



NGK SPARK PLUGS (U.K), LTD
 Maylands Avenue, Hemel Hempstead, Herts, HP24SD, U.K.
 Tel. : +44 1442-281-000
 Fax : +44 1442-281-080



NTK Technical Ceramics Polska Sp.z o.o.
 Leg. Ul. Europejska 8
 55-220 Jelcz-Laskowice
 Tel. : +48 71-381-1284
 Fax : +48 71-318-2333



NTK CUTTING TOOLS KOREA CO.,LTD.
 680-14 Kojan-Dong, Namdong-ku Incheon, Korea
 Tel. : +82-32-815-6763
 Fax : +82-32-815-6762



NGK SPARK PLUG CO.,LTD.
Technical Ceramics Group Cutting Tool Overseas Sales & Marketing
 2808, Iwasaki, Komaki, Aichi 485-8510, Japan
 Tel. : +81-568-76-1538
 Fax : +81-568-76-1288



NGK SPARK PLUGS (U.S.A), INC.
Cutting Tool Sales Office
 46929 Magellan Dr., Wixom, MI 48393 U.S.A.
 Tel. : +1-248-668-0100
 Fax : +1-248-668-0200



NGK DO BRASIL LTDA.
CERAMICA E VELAS DE IGNICAO
 Estrada Mogi-Salesopolis, km 09 Bairro Cocuera, Mogi das Cruzes (SP), Brazil
 Tel. : +55-11-4793-9092
 Fax : +55-11-4793-8270



NGK SPARK PLUG EUROPE GmbH
 Harkortstr.41
 40880 Ratingen, Germany
 Tel. : +49 2102 974-350
 Fax : +49 2102 974-399



NTK Cutting Tools Italy Liaison Office
 Via delle Azalee, 15
 20090 Buccinasco (MI), Italy
 Tel. : +39.02.488.86.91
 Fax : +39.02.488.42.717



NGK SPARK PLUGS (THAILAND) CO.,LTD.
 Unit 1504 15th Floor, chartered Square Bldg, 152 North Sathorn Rd Bangkok, Bangkok 10500, Thailand
 Tel. : +66-2634-5211
 Fax : +66-2634-5214



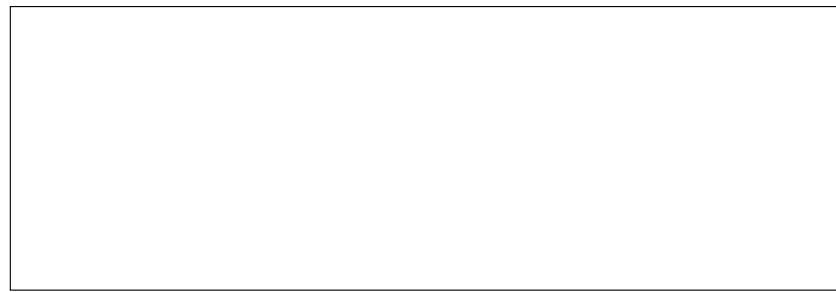
NGK SPARK PLUG CO.,LTD.
Shanghai Liaison Office
 Flat D, 7/F, Century Ba-shi Building, No. 398 Huai Hai Rd(M), Shanghai 200020, THE PEOPLE'S REPUBLIC OF CHINA
 Tel. : +86-21-6385-7652
 Fax : +86-21-6385-3690



NGK | **NTK**
SPARK PLUGS | **TECHNICAL CERAMICS**
NGK SPARK PLUGS(USA),INC.

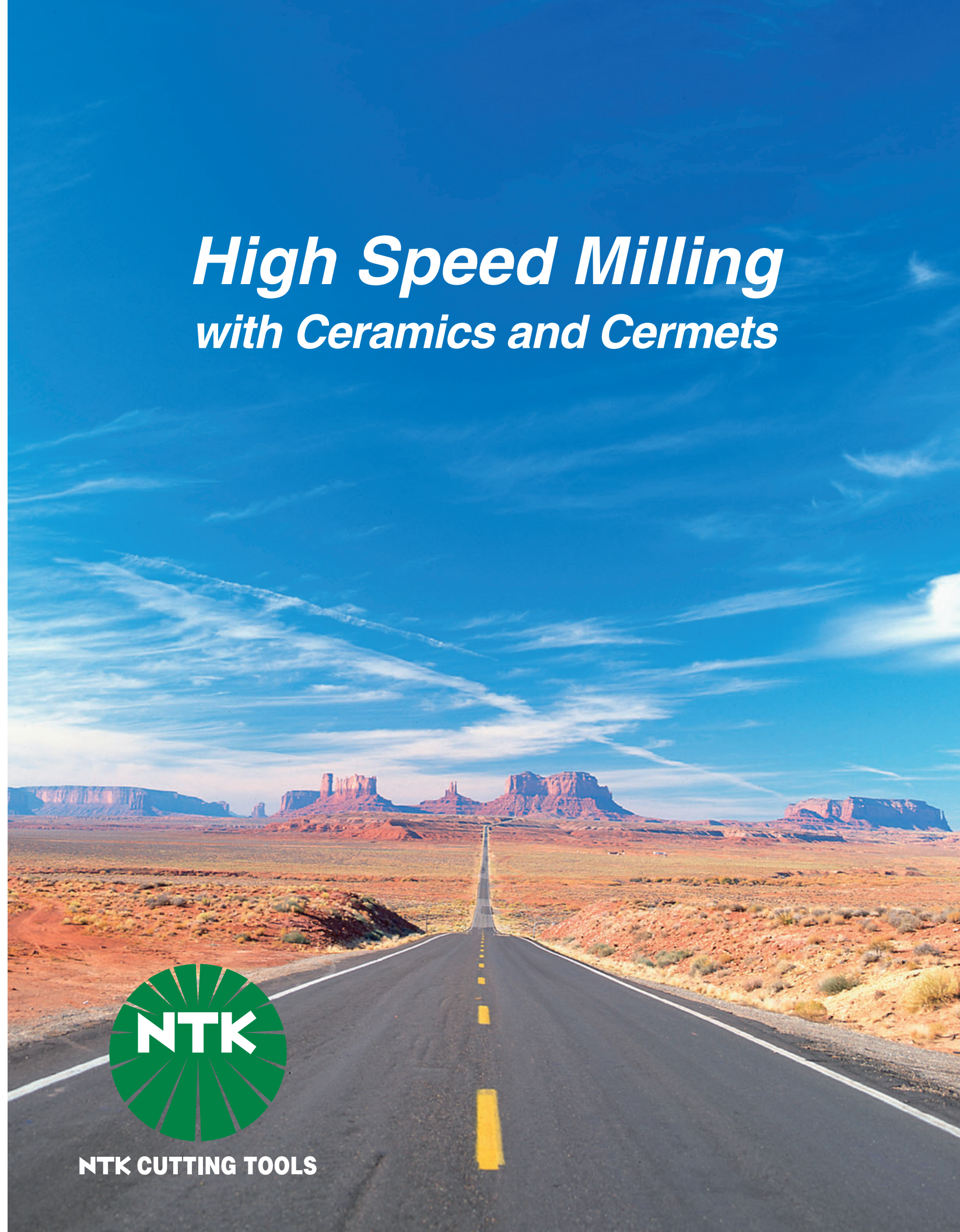
CUTTING TOOL SALES OFFICE
 Detroit Office: (Main Sales Office)
 46929 Magellan Dr., Wixom, MI 48393 U.S.A.
 Phone: 248-668-0100 Fax: 248-668-0200
 Toll Free: 866-900-9800

DISTRIBUTED BY



Printed in Japan 0805

High Speed Milling with Ceramics and Cermets



NTK CUTTING TOOLS

High Speed Shear Mill



Positive axial rake provides

- Excellant burr-free cutting on the edges of the machined face
- Excellant flatness on the machined face
- Less machine horsepower required

Recommended work materials

- Cast Irons, Ductile Irons
- Carbon Steels, Alloy Steels & Stainless Steels

Available cutter diameter

- 2.5, 3.0, 4.0, 5.0 inch

Available lead angle

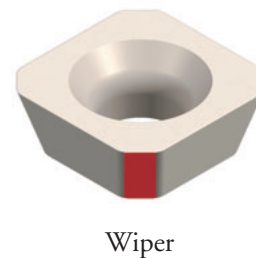
- 45°, 75°, 88°

Screw-on Positive inserts offer

- Excellant index repeatability
- Cost Reduction in hardware - No clamps required

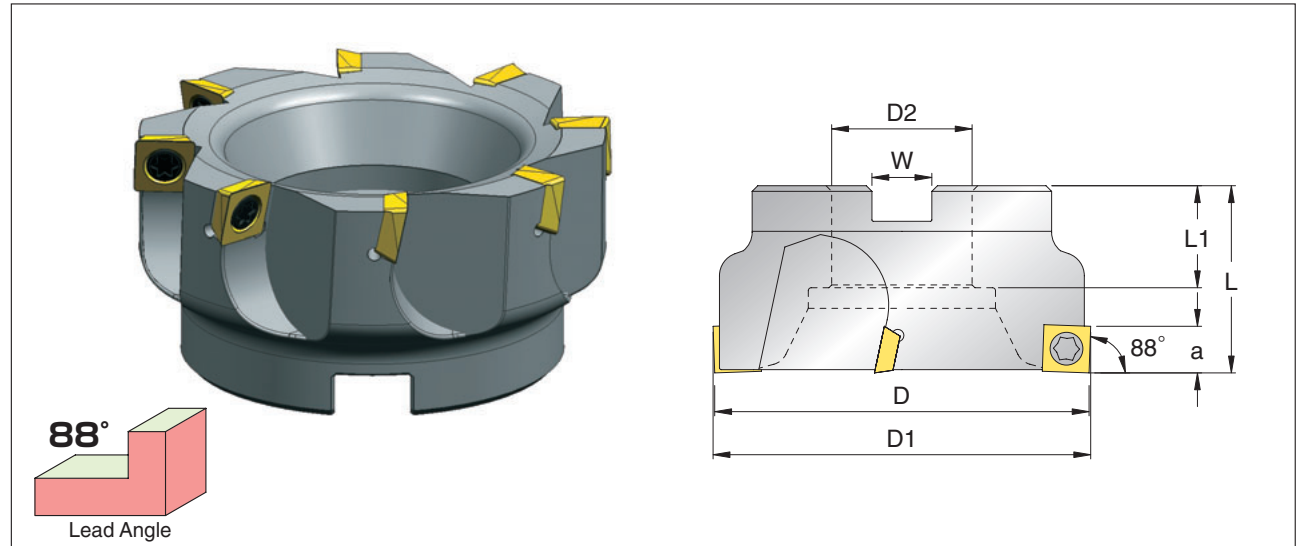
Wiper inserts also available

- Reduce surface finishes
- Increase feeds while maintaining good surface finishes





Note:
 Torque-control wrench needed for clamping ceramic inserts.
 Recommended torque is 35lbs (4Nm).
 Order TCW20 wrench separately.

Lead angle 88 degree - SDW43 (A.R. +12°, R.R. 0°)



Cutter	Effective Cutting Dia. D	No. of Inserts	Dimensions (inch)						Weight
			D1	Height L	Bore D2	Keyway W	L1	a	
P250R100-SDW43-4C	2.500	4	2.590	2.000	1.000	.387	.780	.40	1.8 lbs
P300R100-SDW43-6C	3.000	6	3.070	2.000	1.000	.387	.780	.40	2.3 lbs
P400R150-SDW43-8C	4.000	8	4.070	2.000	1.500	.640	1.09	.40	3.3 lbs
P500R150-SDW43-10C	5.000	10	5.070	2.000	1.500	.640	1.09	.40	5.0 lbs

Spare Parts

	
Insert screw IS-5x10	Torx wrench K5620

Inserts

Fig.1: SDCW43

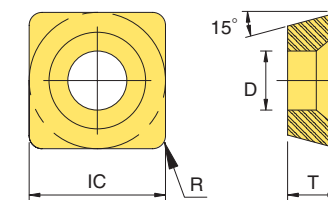
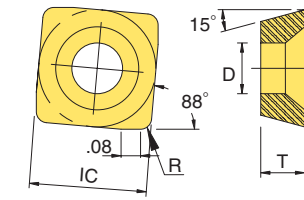



Fig.2: SDCW43PE WIPER

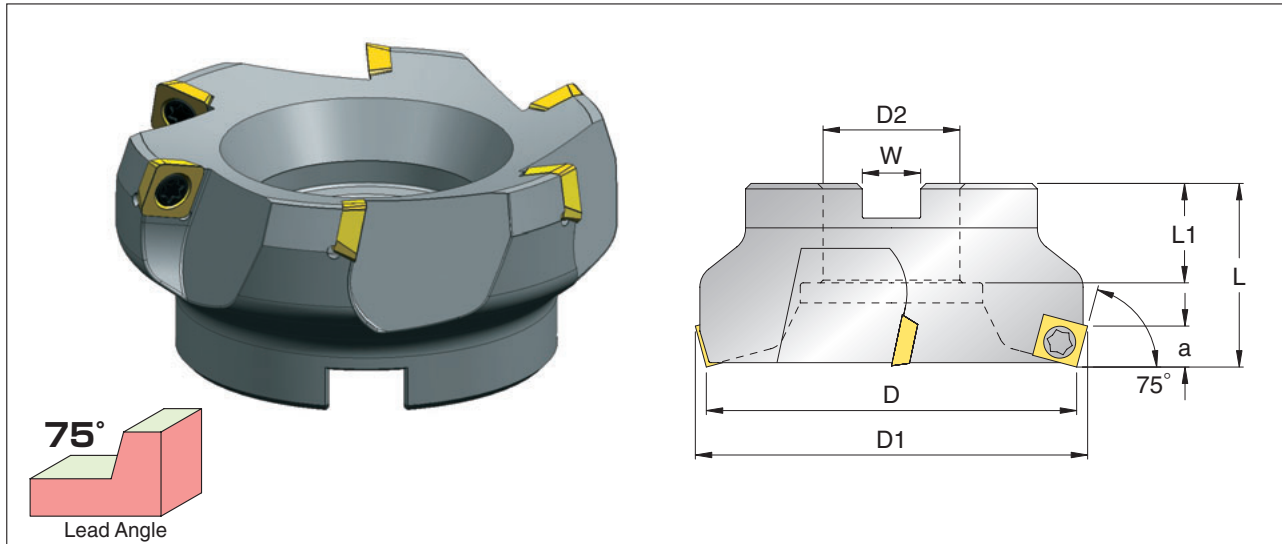


Shape	NTK Part Number	Dimensions (inch)						SX1	SX6	SX8	C7X
		IC	T	R	D	Fig.					
	SDCW432T0420	1/2	3/16	1/32	.216	1	●	●	●	●	
	SDCW433T0420	1/2	3/16	3/64	.216	1	●	●	●	●	
	SDCW434T0420	1/2	3/16	1/16	.216	1	●	●	●	●	
	SDCW43PET0420R	1/2	3/16	1/32	.216	2	●	●	●	●	

● : Stock

High Speed Shear Mill

● Lead angle 75 degree - SDW43 (A.R. +12°, R.R. 0°)



Cutter	Effective Cutting Dia. D	No. of Inserts	Dimensions (inch)						Weight
			D1	Height L	Bore D2	Keyway W	L1	a	
E250R100-SDW43-4C	2.500	4	2.780	2.000	1.000	.387	.780	.36	1.8 lbs
E300R100-SDW43-5C	3.000	5	3.280	2.000	1.000	.387	.780	.36	2.3 lbs
E400R150-SDW43-6C	4.000	6	4.280	2.000	1.500	.640	1.09	.36	3.3 lbs
E500R150-SDW43-7C	5.000	7	5.280	2.000	1.500	.640	1.09	.36	5.0 lbs

● Spare Parts

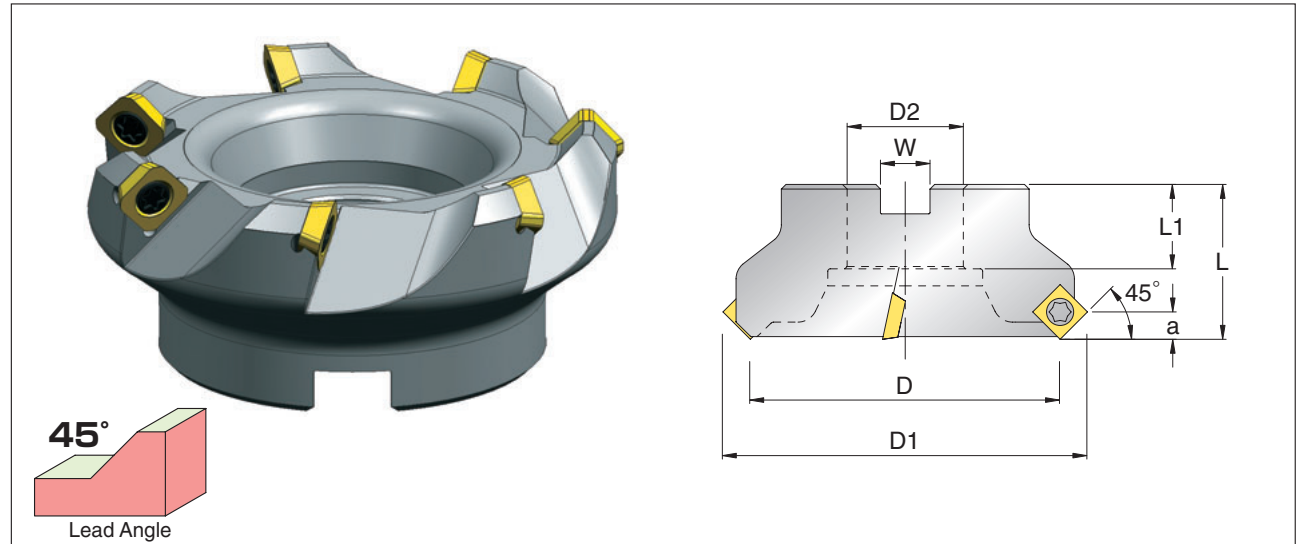


● Inserts

Shape	NTK Part Number	Dimensions (inch)						SX1	SX6	SX8	C7X
		IC	T	R	D	Fig.					
	SDCW432T0420	1/2	3/16	1/32	.216	1	●	●	●	●	
	SDCW433T0420	1/2	3/16	3/64	.216	1	●	●	●	●	
	SDCW434T0420	1/2	3/16	1/16	.216	1	●	●	●	●	
	SDCW43EET0420R	1/2	3/16	—	.216	2	●	●	●	●	

● : Stock

● Lead angle 45 degree - SDW43 (A.R. +12°, R.R. 0°)



Cutter	Effective Cutting Dia. D	No. of Inserts	Dimensions (inch)						Weight
			D1	Height L	Bore D2	Keyway W	L1	a	
A300R100-SDW43-6C	3.000	6	3.740	2.000	1.000	.387	.780	.26	2.3 lbs
A400R150-SDW43-7C	4.000	7	4.740	2.000	1.500	.640	1.09	.26	3.3 lbs
A500R150-SDW43-8C	5.000	8	5.740	2.000	1.500	.640	1.09	.26	5.0 lbs

● Spare Parts



● Inserts

Shape	NTK Part Number	Dimensions (inch)						SX1	SX6	SX8	C7X
		IC	T	R	D	Fig.					
	SDCW432T0420	1/2	3/16	1/32	.216	1	●	●	●	●	
	SDCW433T0420	1/2	3/16	3/64	.216	1	●	●	●	●	
	SDCW434T0420	1/2	3/16	1/16	.216	1	●	●	●	●	
	SDCW43AET0420	1/2	3/16	—	.216	2	●	●	●	●	

● : Stock

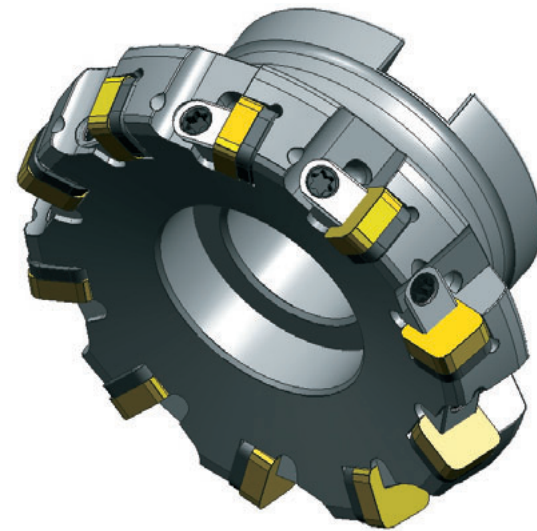


HVM cutters offer high feed and heavy depth of cut milling of various materials

- Clamp-on Negative inserts make high feed and heavy depth of cut machining possible
- Shim seats are located to protect milling cutter body

Recommended work materials

- Cast Irons, Ductile Irons
- Carbon Steels, Alloy Steels & Stainless Steels
- High Temperature Alloys
- Hardened Steels



Available cutter diameter

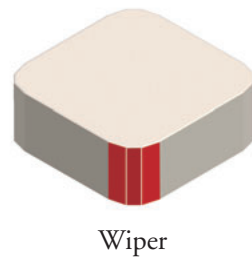
- 2.5, 3.0, 4.0, 5.0 inch

Available lead angle

- 75°

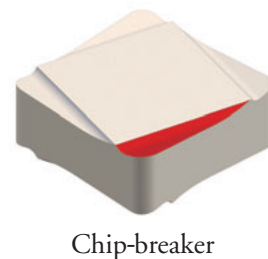
Wiper inserts also available

- Excellent surface roughness
- High feed machining with maintained surface roughness

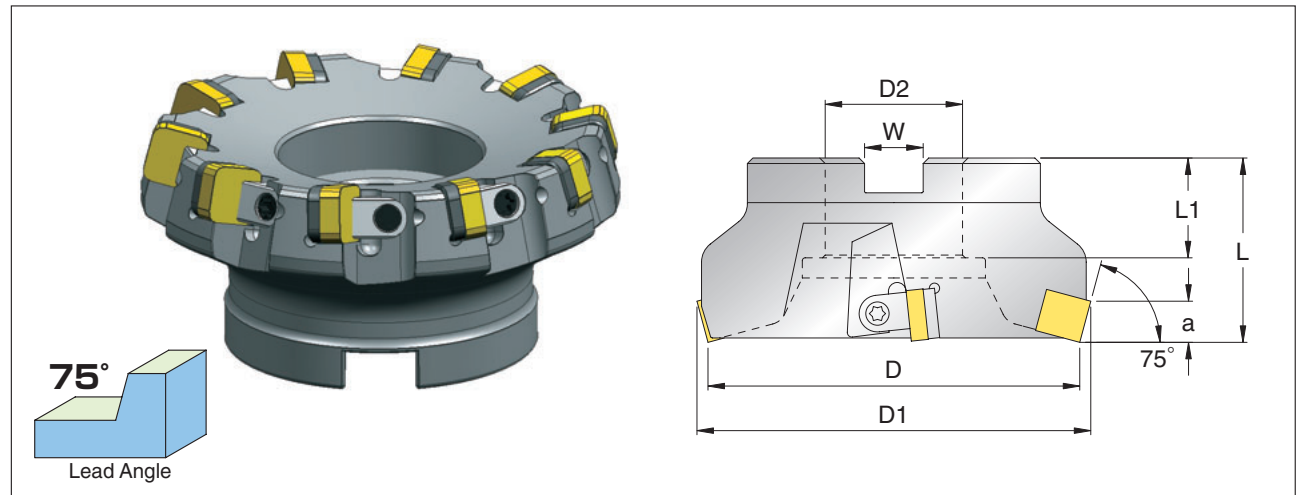


Chip-breaker inserts also available

- Excellent burr-free cutting
- Less tool pressure required



Lead angle 75 degree - SN43 (A.R. -6°, R.R. -10°)

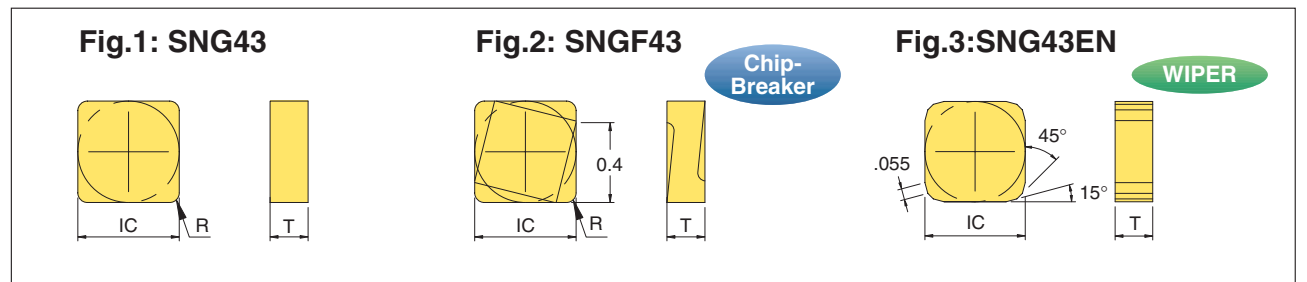


Cutter	Effective Cutting Dia. D	No. of Inserts	Dimensions (inch)						Weight
			D1	Height L	Bore D2	Keyway W	L1	a	
E250R100-SN43-6N	2.500	6	3.050	2.000	1.000	.387	.780	.36	2.0 lbs
E300R100-SN43-8N	3.000	8	3.550	2.000	1.000	.387	.780	.36	3.0 lbs
E400R150-SN43-10N	4.000	10	4.550	2.000	1.500	.640	1.09	.36	4.0 lbs
E500R150-SN43-12N	5.000	12	5.550	2.000	1.500	.640	1.09	.36	5.5 lbs

Spare Parts

Wedge W6226	Wedge screw WS1266	Torx wrench K5615	Shim S3212	Shim screw SS1630	Torx wrench K5609

Inserts



Shape	NTK Part Number	Dimensions (inch)										
		IC	T	R	Fig.	SX1	SX5	SX6	SX8	SX9	WA1	C7X
	SNG432T0220	1/2	3/16	1/32	1		●			●	●	
	SNG432T0420	1/2	3/16	1/32	1	●		●	●	●	●	●
	SNG433T0220	1/2	3/16	3/64	1		●			●	●	
	SNG433T0420	1/2	3/16	3/64	1	●		●	●	●	●	●
	SNG434T0220	1/2	3/16	1/16	1		●			●	●	
	SNG434T0420	1/2	3/16	1/16	1	●		●	●	●	●	●
	SNGF433TRCC413	1/2	3/16	3/64	2	●						
	SNG43ENTN	1/2	3/16	—	3	●		●	●			●

● : Stock

Xtreme-Feed Mill



XFM cutters offer higher feed capacity by engaging more teeth

Recommended work materials

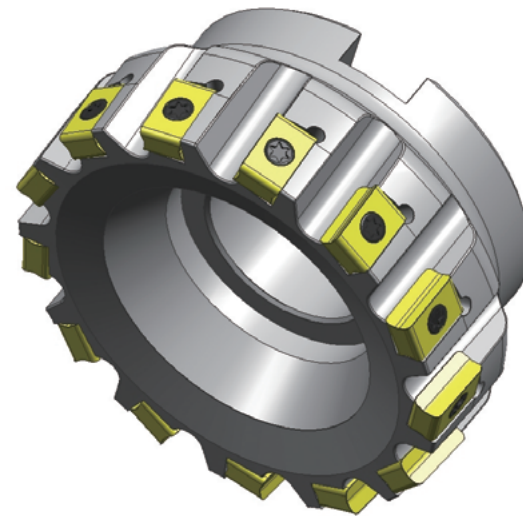
- Cast Irons, Ductile Irons

Available cutter diameter

- 3.0, 4.0, 5.0 inch

Available lead angle

- 88°



Screw-on Rectangular inserts with chip-breaker offer

- Sharpness and Toughness
- Reduced tool pressure
- Increased depth of cut
- Cost Reduction in hardware - No clamps required

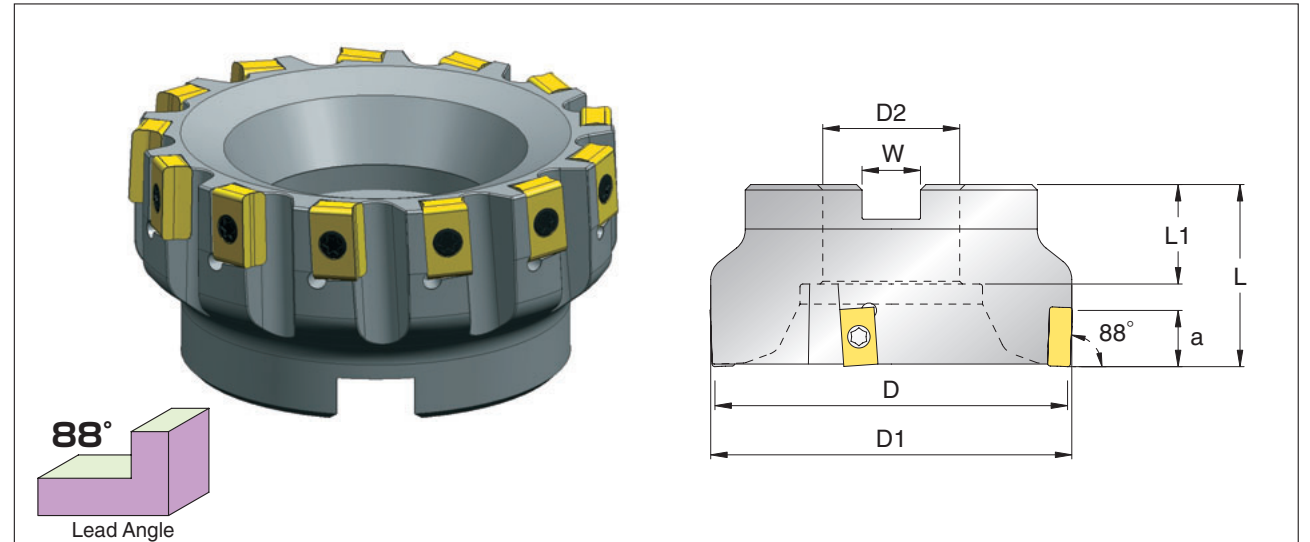


Chip-breaker

Note:
Torque-control wrench needed for clamping ceramic inserts.
Recommended torque is 35lbs (4Nm).
Order TCW15 wrench separately.



Note:
Only right hand cutter available at this time.

Lead angle 88 degree - LNX324 (A.R. -4°, R.R. 0°)



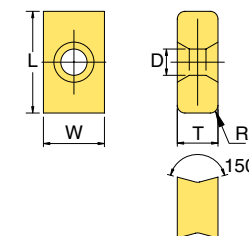
Cutter	Effective Cutting Dia. D	No. of Inserts	Dimensions (inch)						Weight
			D1	Height L	Bore D2	Keyway W	L1	a	
P300R100-LNX324-10C	3.000	10	3.130	2.000	1.000	.387	.770	.56	2.3 lbs
P400R150-LNX324-13C	4.000	13	4.130	2.000	1.500	.640	1.09	.56	3.3 lbs
P500R150-LNX324-16C	5.000	16	5.130	2.000	1.500	.640	1.09	.56	5.0 lbs

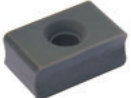
Spare Parts

	
Insert screw IS-4x12	Torx wrench K5615

Inserts

Fig. 1: LNX324



Shape	NTK Part Number	Dimensions (inch)						Fig.	SX1
		L	W	T	R	D			
	LNX324-02T0420	5/8	3/8	1/4	1/32	.161	1	●	
	LNX324-03T0420	5/8	3/8	1/4	3/64	.161	1	●	
	LNX324-04T0420	5/8	3/8	1/4	1/16	.161	1	●	

● : Stock

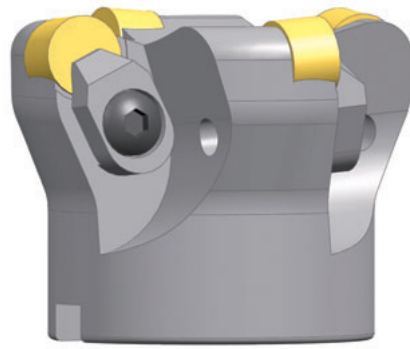
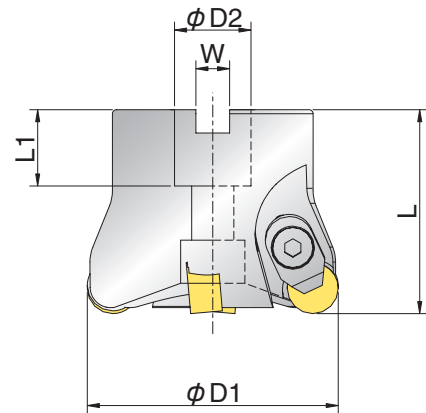
Accel High Speed Mill




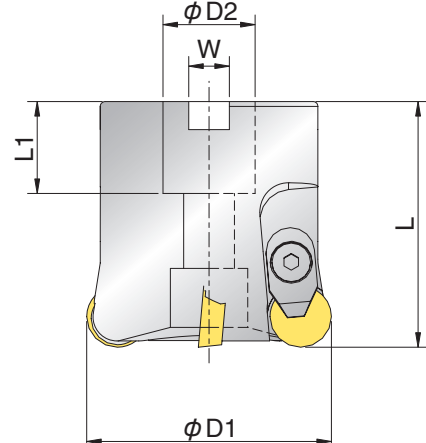
AHM with round type inserts makes high speed milling of high temperature alloys and hardened steels possible

Recommended work materials


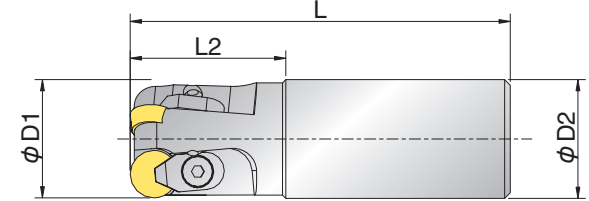
- High Temperature Alloys
- Hardened Steels

Cutter	Effective Cutting Dia. $\phi D1$	No. of Inserts	Dimensions				Insert
			Height L	Bore $\phi D2$	Keyway W	L1	
RNIW200S075R03	2.000	3	2.000	.750	.322	.748	RNG45
RNIW250S075R04	2.500	4					
RNIW300S100R05	3.000	5					






Cutter	Effective Cutting Dia. $\phi D1$	No. of Inserts	Dimensions				Insert
			Height L	Bore $\phi D2$	Keyway W	L1	
RPIW200S075R04	2.000	4	2.000	.750	.322	.748	RPG43
RPIW300S100R05	3.000	5					

Cutter	Effective Cutting Dia. $\phi D1$	No. of Inserts	Shank Diameter $\phi D2$	Overall Length L	Head Length L2	Insert
RPIW125E125R03	1.250	3	1.250	4.000	1.640	RPG43
RPIW150E150R03	1.500		1.500		1.830	

● Inserts

Shape	NTK Part Number	Dimensions (inch)			WA1	SX5	SX9	HC7
		IC	T	R				
	RNG45E01	1/2	5/16	—	●	●	●	●
	RNG45T0220				●	●	●	●
	RNG45T0420				●	●	●	●
	RNG45Z0620				●	●	●	●
	RNG45Z0825				●	●	●	●
	RPG43T0220	1/2	3/16	—	●	●	●	●
	RPG43T0420				●	●	●	●
	RPG43Z0620				●	●	●	●
	RPG43Z0825				●	●	●	●

● : Stock

● Spare Parts

Cutter					
RNIW200S075R03	Clamp	Clamp screw	Torx wrench	Shim	Shim screw
RNIW250S075R04	AMS-6T	AOB-6S-T30	LLR-T30	—	—
RNIW300S100R05					
RPIW125E125R03					
RPIW150E150R03	AMS-5T	AOB-5S-T25	LLR-T25	—	—
RPIW200S075R04				ARP42A	M3X8
RPIW300S100R05					

SX1, SX6 & SX8-Silicon Nitride Ceramics for Milling of Gray Cast Irons

NTK silicon nitride ceramics SX1, SX6 & SX8 make high-speed milling of cast iron possible. SX1 and SX6 grades have the highest silicon nitride content on the market. Both grades offer exceptional thermal shock resistance and wear resistance at high cutting speeds. Finer finishes and flatter surfaces can be obtained when SX1 and SX6 wiper inserts are used in high-speed milling. SX8 is the toughest silicon nitride grade for high speed milling of cast iron. Use SX8 for applications where lack of fracture toughness due to heavy depth of cut causes insert breakage.

SX1 Features

- Excellent notch wear resistance at high speeds
- Better thermal shock resistance at high speeds

SX6 Features

NEW

- Best notch wear resistance at high speeds
- Excellent wear resistance at high speeds
- Best thermal shock resistance at high speeds

SX8 Features

- Toughest silicon nitride ceramics on the market

Work Material	Depth of Cut (inch)	Grade	Dry	Wet	Cutting Speed (SFM)							Feed (IPT)											
					500	1000	1500	2000	2500	3000	3500	.002	.004	.006	.008	.010	.012	.014					
Gray Cast Iron	.020 to .060	SX1	●	○																			
		SX6	●	○																			
		SX8	●	○																			
	Over .060 or As cast	SX1	●	○																			
		SX6	●	○																			
		SX8	●	○																			
Ductile Iron	.020 to .060	SX1	●	○																			
		SX6	●	○																			
		SX8	●	○																			
	Over .060 or As cast	C7X	●	○																			
		SX1	●	○																			
		SX6	●	○																			

● : 1st choice, ○ : 2nd choice

SX5 & SX9-SiAlON Ceramics for Milling of High Temperature Alloys

NTK SX5 and SX9 are SiAlON ceramics for high-speed milling of high temperature alloys. SiAlON ceramics offer better wear resistance and higher toughness than silicon nitride ceramics when machining high temperature alloys. SX5 is the toughest SiAlON grade on the market for machining high temperature alloys at high cutting speed. Use SX5 for applications where lack of fracture toughness due to heavy depth of cut causes insert breakage. SX9 has both the best thermal shock resistance and the best notch wear resistance in the SiAlON ceramics. Use SX9 for applications where thermal shock resistance or notch wear due to high-speed cutting cause insert breakage.

SX5 Features

- Excellent notch wear resistance at high speeds
- Toughest SiAlON grade on the market

SX9 Features

- Best notch wear resistance in the SiAlON ceramics
- Best thermal shock resistance in the SiAlON ceramics

Work Material	Grade	Dry	Wet	Cutting Speed (SFM)					Feed (IPT)					Depth of Cut (INCH)								
				1500	2000	2500	3000	3500	.002	.003	.004	.005	.006	.007	.020	.040	.060	.080	.100	.120		
High Temperature Alloys	SX5	●	○																			
	SX9	●	○																			
	WA1	●	○																			

● : 1st choice, ○ : 2nd choice

WA1, Whisker-Reinforced Ceramic for Milling of High Temperature Alloys and Hardened Steels

NTK WA1 is a whisker-reinforced ceramic material with silicon-carbide(SiC) whiskers added to alumina. WA1 has been used widely for machining high temperature alloys and machining hardened steel at high cutting speeds. WA1 has a higher (SiC) content than other competitor's whisker-reinforced ceramics. The resulting material, WA1, shows higher toughness and better thermal shock resistance which are needed in milling applications.

WA1 Features

NEW

- Higher toughness compared with competitor's whisker reinforced ceramics
- Better thermal shock resistance compared with competitor's whisker ceramics
- Best notch wear resistance in the whisker-reinforced ceramics

HC7, Alumina-TiC Ceramic for Milling of Hardened Steels

NTK HC7 consists of aluminum oxide and titanium carbide (TiC). HC7 shows better surface view than whisker-reinforced ceramics in machining hardened steel. Use HC7 for finish milling applications where are needed surface roughness.

HC7 Features

- Excellent surface roughness in milling of hardened steel

Work Material	Grade	Dry	Wet	Cutting Speed (SFM)					Feed (IPT)				Depth of Cut (INCH)									
				300	600	900	1200	1500	.002	.003	.004	.005	.010	.020	.030	.040	.050					
Hardened Steel	45 - 55 Rc	WA1	●	○																		
		HC7	●	○																		
	55 - 65 Rc	WA1	●	○																		
		HC7	●	○																		

● : 1st choice, ○ : 2nd choice

C7X-Cermet for Milling of Ductile Irons & Steels

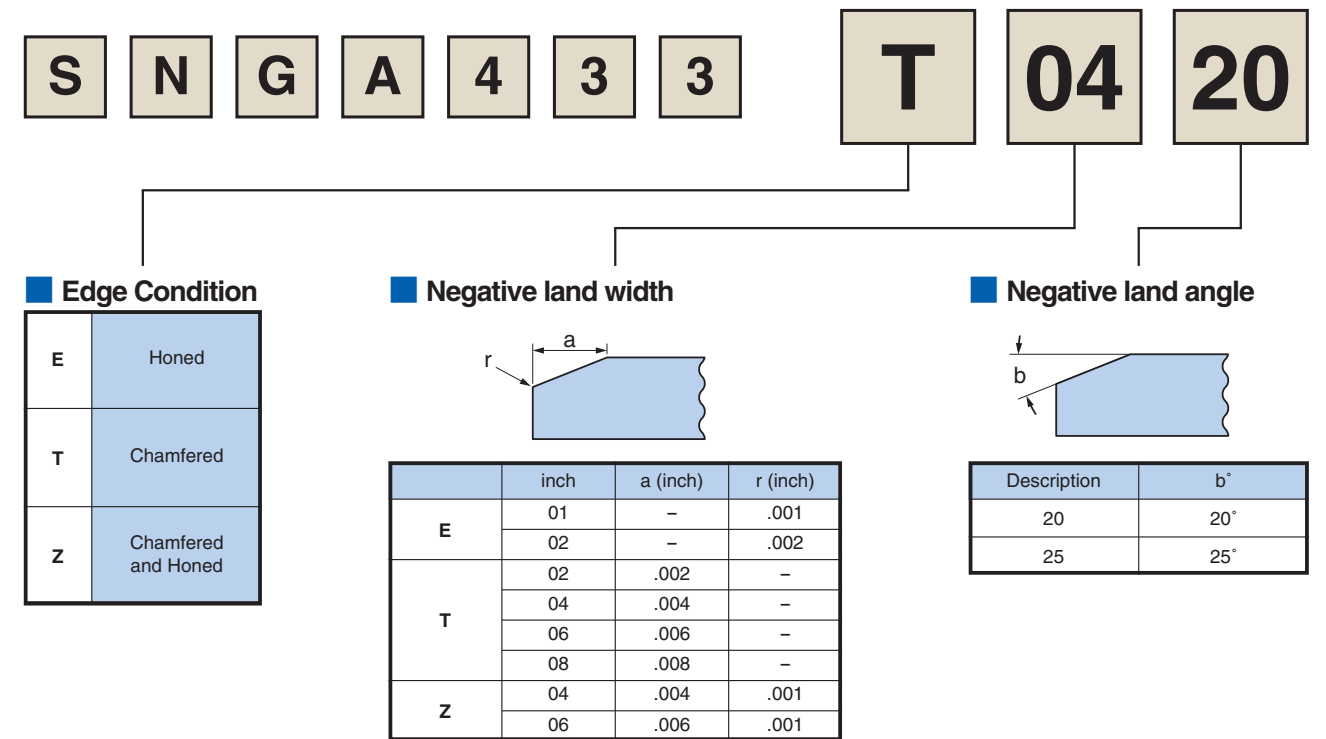
NTK's newest cermet C7X, is designed for higher speed milling of ductile iron, carbon steels, alloy steels and stainless steels. By adding special alloy binders in the composition, C7X has special alloy binders which increase both its wear and thermal shock resistance. Also, C7X has increased fracture toughness comparable with some carbide milling grades on the market.

C7X Features

- Stable performance on semi-finishing and finishing steel regardless of dry or wet conditions
- High fracture toughness makes some roughing as well as finishing operations possible
- Stable tool life when milling with coolant by reducing chipping and breakage due to thermal cracks

Work Material	Depth of Cut (inch)	Grade	Dry	Wet	Cutting Speed (SFM)					Feed (IPT)								
					200	400	600	800	1000	.002	.004	.006	.008	0.10				
Stainless Steel	400 Series-Martensitic & Ferritic Up to .150	C7X	●	○														
	300 Series-Austenitic Up to .150	C7X	●	○														
	Precipitation Hardness (17- 4etc) Up to .100	C7X	●	○														
Carbon Steel-1000 Series & Alloy Steel-4000 5000 6000 8000 9000 Series	130 - 220 BHN Up to .120	C7X	●	○														
	220 - 300 BHN Up to .080	C7X	●	○														
	300 - 400 BHN Up to .040	C7X	●	○														
	- 45 Rc Up to .020	C7X	●	○														

● : 1st choice, ○ : 2nd choice



Guide to This Catalogue

This catalogue lists products as of May 2008.

Inventory status symbols: ● : Stock item

Safety Notice

We make a particular effort to manufacture safe products. However, NTK cutting tools may be broken due to a sudden increase of the cutting load or excessive tool wear, which could possibly cause injuries to operators. To protect the operators from such accidents, please note the following when operating a cutting tool:

- Install shielding plates or wear protective clothes and glasses.
- Do not touch the cutting edge with bare hand because it is sharp.
- Use genuine NTK parts for parts and drivers, etc.
- Check sharpness and replace the tool early if necessary.
- Check the sharpness of tools and exchange them at an early stage.

We do not recommend you to grind cutting tools because grinding may cause cracks and improper finishing, possibly resulting in breakage of the tool.

