS R30783									
Inconel alloy 800										
Inconel alloy 800H	UNS N08810									

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Hardness HRB HRC HB	Rm N/mm²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
HTA Nickel Based Alloys																			
			61.6	10.0	15.0	3				0.18	5.5	4.7							V 1.0
		38.0	34.0	20.0	2.5														Nb 0.6 Cu 3.5
		25.4	41.0	29.5				0.5	0.75	0.06	0.25	0.6							Cu 0.4
80HRB	510	29.5	42.0	21.5			3	0.5	0.65	0.03	0.2	0.9							Cu 2.25
180-300HB	600-970	34.0	44.3	12.5		6.2		0.22	0.48	0.05		2.5							
380HB	1250	41.0	39.0		15.0						0.7	1.4							Nb 3.0
32HRC	1000	25.4	45.0	21.0		3					0.3	2.1							Cu 1.8
36HRC	1130	18.0	50.0	20.0	3.0														
		7.5	66.0	16.0															
90HRB	600	2.5	58.0	22.0															
		1.0	60.0	22.0	1.0														
85HRB	550	8.0	76.0	16.0						0.075									
		8.0	77.0	15.0															
65HRB	400	14.0	61.0	24.0				0.2	0.5	0.05	1.3				0.008				Cu 0.5
77HRB	480	14.0	61.0	24.0															
			73.0	22.0															
		8.0	72.0	16.0				0.2	0.2	0.04									
		1.0	73.0	20.0															
		6.0	76.0	16.0															
180HB	600	1.0	53.0	22.0	13.0	9				0.07	1								
		8.0	74.0	15.0															
100HRB	780	2.5	58.0	22.0		14.2	3.2												
95HRB	690	4.0	61.0	22.0		9				0.05	0.3	0.3							Cb 3.7
		4.0	61.0	22.0															
		0.5	47.5	50.0															
			51.5	48.0															
			54.0	45.0															
90HRB	600	1.0	58.0	21.0															
85HRB	550	9.0	62.0	29.0				0.2	0.2	0.25					0.007				
		9.0	59.0	30.0															
		5.0	60.0	30.0															
		1.0	79.0	16.0				0.2	0.05	0.04	3.4	0.7							
40HRC	1270	37.0	42.0	16.0						0.03		1.8							Cb 2.9
42HRC	1330	18.0	54.0	18.0		3.1				0.02	0.5	0.9							Cb 5.2
40-47HRC	1560	bal	50-55	17-21	1.0	2.8-3.3		0.35	0.35	0.08	.2-.8	.65-1.15		0.015	0.015				Cb+Ta 5-5.5
38HRC	1200	18.0	54.0	18.0		3.1				0.02	0.5	0.9							Cb 5.2
43HRC	1380	14.7	58.0	18.0	14.7	3	1.25				2.5	5							
		7.0	71.0	16.0				0.15	2.25	0.07	0.1	3							Cu 0.2
34HRC	1070	7.0	74.0	16.0						0.04	0.7	2.4							
37HRC	1170	9.0	58.0	21.0		8					0.3	1.5							Nb 3.5
		9.0	58.0	21.0															
		0.5		16.0	8.5	1.8	2.6	0.3	0.2	0.17	3.4	3.4							Nb 0.9 Ta 1.8 Zr 0.1
		1.0	48.0	25.0	20.0														
34HRC	1070	26.0	28.5	3.0	34.0						5.4	0.1							Nb 0.3
86HRB	550	46.0	31.0	21.0															
70HRB	450	44.0	32.0	21.0				0.35	1	0.08	0.4	0.4		0.02	0.01			0.3	

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HTA Nickel Based Alloys										
Inconel alloy 82										
Inconel alloy 939										
Inconel alloy C-276	UNS N10276									
Inconel alloy G										
Inconel alloy G-3										
Inconel alloy HX	UNS N06002					NiCr22Fe18Mo	NC22FeD			
Inconel alloy MA 6000										
Inconel alloy MA754	UNS N07754									
Inconel alloy MA758										
Inconel alloy X-750	UNS N07750			5542	2.4669	NiCr16FeTi	NC15FeTNb			
Inconel alloy X-751	UNS N07751									
Jessop G81						NiCr20Co18Ti				
M-252	UNS N07252			5551		G-NiCr19Co				
Monel 400	UNS N04400	3072.76		4544	2.4360	NiCu30Fe	NU30			
Monel K500	UNS N05500	3072.76		4676	2.4375	NiCu30Al				
Monel R405	UNS N04405			4674						
Nimocast 713		HC203		5391A		G.NiCr13Al16MoNb	NC13AD			
Nimocast 80		3146								
Nimocast 90										
Nimocast PD16						NiFe33Cr17Mo				
Nimocast PE10		HC202					NC20N13			
Nimocast PK24										
Nimonic 101										
Nimonic 105		HR3			2.4634	NiCo20Cr15MoAlTi	NCKD20ATV			
Nimonic 115		HR401, 601			2.4636	NiCo15Cr15MoAlTi	NCVK15ATD			
Nimonic 75	UNS N06075	HR5, 203.4			2.4630	NiCr20Ti	NC20T			
Nimonic 80A	UNS N07080	HR401, 601			2.4631	NiCr20TiAl	NC20TA			
Nimonic 86										
Nimonic 90	UNS N07090	HR2, 202			2.4632	NiCr20Co18Ti	Nc20ATV			
Nimonic 901	UNS N09901			5660, 5661	2.4662	NiCr15MoTi	Z8NCDT42			
Nimonic 91										
Nimonic 95							NC19K18Fe5TA			
Nimonic C22	UNS N06022			ASME SB575						
Nimonic C263	UNS N07263	HR10			2.4650	NiCr20CoMoTi	NCK20D			
Nimonic C276	UNS N10276			ASME SB575	2.4819		NiMo16Cr15			
Nimonic PE13		HR6, 204		5536E		NiCr22Fe18Mo	NC22FeD			
Nimonic PE16		HR207				NiFe33Cr17Mo	NW11AC			
Nimonic PK25				5751A	2.4666	NiCr18CoMo	NKCD20ATU			
Nimonic PK31										
Nimonic PK33		5057				NiCr20Co16MoTi	NC19KDUN			
R-235				AISI 686						
Refractaloy 26				AISI 690			Z6NKCDT38			
René 100					2.4674	NiCo15Cr10MoAlTi	NK15C10A5T			
René 104										
René 125							NK10C8W7ATaTD			
René 41	UNS N07041			5712, 5713	2.4973	NiCr19Co11MoTi	NC19KDT			
René 63							NK15C14D6AWT			

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Hardness HRB HRC HB	Rm N/mm²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
HTA Nickel Based Alloys																			
		2.0	72.0	19.0															
			48.0	22.5	19.0														
90HRB	600	5.0	59.0	15.5	0.5	16	3.5			0.01									
		20.0	44.0	22.0	1.0														
		20.0	44.0	22.0	3.0														
90HRB	600	18.0	47.0	22.0	1.5	9	0.6												
			55.0	15.0	15.0														
29HRC	930	1.0	77.5	20.0							0.3	0.5							
320HV	1050		68.0	30.0															
32HRC	1000	7.0	72.0	16.0															
35HRC	1100	7.0	73.0	15.0				0.2	0.5	0.05	1.2	2.3			0.005				Cb 1.1 Cu 0.2
		0.5	79.3	20.0	13.0			0.2	0.5	0.08	1.5	2.5							
27-30HRC	900			18.0-20.0	9.0-11.0	9.0-10.5		0.5	0.5	0.15	0.75-1.25	2.25-2.75			0.015				
70HRB	440	1.2	66.0					0.25		0.15					0.01				
27HRC	860	1.0	66.0					0.25	0.7	0.1	2.7	0.6			0.01				
150HB	510	1.3	63.0					0.25	1	0.15									Cu 31.5
			72.6	13.5		4.5				0.12	6	0.9							
		5.0	69.9	20.0	2.0														
		5.0	52.9	20.0	18.0														
		34.0	43.8	16.5						0.06	1.2	1.2							
			56.4	20.0		6	2.5			0.03									
			61.1	9.5	15.5	9				0.17	5.5	4.7							
			48.0	24.2	19.7	1.5					1.4	3							Nb 1
320HB	1040	1.0	54.0	15.0	20.0	5		0.5	0.5	0.1	4.7	1.2							
350HB	1130	1.0	59.0	15.0	14.0	4				0.16	5	4							
170HB	570	4.0	76.0	20.0				0.45	0.45	0.45	0.1	0.35							
350HB	1130	1.5	70.0	19.5	1.0			0.2	0.55	0.08	1.4	2.4							
			65.0	25.0		10													Ce 0.03
28HRC	870	0.3	58.3	19.5	18.0					0.065	1.4	2.4							
36HRC	1130	35.6	43.0	12.5		6				0.05		2.8							B 0.015
			48.0	29.0	20.0														
		5.0	49.9	19.5	18.0			1	1	0.1	2	3.5							
85HRB	550	4.0	57.0	21.2	1.2	13.5	3	0.04	0.2	0.07				0.01					V 0.17
28HRC	870	0.7	54.9	20.0	20.0	5.85				0.06	0.45	2.15							
80HRB	510	5.0	59.5	15.5	0.5	16	3.5			0.01									
		18.5	49.0	21.8	1.5	9	0.6	0.5	0.5	0.1									
250HB	810	1.2	43.0	16.0	2.0	3.5				0.05	1.2	1.2							
			49.9	19.0	19.5	4		0.75	0.75	0.08	2.9	2.9							B 0.01
			53.0	20.0	14.0	4.5					0.4	2.3							Nb 5.0
350HB	1130	1.0	55.0	18.0	14.0	7		0.25	0.25	0.05	2.1	2							
		10.0	63.3	15.0	1.2	5.5		0.3	0.1	0.12	20	2.5							
		16.0	38.0	19.0	20.0	3.2		1	0.8	0.03	0.2	2.8							
			60.6	10.0	15.0	3				0.18	5.5	4.7							V 1.0
			52.4	11.0	20.5	3.7	2			0.04	3.4	3.6							Nb 0.9 Ta 2.4 B 0.03
			60.0	8.9	10.0	2	7			0.1	4.7	2.5							Hf 1.05 Ta 3.0
36HRC	1130	3.0	52.5	19.0	11.0	9.75				0.06	1.6	2.5							B 0.007
		3.5	54.4	14.0	15.0	6	3.5	0.2	0.1	0.05	3.8	2.5							

Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels | P Alloyed Steels | M Stainless Steels | M PH Stainless | K Cast Irons | N Aluminum & Alloys | S High Temp. Alloys | H Hard Materials

Commercial Name	UNS Number	UK: BS,EN	Sweden: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
HTA Nickel Based Alloys										
René 77							NC15K15ADT			
René 80							NC14K9T5DWA			
René 95							NC14K8			
Stelloy HS27						NiCo32Cr26Mo	KC20WN			
TRW VIA						NiTa9Co8W6CrAl	NTa9K7C6W5A5DT			
Udimet 500	UNS N07500			AISI 684	2.4983	NiCr18CoMoAlTi	NCK19DAT			
Udimet 520										
Udimet 630						NiCr19NbMo	NC18Fe18Nb6DWT			
Udimet 700				AISI 687	2.4636	NiCo15Cr15MoAlTi	NCKD20AT			
Udimet 710							NCK18TDA			
Udimet 718		HR8		5383	2.4668	NiCr19Fe19NbMo	NC19FeNb			
Udimet 720							NC18K15TDA			
Waspaloy®	UNS N07001			5544	2.4654	NiCr20Co14MoTi	NC20K14			
HTA Titanium Based Alloys										
Ti-10.2.3										
Ti-11.5Mo-6Zr-4.5Sn										
Ti-12Mo-6Zr-2Fe (TMZF)										
Ti-13Nb-13Zr										
Ti-13V-11Cr-3Al				4917		TiV13Cr11Al3				
Ti-15-333	UNS R58153									
Ti-15Mo (Alpha + Beta)										
Ti-15Mo (Beta)										
Ti-15Mo-3Nb-3Al-0.2Si				ASTM Grade 21						
Ti-3Al-2.5V	UNS R56320			4943, 4944						
Ti-3Al-8V-6Cr-4Mo-4Zr	UNS R58640									
Ti-425										
Ti-425 MIL										
Ti-45Nb										
Ti-48Al-2Cr-2Nb										
Ti-4Al-4Mo-2Sn-0.5Si		5103				TiAl4Mo4Sn2Si0.5	T-A4DE			
Ti-4Al-4Mo-4Sn-0.5Si		5203				TiAl4Mo4Sn4Si0.5				
Ti-5Al-2.5Fe (Tikrutan)										
Ti-5Al-2.5Sn	UNS R54520	TA 14,17		ASTM B 265	3.7115	TiAl5Sn2	T-A5E			
Ti-5Al-2Sn-2Zr-4Cr-4Mo	UNS R58650			4995		Ti5Al2Sn2Zr4Cr4Mo				
Ti-5Al-5Mo-5V-1Cr-1Fe										TC18
Ti-5Al-5V-5Mo-3Cr										
Ti-6-2-4-6	UNS R56260			4981						
Ti-6-7	UNS R56700									
Ti-6Al-2Sn-2Zr-2Mn-2Cr-0.2Si										
Ti-6Al-4V	UNS R56400	TA10 TA11 TA12 TA13 TA28 TA56		4906, 4920, 4928, 4965, 4967		TiAl6V4	T.A6V;AIR:9183			TC4
Ti-6Al-4V ELI	UNS R56401			4907, 4930, 4931						
Ti-6Al-4V MIL	UNS R56400	TA10 TA11 TA12 TA13 TA28 TA56		4906, 4920, 4928, 4965, 4967		TiAl6V4	T.A6V;AIR:9183			
Ti-6Al-4V MIL (HT)	UNS R56400	TA10 TA11 TA12 TA13 TA28 TA56		4906, 4920, 4928, 4965, 4967		TiAl6V4	T.A6V;AIR:9183			

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Hardness HRB HRC HB	Rm N/mm²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
HTA Nickel Based Alloys																			
		0.4	58.0	15.0	15.0	4.2		0.1	0.1	0.17	4.3	3.3							
			61.0	14.0	9.5	4				0.15		4							
		0.3	64.5	14.0	8.0	3.5				0.15		2.5							
		2.0	30.0	25.0	30.0														
			70.5	6.0	7.5	2	5.8			0.13	5.4	1							
		4.0	52.0	19.0	18.0	4		0.1	0.1	0.07	3	3							
40HRC	1270		56.9	19.0	12.0	6	1				2	3							
		18.0	51.0	19.0	18.0	3				0.04	0.6	1.1							
		1.0	53.0	15.0	19.0					0.1	4.4	3.4							
		0.5	55.0	18.0	15.0	1.5				0.07	2.5	5							
42HRC	1330	19.0	54.0	18.0		3				0.05	0.6	1							
	1600		55.0	18.0	14.8	3	1.2			0.035	2.5	5							
38HRC	1200	1.0	57.7	19.5	13.0	4.3				0.05	1.4	3							Zr 0.07
HTA Titanium Based Alloys																			
HRC35	1100																		
	1037	0.085																	Nb13.18 Zr13.49
HRC40	1270																		
HRC32	1000	0.12		3						0.02	3								V 15.0
HRC38	1200	0.1				15													
HRC24	820	0.1				15													
	930	< 0.4				15					3	76.0/80.8							Nb 3.0
HRC24	820	0.13									3								V 2.5
HRC32	1000	0.35		6.5		4.5				0.05	4								V 8.5 Zr 4.5
HRC36	1130	1.5									4								V 2.5 O 0.25
HRC36	1130	1.2/1.8									4.5								V 2.5 O 0.25
												55							Nb 45
HRC22	800			2							48.03	47.97							Nb 2
HRC35	1100																		
	1020	2.5									5								
HRC36	1130																		
HRC38	1200	0.3		3.5/4.5		3.5/4.5					4.5/5.5								Sn 1.5/2.5 Zr 1.5/2.5
HRC40	1270																		
HRC40	1270																		
HRC36	1130																		
HRC32	1000	0.15								0.08	6								Nb 7
				2				0.2	2		6								Sn 2 Zr 2
HRC30-34	1130	0.3								0.1	5.5/6.75								V 4
HRC32	1000	0.25								0.08	5.5/6.75								V 3.5/4.5 O 0.13
HRC30-34	1130	0.3								0.1	5.5/6.75								V 3.5/4.5 O 0.2
HRC35-39	1200	0.3								0.1	5.5/6.75								V 3.5/4.5 O 0.2

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STELLRAM

Commercial Name	UNS Number	UK: BS,EN	Sweden: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
HTA Titanium Based Alloys										
Ti-6Al-4Zr-2Mo-2Sn	UNS R54620									
Ti-6Al-4Zr-2Mo-2Sn-0.2Si	UNS R54620 modified			4919, 4975, 4976		TiAl6Zr4Mo2Sn2				
Ti-6Al-5Zr-0.5Mo-0.25Si						TiA6Zr5Mo0.5Si0.25	T.AGZ.50			
Ti-6Al-5Zr-4Mo-Cu-0.2Si		M201				TiAl6Zr5Mo4CuSi0.2				
Ti-6Al-6V-2Sn	UNS R56620			4971		TiAl16V6Sn2				
Ti-6Al-7Nb						TiAl7Nb				
Ti-7Al-4Mo				ASTM B381		TiAl7Mo4				
Ti-8Al-1Mo-1V	UNS R54810			4915, 4933, 4972		TiAl8Mo1V1				
Ti-8Mo-8V-2Fe-3Al										
Ti-99.5	UNS R50700			ASTM Grade 1 B381F4		Ti-99.5	AIR:9182T60			
Ti-99.6	UNS R50550	TA2, TA3, TA4, TA5		ASTM Grade 2 B381F3		Ti-99.6	AIR:9182T50			
Ti-99.7	UNS R50400	TA2.5		ASTM Grade 3 B381F2		Ti-99.7	AIR:9182T40			
Ti-99.8	UNS R50250	TA6, TA7, TA8, TA9		ASTM Grade 4 B381F1		Ti-99.8	AIR:9182T35			
Hard Steel >1400Mpa										
500										
521										
600										
60SPb20										
70SPb20										
A100										
A2 / Z100CDV5 (HT)		BA2	2260	A2	1.2363	X100CrMoV5 1	Z100CDV5	X100CrMoV51KU	X100CrMoV5 F5227	SKD12
Durimphy						X2NiCoMoTi180905	Z2NKD180905			
Ferrium® S53®										
H10										
H11										
H12										
H19										
H21 / Z30WCV9										
Hardox 450										
Hardox 500										
Hardox 550										
Hardox 600										
K12										
K12 (HT)										
L6 / 55NCDV07 (HT)										
Mh97+Pb										
Z38CDV5										
Chilled Cast Iron 1400Mpa										
GGG120B / EN-GJS-1200-2										
GGG140B / EN-GJS-1400-1										
GGG80B / EN-GJS-800-8										
GGG90B / EN-GJS-1000-5										

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Hardness HRB HRC HB	Rm N/mm²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
HTA Titanium Based Alloys																			
HRC28	900																		
HRC28	900	0.05				2		0.12		0.1	6								Zr 4.0
HRC35	1100	0.5								0.05	5.5							0.5	V 5.5 Sn 2 O 0.2
	1000										6	84.5/88.0							Nb 7.0
HRC35	1100	0.13				1					8								V 1 O 0.12
HRB100	780	0.5								0.1									O 0.4
HRB90	600	0.3								0.1									O 0.35
HRB80	510	0.3								0.1									O 0.25
HRB70	430	0.2								0.1									O 0.18
Hard Steel >1400Mpa																			
447-534HB	1490-1730	91.6	4	2		0.37		0.45	1.2	0.32				0.02	0.005				
470-550HB	1590-1800	91.4	4	2		0.5		0.5	1.2	0.32				0.025	0.005				
574-634HB	> 2060	91.8	4.25	1.5		0.37		0.5	1	0.52				0.02	0.005				
55/61HRc																			
63/65HRc																			
64/67HRc																			
55/64HRc																			
	1040-2000																		
54HRC	1930		5.5	10	14	2	1			0.21				0.02	0.005				V 0.3
	1180-1670																		
	1180-1570																		
	1080-1270																		
	1270-1670																		
	1180-1770																		
450HBW	1500																		
500HBW	1730																		
550HBW	1950																		
600HBW	>2000																		
48-54HRC	1590-1930																		
58-64HRC																			
	1200-1700																		
64/66HRC																			
	1400-1500																		
Chilled Cast Iron 1400Mpa																			
341-444HB	1490																		
444-555HB	2010																		
269-321HB	1040																		
302-363HB	1150																		

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Metalcutting Safety

IMPORTANT SAFETY INSTRUCTIONS
Read before using the tools in this catalog!
Projectile and Fragmentation Hazards:

Modern metalcutting operations involve high spindle and cutter speeds and high temperatures and cutting forces. Hot metal chips may fly off the workpiece during metalcutting. Although cutting tools are designed and manufactured to withstand high cutting forces and temperatures, they can sometimes fragment, particularly if they are subjected to over-stress, severe impact, or other abuse.

To avoid injury:

- Always wear appropriate personal protective equipment, including safety goggles, when operating metalcutting machines or working nearby.
- Always make sure all machine guards are in place.

Breathing and Skin Contact Hazards:
Grinding carbide or other advanced cutting tool materials produces dust or mist containing metallic particles. Breathing this dust or mist — especially over an extended period — can cause temporary or permanent lung disease or make existing medical conditions worse. Contact with this dust or mist can irritate eyes, skin, and mucous membranes and may make existing skin conditions worse.

To avoid injury:

- Always wear breathing protection and safety goggles when grinding.
- Provide ventilation control and collect and properly dispose of dust, mist, or sludge from grinding.
- Avoid skin contact with dust or mist.

For more information, read the applicable Material Safety Data Sheet provided by Kennametal and consult General Industry Safety and Health Regulations, Part 1910, Title 29 of the Code of Federal Regulations.

These safety instructions are general guidelines. Many variables affect machining operations. It is impossible to cover every specific situation. The technical information included in this catalog and recommendations on machining practices may not apply to your particular operation. For more information, consult Kennametal's Metalcutting Safety booklet, available free from Kennametal at 724.539.5747 or fax 724.539.5439. For specific product safety and environmental questions, contact our Corporate Environmental Health and Safety Office at 724.539.5066 or fax 724.539.5372.

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Tel: 0800 807 721
Fax: 0800 807 701

SVIZZERA ITALIANA
Tel: 0800 807 722
Fax: 0800 807 701

kennametal.com



WORLD HEADQUARTERS
Kennametal Inc.
1600 Technology Way
Latrobe, PA 15650
USA
Tel: 800.446.7738 (United States and Canada)
E-mail: ftmill.service@kennametal.com

EUROPEAN HEADQUARTERS
Kennametal Europe GmbH
Rheingoldstrasse 50
CH 8212 Neuhausen am Rheinfall
Switzerland
Tel: 41.52.6750.100
E-mail: neuhausen.info@kennametal.com

ASIA-PACIFIC HEADQUARTERS
Kennametal (Singapore) Pte. Ltd.
3A International Business Park
Unit #01-02/03/05, ICON@IBP
Singapore 609935
Tel: 65.6265.9222
E-mail: k-sg.sales@kennametal.com

INDIA HEADQUARTERS
Kennametal India Limited
8/9th Mile, Tumkur Road
Bangalore - 560 073
Tel: 91.80.2839.4321
E-mail: bangalore.information@kennametal.com

KENNAMETAL®

Kennametal Inc.
1600 Technology Way
Latrobe, PA 15650
USA

www.kennametal.com

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