2015►2016
General Catalog

SUMITOMO

CARBIDE - CBN - DIAMOND

High Performance Cutting Tools

Global Support
Global Solutions

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SUMITOMO

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Turning

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	Insert Shape Chart 1	Relief Angle Chart 2	Tolerance Chart 3	Type Chart 4	I.C. Chart 5

Chart 1 Insert Shape

Symbol	Insert Shape
V	35˚ Diamond
D	55˚ Diamond
T	60˚ Triangle
C	80˚ Diamond
W	80˚ Trigon
S	90˚ Square
R	Round
A, K, M	Parallelogram

Chart 2 Relief Angle

Symbol	Relief Angle
N	0°
B	5°
C	7°
P	11°
D	15°
E	20°
F	25°

Chart 3 Tolerance

Symbol	Insert I.C.	Thickness	Nose Position
A	±.001	±.001	±.0002
C	±.001	±.001	±.0005
E	±.001	±.001	±.001
F	±.0005	±.001	±.0002
G	±.001	±.005	±.001
J	±..002	±.001	±.002
M	See Chart 3.1		
U	See Chart 3.1		

Chart 5 Inscribed Circle

Sumitomo Number	I.S.O. Number							
SIZE \ SHAPE	R	S	T	C	D	V	W	I.C.
(5)			06				03	5/32"
(6)			08					3/16"
			09					7/32"
	06							(.236)
2		06	11	06	07		04	1/4"
2.5		07		08	09			5/16"
	08							(.315)
3	09	09	16	09	11	16	06	3/8"
	10							(.394)
	12							(.472)
4	12	12	22	12	15	22	08	1/2"
5	15	15	27	16				5/8"
	16							(.630)
6	19	19	33	19				3/4"
	20							(.787)
	25							(.984)
8	25	25						1
	31							1-1/4"
	32							(1.260)

Chart 6 Thickness

Sumitomo Number	I.S.O. Number	Thickness
(2)	01	1/16″
1.5	02	3/32″
2	03	1/8″
2.5	T3	5/32″
3	04	3/16″
—	05	7/32″
4	06	1/4″
5	07	5/16″
5	08	5/16″
6	09	3/8″

Insert Nomenclature

3	2	EGU
04	08	NGU
Thickness Chart 6	Nose Radius Chart 7	Chipbreaker Chart 8

Chart 3.1 **"M" and "U" Class Tolerance's**

	Inscribed Circle		Nose Position Tolerance				Thickness
Symbol	M	U	M			U	M & U
Shapes	All	All	S,T, C, R, W	D	V	All	All
I.C. Size							
5/32 - 3/8	±.002	±.003	±.003	±.004	±.007	±.005	±.005
7/16 - 9/16	±.003	±.005	±.005	±.006	±.010	±.008	
5/8 - 3/4	±.004	±.007	±.006	±.006	–	±.001	
7/8	±.006	±.010	±.006	±.006	–	±.015	
1	±.006	±.010	±.007	±.007	–	±.015	
11/4	±.006	±.010	±.008	±.008	–	±.015	

Chart 4

Symbol	Hole	Chipbreaker	Hole Style
A	Yes	No	Straight
G	Yes	Double	Straight
M	Yes	Single	Straight
N	No	No	None
R	No	Single	None
D	Yes	No	Countersunk
T	Yes	Single	Countersunk
X	Yes	10˚ Rake Angle	Straight or Countersunk
E	No	No	None

Chart 7 **Nose Radius**

Sumitomo Number	I.S.O. Number	Radius
v	00	.0012″
001	.0039″	
0.5	02	.0079″
1	04	.0156″
—	05	.0197″
2	08	.0312″
—	10	.0394″
3	12	.0469″
—	15	.0591″
4	16	.0625″
6	24	.0938″
8	32	.1250″
—	40	.1575″

Chart 8 **Chipbreaker**

See Pages 9-10 for chipbreaker information.

CVD Coated Grades

Class	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (µm)	Characteristics	Old Grades
P Steel	AC810P	91.0	2.2	Super FF Coat	18	A new P10 grade with excellent wear resistance that features stability and longer tool life. Utilises a special carbide substrate with Super FF Coat for high to medium speed cutting.	AC700G
	AC820P	90.1	2.2	Super FF Coat	14	A P20 grade that features stability and longer tool life. Employs special carbide substrate and Super FF Coat to improve on P20 wear and fracture resistance.	AC2000
	AC830P	89.4	2.6	Super FF Coat	8	Stable long-life grade employs special tough, carbide substrate and Super FF Coat. Improves on P30 grade fracture resistance and approaches P20 grade in terms of wear resistance.	AC3000
	AC630M	89.5	2.7	Super FF Coat	5	Superior performance in continuous and light cutting, and other low-speed applications that require sharp edges.	AC230
M Stainless Steel	AC610M	91.0	2.2	Super FF Coat	5	A high efficiency M10 grade featuring improved wear resistance during stainless steel cutting. Employs special, ultra-hard substrate and thin Super FF Coat.	—
	New AC6030M	90.0	2.7	Absotech Coat	5	A general purpose grade featuring improved wear and fracture resistance during stainless steel cutting. Utilises a special tough carbide substrate with our patented Absotech Coat.	AC630M
K Cast Iron	AC405K	92.0	2.4	Super FF Coat	18	Employs an ultra-hard substrate and ultra-hard Super FF Coating to provide excellent resistance to wear and plastic deformation. Suitable for high-speed continuous cutting of cast iron.	AC410K
	AC415K	91.1	2.5	Super FF Coat	18	Employs a special dedicated ultra-hard substrate that is also suitable for interrupted cutting and ultra-hard Super FF Coating to provide stability and long tool life in a wide range of processes. First recommended grade for cast iron turning.	AC410K
	AC420K	91.1	2.5	Super FF Coat	12	A new, extremely versatile grade that can be used for rough, interrupted cutting of ductile and grey cast iron. Employs special, ultra-hard carbide substrate and Super FF Coat to provide stability and long tool life.	AC700G
	AC820P	90.1	2.2	Super FF Coat	14	A grade suited to heavy interrupted cutting of ductile cast iron.	AC2000

PVD Coated Grades

Class	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (µm)	Characteristics	Old Grades
P Steel	New T1500Z (Cermet)	92.0	2.2	Brilliant Coat	3	• Brilliant Coat PVD coating gives excellent lubricity for higher quality machining. General-purpose coated cermet grade that can maintain high-quality machined surfaces and also gives excellent wear resistance.	T2000Z
	T3000Z (Cermet)	91.3	2.4	ZX Coat	3	• An ultra-reliable coating grade with tough cermet substrate.	—
	AC530U	91.4	3.3	Super ZX Coat	3	• For interrupted and general steel cutting. • Utilizing the new super multi-layered PVD coating of nanometer thick TiAlN and AlCrN layers, coupled with a fine-grained super tough substrate for excellent fracture resistance.	ACZ310
	AC520U	91.7	3.0	Super ZX Coat	3	• Interrupted machining and stainless steel machining. • Utilizing the new super multi-layered PVD coating of nanometer thick TiAlN and AlCrN layers, coupled with a super tough substrate for excellent fracture resistance.	EH520Z EH20Z
M Stainless Steel	New AC6040M	91.4	3.8	Absotech Coat	3	• Heavy interrupted machining and stainless steel machining. • Utilizing the new super multi-layered PVD coating of nanometer thick TiAlN and AlCrN layers, coupled with a fine-grained super tough substrate for excellent fracture resistance.	ACZ310 AC530U
K Cast Iron	AC510U	92.6	2.6	Super ZX Coat	3	• General to interrupted machining of cast iron and ductile cast iron. • Utilizing the new super multi-layered PVD coating of nanometer thick TiAlN and AlCrN layers, coupled with a fine-grained super tough substrate for excellent fracture resistance.	EH510Z EH10Z
S Exotic Alloy	AC510U	92.6	2.6	Super ZX Coat	3	• Finishing to medium cutting of exotic alloys. • Utilizing the new super multi-layered PVD coating of nanometer thick TiAlN and AlCrN layers. Superior wear and heat resistance, and stable, long tool life.	EH510Z EH10Z
	AC520U	91.7	3.0	Super ZX Coat	3	• Medium to rough cutting of exotic alloys. • Utilizing the new super multi-layered PVD coating of nanometer thick TiAlN and AlCrN layers. Superior wear and heat resistance, and stable, long tool life even in interrupted cutting.	EH520Z EH20Z
Small Product Machining	ACZ150	91.4	3.3	ZX Coat	1	• For small tools, and high-precision finishing to general finishing applications. • TiN ultra-thin coating and fine-grained, super tough substrate combine to give good edge sharpness and superior cut finish.	—

Ceramic Grades For Turning

Class	Grade	Hardness (HRA)	TRS (GPa)	Main Coating Components	Coating Thickness (µm)	Characteristics
K Cast Iron	**SN2000K**	94.9	1.2	—	—	Contains Si_3N_4. Suitable for medium to finishing of cast iron.
S Exotic Alloy	**WX2000**	90.0	1.2	—	—	Enhanced with SiC whiskers. For heat-resistant alloy and ultra-hard roll cutting.
H Hardened Steel	**NB90S**	95.0	1.0	TiAlN	2	Ultra-strong. Contains Al2O3 and ZX Coat. Continuous low-speed turning of hardened steel.

Ceramic Grades For Milling

Class	Grade	Hardness (HRA)	TRS (GPa)	Main Coating Components	Coating Thickness (µm)	Characteristics
K Cast Iron	**SN2100K**	93.2	0.7	—	—	Contains Si_3N_4. For high speed finish milling of cast iron.

Uncoated Carbide Grades

Application	Grade	Hardness (HRA)	TRS (GPa)	Young Modulus (GPa)	Thermal Conductivity (W/m·°C)	Compressive Strength (GPa)	Linear-Thermal Expansion Coefficient (X 10^{-6}/°C)
P Steel	**A30N**	91.2	2.2	520	-	-	-
M Stainless Steel	**EH510**	92.6	2.6	-	-	-	-
	EH520	91.7	3.0	-	-	-	-
K Cast Iron	**BL130**	94.3	2.9	-	-	-	-
	H1	92.9	2.1	650	109	6.1	4.7
	EH10	92.4	3.4	640	105	-	4.5
	EH510	92.6	2.6	-	-	-	-
	EH520	91.7	3.0	-	-	-	-
	G10E	91.1	2.2	620	105	5.7	-
N Non-Ferrous Metal	**H1**	92.9	2.1	650	109	6.1	4.7
S Exotic Alloy	**EH510**	92.6	2.6	-	-	-	-
	EH520	91.7	3.0	-	-	-	-

CBN Grades

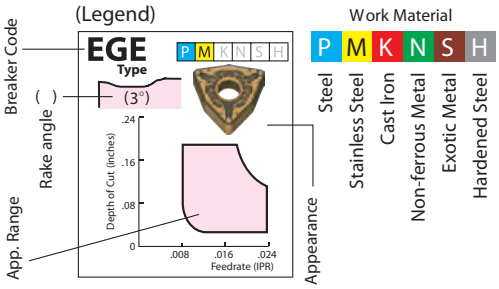
Class	Grade	Binder	Carbon Content (%)	Grain Size (µm)	Hardness HV (GPa)	TRS (GPa)	Series	Characteristics
H Hardened Steel	**BNC2010**	TiCN	50 to 55	2	30 to 32	1.10 to 1.20	Coated SUMIBORON (Coated)	Highly wear resistant coating makes this grade suited for high speed finishing.
	BNC2020	TiN	70 to 75	5	34 to 36	1.20 to 1.30		High crater wear and breakage resistance make this grade suited for high load and interrupted cutting.
	BNC100	TiN	40 to 45	1	29 to 32	1.05 to 1.15		Highly wear resistant coating makes this grade suited for high speed finishing.
	BNC160	TiN	60 to 65	3	31 to 33	1.10 to 1.20		Stable, high precision finishing of hardened steel.
	BNC200	TiN	65 to 70	4	34 to 36	1.15 to 1.25		Tough substrate with high wear resistant coating provide longer tool life.
	BNC300	TiN	60 to 65	1	33 to 35	1.15 to 1.25		Suited for finishing when there is a combination of continuous and interrupted cutting.
	BNX10	TiCN	40 to 45	3	27 to 31	0.80 to 0.90	SUMIBORON (Uncoated)	Optimum wear resistance. Suited to continuous, high-speed cutting.
	BN1000	TiCN	40 to 45	1	27 to 31	0.90 to 1.00		Ultimate wear and fracture resistance. Suited to high-speed cutting.
	BNX20	TiN	55 to 60	3	31 to 33	0.95 to 1.10		Crater resistant grade, suitable for high efficiency cutting under high temperature conditions.
	BNX25	TiN	65 to 70	4	29 to 31	1.00 to 1.10		Excellent fracture resistance during high speed cutting. Suited to high speed interrupted cutting of hardened steel.
	BN2000	TiN	50 to 55	2	31 to 34	1.05 to 1.15		A general purpose grade for hardened steel that provides a high degree of fracture and wear resistance.
	BN350	TiN	60 to 65	1	33 to 35	1.20 to 1.30		High cutting edge strength, suited to heavy interrupted cutting.
Sintered Components	**BN7500**	Co Compound	90 to 95	1	41 to 44	1.40 to 1.50		Maintains optimum cutting edge sharpness. Suited for finishing of sintered alloy.
	BN700	Co Compound	90 to 95	2	40 to 43	1.20 to 1.30		Maintains good wear and fracture resistance in rough cutting of sintered components.
	BN7000	Co Compound	90 to 95	2	41 to 44	1.30 to 1.40		Improved wear and fracture resistance in rough cutting of sintered components.
K Cast Iron	**BN700**	Co Compound	90 to 95	2	40 to 43	1.20 to 1.30		Maintains good wear and fracture resistance in rough cutting of cast iron and exotic alloy.
	BN7000	Co Compound	90 to 95	2	41 to 44	1.30 to 1.40		Improved wear and fracture resistance in rough cutting of cast iron and exotic alloy.
	BNS800	Al Alloy	85 to 90	8	39 to 42	0.95 to 1.10		100% solid CBN structure with good thermal impact resistance.
	BNC500	TiC	60 to 65	4	32 to 34	1.00 to 1.10	Coated SUMIBORON (Coated)	Substrate with excellent wear resistance and coating makes this grade suited for hard-to-cut cast iron.

PCD Grades

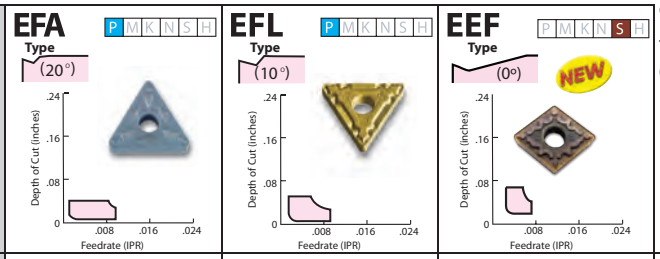
Class	Grade	Binder	Carbon Content (%)	Grain Size (µm)	Hardness HV (GPa)	TRS (GPa)	Characteristics
N Non-Ferrous Metal	**DA1000**	Co	90 to 95	Up to 0.5	110 to 120	≈ 2.60	High density sintered material made of ultra-fine diamond particles that demonstrates optimum wear and fracture resistance, and edge sharpness.
	DA2200	Co	85 to 90	0.5	90 to 100	≈ 2.45	Sintered material made of ultra-fine diamond particles that demonstrates optimum wear and fracture resistance, and edge sharpness.
	DA150	Co	85 to 90	5	100 to 120	≈ 1.95	Sintered material made of fine diamond particles that provides a good balance of workability and wear resistance.
	DA90	Co	90 to 95	50	100 to 120	≈ 1.10	Sintered material made of coarse diamond particles with high diamond content and excellent wear resistance.

(Bumpy breaker Standard breaker)

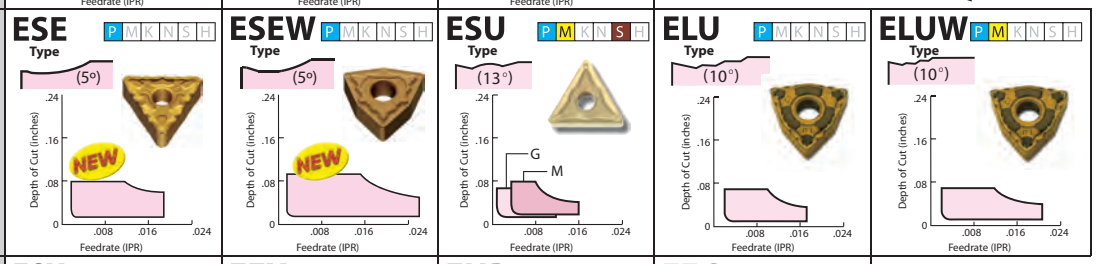
(Legend)



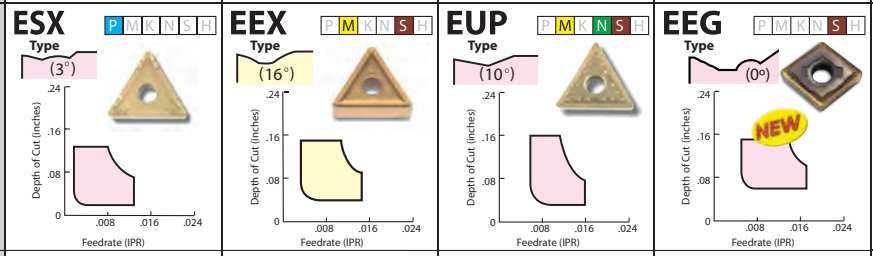
Fine Finishing



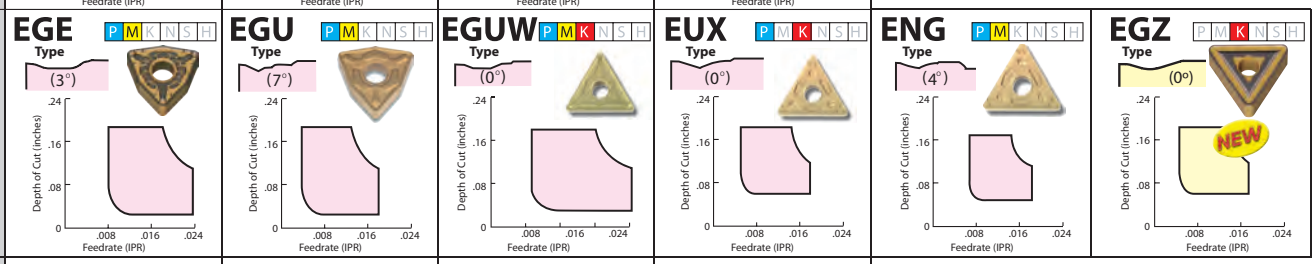
Finishing



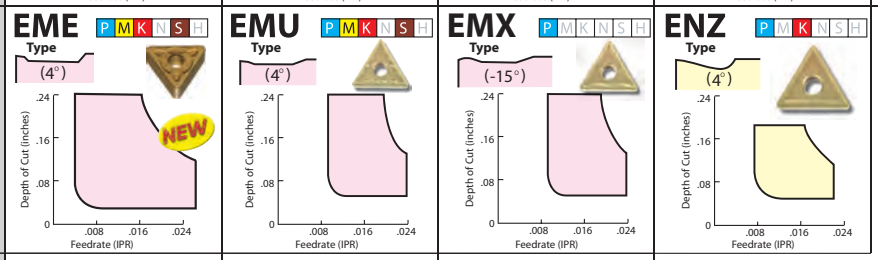
Light~Medium Cut



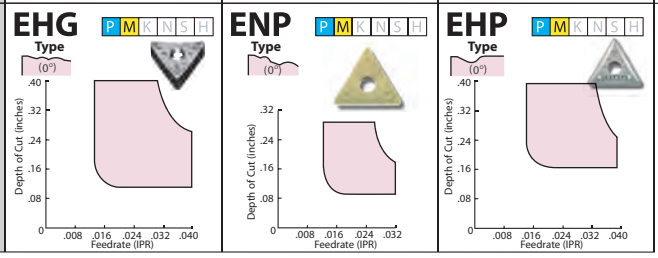
Medium Cut



Medium~Rough Cut

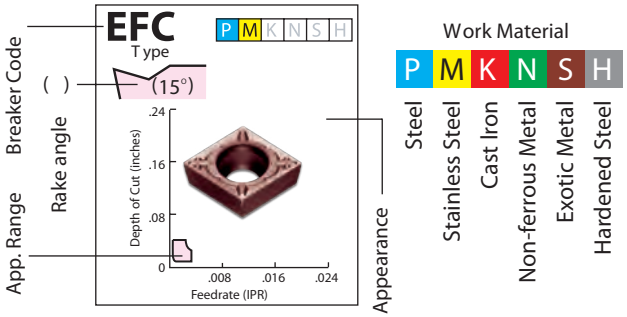


Rough~Heavy Cut



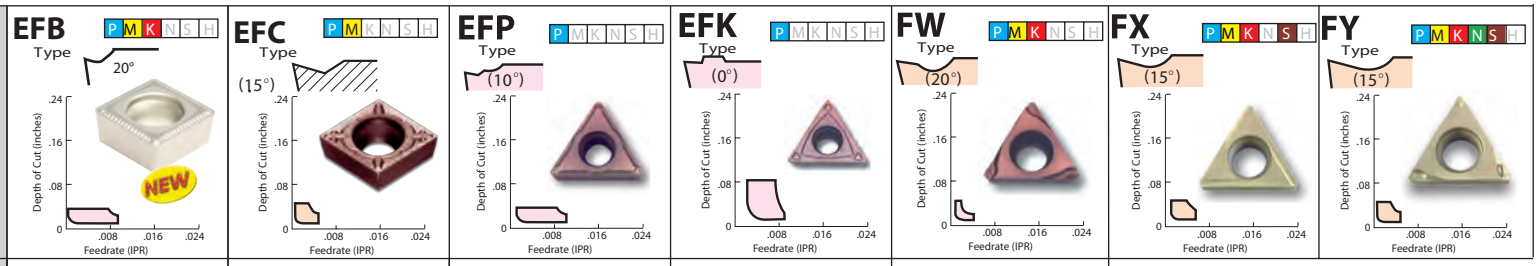
SUMITOMO POSITIVE CHIPBREAKERS

(Legend)

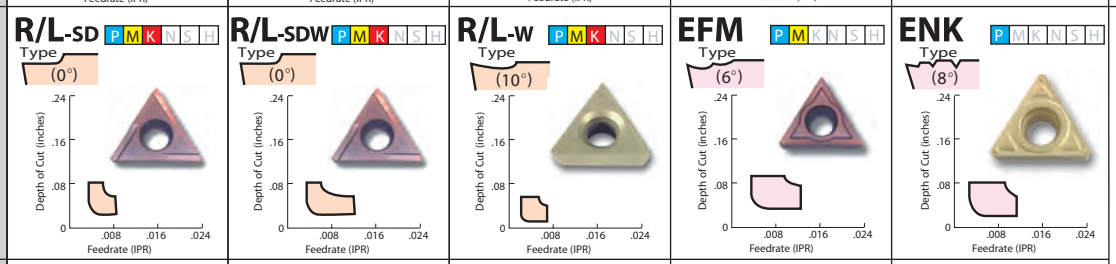


(Bumpy breaker Handed breaker)

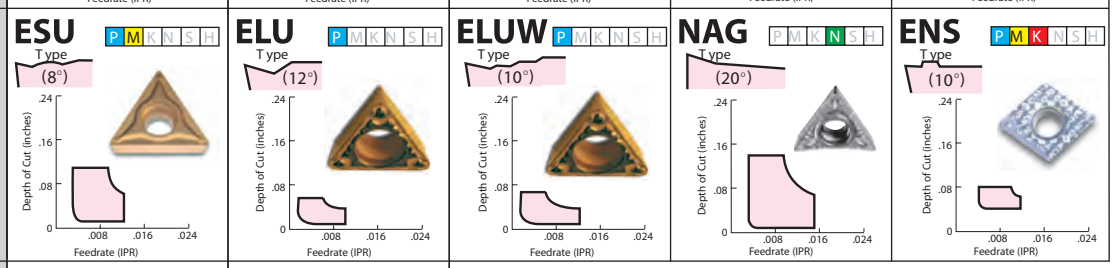
Finishing



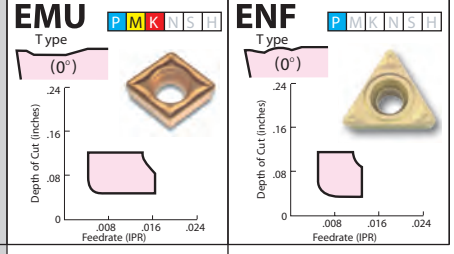
Finish~Light Cut



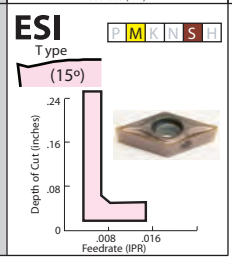
Light Cut



Light~Medium Cut



Rough~Heavy Cut



Turning

P Steel — Carbide Grades

Steel

Application	High Speed			Medium		
ISO Classification	-	P05	P10	P20	P30 (M30)	P40 (M40)
COATED CARBIDE	AC810P	AC810P	AC820P	AC830P	AC830P	AC830P
COATED CERMET	T1500Z	T1500Z	T3000Z	T3000Z	T3000Z	T3000Z
CERMET	T1500A	T1500A	T1500A	T1500A	T1500A	T1500A
CERAMIC						
CARBIDE					A30	A30

K Cast Iron

Cast Iron

High Speed	Finishing	Medium		
—	K01	K10	K20	K30
AC405K	AC405K	AC415K	AC420K	AC820P
AC405K	AC415K	AC420K	AC820P	AC820P
AC405K	AC415K	AC420K	AC820P	AC820P
SN2000K	SN2000K			
SN2100K	SN2100K			
		G10E		

M Stainless Steel

Stainless Steels

Application	Finishing~Light Cut	Medium~Roughing
COATED CARBIDE	AC610M	AC610M
	AC630M	AC630M
	AC6030M	AC6030M
	AC520U	AC520U
	AC6040M	AC6040M
		AC530U
CERMET	T1500A	

S Exotic Metal

Exotic Materials

Application	Finishing~Light Cut	Medium
COATED CARBIDE	AC510U	AC510U
	AC520U	AC520U
		AC530U
CARBIDE	EH510	EH510
		EH520
CERAMIC	WX2000	WX2000
CBN	BN7000	BN7000
		BNS800

Ceramic Grades

For Turning	High-Speed	Finishing to Light		Medium	Rough to Heavy	
	—	01	10	20	30	40
K Cast Iron	SN2000K					
S Exotic Alloy			WX2000			
H Hardened Steel		NB90S				

For Milling	High-Speed	Finishing to Light		Medium	Rough to Heavy	
	—	01	10	20	30	40
K Cast Iron	SN2100K					

CBN Grades

Class	Series	Finishing to Light		Medium	Rough to Heavy
H Hardened Steel	Classification	H01	H10	H20	H30
	Coated SUMIBORON	BNC2010		BNC2020	
		BNC100	BNC160		
			BNC200		
					BNC300
	Uncoated SUMIBORON	BNX10,BN1000			
			BN2000		
				BNX20	
					BNX25,BN350
Sintered Components	Classification	01	10	20	30
	Uncoated SUMIBORON			BN7000, BN700	
			BN7500		
K Cast Iron	Classification	K01	K10	K20	K30
	Coated SUMIBORON	BNC500			
	Uncoated SUMIBORON		BN7000,BN700		
			BN7500		
				BNS800	

SUMITOMO

CARBIDE - CBN - DIAMOND

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INDEXABLE INSERTS

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INDEXABLE INSERTS **PAGES**

80° DIAMOND TYPE
NEGATIVE INSERT

CN
- 80° Diamond Type
- Negative
- With Insert Hole

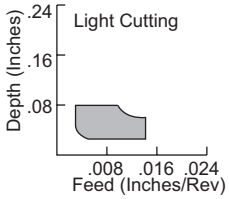
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

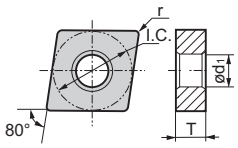
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

CNGG ESU

Rake Angle: 13°

Cutting Conditions:	Coated				Cermet						Uncoated					
Continuous Cut	●				●	●		●	●			●				
Medium Cut	●	●			●	●	●	●	●			●				
Interrupted Cut		●					●	●	●							



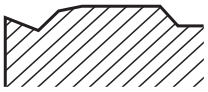


Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A	H1
CNGG430ESU	CNGG120401N-SU	.500	.1875	.0039	.2031	●	●						
CNGG430.5ESU	CNGG120402N-SU			.0078		●	●	●	●	●	●	●	
CNGG431ESUJ	CNGG120404N-SUJ												●
CNGG431ESU	CNGG120404N-SU			.0156		●	●	●	●	★	●		
CNGG432ESUJ	CNGG120408N-SUJ												●
CNGG432ESU	CNGG120408N-SU			.0313		●	●	●	●		★	★	

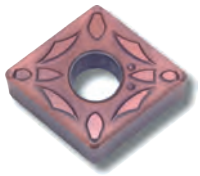
J in ESUJ = J Polish

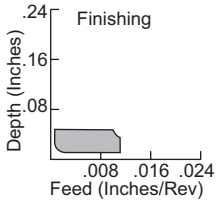
CNMG EFA

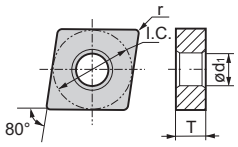
Rake Angle: 20°



Cutting Conditions:	Coated				Cermet						Uncoated					
Continuous Cut					●	●		●	●							
Medium Cut					●	●	●	●	●							
Interrupted Cut							●	●	●							



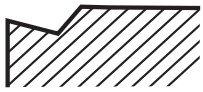




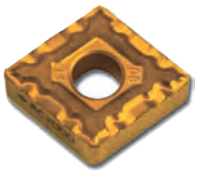
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z	T2000Z	T3000Z	T1500A	T1200A
CNMG430.5EFA	CNMG120402N-FA	.500	.1875	.0078	.2031	●	●	●	●	●
CNMG431EFA	CNMG120404N-FA			.0156		●	●	★	●	●
CNMG432EFA	CNMG120408N-FA			.0313		●	●	★	●	●

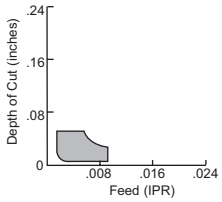
CNMG EFL

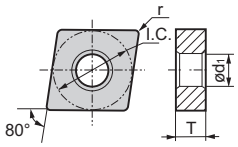
Rake Angle: 10°



Cutting Conditions:	Coated				Cermet						Uncoated					
Continuous Cut	●	●			●	●										
Medium Cut	●	●			●	●	●									
Interrupted Cut	●	●					●									







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	YB100	T1500Z	T2000Z	T3000Z
CNMG431EFL	CNMG120404N-FL	.500	.1875	.0156	.2031	●		●	●	★
CNMG432EFL	CNMG120408N-FL			.0313		●	▲	●	●	★

80° DIAMOND TYPE
NEGATIVE INSERT

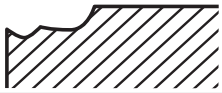
CN — 80° Diamond Type | Negative | With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

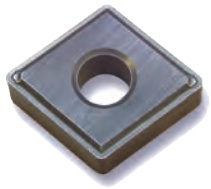
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

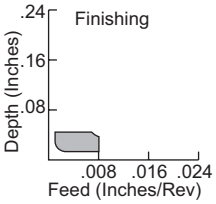
CNMG EFP

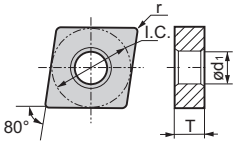
Rake Angle: 10°



Cutting Conditions:	Coated				Cermet				Uncoated							
Continuous Cut					●											
Medium Cut					●											
Interrupted Cut					●											





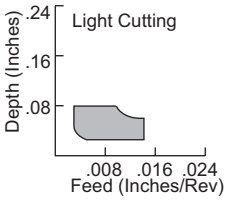


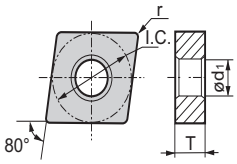
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1200A
CNMG430.5EFP	CNMG120402N-FP	.500	.1875	.0078	.2031	●
CNMG431EFP	CNMG120404N-FP			.0156		●
CNMG432EFP	CNMG120408N-FP			.0313		●

CNMG ESU

Rake Angle: 13°

Cutting Conditions:	Coated												Cermet					UC
Continuous Cut	●	●		●	●	●	●	●	●	●	●		●	●		●	●	●
Medium Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Interrupted Cut		●	●	●	●		●	●	●	●		●			●	●	●	



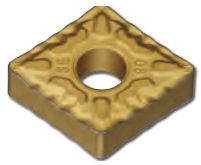


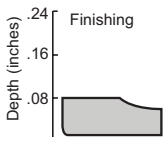
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC610M	AC6030M	AC6040M	AC630M	AC530U	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A	EH510
CNMG321ESU	CNMG090304N-SU	.375	.125	.0156	.150		★																
CNMG322ESU	CNMG090308N-SU			.0313			★																
CNMG331ESU	CNMG090404N-SU		.1875	.0156			★																
CNMG332ESU	CNMG090408N-SU			.0313			★																
CNMG430.5ESU	CNMG120402N-SU	.500		.0078	.2031											●	●						
CNMG431ESU	CNMG120404N-SU			.0156		●	●	●	●	▲		○	○	●	★	●	●	●	●	●	●	●	
CNMG432ESU	CNMG120408N-SU			.0313		●	●	●	●	▲	●	○	○	●	★	●	●	●	●	●	●	●	●
CNMG433ESU	CNMG120412N-SU			.0469		●	●	●	●			○	○	●	★		●	●	●	●	★	●	

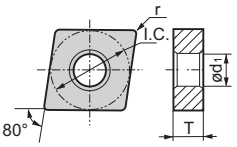
CNMG ESE

Rake Angle: 5°

Cutting Conditions:	Coated				Cermet					Uncoated							
Continuous Cut	●	●			●												
Medium Cut	●	●	●		●												
Interrupted Cut		●	●		●												







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	T1500A
CNMG431ESE	CNMG120404N-SE	.500	.1875	.0156	.2031	●		★	●
CNMG432ESE	CNMG120408N-SE			.0313		●	●	●	●
CNMG433ESE	CNMG120412N-SE			.0469		●			

80° DIAMOND TYPE
NEGATIVE INSERT

CN
- 80° Diamond Type
- Negative
- With Insert Hole

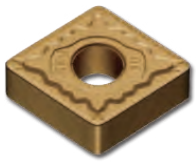
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

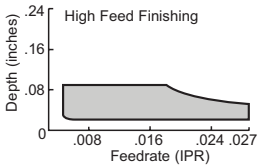
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

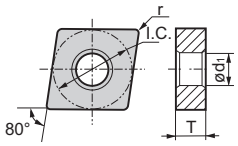
CNMG ESEW
Wiper Insert

Rake Angle: 5°

Cutting Conditions:	Coated					Cermet					Uncoated						
Continuous Cut	○	○				○											
Medium Cut	○	○				○											
Interrupted Cut		○				○											





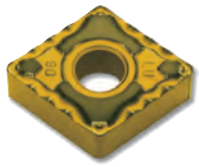


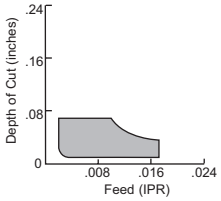
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P				T1500A										
CNMG431ESEW	CNMG120404N-SEW	.500	.1875	.0156	.2031	●	●				●										
CNMG432ESEW	CNMG120408N-SEW			.0313		●	●				●										
CNMG433ESEW	CNMG120412N-SEW			.0469		●	●														

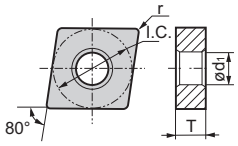
CNMG ELU

Rake Angle: 10°

Cutting Conditions:	Coated					Cermet					Uncoated						
Continuous Cut	○	○	○	○		○	○		○	○							
Medium Cut	○	○	○	○		○	○	○	○	○							
Interrupted Cut		○	○	○				○	○	○							



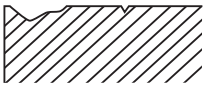




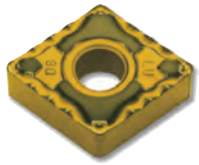
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	YB100		T1500Z	T2000Z	T3000Z	T1500A	T1200A						
CNMG321ELU	CNMG090304N-LU	.375	.125	.0156	.150	●	★	★			★	★	★								
CNMG322ELU	CNMG090308N-LU			.0313		★	★	★			★	★	★								
CNMG431ELU	CNMG120404N-LU	.500	.1875	.0156	.2031	●	●	●			●	●	●	★	★						
CNMG432ELU	CNMG120408N-LU			.0313		●	●	●	▲		●	●	●	★	★						
CNMG433ELU	CNMG120412N-LU			.0469		●	●	●			★	●	●	★	★						

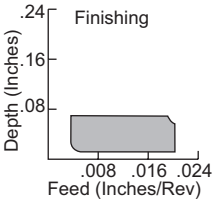
CNMG ELUW
Wiper Insert

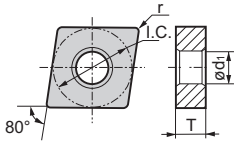
Rake Angle: 10°



Cutting Conditions:	Coated					Cermet					Uncoated						
Continuous Cut	○	○	○	○		○	○										
Medium Cut	○	○	○	○		○	○	○									
Interrupted Cut		○	○	○				○									







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	YB100		T1500Z	T2000Z	T3000Z								
CNMG431ELUW	CNMG120404N-LUW	.500	.1875	.0156	.2031	●	●	●			●	●	●								
CNMG432ELUW	CNMG120408N-LUW			.0313		●	●	●	▲		●	●	●								
CNMG433ELUW	CNMG120412N-LUW			.0469		●	●	●			●	●	★								

80° DIAMOND TYPE
NEGATIVE INSERT

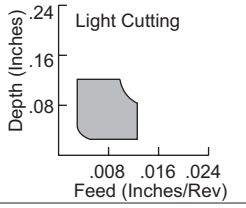
CN — 80° Diamond Type — Negative — With Insert Hole

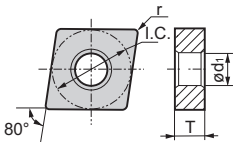
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

CNMG ENK

Rake Angle: 10°



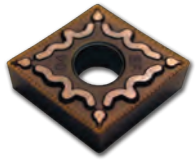


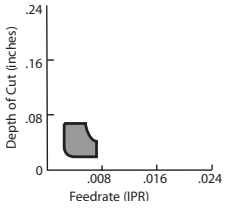
Cutting Conditions:	Coated				Cermet				Uncoated							
Continuous Cut	●				●	●										
Medium Cut	◐				◐	◐										
Interrupted Cut	◐				◐	◐										

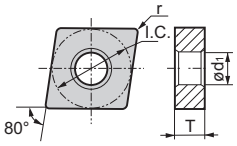
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P				T1500A	T1200A									
CNMG431ENK	CNMG120404N-SK	.500	.1875	.0156	.2031	●				●	●									
CNMG432ENK	CNMG120408N-SK			.0313		●				●	●									

CNMG EEF

Rake Angle: °0





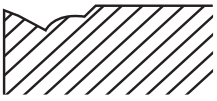


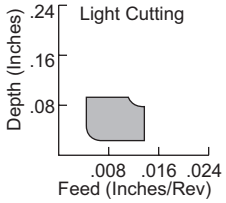
Cutting Conditions:	Coated						Cermet				Uncoated							
Continuous Cut	●	●	●	●							●							
Medium Cut	◐	◐	◐	◐	◐						◐	◐						
Interrupted Cut	◐	◐	◐		◐													

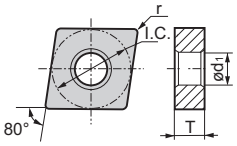
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC6030M	AC6040M	AC630M	AC510U	AC520U						EH510	EH520					
CNMG431EEF	CNMG120404N-EF	.500	.1875	.0156	.2031	○	○	●	●	●						●	●					
CNMG432EEF	CNMG120408N-EF			.0313		○	○	●	●	●						●	●					

CNMG ESX

Rake Angle: 3°







Cutting Conditions:	Coated				Cermet					Uncoated							
Continuous Cut	●	●		●	●	●		●	●								
Medium Cut	◐	◐	◐	◐	◐	◐	◐	◐	◐								
Interrupted Cut		◐	◐	◐			◐	◐	◐								

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	T1500Z	T2000Z	T3000Z	T1500A	T1200A								
CNMG431ESX	CNMG120404N-SX	.500	.1875	.0156	.2031	●	●	●	●	●	●	★	★	●								
CNMG432ESX	CNMG120408N-SX			.0313		●	●	●	●	●	●	★	●	●								
CNMG433ESX	CNMG120412N-SX			.0469		●	●	●	●													

80° DIAMOND TYPE
NEGATIVE INSERT

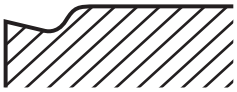
CN
- 80° Diamond Type
- Negative
- With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

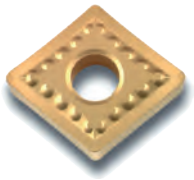
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

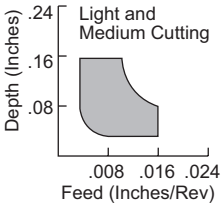
CNMG EUP

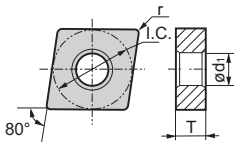
Rake Angle: 10°



Cutting Conditions:	AC820P	AC830P	AC610M	AC630M	AC530U	AC510U	AC520U	G10E	EH510
	Coated							Uncoated	
Continuous Cut	●		●	●	●	●			●
Medium Cut	●	●	●	●	●	●	●	●	●
Interrupted Cut	●	●		●	●		●		





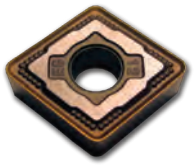


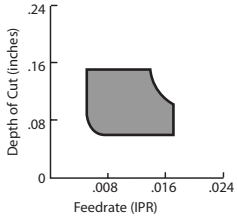
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC610M	AC630M	AC530U	AC510U	AC520U	G10E	EH510
CNMG431EUP	CNMG120404N-UP	.500	.1875	.0156	.2031	●	●		●	★	●	●	●	
CNMG432EUP	CNMG120408N-UP			.0313		●	●	●	●	★	●	●	●	●
CNMG433EUP	CNMG120412N-UP			.0469		●	●	●	●	★	●	●		
CNMG542EUP	CNMG160608N-UP	.625	.250	.0313	.250	●	●							
CNMG543EUP	CNMG160612N-UP			.0469		●	●							
CNMG643EUP	CNMG190612N-UP	.750		.0469	.3126	●	●							

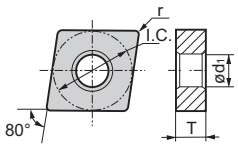
CNMG EEG

Rake Angle: 0°

Cutting Conditions:	AC6030M	AC6040M	AC630M	AC510U	AC520U	EH510	EH520
	Coated					Cermet / Uncoated	
Continuous Cut	●	●	●	●		●	
Medium Cut	●	●	●	●	●	●	●
Interrupted Cut	●	●	●		●		



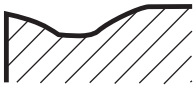




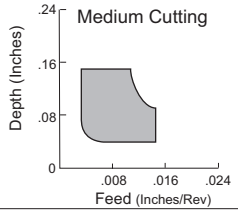
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC6030M	AC6040M	AC630M	AC510U	AC520U	EH510	EH520
CNMG432EEG	CNMG120408N-EG	.500	.1875	.0313	.2031	○	○	●	●	●	●	●
CNMG433EEG	CNMG120412N-EG			.0469		○	○	●	●	●	●	●
CNMG543EEG	CNMG160612N-EG	.625	.250	.0469	.250	○	○	●	●	●		
CNMG643EEG	CNMG190612N-EG	.750		.0469	.3126	○	○	●	●	●		

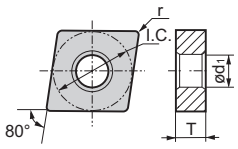
CNMG EEX

Rake Angle: 16°



Cutting Conditions:	AC610M	AC630M	AC530U	AC510U	AC520U	EH510	EH520
	Coated					Uncoated	
Continuous Cut	●	●	●	●			
Medium Cut	●	●	●	●	●	●	●
Interrupted Cut		●	●		●		





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC610M	AC630M	AC530U	AC510U	AC520U	EH510	EH520
CNMG431EEX	CNMG120404N-EX	.500	.1875	.0156	.2031	●	●	★	●	●	●	●
CNMG432EEX	CNMG120408N-EX			.0313		●	●	★	●	●		●
CNMG433EEX	CNMG120412N-EX			.0469		●	●	★	●	●		
CNMG543EEX	CNMG160612N-EX	.625	.250	.0469	.250			●	●	●		
CNMG643EEX	CNMG190612N-EX	.750		.0469	.3126				●	●		

80° DIAMOND TYPE
NEGATIVE INSERT

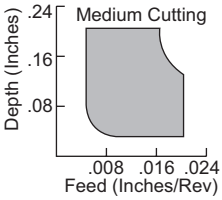
CN
80° Diamond Type
Negative
With Insert Hole

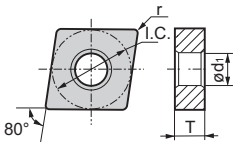
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

CNMG EGU

Rake Angle: 7°



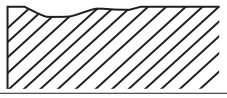


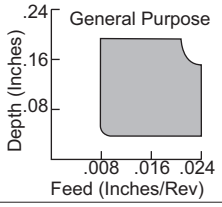
Cutting Conditions:	Coated										Cermet		Uncoated			
Continuous Cut	●	●		●	●	○	○	●			●	●				
Medium Cut	●	●	●	●	●	○	○	●			●	●				
Interrupted Cut		●	●	●	●		○	○			●	●				

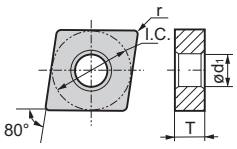
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC610M	AC630M	AC530U			T1500A	T1200A					
CNMG322EGU	CNMG090308N-GU	.375	.125	.0313	.150		★	★														
CNMG431EGU	CNMG120404N-GU	.500	.1875	.0156	.2031	●	●	●	●	▲	●	●	★			★	★					
CNMG432EGU	CNMG120408N-GU			.0313		●	●	●	●	▲	●	●	●			●	●					
CNMG433EGU	CNMG120412N-GU			.0469		●	●	●	●	▲	●	●	★				★					
CNMG434EGU	CNMG120416N-GU			.0625			●	●	●													
CNMG542EGU	CNMG160608N-GU	.625	.250	.0313	.250		●	●														
CNMG543EGU	CNMG160612N-GU			.0469		●	●	●	●	▲												
CNMG544EGU	CNMG160616N-GU			.0625		●	●	●	●													

CNMG EGUW
Wiper Insert

Rake Angle: 0°







Cutting Conditions:												Cermet			
Continuous Cut	●	●		●	●	○	○	○	●	●	●				
Medium Cut	●	●	●	●	●	○	○	○		●	●				
Interrupted Cut		●	●	●	●	○	○	○							

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC6030M	AC6040M	AC630M	AC405K	AC410K	AC415K				
CNMG432EGUW	CNMG120408N-GUW	.500	.1875	.0313	.2031	●	●	●	●	▲	○	○	●	●	▲	●				
CNMG433EGUW	CNMG120412N-GUW			.0469		●	●		●	▲	○	○	●	●	▲	●				

80° DIAMOND TYPE
NEGATIVE INSERT

CN
- 80° Diamond Type
- Negative
- With Insert Hole

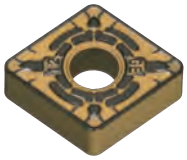
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

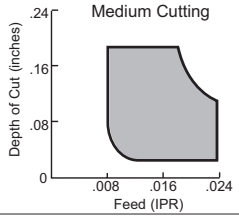
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

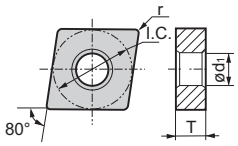
CNMG EGE

Rake Angle: 3°

Cutting Conditions:	Coated						Cermet					Uncoated					
Continuous Cut	○	○		○													
Medium Cut	○	○	○	○													
Interrupted Cut		○	○	○													



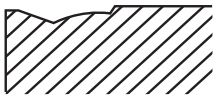




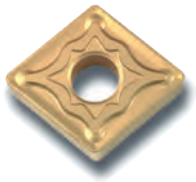
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G
CNMG431EGE	CNMG120404N-GE	.500	.1875	.0156	.2031	★	●	●	
CNMG432EGE	CNMG120408N-GE			.0313		●	●	●	●
CNMG433EGE	CNMG120412N-GE			.0469		●	●	●	●
CNMG434EGE	CNMG120416N-GE			.0625		★	●	●	
CNMG543EGE	CNMG160612N-GE	.625	.250	.0469	.250	●	●	●	●
CNMG544EGE	CNMG160616N-GE			.0625		●	●	●	●
CNMG643EGE	CNMG190612N-GE	.750		.0469	.3126	●	●	●	
CNMG644EGE	CNMG190616N-GE			.0625		●	●	●	

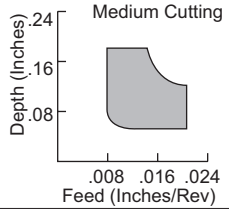
CNMG EUX

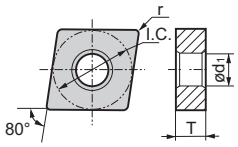
Rake Angle: 0°



Cutting Conditions:	Coated										Cermet						
Continuous Cut	○	○		○	○	○					○						
Medium Cut	○	○	○	○	○	○					○						
Interrupted Cut		○	○	○	○						○						







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC410K	T1200A
CNMG322EUX	CNMG090308N-UX	.375	.125	.0313	.150			●				
CNMG431EUX	CNMG120404N-UX	.500	.1875	.0156	.2031	●	●	●	●		▲	
CNMG432EUX	CNMG120408N-UX			.0313		●	●	●	●	▲	▲	★
CNMG433EUX	CNMG120412N-UX			.0469		●	●	●	●	▲	▲	
CNMG434EUX	CNMG120416N-UX			.0625		●	●	●	●		▲	
CNMG542EUX	CNMG160608N-UX	.625	.250	.0313	.250	●	●	●	★			
CNMG543EUX	CNMG160612N-UX			.0469		●	●	●	●	▲	▲	
CNMG544EUX	CNMG160616N-UX			.0625		●	●	●	●		▲	
CNMG642EUX	CNMG190608N-UX	.750	.250	.0313	.3126			●				
CNMG643EUX	CNMG190612N-UX			.0469		●	●	●	●	▲	▲	
CNMG644EUX	CNMG190616N-UX			.0625		●	●	●	●		▲	

80° DIAMOND TYPE
NEGATIVE INSERT

CN
80° Diamond Type
Negative
With Insert Hole

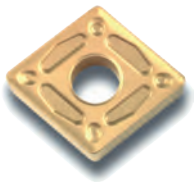
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

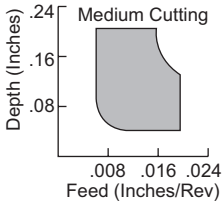
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

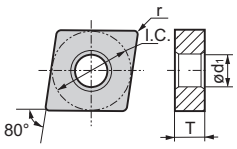
CNMG ENG

Rake Angle: 4°

Cutting Conditions:	Coated								Cermet							
Continuous Cut	●		●						●							
Medium Cut	●	●	●						●							
Interrupted Cut	●	●	●						●							



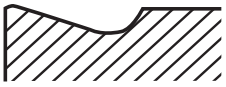




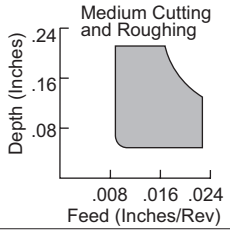
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC700G						T1200A							
CNMG321ENG	CNMG090304N-UG	.375	.125	.0156	.150	★															
CNMG322ENG	CNMG090308N-UG			.0313		●															
CNMG431ENG	CNMG120404N-UG	.500	.1875	.0156	.2031	●	●	●													
CNMG432ENG	CNMG120408N-UG			.0313		●	●	●						●							
CNMG433ENG	CNMG120412N-UG			.0469		●	●	●						●							
CNMG434ENG	CNMG120416N-UG			.0625		★	★														
CNMG542ENG	CNMG160608N-UG	.625	.250	.0313	.250	●	●														
CNMG543ENG	CNMG160612N-UG			.0469		●	●														
CNMG544ENG	CNMG160616N-UG			.0625			★														
CNMG642ENG	CNMG190608N-UG	.750	.250	.0313	.3126	●	●														
CNMG643ENG	CNMG190612N-UG			.0469		●	●														
CNMG644ENG	CNMG190616N-UG			.0625		●	★														

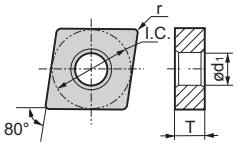
CNMG ENZ

Rake Angle: 4°



Cutting Conditions:	Coated												Uncoated					
Continuous Cut	●		●	●	●	●												
Medium Cut	●	●	●		●	●	●						●					
Interrupted Cut	●	●	●				●											





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC700G	AC405K	AC410K	AC415K	AC420K					G10E				
CNMG431ENZ	CNMG120404N-UZ	.500	.1875	.0156	.2031							●									
CNMG432ENZ	CNMG120408N-UZ			.0313		●	●	●	●	▲	●	●					●				
CNMG433ENZ	CNMG120412N-UZ			.0469		●	●	●	●	▲	●	●									
CNMG434ENZ	CNMG120416N-UZ			.0625								●									
CNMG542ENZ	CNMG160608N-UZ	.625	.250	.0313	.250	●	●														
CNMG543ENZ	CNMG160612N-UZ			.0469		●	●	●	●	▲	●	●									
CNMG544ENZ	CNMG160616N-UZ			.0625		●	●		●	▲	●	●									
CNMG642ENZ	CNMG190608N-UZ	.750	.250	.0313	.3126	●	●														
CNMG643ENZ	CNMG190612N-UZ			.0469		●	●	●	●		●	●									
CNMG644ENZ	CNMG190616N-UZ			.0625		●	●		●	▲	●	●									

80° DIAMOND TYPE
NEGATIVE INSERT

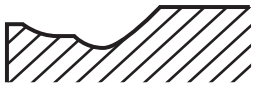
CN
- 80° Diamond Type
- Negative
- With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

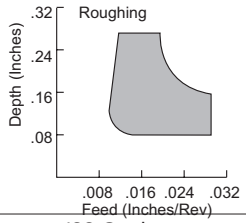
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

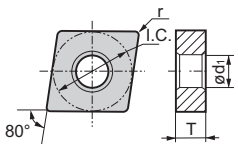
CNMG EMU

Rake Angle: 4°



Cutting Conditions:	Coated													Uncoated			
	AC810P	AC820P	AC830P	AC700G	YB100	AC610M	AC6030M	AC6040M	AC630M	AC530U	AC410K	AC510U	AC520U	EH510	EH520		
Continuous Cut	●	●		●	●	○	○	○	○	●	●	●		●			
Medium Cut	●	●	●	●	●	○	○	○	○	○	●	●	●	●	●		
Interrupted Cut		○	○	○	○		○	○	○	○			●				



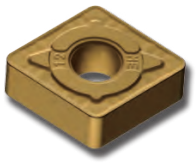


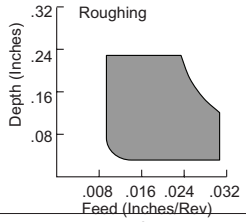
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC610M	AC6030M	AC6040M	AC630M	AC530U	AC410K	AC510U	AC520U	EH510	EH520		
CNMG432EMU	CNMG120408N-MU	.500	.1875	.0313	.2031	●	●	●	●	▲	●	○	○	●	●	▲	●	●	★	●		
CNMG433EMU	CNMG120412N-MU			.0469		●	●	●	●	▲	●	○	○	●	●	▲	●	●	★	●		
CNMG434EMU	CNMG120416N-MU			.0625		●	●	●	●			○	○	●	●							
CNMG542EMU	CNMG160608N-MU	.625	.250	.0313	.250	●	●	●	●	▲							●	●				
CNMG543EMU	CNMG160612N-MU			.0469		●	●	●	●	▲		○	○	●			●	●				
CNMG544EMU	CNMG160616N-MU			.0625		●	●	●	●	▲		○	○	●			●	●				
CNMG642EMU	CNMG190608N-MU	.750		.0313	.3126			●										●				
CNMG643EMU	CNMG190612N-MU			.0469		●	●	●	●	▲		○	○	●			●	●				
CNMG644EMU	CNMG190616N-MU			.0625		●	●	●	●			○	○	●			●	●		●		

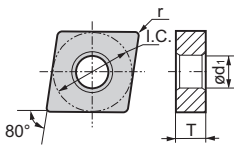
CNMG EME

Rake Angle: 4°

Cutting Conditions:	Coated													Uncoated			
	AC810P	AC820P	AC830P														
Continuous Cut	●	●															
Medium Cut	●	●	●														
Interrupted Cut		○	○														







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P
CNMG432EME	CNMG120408N-ME	.500	.1875	.0313	.2031	●	●	●
CNMG433EME	CNMG120412N-ME			.0469		●	●	●
CNMG434EME	CNMG120416N-ME			.0625		●	●	●
CNMG542EME	CNMG160608N-ME	.625	.250	.0313	.250	●	●	●
CNMG543EME	CNMG160612N-ME			.0469		●	●	●
CNMG544EME	CNMG160616N-ME			.0625		●	●	●
CNMG643EME	CNMG190612N-ME	.750		.0469	.3126	●	●	●
CNMG644EME	CNMG190616N-ME			.0625		●	●	●

80° DIAMOND TYPE
NEGATIVE INSERT

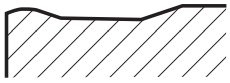
CN — 80° Diamond Type / Negative / With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

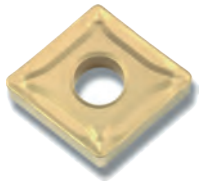
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

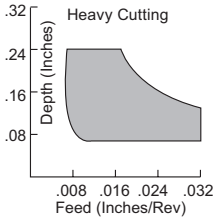
CNMG EMX

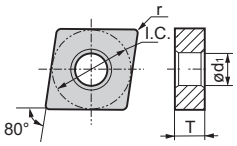
Rake Angle: -15°



Cutting Conditions:	Coated												Uncoated			
	AC810P	AC820P	AC830P	YB100												
Continuous Cut	○	○		○												
Medium Cut	○	○	○	○												
Interrupted Cut		○	○	○												





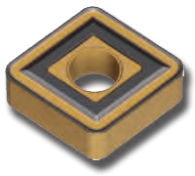


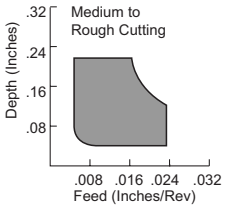
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	YB100
CNMG432EMX	CNMG120408N-MX	.500	.1875	.0313	.2031		●	●	
CNMG433EMX	CNMG120412N-MX			.0469			●	●	
CNMG434EMX	CNMG120416N-MX			.0625			●		
CNMG542EMX	CNMG160608N-MX	.625	.250	.0313	.250		●	●	
CNMG543EMX	CNMG160612N-MX			.0469			●	●	
CNMG544EMX	CNMG160616N-MX			.0625			●	●	
CNMG643EMX	CNMG190612N-MX	.750		.0469	.3126	●	●	●	▲
CNMG644EMX	CNMG190616N-MX			.0625		●	●	●	

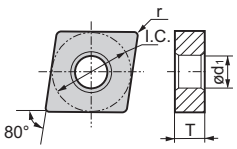
CNMG EGZ

Rake Angle: 0°

Cutting Conditions:	Coated												Uncoated			
	AC405K	AC410K	AC415K	AC420K												
Continuous Cut	○	○	○													
Medium Cut		○	○	○												
Interrupted Cut				○												







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC405K	AC410K	AC415K	AC420K
CNMG431EGZ	CNMG120404N-GZ	.500	.1875	.0156	.2031	●		●	●
CNMG432EGZ	CNMG120408N-GZ			.0313		●	▲	●	●
CNMG433EGZ	CNMG120412N-GZ			.0649		●	▲	●	●
CNMG434EGZ	CNMG120416N-GZ			.0625				●	●
CNMG543EGZ	CNMG160612N-GZ	.625	.250	.0469	.250			●	
CNMG544EGZ	CNMG160616N-GZ			.0625		●		●	

80° DIAMOND TYPE
NEGATIVE INSERT

CN
- 80° Diamond Type
- Negative
- With Insert Hole

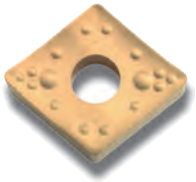
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

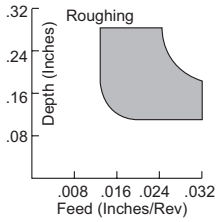
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

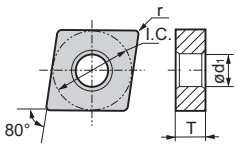
CNMM ENP

Rake Angle: 0°

Cutting Conditions:	Coated												Uncoated			
Continuous Cut	○															
Medium Cut	○	○														
Interrupted Cut	○	○														





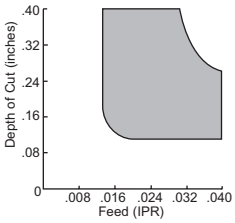


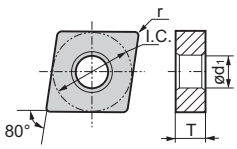
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P
CNMM646ENP	CNMM190624N-MP	.750	.250	.0938	.3126	★	●

CNMM EHG

Rake Angle: 0°

Cutting Conditions:	Coated				Cermet
Continuous Cut	○	○		○	
Medium Cut	○	○	○	○	
Interrupted Cut		○	○	○	





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G
CNMM432EHG	CNMM120408N-HG	.500	.1875	.0313	.2031	★	●	●	★
CNMM433EHG	CNMM120412N-HG			.0469		★	●	●	
CNMM543EHG	CNMM160612N-HG	.625	.250	.0469	.250	★	●	●	
CNMM544EHG	CNMM160616N-HG			.0625		★	●	●	
CNMM643EHG	CNMM190612N-HG			.0469	.3126	★	●	●	
CNMM644EHG	CNMM190616N-HG			.0625		★	●	●	●
CNMM646EHG	CNMM190624N-HG	.750		.0938		★	★	●	

80° DIAMOND TYPE
NEGATIVE INSERT

CN
80° Diamond Type
Negative
With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

CNMA

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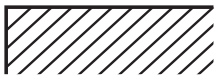
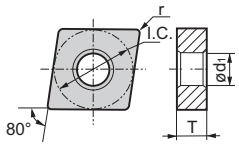
No Breaker



Cutting Conditions:	AC700G	YB100	AC405K	AC410K	AC415K	AC420K
	Coated					Uncoated
Continuous Cut	●	●	○	○	○	
Medium Cut	◐	◐		◐	◐	◐
Interrupted Cut	◐	◐				◐

—



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC700G	YB100	AC405K	AC410K	AC415K	AC420K
CNMA431	CNMA120404	.500	.1875	.0156	.2031	●		●	▲	●	●
CNMA432	CNMA120408			.0313		●	▲	●	▲	●	●
CNMA433	CNMA120412			.0469		●		●	▲	●	●
CNMA434	CNMA120416			.0625		●		●	▲	●	●
CNMA543	CNMA160612	.625	.250	.0313	.250	●		●	▲	●	●
CNMA544	CNMA160616			.0469				●	▲	●	
CNMA643	CNMA190612	.750		.0469	.3126	●		●	▲	●	●
CNMA644	CNMA190616			.0625		●		●	▲	●	●

55° DIAMOND TYPE
NEGATIVE INSERT

DN
55° Diamond Type
Negative
With Insert Hole

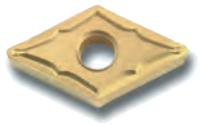
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

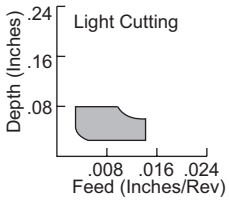
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

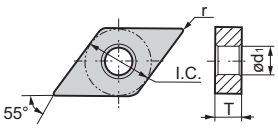
DNGG ESU

Rake Angle: 13°

Cutting Conditions:	Coated				Cermet					Uncoated						
Continuous Cut					●	●				●						
Medium Cut	♥				♥	♥	♥			♥						
Interrupted Cut	✿						✿									







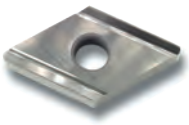
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC520U				T1500Z	T2000Z	T3000Z				H1					
DNGG430ESU	DNGG150401N-SU	.500	.1875	.0039	.2031	●															
DNGG430.5ESU	DNGG150402N-SU			.0078		●				●	●	●									
DNGG430.5ESUJ	DNGG150402N-SUJ			.0078												●					
DNGG431ESU	DNGG150404N-SU			.0156		●				●	●	★									
DNGG431ESUJ	DNGG150404N-SUJ			.0156												●					
DNGG432ESU	DNGG150408N-SU			.0313		●				●	●	★									
DNGG432ESUJ	DNGG150408N-SUJ			.0313												●					

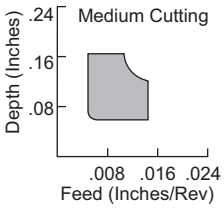
J in ESUJ = J Polish

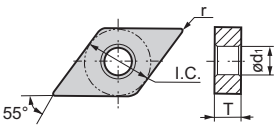
DNJG UM

Rake Angle: 14°

Cutting Conditions:	Coated				Cermet					Uncoated						
Continuous Cut					●	●										
Medium Cut					♥	♥										
Interrupted Cut					✿	✿										



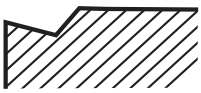




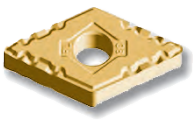
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500A	T1200A
DNJG431L	DNGG150404L-UM	.500	.1875	.0156	.2031	●	●
DNJG431R	DNGG150404R-UM			.0156		●	●
DNJG432L	DNGG150408L-UM			.0313		●	●
DNJG432R	DNGG150408R-UM			.0313		●	●

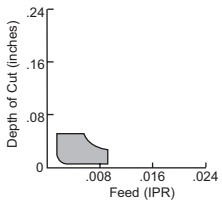
DNMG EFL

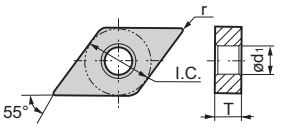
Rake Angle: 10°



Cutting Conditions:	Coated				Cermet					Uncoated						
Continuous Cut	●	●			●	●										
Medium Cut	♥	♥			♥	♥	♥									
Interrupted Cut	✿	✿					✿									







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	YB100			T1500Z	T2000Z	T3000Z									
DNMG431EFL	DNMG150404N-FL	.500	.1875	.0156	.2031	●	▲			●	●	★									
DNMG432EFL	DNMG150408N-FL			.0313		●	▲			●	●	●									
DNMG433EFL	DNMG150412N-FL			0469			▲														

55° DIAMOND TYPE
NEGATIVE INSERT

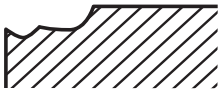
DN
55° Diamond Type
Negative
With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

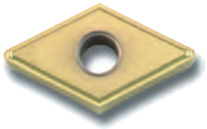
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

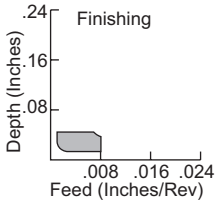
DNMG EFP

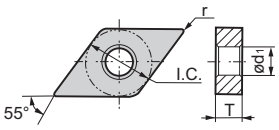
Rake Angle: 10°



Cutting Conditions:	Coated					Cermet					Uncoated				
						T1200A									
Continuous Cut						●									
Medium Cut						●									
Interrupted Cut						●									



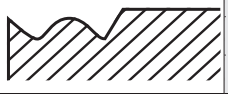




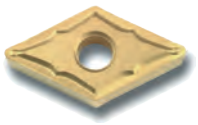
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
DNMG431EFP	DNMG150404N-FP	.500	.1875	.0156	.2031
DNMG432EFP	DNMG120408N-FP			.0313	

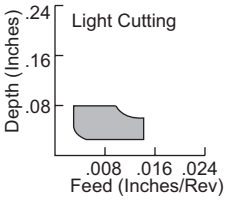
DNMG ESU

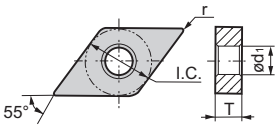
Rake Angle: 13°



Cutting Conditions:	Coated												Cermet					UC
	AC810P	AC820P	AC830P	AC700G	YB100	AC610M	AC6030M	AC6040M	AC630M	AC530U	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A	EH510
Continuous Cut	●	●		●	●	●	●	●	●	●	●		●	●		●	●	●
Medium Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Interrupted Cut		●	●	●	●		●	●	●	●		●			●	●	●	







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC610M	AC6030M	AC6040M	AC630M	AC530U	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A	EH510
DNMG331ESU	DNMG090404N-SU	.375	.1875	.0156	.150					▲													
DNMG332ESU	DNMG090408N-SU			.0313		●				▲													
DNMG431ESU	DNMG150404N-SU	.500		.0156	.2031	●	●	●	●			○	○	●	★	●	●	●	●	●	●	●	
DNMG432ESU	DNMG150408N-SU			.0313		●	●	●	●	▲	●	○	○	●	★	●	●	●	●	●	●	●	●
DNMG433ESU	DNMG150412N-SU			.0469		●	●	●	●	▲		○	○	●		●	●	●	●	●	●	●	

55° DIAMOND TYPE
NEGATIVE INSERT

DN
55° Diamond Type
Negative
With Insert Hole

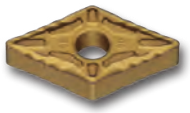
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

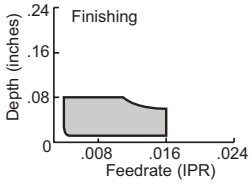
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

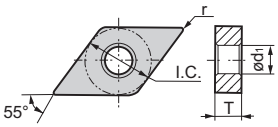
DNMG ESE

Rake Angle: 13°

Cutting Conditions:	Coated									Cermet			Uncoated					
Continuous Cut	●	●								●								
Medium Cut	●	●								●								
Interrupted Cut		●								●								





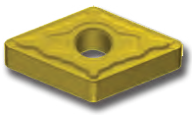


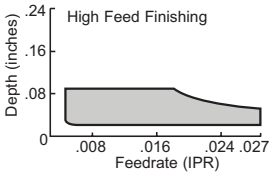
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	T1500A
DNMG332ESE	DNMG090408N-SE	.375	.1825	.0313	.150	●		
DNMG431ESE	DNMG150404N-SE	.500		.0156	.2031	●		●
DNMG432ESE	DNMG150408N-SE			.0313		●	●	●
DNMG433ESE	DNMG150412N-SE			.0469		●	●	●

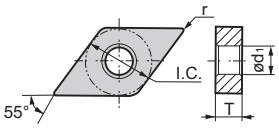
DNMX ESEW
Wiper Insert

Rake Angle: 13°

Cutting Conditions:	Coated				Cermet				Uncoated					
Continuous Cut	●	●			●	●	●							
Medium Cut	●	●			●	●	●							
Interrupted Cut		●					●							





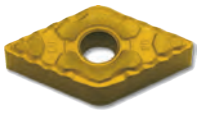


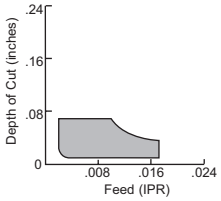
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	T1500Z	T2000Z	T1500A
DNMX431ESEW	DNMX150404N-SEW	.500	.1875	.0156	.2031	●		●		
DNMX432ESEW	DNMX150408N-SEW			.0313		●	●	●	●	●
DNMX433ESEW	DNMX150412N-SEW			.0469		●	●			

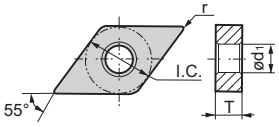
DNMG ELU

Rake Angle: 10°

Cutting Conditions:	Coated					Cermet					Uncoated					
Continuous Cut	●	●	●			●	●		●	●						
Medium Cut	●	●	●			●	●	●	●	●						
Interrupted Cut		●	●					●	●	●						







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	T1500Z	T2000Z	T3000Z	T1500A	T1200A
DNMG431ELU	DNMG150404N-LU	.500	.1875	.0156	.2031	●	●	●	●	●	●	●	★
DNMG432ELU	DNMG150408N-LU			.0313		●	●	●	●	●	●	●	★
DNMG433ELU	DNMG150412N-LU			.0469		●	●	●	●	●	●	★	★

55° DIAMOND TYPE
NEGATIVE INSERT

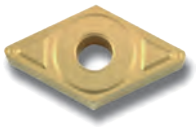
DN — 55° Diamond Type — Negative — With Insert Hole

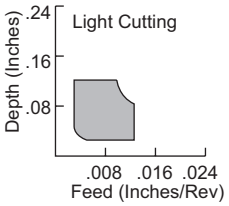
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

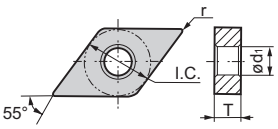
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

DNMG ENK

Rake Angle: 10°





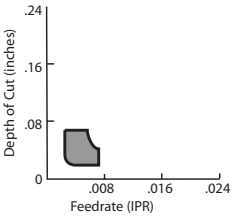


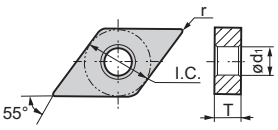
Cutting Conditions:	Coated						Cermet					Uncoated					
Continuous Cut	●						●										
Medium Cut	◐						◐										
Interrupted Cut	✿						✿										

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	T1200A
DNMG431ENK	DNMG150404N-SK	.500	.1875	.0156	.2031	●	●
DNMG432ENK	DNMG150408N-SK			.0313		●	●

DNMG EEF

Rake Angle: 0°



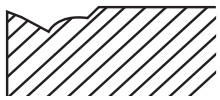


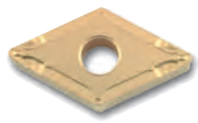
Cutting Conditions:	Coated								Cermet				Uncoated					
Continuous Cut	●	●	●	●									●					
Medium Cut	◐	◐	◐	◐	◐								◐	◐				
Interrupted Cut	✿	✿	✿		✿													

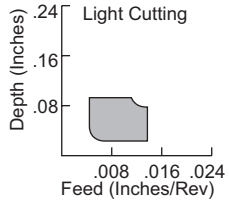
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC6030M	AC6040M	AC630M	AC510U	AC520U	EH510	EH520
DNMG431EEF	DNMG150404N-EF	.500	.1875	.0156	.2031	○	○	●	●	●	●	●
DNMG432EEF	DNMG150408N-EF			.0313		○	○	●	●	●	●	●
DNMG433EEF	DNMG150412N-EF			.0469		○	○	●	●	●		

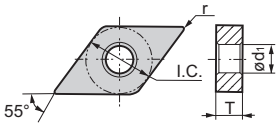
DNMG ESX

Rake Angle: 3°









Cutting Conditions:	Coated						Cermet					Uncoated					
Continuous Cut	●	●		●	●		●	●		●	●						
Medium Cut	◐	◐	◐	◐	◐		◐	◐	◐	◐	◐						
Interrupted Cut		✿	✿	✿	✿				✿	✿	✿						

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	T1500Z	T2000Z	T3000Z	T1500A	T1200A
DNMG431 ESX	DNMG150404N-SX	.500	.1875	.0156	.2031	●	●	●	●		●	●	★	●	●
DNMG432 ESX	DNMG150408N-SX			.0313		●	●	●	●	▲	●	●	★	★	●
DNMG433 ESX	DNMG150412N-SX			.0469		●	●	●	●	▲					

55° DIAMOND TYPE
NEGATIVE INSERT

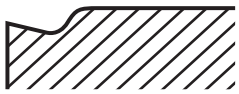
DN
55° Diamond Type
Negative
With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

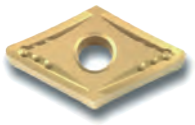
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

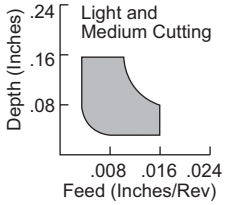
DNMG EUP

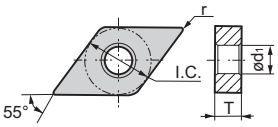
Rake Angle: 10°



Cutting Conditions:	AC820P	AC830P	AC530U	AC510U	AC520U	G10E	EH510
	Coated					Uncoated	
Continuous Cut	●		●	●			●
Medium Cut	●	●	●	●	●	●	●
Interrupted Cut	●	●	●		●		





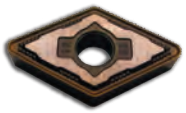


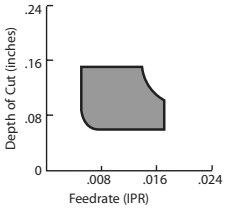
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC530U	AC510U	AC520U	G10E	EH510
DNMG431EUP	DNMG150404N-UP	.500	.1875	.0156	.2031	●	●	★	●	●	●	
DNMG432EUP	DNMG150408N-UP			.0313		●	●	★	●	●	●	★
DNMG433EUP	DNMG150412N-UP			.0469		●	●	★	▲	●		

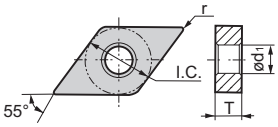
DNMG EEG

Rake Angle: 0°

Cutting Conditions:	AC6030M	AC6040M	AC630M	AC510U	AC520U	EH510	EH520
	Coated					Uncoated	
Continuous Cut						●	
Medium Cut				●	●	●	●
Interrupted Cut					●		





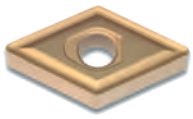


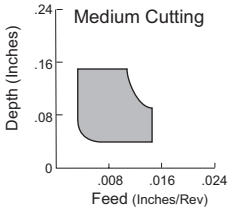
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC6030M	AC6040M	AC630M	AC510U	AC520U	EH510	EH520
DNMG431EEG	DNMG150404N-EG	.500	.1875	.0156	.2031	○	○	●	●	●	●	●
DNMG432EEG	DNMG150408N-EG			.0313		○	○	●	●	●	●	●
DNMG433EEG	DNMG150412N-EG			.0469		○	○	●	●	●	●	●

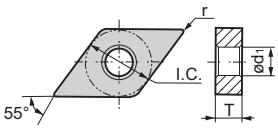
DNMG EEX

Rake Angle: 16°

Cutting Conditions:	AC610M	AC630M	AC530U	AC510U	AC520U	EH510	EH520
	Coated					Uncoated	
Continuous Cut						●	
Medium Cut				●	●	●	●
Interrupted Cut		●	●		●		







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC610M	AC630M	AC530U	AC510U	AC520U	EH510	EH520
DNMG431EEX	DNMG150404N-EX	.500	.1875	.0156	.2031	●	●	★	●	●	●	●
DNMG432EEX	DNMG150408N-EX			.0313		●	●	★	●	●	●	●
DNMG433EEX	DNMG150412N-EX			.0469		●	●	★	●	●	●	

55° DIAMOND TYPE
NEGATIVE INSERT

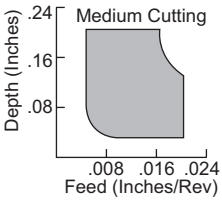
DN — 55° Diamond Type — Negative — With Insert Hole

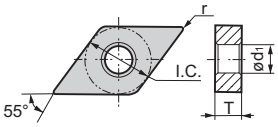
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

DNMG EGU

Rake Angle: 7°



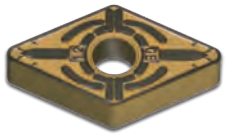


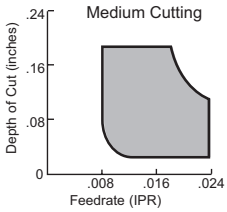
Cutting Conditions:	AC810P	AC820P	AC830P	AC700G	YB100	AC610M	AC630M	AC530U			T1500A	T1200A					
	Coated										Cermet		Uncoated				
Continuous Cut	●	●		●	●	○	○	●			●	●					
Medium Cut	●	●	●	●	●	○	○	●			●	●					
Interrupted Cut		●	●	●	●		○	●			●	●					

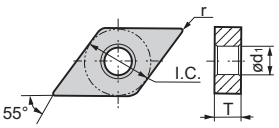
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC610M	AC630M	AC530U			T1500A	T1200A					
DNMG331EGU	DNMG110404N-GU	.375	.1875	.0156	.150		●	●		▲												
DNMG332EGU	DNMG110408N-GU			.0313			●	●		▲												
DNMG431EGU	DNMG150404N-GU	.500		.0156	.2031	●	●	●	●	▲	●	●	★			●	●					
DNMG432EGU	DNMG150408N-GU			.0313		●	●	●	●	▲	●	●	★			●	●					
DNMG433EGU	DNMG150412N-GU			.0469		●	●	●	●	▲	●	●	★			★						

DNMG EGE

Rake Angle: 3°





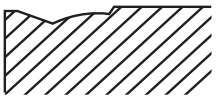


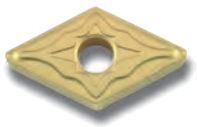
Cutting Conditions:	AC810P	AC820P	AC830P	AC700G													
	Coated					Cermet				Uncoated							
Continuous Cut	●	●		●													
Medium Cut	●	●	●	●													
Interrupted Cut		●	●	●													

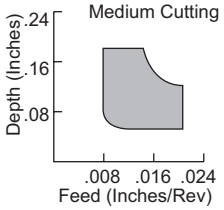
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G													
DNMG431EGE	DNMG150404N-GE	.500	.1875	.0156	.2031	★	●	●														
DNMG432EGE	DNMG150408N-GE			.0313		●	●	●	●													
DNMG433EGE	DNMG150412N-GE			.0469		●	●	●	●													

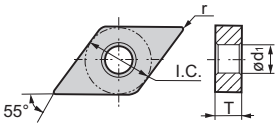
DNMG EUX

Rake Angle: 0°









Cutting Conditions:	AC810P	AC820P	AC830P	AC700G	YB100	AC410K											
	Coated												Cermet				
Continuous Cut	●	●		●	●	●							●				
Medium Cut	●	●	●	●	●	●							●				
Interrupted Cut		●	●	●	●								●				

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC410K							T1200A				
DNMG332EUX	DNMG110408N-UX	.375	.1875	.0313	.150			●														
DNMG431EUX	DNMG150404N-UX	.500		.0156	.2031	●	●	●	●		▲											
DNMG432EUX	DNMG150408N-UX			.0313		●	●	●	●	▲	▲							★				
DNMG433EUX	DNMG150412N-UX			.0469		●	●	●	●		▲											

55° DIAMOND TYPE
NEGATIVE INSERT

DN
55° Diamond Type
Negative
With Insert Hole

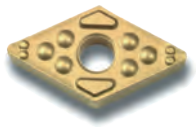
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

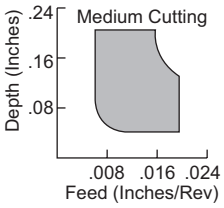
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

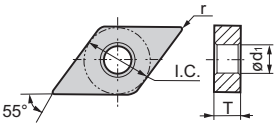
DNMG ENG

Rake Angle: 4°

Cutting Conditions:	Coated									Cermet							
Continuous Cut	●		●							●							
Medium Cut	●	●	●							●							
Interrupted Cut	●	●	●							●							



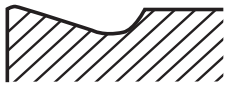




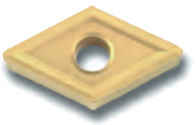
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC700G	T1200A
DNMG331ENG	DNMG110404N-UG	.375	.1875	.0156	.150	●	★		
DNMG332ENG	DNMG110408N-UG			.0313		●	★		
DNMG431ENG	DNMG150404N-UG	.500		.0156	.2031	●	●	●	●
DNMG432ENG	DNMG150408N-UG			.0313		●	●	●	●
DNMG433ENG	DNMG150412N-UG			.0469		★	★	●	●
DNMG542ENG	DNMG190608N-UG	.625	.250	.0313	.250	●	●		
DNMG543ENG	DNMG190612N-UG			.0469		●	●		

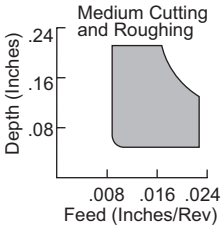
DNMG ENZ/FNZ

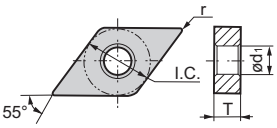
Rake Angle: 4°



Cutting Conditions:	Coated									Uncoated							
Continuous Cut	●		●	●	●	●											
Medium Cut	●	●	●		●	●	●			●							
Interrupted Cut	●	●	●				●										







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC700G	AC405K	AC410K	AC415K	AC420K	G10E
DNMG431ENZ	DNMG150404N-UZ	.500	.1875	.0156	.2031		●		●			●	
DNMG432ENZ	DNMG150408N-UZ			.0313		●	●	●	●	▲	●	●	
DNMG433ENZ	DNMG150412N-UZ			.0469		●	●	●	●	▲	●	●	
DNMG542ENZ	DNMG190608N-UZ	.625	.250	.0313	.250	●	●						
DNMG543ENZ	DNMG190612N-UZ			.0469		●	●						
DNMG544ENZ	DNMG190616N-UZ			.0625		●	●						
DNMG432FNZ	DNMG150408N-UZ	.500	.1875	.0313	.2031								▲

55° DIAMOND TYPE
NEGATIVE INSERT

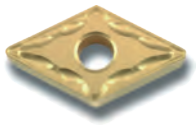
DN
55° Diamond Type
Negative
With Insert Hole

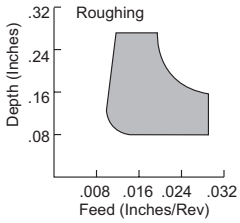
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

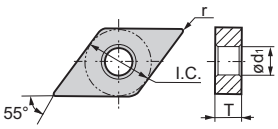
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

DNMG EMU

Rake Angle: 4°





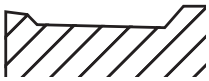


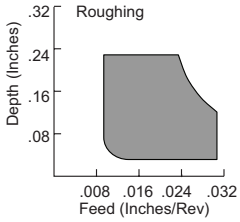
Cutting Conditions:	AC810P	AC820P	AC830P	AC700G	YB100	AC6030M	AC6040M	AC630M	AC530U	AC510U	AC520U	EH520
	Coated											Uncoated
Continuous Cut	●	●		●	●	○	○	○	●	●		
Medium Cut	●	●	●	●	●	○	○	○	●	●	●	●
Interrupted Cut		●	●	●	●	○	○	○	○		●	

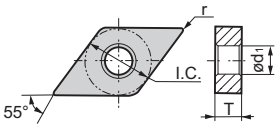
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC6030M	AC6040M	AC630M	AC530U	AC510U	AC520U	EH520
DNMG432EMU	DNMG150408N-MU	.500	.1875	.0313	.2031	●	●	●	●	▲	○	○	●	★	●	●	●
DNMG433EMU	DNMG150412N-MU			.0469		●	●	●	●	▲	○	○	●	★	●	●	●
DNMG434EMU	DNMG150416N-MU			.0625			★	★									

DNMG EME

Rake Angle: 4°





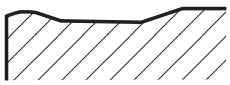


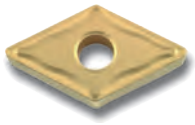
Cutting Conditions:	AC810P	AC820P	AC830P
	Coated		
Continuous Cut	●	●	
Medium Cut	●	●	●
Interrupted Cut		●	●

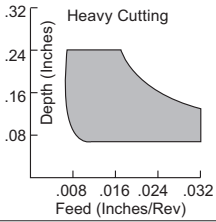
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P
DNMG432EME	DNMG150408N-ME	.500	.1875	.0313	.2031	●	●	●
DNMG433EME	DNMG150412N-ME			.0469		●	●	●

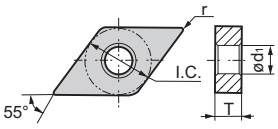
DNMG EMX

Rake Angle: -15°









Cutting Conditions:	AC820P	AC830P
	Coated	
Continuous Cut	●	
Medium Cut	●	●
Interrupted Cut	●	●

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P
DNMG432EMX	DNMG150408N-MX	.500	.1875	.0313	.2031	●	●
DNMG433EMX	DNMG150412N-MX			.0469		●	●
DNMG434EMX	DNMG150416N-MX			.0625			●

55° DIAMOND TYPE
NEGATIVE INSERT

DN
55° Diamond Type
Negative
With Insert Hole

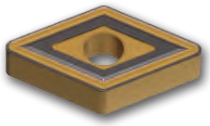
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

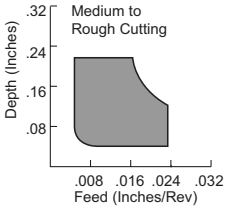
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

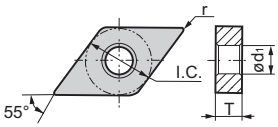
DNMG EGZ

Rake Angle: 0°

Cutting Conditions:	Coated				Cermet				Uncoated							
	AC405K	AC410K	AC415K	AC420K												
Continuous Cut	●	●	●													
Medium Cut	●	●	●	●												
Interrupted Cut				●												



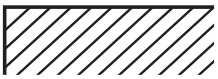




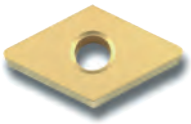
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC405K	AC410K	AC415K	AC420K
DNMG431EGZ	DNMG150404N-GZ	.500	.1875	.0156	.2031	●		●	●
DNMG432EGZ	DNMG150408N-GZ			.0313		●	▲	●	●
DNMG433EGZ	DNMG150412N-GZ			.0469		●	▲	●	●

DNMA —

No Breaker



Cutting Conditions:	Coated					Uncoated
	AC700G	AC405K	AC410K	AC415K	AC420K	
Continuous Cut	●	●	●	●		
Medium Cut	●		●	●	●	
Interrupted Cut	●				●	



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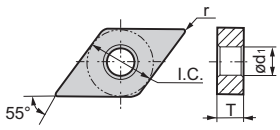


Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC700G	AC405K	AC410K	AC415K	AC420K
DNMA431	DNMA150404	.500	.1875	.0156	.2031	★				●
DNMA432	DNMA150408			.0313		●	●	▲	●	●
DNMA433	DNMA150412			.0469		●	●	▲	●	●
DNMA442	DNMA150608		.250	.0313		★		▲		●
DNMA443	DNMA150612			.0469				▲		●

RN

Round Type
Negative
With Insert Hole

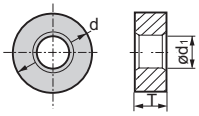
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

RNMG ENT

Rake Angle: 0°

Cutting Conditions:	Coated	Cermet	Uncoated
Continuous Cut			
Medium Cut	●		
Interrupted Cut	●		

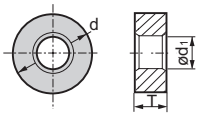


Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC830P
RNMG43ENT		.500	.1875	-	.2031	●

RNMG ENU

Rake Angle: 0°

Cutting Conditions:	Coated	Cermet	Uncoated
Continuous Cut			
Medium Cut	●		
Interrupted Cut	●		

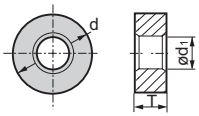


Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC830P
RNMG54ENU		.625	.250	-	.250	●

RNMG ENV

Rake Angle: 0°

Cutting Conditions:	Coated	Cermet	Uncoated
Continuous Cut			
Medium Cut	●		
Interrupted Cut	●		



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC830P
RNMG64ENV		.750	.250	-	.3126	●

RN

Round Type
Negative
With Insert Hole

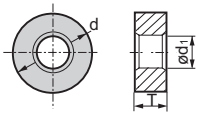
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

RNMG ENY

Rake Angle: 0°

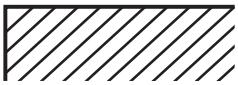
Cutting Conditions:	Coated				Cermet				Uncoated							
Continuous Cut																
Medium Cut																
Interrupted Cut																



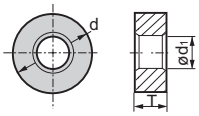
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC830P														
RNMG84ENY		1.00	.250	-	.3622	●														
RNMG86ENY			.375	-		●														

RNMA

No Breaker



Cutting Conditions:	Coated				Cermet				Uncoated							
Continuous Cut																
Medium Cut																
Interrupted Cut																



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC700G	AC405K	AC410K	AC415K											
RNMA43		.500	.1875	-	.2031	●	●	▲	●											

90° SQUARE TYPE
NEGATIVE INSERT

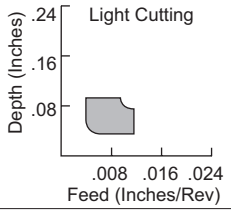
SN — 90° Square Type / Negative / With Insert Hole

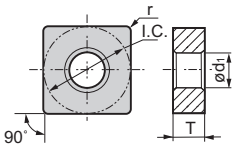
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

SNPR/L T

Rake Angle: 0°



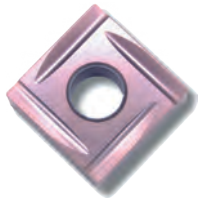


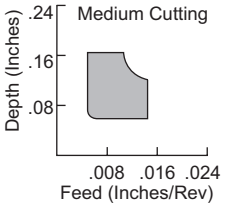
Cutting Conditions:	Coated			Cermet						Uncoated					
				T2000Z	T1500A	T1200A				G10E					
Continuous Cut				●	●	●									
Medium Cut				◐	◐	◐				◐					
Interrupted Cut					◐	◐									

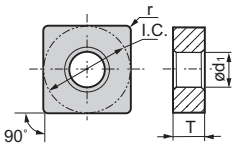
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T2000Z	T1500A	T1200A	G10E
SNPR321T	SNGG090304R-ST	.375	.125	.0156	.150		★	●	
SNPL321T	SNGG090304L-ST			.0156			●	●	★
SNPR322T	SNGG090308R-ST			.0313			★	●	★
SNPL322T	SNGG090308L-ST			.0313			★	●	★
SNPR323T	SNGG090312R-ST			.0469		●			

SNPR/L M

Rake Angle: 14°





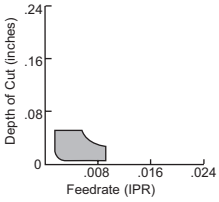


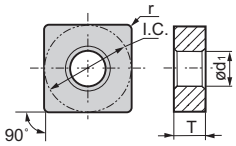
Cutting Conditions:	Coated			Cermet						Uncoated					
				T2000Z	T1500A	T1200A				G10E					
Continuous Cut				●	●	●									
Medium Cut				◐	◐	◐				◐					
Interrupted Cut					◐	◐									

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T2000Z	T1500A	T1200A	G10E
SNMN422M	SNGG120308-UM	.500	.1875		.2031				▲
SNPR431M	SNGG120404R-UM			.0156		●	★	●	★
SNPL431M	SNGG120404L-UM			.0156			★	★	
SNPR432M	SNGG120408R-UM			.0313			★	★	★
SNPL432M	SNGG120408L-UM			.0313			★	★	★
SNPR433M	SNGG120412R-UM			.0469			●	★	
SNPL433M	SNGG120412L-UM			.0469				●	

SNMG EFL

Rake Angle: 10°





Cutting Conditions:	Coated			Cermet						Uncoated					
				T1500Z	T2000Z	T3000Z									
Continuous Cut	●			●	●										
Medium Cut	◐			◐	◐	◐									
Interrupted Cut	◐					◐									

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	T1500Z	T2000Z	T3000Z
SNMG432EFL	SNMG120408N-FL	.500	.1875	.0313	.2031	●	●	★	★

90° SQUARE TYPE
NEGATIVE INSERT

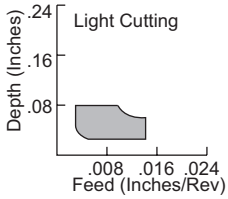
SN
- 90° Square Type
- Negative
- With Insert Hole

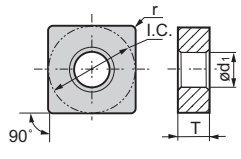
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

SNMG ESU

Rake Angle: 13°



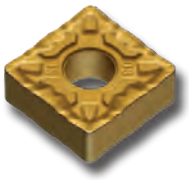


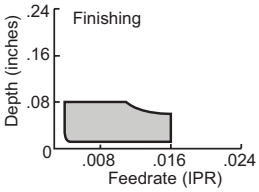
Cutting Conditions:	AC810P	AC820P	AC830P	AC700G	AC6030M	AC6040M	AC630M	AC530U	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A	EH510
	Coated										Cermet					Uncoated
Continuous Cut	●	●		●	○	○	○	●	●		●	●		●	●	●
Medium Cut	●	●	●	●	○	○	○	●	●	●	●	●	●	●	●	●
Interrupted Cut		●	●	●	○	○	○	○		●			●	●	●	

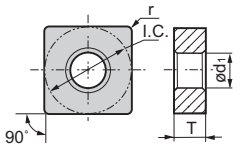
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	AC6030M	AC6040M	AC630M	AC530U	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A	EH510
SNMG432 ESU	SNMG120408N-SU	.500	.1875	.0313	.2031	●	●	●	●	○	○	●	★	●	●	●	●	★	●	●	●

SNMG ESE

Rake Angle: 5°





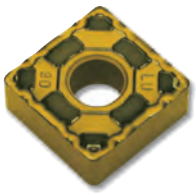


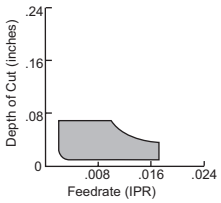
Cutting Conditions:	AC810P	AC820P	AC830P
	Coated		
Continuous Cut	●	●	
Medium Cut	●	●	●
Interrupted Cut		●	●

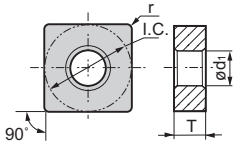
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P
SNMG432ESE	SNMG120408N-SE	.500	.1875	.0313	.2031	●	●	●
SNMG433ESE	SNMG120412N-SE			.0469		●		

SNMG ELU

Rake Angle: 10°







Cutting Conditions:	AC810P	AC820P	AC700G	T1500Z	T2000Z	T3000Z
	Coated			Cermet		
Continuous Cut	●	●	●	●	●	
Medium Cut	●	●	●	●	●	●
Interrupted Cut		●	●			●

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	T1500Z	T2000Z	T3000Z
SNMG432ELU	SNMG120408N-LU	.500	.1875	.0313	.2031	●	●	●	★	●	★
SNMG433ELU	SNMG120412N-LU			.0469		●	★	★		★	★

90° SQUARE TYPE
NEGATIVE INSERT

SN — 90° Square Type / Negative / With Insert Hole

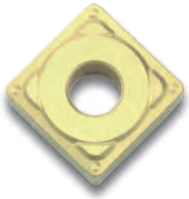
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

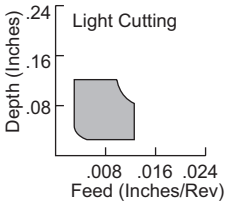
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

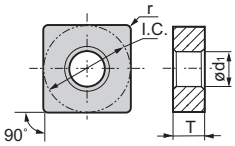
SNMG ENK

Rake Angle: 10°

Cutting Conditions:	Coated							Cermet				Uncoated				
	AC820P							T1200A								
Continuous Cut	●							●								
Medium Cut	●							●								
Interrupted Cut	●							●								



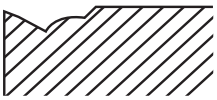




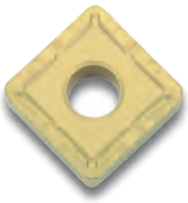
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	T1200A
SNMG321ENK	SNMG090304N-SK	.375	.125	.0156	.150	●	
SNMG322ENK	SNMG090308N-SK			.0313		●	●
SNMG431ENK	SNMG120404N-SK	.500	.1875	.0156	.2031	●	
SNMG432ENK	SNMG120408N-SK			.0313		●	

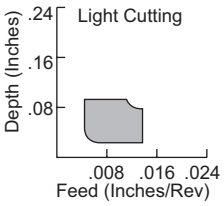
SNMG ESX

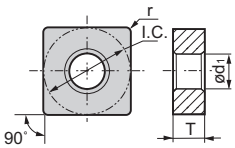
Rake Angle: 3°



Cutting Conditions:	Coated						Cermet					Uncoated				
	AC810P	AC820P	AC830P	AC700G			T1500Z	T2000Z	T3000Z	T1500A	T1200A					
Continuous Cut	●	●		●			●	●		●	●					
Medium Cut	●	●	●	●			●	●	●	●	●					
Interrupted Cut		●	●	●					●	●	●					







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	T1500Z	T2000Z	T3000Z	T1500A	T1200A
SNMG431 ESX	SNMG120404N-SX	.500	.1875	.0156	.2031					●	●	★	★	
SNMG432 ESX	SNMG120408N-SX			.0313		●	●	●	●	●	●	★	★	●
SNMG433 ESX	SNMG120412N-SX			.0469		●	●	●	●					

90° SQUARE TYPE
NEGATIVE INSERT

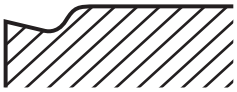
SN
- 90° Square Type
- Negative
- With Insert Hole

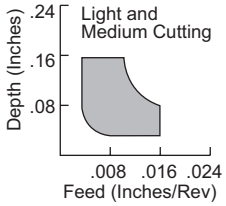
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

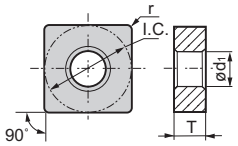
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

SNMG EUP

Rake Angle: 10°





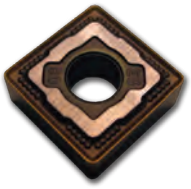


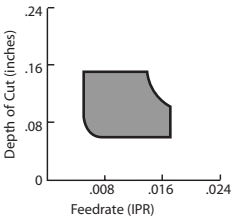
Cutting Conditions:	AC820P	AC830P	AC530U
Continuous Cut	●		●
Medium Cut	●	●	●
Interrupted Cut	●	●	●

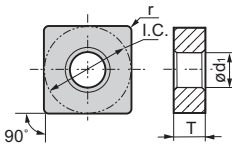
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC530U
SNMG431 EUP	SNMG120404N-UP	.500	.1875	.0156	.2031	★	●	
SNMG432 EUP	SNMG120408N-UP			.0313		●	●	★
SNMG433 EUP	SNMG120412N-UP			.0469		★	●	★

SNMG EEG

Rake Angle: 0°





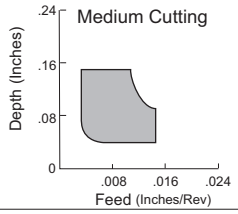


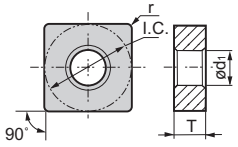
Cutting Conditions:	AC6030M	AC6040M	AC630M	AC510U	AC520U	EH510	EH520
Continuous Cut	○	○	●	●	●	●	●
Medium Cut	○	○	●	●	●	●	●
Interrupted Cut	○	○	●	●	●		

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC6030M	AC6040M	AC630M	AC510U	AC520U	EH510	EH520
SNMG432EEG	SNMG120408N-EG	.500	.1875	.0313	.2031	○	○	●	●	●	●	●
SNMG433EEG	SNMG120412N-EG			.0469		○	○	●	●	●	●	●
SNMG543EEG	SNMG120612N-EG	.625	.250	.0469	.250	○	○	●	●	●		
SNMG643EEG	SNMG190612N-EG	.750		.0469		○	○	●	●	●		
SNMG644EEG	SNMG190616N-EG	.625		.0625				●	●	●		

SNMG EEX

Rake Angle: 16°





Cutting Conditions:	AC610M	AC630M	AC530U	AC510U	AC520U	EH510	EH520
Continuous Cut	●	●	●	●		●	
Medium Cut	●	●	●	●	●	●	●
Interrupted Cut		●	●		●		

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC610M	AC630M	AC530U	AC510U	AC520U	EH510	EH520
SNMG322EEX	SNMG090308N-EX	.375	.125	.0313	.150		●					
SNMG431EEX	SNMG120404N-EX	.500	.1875	.0156	.2031	★	★		●	●		
SNMG432EEX	SNMG120408N-EX			.0313		●	●	★	●	●	●	●
SNMG433EEX	SNMG120412N-EX			.0469		●	●	★	●			
SNMG543EEX	SNMG160612N-EX	.625	.250	.0469	.250				●	●		
SNMG643EEX	SNMG190612N-EX	.750		.0469	.3126				●	●		

SN

90° Square Type
Negative
With Insert Hole

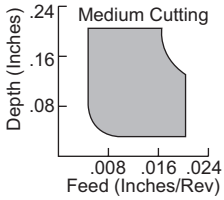
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

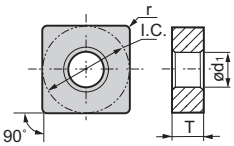
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

SNMG EGU

Rake Angle: 7°

Cutting Conditions:	AC810P	AC820P	AC830P	AC700G	AC610M	AC630M	AC530U	T1500A	T1200A
	Coated							Cermet	
Continuous Cut	●	●		●	●	●	●	●	●
Medium Cut	●	●	●	●	●	●	●	●	●
Interrupted Cut		●	●	●		●	●	●	●

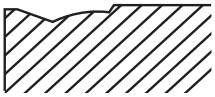




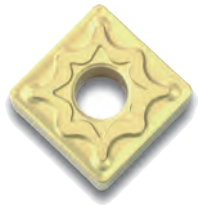
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	AC610M	AC630M	AC530U	T1500A	T1200A
SNMG321EGU	SNMG090304N-GU	.375	.125	.0156	.150		●							
SNMG322EGU	SNMG090308N-GU			.0313			●	★					●	
SNMG431EGU	SNMG120404N-GU	.500	.1875	.0156	.2031	★	●		●	★	★	★	★	★
SNMG432EGU	SNMG120408N-GU			.0313		●	●	●	●	★	●	★	●	●
SNMG433EGU	SNMG120412N-GU			.0469		●	●	●	●	★	●	★		
SNMG434EGU	SNMG120416N-GU			.0625			●	●	●		●			
SNMG543EGU	SNMG150612N-GU	.625	.250	.0469	.250		●	●						

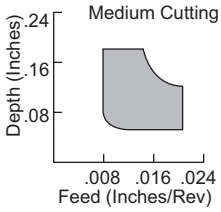
SNMG EUX

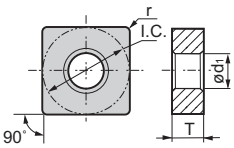
Rake Angle: 0°



Cutting Conditions:	AC810P	AC820P	AC830P	AC700G	YB100	AC410K
	Coated					Cermet
Continuous Cut	●	●		●	●	●
Medium Cut	●	●	●	●	●	●
Interrupted Cut		●	●	●	●	







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC410K
SNMG322EUX	SNMG090308N-UX	.375	.125	.0313	.150			●			
SNMG431EUX	SNMG120404N-UX	.500	.1875	.0156	.2031			●			
SNMG432EUX	SNMG120408N-UX			.0313		●	●	●	●	▲	▲
SNMG433EUX	SNMG120412N-UX			.0469		●	●	●	●	▲	▲
SNMG434EUX	SNMG120416N-UX			.0625		★	●	●	●		▲
SNMG643EUX	SNMG190612N-UX	.625	.250	.0469	.250	●	●	●	★		▲
SNMG644EUX	SNMG190616N-UX			.0625		●	●	●	★		▲

90° SQUARE TYPE
NEGATIVE INSERT

SN
- 90° Square Type
- Negative
- With Insert Hole

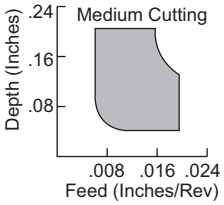
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

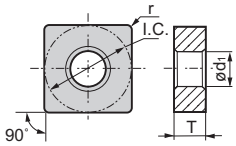
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

SNMG ENG

Rake Angle: 4°

Cutting Conditions:	AC820P	AC830P	AC700G	T1200A
Continuous Cut	○		○	○
Medium Cut	◐	◐	◐	◐
Interrupted Cut	◐	◐	◐	◐

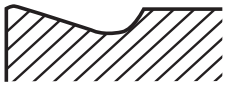




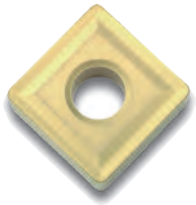
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC700G	T1200A
SNMG322ENG	SNMG090308N-UG	.375	.125	.0313	.150	●	●		●
SNMG432ENG	SNMG120408N-UG	.500	.1875	.0313	.2031	●	●	●	●
SNMG433ENG	SNMG120412N-UG			.0469		●	●		
SNMG434ENG	SNMG120416N-UG			.0625			★		
SNMG543ENG	SNMG150612N-UG	.625	.250	.0469	.250	●	●		
SNMG643ENG	SNMG190612N-UG	.750		.0469	.3126	●	●		
SNMG644ENG	SNMG190616N-UG			.0625		●	★		
SNMG866ENG	SNMG250924N-UG	1.00	.375	.0938	.3622	●	●		

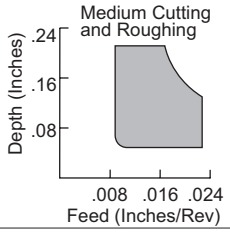
SNMG ENZ

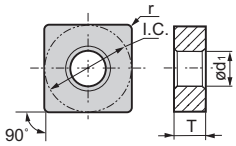
Rake Angle: 4°



Cutting Conditions:	AC820P	AC830P	AC700G	AC405K	AC410K	AC415K	AC420K
Continuous Cut	○		○	○	○	○	
Medium Cut	◐	◐	◐		◐	◐	◐
Interrupted Cut	◐	◐	◐				◐







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC700G	AC405K	AC410K	AC415K	AC420K
SNMG432ENZ	SNMG120408N-UZ	.500	.1875	.0313	.2031	●	●	●	●	▲	●	●
SNMG433ENZ	SNMG120412N-UZ			.0469		●	●	●	●		●	●
SNMG434ENZ	SNMG120416N-UZ			.0625		●	●					●
SNMG543ENZ	SNMG150612N-UZ	.625	.250	.0469	.250	●	●	●	●	▲	●	
SNMG544ENZ	SNMG150616N-UZ			.0625		●	●					
SNMG642ENZ	SNMG190608N-UZ	.750		.0313	.3126		●					
SNMG643ENZ	SNMG190612N-UZ			.0469		●	●		●	▲	●	●
SNMG644ENZ	SNMG190616N-UZ			.0625		●	●	●	●	▲	●	●
SNMG866ENZ	SNMG250924N-UZ	1.00	.375	.0938	.3622	●	●					

90° SQUARE TYPE
NEGATIVE INSERT

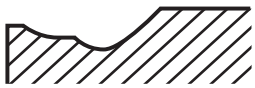
SN — 90° Square Type / Negative / With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

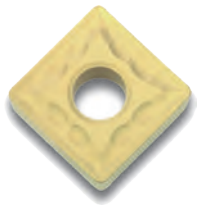
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

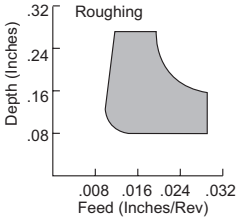
SNMG EMU

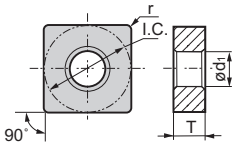
Rake Angle: 4°



Cutting Conditions:	AC810P	AC820P	AC830P	AC700G	YB100	AC6030M	AC6040M	AC630M	AC530U	AC510U	AC520U	EH520
	Coated											Uncoated
Continuous Cut	●	●		●	●	○	○	○	●	●		
Medium Cut	●	●	●	●	●	○	○	○	●	●	●	●
Interrupted Cut		●	●	●	●	○	○	○	○		●	





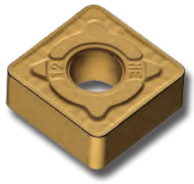


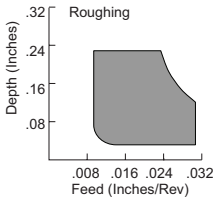
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC6030M	AC6040M	AC630M	AC530U	AC510U	AC520U	EH520
SNMG432EMU	SNMG120408N-MU	.500	.1875	.0313	.2031	●	●	●	●		○	○	●	★		●	
SNMG433EMU	SNMG120412N-MU			.0469		●	●	●	●	▲	○	○	●	★		●	
SNMG434EMU	SNMG120416N-MU			.0625			●	●									
SNMG543EMU	SNMG160612N-MU	.625	.250	.0469	.250	●	●	●	●		○	○	●		●	●	
SNMG544EMU	SNMG160616N-MU			.0625		●	●	●	●		○	○	●		★	●	
SNMG643EMU	SNMG190612N-MU	.750		.0469	.3126	●	●	●			○	○	●		●	●	
SNMG644EMU	SNMG190616N-MU			.0625		●	●	●	●	▲	○	○	●		●	●	●

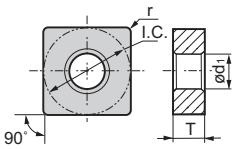
SNMG EME

Rake Angle: 4°

Cutting Conditions:	AC810P	AC820P	AC830P
	Coated		
Continuous Cut	●	●	
Medium Cut	●	●	●
Interrupted Cut		●	●







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P
SNMG432EME	SNMG120408N-ME	.500	.1875	.0313	.2031	●	●	●
SNMG433EME	SNMG120412N-ME			.0469		●	●	●
SNMG434EME	SNMG120416N-ME			.0625		●	●	★
SNMG543EME	SNMG150612N-ME	.625	.250	.0469	.250	●	●	●
SNMG544EME	SNMG150616N-ME			.0625		●	●	●
SNMG643EME	SNMG190612N-ME	.750		.0469	.3126	●	●	●
SNMG644EME	SNMG190616N-ME			.0625		●	●	●

90° SQUARE TYPE
NEGATIVE INSERT

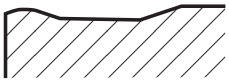
SN
- 90° Square Type
- Negative
- With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

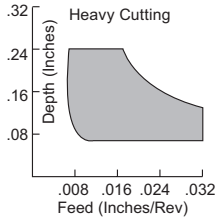
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

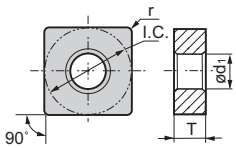
SNMG EMX

Rake Angle: -15°



Cutting Conditions:	Coated			Uncoated
	AC810P	AC820P	AC830P	
Continuous Cut	●	●		
Medium Cut	●	●	●	
Interrupted Cut		●	●	



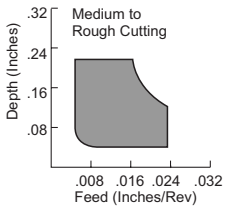


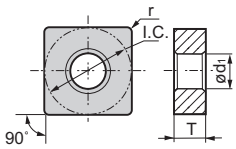
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P
SNMG432EMX	SNMG120408N-MX	.500	.1875	.0313	.2031		●	●
SNMG433EMX	SNMG120412N-MX			.0469			●	●
SNMG434EMX	SNMG120416N-MX			.0625			●	
SNMG543EMX	SNMG150612N-MX	.625	.250	.0469	.250		●	●
SNMG544EMX	SNMG150616N-MX			.0625			●	●
SNMG643EMX	SNMG190612N-MX	.750		.0469	.3126	●	●	●
SNMG644EMX	SNMG190616N-MX			.0625		●	●	●

SNMG EGZ

Rake Angle: 0°

Cutting Conditions:	Coated				Uncoated
	AC405K	AC410K	AC415K	AC420K	
Continuous Cut	●	●	●		
Medium Cut		●	●	●	
Interrupted Cut				●	





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC405K	AC410K	AC415K	AC420K
SNMG432EGZ	SNMG120408N-GZ	.500	.1875	.0313	.2031	●	▲	●	●
SNMG433EGZ	SNMG120412N-GZ			.0469		●	▲	●	●
SNMG434EGZ	SNMG120416N-GZ			.0625				★	●
SNMG643EGZ	SNMG190612N-GZ	.750	.250	.0469	.250			★	

90° SQUARE TYPE
NEGATIVE INSERT

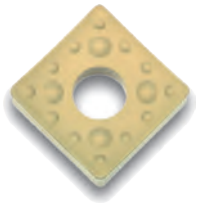
SN — 90° Square Type / Negative / With Insert Hole

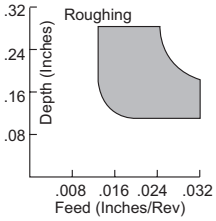
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

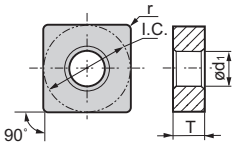
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

SNMM ENP

Rake Angle: 0°





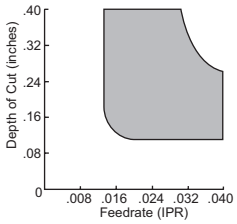


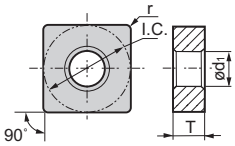
Cutting Conditions:	Coated			Uncoated
Continuous Cut	●	●		
Medium Cut	◐	◐	◐	
Interrupted Cut		◐	◐	

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P
SNMM643ENP	SNMM190612N-MP	.750	.250	.0469	.250	★		
SNMM644ENP	SNMM190616N-MP			.0625	.3126	★	●	
SNMM856ENP	SNMM250724N-MP	1.00	.3125	.0938	.3622	★	★	★
SNMM866ENP	SNMM250924N-MP		.375	.0938		★	★	

SNMM EHG

Rake Angle: 0°



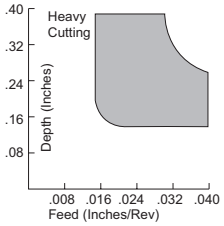


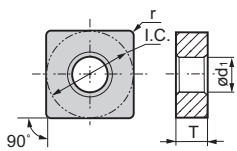
Cutting Conditions:	Coated			Cermet
Continuous Cut	●	●		
Medium Cut	◐	◐	◐	
Interrupted Cut		◐	◐	

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P
SNMM432EHG	SNMM120408N-HG	.500	.1875	.0313	.2031	★	●	●
SNMM433EHG	SNMM120412N-HG			.0469		★	●	●
SNMM434EHG	SNMM120416N-HG			.0625		★	●	●
SNMM643EHG	SNMM190612N-HG	.750	.250	.0469	.3126	★	●	●
SNMM644EHG	SNMM190616N-HG			.0625		★	●	●
SNMM646EHG	SNMM190624N-HG			.0938		★	●	

SNMM EHP

Rake Angle: 0°





Cutting Conditions:	Coated			Uncoated
Continuous Cut	●	●		
Medium Cut	◐	◐	◐	
Interrupted Cut		◐	◐	

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P
SNMM643EHP	SNMM190612N-HP	.750	.250	.0469	.3126		★	●
SNMM644EHP	SNMM190616N-HP			.0625			★	★
SNMM856EHP	SNMM250724N-HP	1.00	.3125	.0938	.3622	★	★	★
SNMM866EHP	SNMM250924N-HP		.375	.0938		★	★	

90° SQUARE TYPE
NEGATIVE INSERT

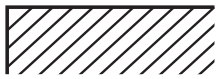
SN
- 90° Square Type
- Negative
- With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

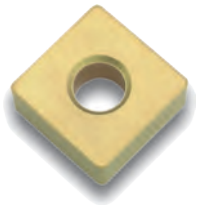
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

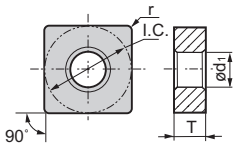
SNMA

No Breaker



Cutting Conditions:	Coated												Uncoated			
Continuous Cut	P	P	P	P									P			
Medium Cut	P		P	P	P								P			
Interrupted Cut	P				P											

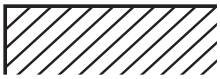




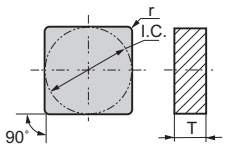
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC700G	AC405K	AC410K	AC415K	AC420K							H1			
SNMA322	SNMA090308	.375	.125	.0313	.150	●	●	▲	●											
SNMA431	SNMA120404	.500	.1875	.0156	.2031	★		▲	★	●										
SNMA432	SNMA120408			.0313		●	●	▲	●	●							★			
SNMA433	SNMA120412			.0469		●	●	▲	●	●										
SNMA434	SNMA120416			.0625		●	●	▲	●	●										
SNMA435	SNMA120420			.0781		★		▲		●										
SNMA543	SNMA150612	.625	.250	.0469	.250	●	●	▲	●											
SNMA643	SNMA190612	.750		.0469			●		●											
SNMA644	SNMA190616			.0625	.3126	●	●		●											

SNMN

No Breaker



Cutting Conditions:	Coated				Cermet					Uncoated						
Continuous Cut	P				P	P										
Medium Cut	P	P			P	P				P						
Interrupted Cut	P	P			P	P										



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC700G	AC420K			T1500A	T1200A				G10E					
SNMN432	SNMN120408	.500	.1875	.0313	-	★	●			★	★									
SNMN433	SNMN120412			.0469		★	●													
SNMN434	SNMN120416			.0625		★	●													
SNMN532	SNMN150408	.625	.1875	.0313											★					

TRIANGULAR TYPE
NEGATIVE INSERT

TN Triangular Type | Negative | With Insert Hole

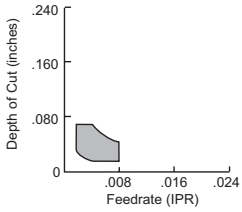
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

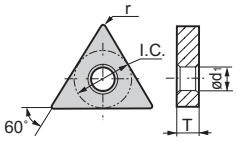
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

TNPR/L FX

Rake Angle: 14°

Cutting Conditions:	Coated				Cermet					Uncoated					
					T1500Z	T1500A									
Continuous Cut					●	●									
Medium Cut					●	●									
Interrupted Cut						●									



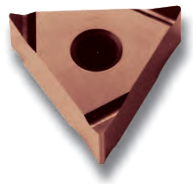


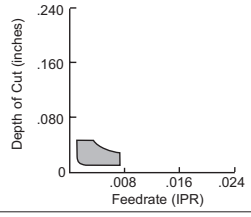
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z	T1500A
TNPR330.5FFX	TNGG160402R-FX	.375	.1875	.0078	.150	★	★
TNPL330.5FFX	TNGG160402L-FX			.0078		★	★
TNPR331FFX	TNGG160404R-FX			.0156		★	★
TNPL331FFX	TNGG160404L-FX			.0156		★	★

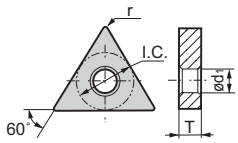
TNPR/L FY

Rake Angle: 15°

Cutting Conditions:	Coated				Cermet					Uncoated					
	ACZ310	AC530U			T1500Z	T2000Z	T3000Z	T1500A	T1200A						
Continuous Cut	○	●			●	●		●	●						
Medium Cut	○	●			●	●	●	●	●						
Interrupted Cut		●					●	●	●						





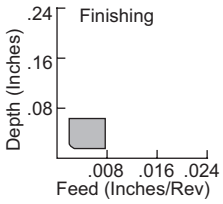


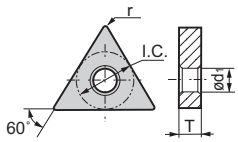
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	ACZ310	AC530U	T1500Z	T2000Z	T3000Z	T1500A	T1200A
TNPR330.5FFY	TNGG160402R-FY	.375	.1875	.0078	.150	▲		●	●	●	●	●
TNPL330.5FFY	TNGG160402L-FY			.0078		▲		●	●	●	●	●
TNPR331FFY	TNGG160404R-FY			.0156			★	★	★	★	★	★
TNPL331FFY	TNGG160404L-FY			.0156			★	★	★	★	★	★

TNPR/L Q

Rake Angle: 0°

Cutting Conditions:	Coated				Cermet				Uncoated						
					T1500A	T1200A									
Continuous Cut					●	●									
Medium Cut					●	●									
Interrupted Cut					●	●									





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500A	T1200A
TNPL220.5Q	TNGG110302L-Q	.325	.125	.0078	.089	●	●
TNPL221Q	TNGG110304L-Q			.0156		●	●

TRIANGULAR TYPE
NEGATIVE INSERT

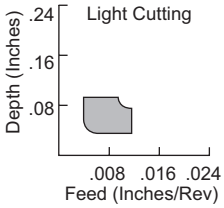
TN
- Triangular Type
- Negative
- With Insert Hole

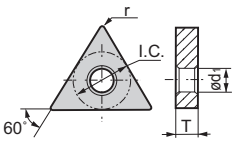
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

TNPR/L T

Rake Angle: 0°



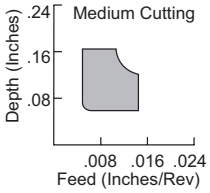


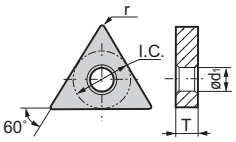
Cutting Conditions:	Coated				Cermet					Uncoated							
					T1500A	T1200A				G10E							
Continuous Cut					●	●											
Medium Cut					●	●				●							
Interrupted Cut					●	●											

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500A	T1200A	G10E
TNPR320.5T	TNGG160302R-ST	.375	.125	.0078	.150	●	●	
TNPL320.5T	TNGG160302L-ST			.0078		●	●	
TNPR321T	TNGG160304R-ST			.0156		●	●	●
TNPL321T	TNGG160304L-ST			.0156		●	●	
TNPR322T	TNGG160308R-ST			.0313		●	●	
TNPL322T	TNGG160308L-ST			.0313		●	●	

TNPR/L M

Rake Angle: 14°





Cutting Conditions:	Coated				Cermet					Uncoated							
					T1500Z	T2000Z	T3000Z	T1500A	T1200A	A30		G10E	H1				
Continuous Cut					●	●		●	●				●				
Medium Cut					●	●	●	●	●	●	●		●				
Interrupted Cut							●	●	●	●							

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z	T2000Z	T3000Z	T1500A	T1200A	A30	G10E	H1
TNPR330.5M	TNGG160402R-UM	.375	.1875	.0078	.150	★		●	★	●		●	
TNPL330.5M	TNGG160402L-UM			.0078		★	●	●	★	●			
TNPR331M	TNGG160404R-UM			.0156		★	●	★	●	●	★	★	★
TNPL331M	TNGG160404L-UM			.0156		★	★	★	●	●	★	★	★
TNPR332M	TNGG160408R-UM			.0313		★	●	★	●	●	★	★	
TNPL332M	TNGG160408L-UM			.0313		★	★	★	●	●	★	★	★
TNPL333M	TNGG160412L-UM			.0469					★	★			
TNPR431M	TNGG220404R-UM	.500		.0156	.2031				●	●		★	
TNPL431M	TNGG220404L-UM			.0156					●	●		★	
TNPR432M	TNGG220408R-UM			.0313					●	●		★	
TNPL432M	TNGG220408L-UM			.0313					●	●		★	

TRIANGULAR TYPE
NEGATIVE INSERT

TN — Triangular Type / Negative / With Insert Hole

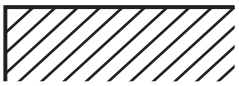
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

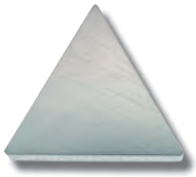
TNG

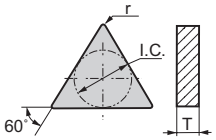
—

No Breaker



Cutting Conditions:	Coated				Cermet					Uncoated							
										G10E							
Continuous Cut																	
Medium Cut										♥							
Interrupted Cut																	

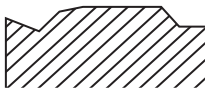




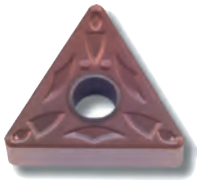
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	G10E
TNG322	TNGN160308	.375	.125	.0313	-	●
TNG332	TNGN160408		.1875	.0313	-	●

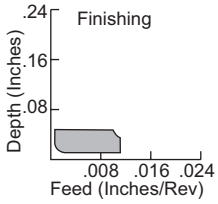
TNMG EFA

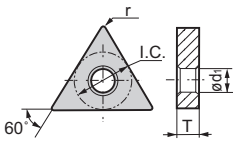
Rake Angle: 20°



Cutting Conditions:	Coated				Cermet					Uncoated							
					T1500Z	T2000Z	T3000Z	T1500A	T1200A								
Continuous Cut					●	●		●	●								
Medium Cut					♥	♥	♥	♥	♥								
Interrupted Cut							♥	♥	♥								





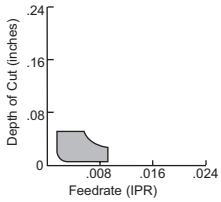


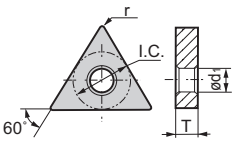
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z	T2000Z	T3000Z	T1500A	T1200A
TNMG330.5EFA	TNMG160402N-FA	.375	.1875	.0078	.150				★	
TNMG331EFA	TNMG160404N-FA			.0156		●	●	★	●	●
TNMG332EFA	TNMG160408N-FA			.0313		●	●	★	●	●

TNMG EFL

Rake Angle: 10°

Cutting Conditions:	Coated				Cermet					Uncoated							
	AC820P				T1500Z	T2000Z	T3000Z										
Continuous Cut	●				●	●											
Medium Cut	♥				♥	♥	♥										
Interrupted Cut	♥						♥										





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	T1500Z	T2000Z	T3000Z
TNMG331EFL	TNMG160404N-FL	.375	.1875	.0156	.150	●	●	●	★
TNMG332EFL	TNMG160408N-FL			.0313		●	★	●	

TRIANGULAR TYPE
NEGATIVE INSERT

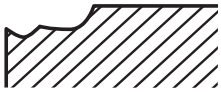
TN
- Triangular Type
- Negative
- With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

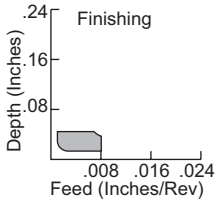
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

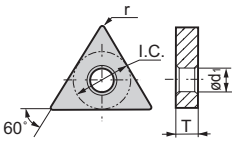
TNMG EFP

Rake Angle: 10°



Cutting Conditions:	Coated				Cermet					Uncoated						
					T1200A											
Continuous Cut					●											
Medium Cut					●											
Interrupted Cut					●											



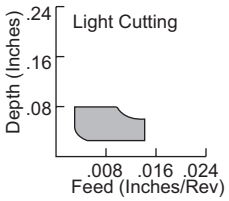


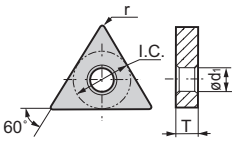
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1200A
TNMG322EFP	TNMG160308N-FP	.375	.125	.0313	.150	●
TNMG332EFP	TNMG160408N-FP		.1875	.0313		●

TNMG ESU

Rake Angle: 13°

Cutting Conditions:	Coated											Cermet				
	AC810P	AC820P	AC830P	AC700G	YB100	AC6030M	AC6040M	AC630M	AC530U	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A
Continuous Cut	●	●		●	●	●	●	●	●	●		●	●		●	●
Medium Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Interrupted Cut		●	●	●	●	●	●	●	●		●			●	●	●





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC6030M	AC6040M	AC630M	AC530U	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A
TNMG321ESU	TNMG160304N-SU	.375	.125	.0156	.150		●	●												●	
TNMG322ESU	TNMG160308N-SU			.0313			●	●													
TNMG331ESU	TNMG160404N-SU		.1875	.0156		●	●	●	●		○	○	●	★			●	●	●	●	●
TNMG332ESU	TNMG160408N-SU			.0313		●	●	●	●		○	○	●	★			●	●	●	●	●
TNMG333ESU	TNMG160412N-SU			.0469		●	●	●	●		○	○	★	★			●	●	●	●	●
TNMG431ESU	TNMG220404N-SU	.500		.0156	.2031										●	●	●	●	●	●	
TNMG432ESU	TNMG220408N-SU			.0313											●	●	●	●	●		
TNMG433ESU	TNMG220412N-SU			.0469														●	●		

TRIANGULAR TYPE
NEGATIVE INSERT

TN
- Triangular Type
- Negative
- With Insert Hole

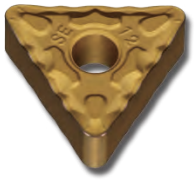
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

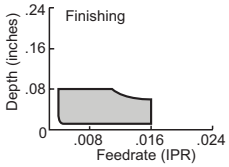
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

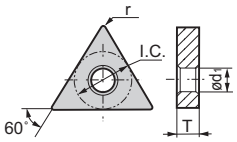
TNMG ESE

Rake Angle: 5°

Cutting Conditions:	AC810P	AC820P	AC830P	T1500A
	Coated			Cermet
Continuous Cut	○	○		○
Medium Cut	◐	◐	◐	◐
Interrupted Cut		◐	◐	◐





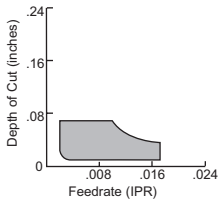


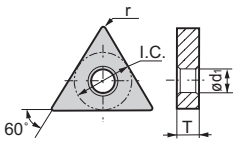
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	T1500A
TNMG331 ESE	TNMG160404N-SE	.375	.1875	.0156	.150	●	●	★	●
TNMG332 ESE	TNMG160408N-SE			.0313		●	●	●	●
TNMG333 ESE	TNMG160412N-SE			.0469		●	●	●	
TNMG431 ESE	TNMG220404N-SE	.500		.0156	.2031	●	★	★	
TNMG432 ESE	TNMG220408N-SE			.0313		●			
TNMG433 ESE	TNMG220412N-SE			.0469		●			

TNMG ELU

Rake Angle: 10°

Cutting Conditions:	AC810P	AC820P	AC700G	T1500Z	T2000Z	T3000Z	T1500A	T1200A
	Coated			Cermet				
Continuous Cut	○	○	○	○	○		○	○
Medium Cut	◐	◐	◐	◐	◐	◐	◐	◐
Interrupted Cut		◐	◐			◐	◐	◐





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	T1500Z	T2000Z	T3000Z	T1500A	T1200A
TNMG331ELU	TNMG160404N-LU	.375	.1875	.0156	.150	●	●	●	●	●	●	★	★
TNMG332ELU	TNMG160408N-LU			.0313		●	●	●	●	●	●	★	★
TNMG333ELU	TNMG160412N-LU			.0469		●	●	●	★	●		★	★

TRIANGULAR TYPE
NEGATIVE INSERT

TN
- Triangular Type
- Negative
- With Insert Hole

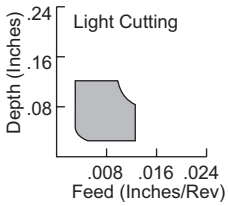
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

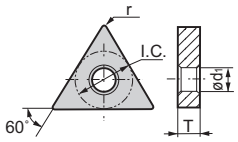
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

TNMG ENK

Rake Angle: 10°

Cutting Conditions:	Coated				Cermet					Uncoated						
	AC820P				T1200A											
Continuous Cut	●				●											
Medium Cut	●				●											
Interrupted Cut	●				●											



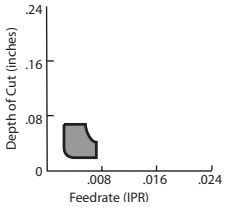


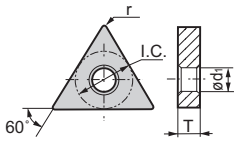
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
TNMG221ENK	TNMG110304N-SK	.250	.125	.0156	.089
TNMG321ENK	TNMG160304N-SK	.375		.0156	.150
TNMG322ENK	TNMG160308N-SK			.0313	
TNMG331ENK	TNMG160404N-SK			.0156	
TNMG332ENK	TNMG160408N-SK			.0313	
TNMG431ENK	TNMG220404N-SK	.500	.1875	.0156	.2031
TNMG432ENK	TNMG220408N-SK			.0313	

TNMG EEF

Rake Angle: 0°

Cutting Conditions:	Coated							Cermet			Uncoated					
	AC6030M	AC6040M	AC630M	AC510U	AC520U						EH510	EH520				
Continuous Cut	○	○	○	●							●					
Medium Cut	○	○	○	●	●						●	●				
Interrupted Cut	○	○	○		●											





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
TNMG331EEF	TNMG160404N-EF	.500	.1875	.0156	.2031
TNMG332EEF	TNMG160408N-EF			.0313	

TRIANGULAR TYPE
NEGATIVE INSERT

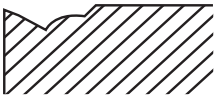
TN Triangular Type | Negative | With Insert Hole

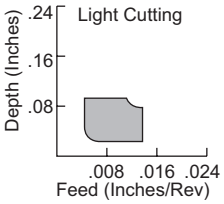
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

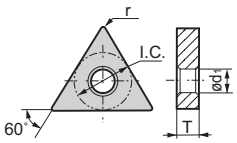
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

TNMG ESX

Rake Angle: 3°





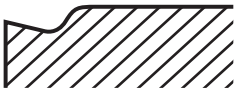


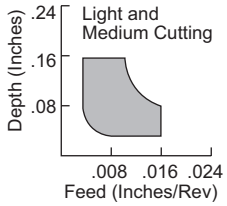
Cutting Conditions:	AC810P	AC820P	AC830P	AC700G	T1500Z	T2000Z	T3000Z	T1500A	T1200A
					Cermet				
Continuous Cut	●	●		●	●	●		●	●
Medium Cut	●	●	●	●	●	●	●	●	●
Interrupted Cut		●	●	●			●	●	●

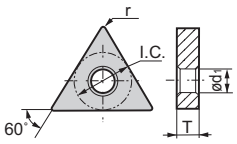
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	T1500Z	T2000Z	T3000Z	T1500A	T1200A
TNMG321ESX	TNMG160304N-SX	.375	.125	.0156	.150		●	●						
TNMG322ESX	TNMG160308N-SX			.0313			●	●						
TNMG331ESX	TNMG160404N-SX		.1875	.0156		●	●	●	●	●	●	★	●	●
TNMG332ESX	TNMG160408N-SX			.0313		●	●	●	●	★	●	★	★	●
TNMG431ESX	TNMG220404N-SX	.500		.0156	.2031	●	●	●	●					
TNMG432ESX	TNMG220408N-SX			.0313		●	●	●	●					
TNMG433ESX	TNMG220412N-SX			.0469			●	★	●					

TNMG EUP

Rake Angle: 10°





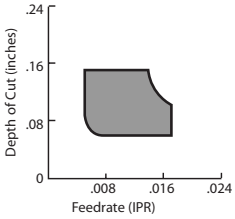


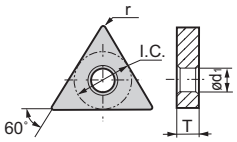
Cutting Conditions:	AC820P	AC830P	AC630M	AC530U	G10E
	Coated				Uncoated
Continuous Cut	●		●	●	
Medium Cut	●	●	●	●	●
Interrupted Cut	●	●	●	●	

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC630M	AC530U	G10E
TNMG331EUP	TNMG160404N-UP	.375	.1875	.0156	.150	●	●		●	
TNMG332EUP	TNMG160408N-UP			.0313		●	●	●	★	
TNMG333EUP	TNMG160412N-UP			.0469		●		●	★	
TNMG432EUP	TNMG220408N-UP	.500		.0313	.2031	●	●			●
TNMG433EUP	TNMG220412N-UP			.0469		★	●			

TNMG EEG

Rake Angle: 0°





Cutting Conditions:	AC6030M	AC6040M	AC630M	AC510U	AC520U	EH510	EH520
	Coated					Uncoated	
Continuous Cut	○	○	●				
Medium Cut	○	○	●	●	●	●	●
Interrupted Cut	○	○	●				

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC6030M	AC6040M	AC630M	AC510U	AC520U	EH510	EH520
TNMG332EEG	TNMG160408N-EG	.500	.1875	.0313	.2031	○	○	●	●	●	●	●
TNMG333EEG	TNMG160412N-EG			.0469		○	○	●	●	●	●	

TRIANGULAR TYPE
NEGATIVE INSERT

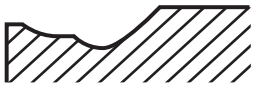
TN
- Triangular Type
- Negative
- With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

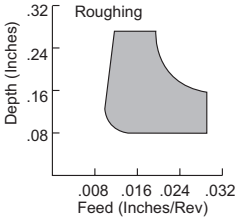
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

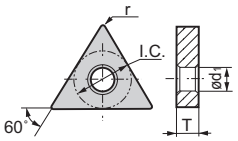
TNMG EMU

Rake Angle: 4°



Cutting Conditions:	AC810P	AC820P	AC830P	AC700G	YB100	AC6030M	AC6040M	AC630M	AC530U	AC510U	AC520U
	Coated										Uncoated
Continuous Cut	●	●		●	●	○	○	○	●	●	
Medium Cut	●	●	●	●	●	○	○	○	●	●	●
Interrupted Cut		●	●	●	●	○	○	○	○		●

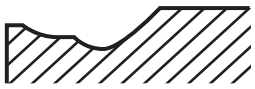




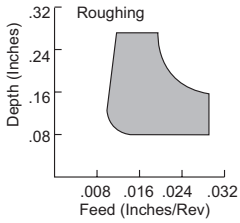
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC6030M	AC6040M	AC630M	AC530U	AC510U	AC520U
TNMG332EMU	TNMG160408N-MU	.375	.1875	.0313	.150	●	●	●	●		○	○	●	★	●	●
TNMG333EMU	TNMG160412N-MU			.0469		●	●	●			○	○	●	★	★	★
TNMG432EMU	TNMG220408N-MU	.500		.0313	.2031	●	●	●	●		○	○	●		●	●
TNMG433EMU	TNMG220412N-MU			.0469		●	●	●	●		○	○	●		●	●
TNMG434EMU	TNMG220416N-MU			.0625		●	●	●	●							
TNMG543EMU	TNMG270612N-MU	.625	.250	.0469	.250	●	●	●	●							
TNMG544EMU	TNMG270616N-MU			.0625		●	●	●	●	▲						

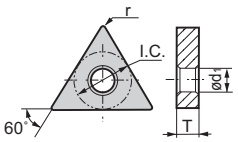
TNMG EME

Rake Angle: 4°



Cutting Conditions:	AC810P	AC820P	AC830P
	Coated			Uncoated
Continuous Cut	●	●	
Medium Cut	●	●	●
Interrupted Cut		●	●





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P
TNMG332EME	TNMG160408N-ME	.375	.1875	.0313	.150	●	●	●
TNMG333EME	TNMG160412N-ME			.0469		●	●	●
TNMG432EME	TNMG220408N-ME	.500		.0313	.2031	●	●	●
TNMG433EME	TNMG220412N-ME			.0469		●	●	●
TNMG434EME	TNMG220416N-ME			.0625		●	●	●

TRIANGULAR TYPE
NEGATIVE INSERT

TN
Triangular Type
Negative
With Insert Hole

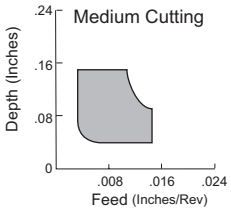
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

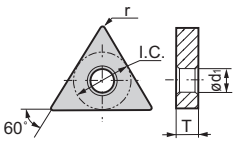
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

TNMG EEX

Rake Angle: 16°

Cutting Conditions:	Coated										Uncoated						
Continuous Cut	○	○	●	●							●						
Medium Cut	○	○	●	●	●						●						
Interrupted Cut		○	○		●												



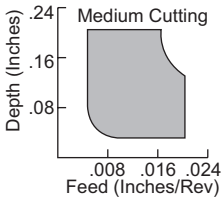


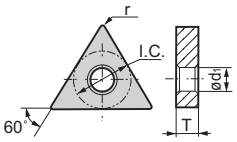
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC610M	AC630M	AC530U	AC510U	AC520U	EH510
TNMG331EEX	TNMG160404N-EX	.375	.1875	.0156	.150	●	●		●	●	
TNMG332EEX	TNMG160408N-EX			.0313		●	●	★	●	●	★
TNMG333EEX	TNMG160412N-EX			.0469		★	★	★	●		

TNMG EGU

Rake Angle: 7°

Cutting Conditions:	Coated										Cermet		Uncoated				
Continuous Cut	●	●		●	●	○	○	●			●	●					
Medium Cut	●	●	●	●	●	○	○	●			●	●					
Interrupted Cut		●	●	●	●		○	○			●	●					



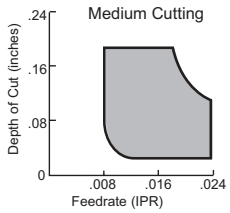


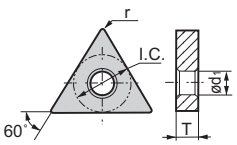
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC610M	AC630M	AC530U	T1500A	T1200A
TNMG331EGU	TNMG160404N-GU	.375	.1875	.0156	.150	●	●	●	●		★	●	★	★	★
TNMG332EGU	TNMG160408N-GU			.0313		●	●	●	●	▲	●	●	★	●	●
TNMG333EGU	TNMG160412N-GU			.0469		●	●	●	●		●	●	★		
TNMG334EGU	TNMG160416N-GU			.0625			★	★							
TNMG431EGU	TNMG220404N-GU	.500		.0156	.2031		●								
TNMG432EGU	TNMG220408N-GU			.0313		●	●	●	●	▲		●			
TNMG433EGU	TNMG220412N-GU			.0469		●	●	●	●			●			

TNMG EGE

Rake Angle: 3°

Cutting Conditions:	Coated										Uncoated						
Continuous Cut	●	●		●													
Medium Cut	●	●	●	●													
Interrupted Cut		●	●	●													





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G
TNMG331EGE	TNMG160404N-GE	.375	.1875	.0156	.150	●	●	●	
TNMG332EGE	TNMG160408N-GE			.0313		●	●	●	
TNMG333EGE	TNMG160412N-GE			.0469		●	●	●	●
TNMG432EGE	TNMG220408N-GE	.500		.0313	.2031	●	●	●	

TRIANGULAR TYPE
NEGATIVE INSERT

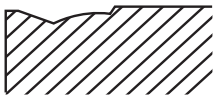
TN
- Triangular Type
- Negative
- With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

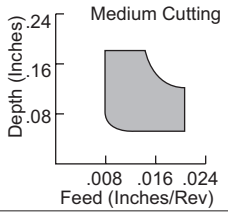
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

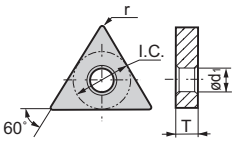
TNMG EUX

Rake Angle: 0°



Cutting Conditions:	AC810P	AC820P	AC830P	AC700G	YB100	AC410K	T1500A	T1200A
	Coated						Cermet	
Continuous Cut	○	○		○	○	○	○	○
Medium Cut	○	○	○	○	○	○	○	○
Interrupted Cut		○	○	○	○		○	○



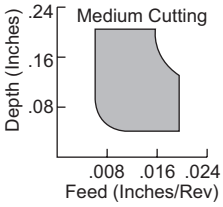


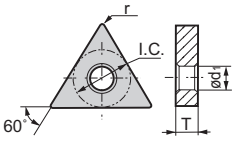
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC410K	T1500A	T1200A
TNMG321EUX	TNMG160304N-UX	.375	.125	.0156	.150	●							
TNMG322EUX	TNMG160308N-UX			.0313		●							
TNMG331EUX	TNMG160404N-UX		.1875	.0156		●	●	●	●		▲	★	★
TNMG332EUX	TNMG160408N-UX			.0313		●	●	●	●	▲	▲	★	★
TNMG333EUX	TNMG160412N-UX			.0469		●	●	●	●		▲		
TNMG432EUX	TNMG220408N-UX	.500		.0313	.2031	●	●	●	●		▲		
TNMG433EUX	TNMG220412N-UX			.0469		●	●	●	●		▲		

TNMG ENG

Rake Angle: 4°

Cutting Conditions:	AC820P	AC830P	AC700G	T1200A
	Coated			Cermet
Continuous Cut	○		○	○
Medium Cut	○	○	○	○
Interrupted Cut	○	○	○	○





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC700G	T1200A
TNMG321ENG	TNMG160304N-UG	.375	.125	.0156	.150	●			
TNMG322ENG	TNMG160308N-UG			.0313		●	●		●
TNMG331ENG	TNMG160404N-UG		.1875	.0156		★	★		
TNMG332ENG	TNMG160408N-UG			.0313		●	●	●	●
TNMG333ENG	TNMG160412N-UG			.0469		★	★	●	
TNMG334ENG	TNMG160416N-UG			.0625			★		
TNMG432ENG	TNMG220408N-UG	.500		.0313	.2031	●	●	●	
TNMG433ENG	TNMG220412N-UG			.0469		●	★	●	
TNMG434ENG	TNMG220416N-UG			.0625			●		
TNMG542ENG	TNMG270608N-UG	.625	.250	.0313	.250	●	●		
TNMG543ENG	TNMG270612N-UG			.0469		●	●		
TNMG544ENG	TNMG270616N-UG			.0625		●	●		
TNMG666ENG	TNMG330924N-UG	.750	.375	.0938	.3126	●	●		

TRIANGULAR TYPE
NEGATIVE INSERT

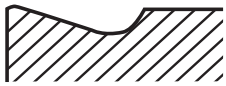
TN
Triangular Type
Negative
With Insert Hole

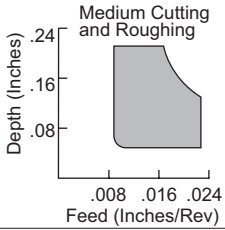
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

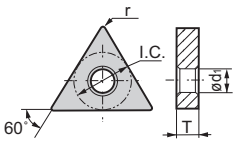
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

TNMG ENZ/FNZ

Rake Angle: 4°





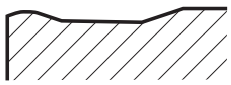


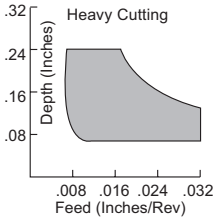
Cutting Conditions:	AC820P	AC830P	AC700G	AC405K	AC410K	AC415K	AC420K				G10E						
	Coated										Uncoated						
Continuous Cut	○		○	○	○	○											
Medium Cut	○	○	○		○	○	○				○						
Interrupted Cut	○	○	○				○										

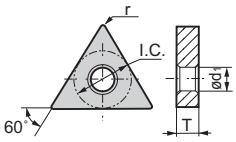
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC700G	AC405K	AC410K	AC415K	AC420K				G10E						
TNMG322 ENZ	TNMG160308N-UZ	.375	.125	.0313	.150		●															
TNMG323 ENZ	TNMG160312N-UZ			.0469			●															
TNMG331 ENZ	TNMG160404N-UZ		.1875	.0156								●										
TNMG332 ENZ	TNMG160408N-UZ			.0313		●	●	●	●	▲	●	●										
TNMG333 ENZ	TNMG160412N-UZ			.0469		●	●	●	●	▲	●	●										
TNMG334 ENZ	TNMG160416N-UZ			.0625								●										
TNMG335 ENZ	TNMG160420N-UZ			.0781								★										
TNMG432 ENZ	TNMG220408N-UZ	.500		.0313	.2031	●	●	●	●	▲	●	●										
TNMG433 ENZ	TNMG220412N-UZ			.0469		●	●	●	●	▲	●	●										
TNMG434 ENZ	TNMG220416N-UZ			.0625		●	●					●										
TNMG542 ENZ	TNMG270608N-UZ	.625	.250	.0313	.250	●	●															
TNMG543 ENZ	TNMG270612N-UZ			.0469		●	●	●														
TNMG544 ENZ	TNMG270616N-UZ			.0625		●	●															
TNMG548 ENZ	TNMG270632N-UZ			.125			●															
TNMG666 ENZ	TNMG330924N-UZ	.750	.375	.0938	.3126	●	●		●													
TNMG432 FNZ	TNMG220408N-UZ	.500	.1875	.0313	.2031											●						

TNMG EMX

Rake Angle: -15°







Cutting Conditions:	AC820P	AC830P															
	Coated										Uncoated						
Continuous Cut	○																
Medium Cut	○	○															
Interrupted Cut	○	○															

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P
TNMG332 EMX	TNMG160408N-MX	.375	.1875	.0313	.150	●	●
TNMG333 EMX	TNMG160412N-MX			.0469		●	●
TNMG432 EMX	TNMG220408N-MX	.500		.0313	.2031	●	●
TNMG433 EMX	TNMG220412N-MX			.0469		●	●

TRIANGULAR TYPE
NEGATIVE INSERT

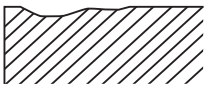
TN
- Triangular Type
- Negative
- With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

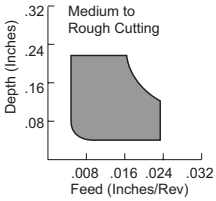
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

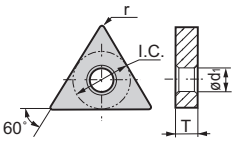
TNMG EGZ

Rake Angle: 0°



Cutting Conditions:	Coated				Cermet					Uncoated						
Continuous Cut	●	●	●													
Medium Cut	●	●	●													
Interrupted Cut				●												



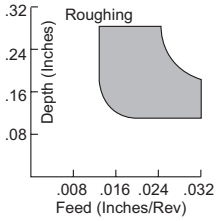


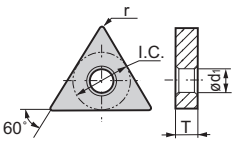
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC405K	AC410K	AC415K	AC420K
TNMG331EGZ	TNMG160404N-GZ	.375	.1875	.0156	.150	●		●	
TNMG332EGZ	TNMG160408N-GZ			.0313		●	▲	●	●
TNMG333EGZ	TNMG160412N-GZ			.0469		●		●	
TNMG432EGZ	TNMG220408N-GZ	.500		.0313	.2031	●		★	
TNMG433EGZ	TNMG220412N-GZ			.0469				★	

TNMM ENP

Rake Angle: 0°

Cutting Conditions:	Coated			Uncoated
Continuous Cut	●	●		
Medium Cut	●	●	●	
Interrupted Cut		●	●	



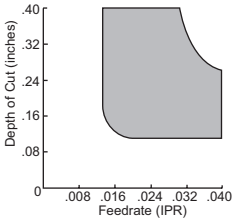


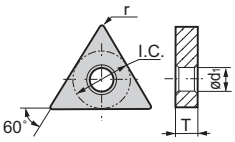
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P
TNMM 332 ENP	TNMM160408N-MP	.375	.1875	.0313	.150	★	★	●

TNMM EHG

Rake Angle: 0°

Cutting Conditions:	Coated			Cermet
Continuous Cut	●	●		
Medium Cut	●	●	●	
Interrupted Cut		●	●	





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P
TNMM432EHG	TNMM220408N-HG	.500	.1875	.0313	.2031	★	●	●
TNMM433EHG	TNMM220412N-HG			.0469		★	●	●
TNMM434EHG	TNMM220416N-HG			.0625		★	●	

TRIANGULAR TYPE
NEGATIVE INSERT

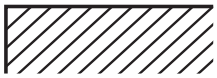
TN
- Triangular Type
- Negative
- With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

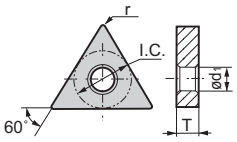
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

TNMA

No Breaker



Cutting Conditions:	Coated													Uncoated			
	AC700G	AC405K	AC410K	AC415K	AC420K									G10E	H1		
Continuous Cut	●	●	●												●		
Medium Cut	●		●	●	●									●	●		
Interrupted Cut	●				●												



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC700G	AC405K	AC410K	AC415K	AC420K	G10E	H1
TNMA322	TNMA160308	.375	.125	.0313	.150	●		▲				
TNMA331	TNMA160404		.1875	.0156		★	★	▲	●	●	★	
TNMA332	TNMA160408			.0313		●	●	▲	●	●		★
TNMA333	TNMA160412			.0469		●	●	▲	●	★		
TNMA334	TNMA160416			.0625		●	●	▲	●	●		
TNMA335	TNMA160420			.0781		★				★		
TNMA431	TNMA220404	.500		.0156	.2031						▲	
TNMA432	TNMA220408			.0313		●	●	▲	●	●		
TNMA433	TNMA220412			.0469		●	●	▲	●	●		
TNMA434	TNMA220416			.0625		●	●	▲	●	●		
TNMA438	TNMA220432			.125		●						
TNMA543	TNMA270612	.625	.250	.0469	.250	●	●	▲	●			
TNMA544	TNMA270616			.0625			●				▲	

TRIANGULAR TYPE
NEGATIVE INSERT

TRM
T-Rex Type
Negative
With Insert Hole

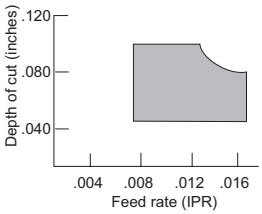
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

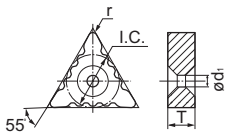
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

TRM GU

Rake Angle: 7°

Cutting Conditions:	Coated							Cermet					Uncoated			
	AC810P	AC820P	AC8300P	AC700G	AC610M	AC6030M	AC630M									
Continuous Cut	●	●		●	●	●	●									
Medium Cut	●	●	●	●	●	●	●									
Interrupted Cut		●	●	●		●	●									



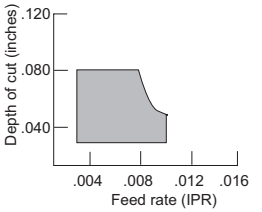


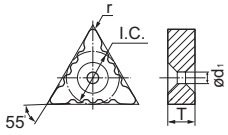
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC8300P	AC700G	AC610M	AC6030M	AC630M
TRM551704GU	TRM551704-GU	.394	.197	.0156	.084	★	●	★	●		○	
TRM551708GU	TRM551708-GU			.0313		★	●	★	●	●	○	●
TRM551712GU	TRM551712-GU			.0469		★	●	★	●		○	●

TRM SU

Rake Angle: 13°

Cutting Conditions:	Coated							Cermet					Uncoated			
	AC610M	AC6030M	AC630M													
Continuous Cut	●	●	●													
Medium Cut	●	●	●													
Interrupted Cut		●	●													



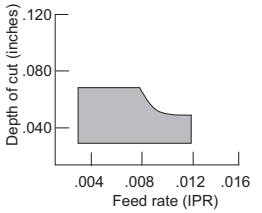


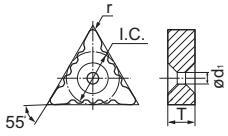
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC610M	AC6030M	AC630M
TRM551704SU	TRM551704-SU	.394	.197	.0156	.084	●	○	●
TRM551708SU	TRM551708-SU			.0313		●	○	●
TRM551712SU	TRM551712-SU			.0469		●	○	●

TRM LU

Rake Angle: 10°

Cutting Conditions:	Coated						Cermet						Uncoated			
	AC810P	AC820P	AC8300P	AC700G			T2000Z									
Continuous Cut	●	●		●			●									
Medium Cut	●	●	●	●			●									
Interrupted Cut		●	●	●												





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC8300P	AC700G	T2000Z
TRM551704LU	TRM551704-LU	.394	.197	.0156	.084	★	●	★	●	●
TRM551708LU	TRM551708-LU			.0313		★	●	★	●	●
TRM551712LU	TRM551712-LU			.0469		★	●	★	●	

35° DIAMOND TYPE
NEGATIVE INSERT

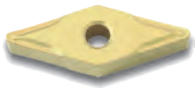
VN
35° Diamond Type
Negative
With Insert Hole

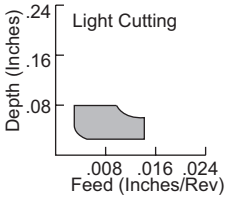
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

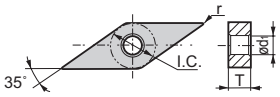
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

VNGG ESU

Rake Angle: 13°







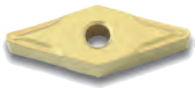
Cutting Conditions:	Coated				Cermet							Uncoated					
	AC520U				T1500Z	T2000Z	T3000Z	T1500A				H1					
Continuous Cut					●	●		●				●					
Medium Cut	●				●	●	●	●				●					
Interrupted Cut	●						●	●									

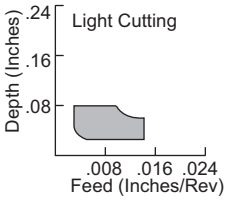
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC520U	T1500Z	T2000Z	T3000Z	T1500A	H1
VNGG330ESU	VNGG160401N-SU	.375	.1875	.0039	.150	●					
VNGG330ESUJ	VNGG160401N-SUJ										●
VNGG330.5ESU	VNGG160402N-SU			.0078		●	●	●	●	●	
VNGG330.5ESUJ	VNGG160402N-SUJ										●
VNGG331ESU	VNGG160404N-SU			.0156		●	●	●	★	●	
VNGG331ESUJ	VNGG160404N-SUJ										●
VNGG332ESU	VNGG160408N-SU			.0313		●	●	●	★	●	
VNGG332ESUJ	VNGG160408N-SUJ										●

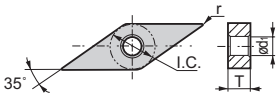
J in ESUJ = J Polish

VNMG ESU

Rake Angle: 13°





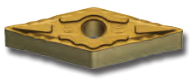


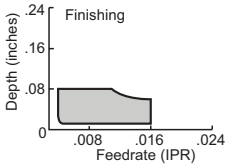
Cutting Conditions:	Coated											Cermet					UC	
	AC810P	AC820P	AC830P	AC700G	YB100	AC6030M	AC6040M	AC630M	AC530U	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A	EH510	EH520
Continuous Cut	●	●		●	●	○	○	○	○	●	●	●	●		●	●	●	
Medium Cut	●	●	●	●	●	○	○	○	○	●	●	●	●	●	●	●	●	●
Interrupted Cut		●	●	●	●	○	○	○	○		●			●	●	●		

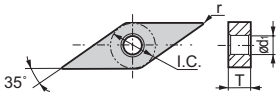
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC6030M	AC6040M	AC630M	AC530U	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A	EH510	EH520
VNMG331ESU	VNMG160404N-SU	.375	.1875	.0156	.150	●	●	●	●	▲	○	○	●	★	●	●	●	●	●	●	●	●	
VNMG332ESU	VNMG160408N-SU			.0313		●	●	●	●	▲	○	○	●	★	●	●	●	●	●	●	●		●

VNMG ESE

Rake Angle: 5°







Cutting Conditions:	Coated											Cermet			Uncoated			
	AC810P	AC820P	AC830P									T1500A						
Continuous Cut	●	●										●						
Medium Cut	●	●	●									●						
Interrupted Cut		●	●									●						

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	T1500A
VNMG331ESE	VNMG160404N-SE	.375	.1875	.0156	.150	●		★	●
VNMG332ESE	VNMG160408N-SE			.0313		●	●	★	●

35° DIAMOND TYPE
NEGATIVE INSERT

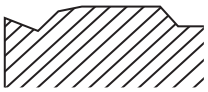
VN
35° Diamond Type
Negative
With Insert Hole

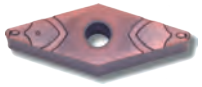
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

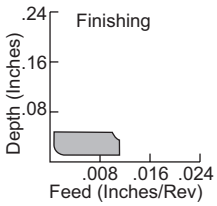
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

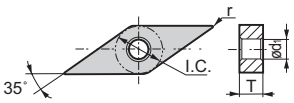
VNMG EFA

Rake Angle: 20°







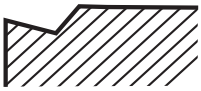


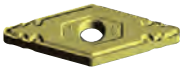
Cutting Conditions:	Coated				Cermet					Uncoated						
Continuous Cut					●	●		●	●							
Medium Cut					●	●	●	●	●							
Interrupted Cut							●	●	●							
					T1500Z	T2000Z	T3000Z	T1500A	T1200A							

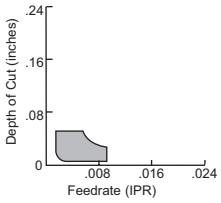
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z	T2000Z	T3000Z	T1500A	T1200A
VNMG331EFA	VNMG160404N-FA	.375	.1875	.0156	.150	●	●	★	●	●
VNMG332EFA	VNMG160608N-FA			.0313		●	●	★	●	●

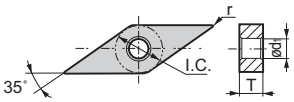
VNMG EFL

Rake Angle: 10°







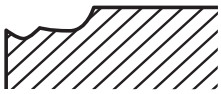


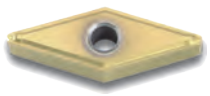
Cutting Conditions:	Coated				Cermet					Uncoated						
Continuous Cut	●				●	●										
Medium Cut	●				●	●	●									
Interrupted Cut	●						●									
	AC820P				T1500Z	T2000Z	T3000Z									

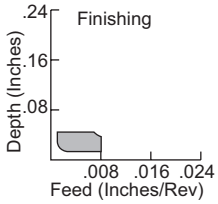
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	T1500Z	T2000Z	T3000Z
VNMG331EFL	VNMG160404N-FL	.375	.1875	.0156	.150	●	●	●	★
VNMG332EFL	VNMG160408N-FL			.0313		●	●	●	★

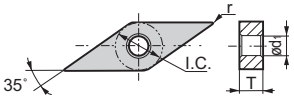
VNMG EFP

Rake Angle: 10°









Cutting Conditions:	Coated				Cermet					Uncoated						
Continuous Cut					●	●										
Medium Cut					●	●										
Interrupted Cut					●	●										
					T1500A	T1200A										

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500A	T1200A
VNMG331EFP	VNMG160404N-FP	.375	.1875	.0156	.150	●	●
VNMG332EFP	VNMG160408N-FP			.0313			●

35° DIAMOND TYPE
NEGATIVE INSERT

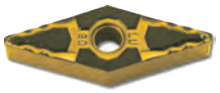
VN — 35° Diamond Type | Negative | With Insert Hole

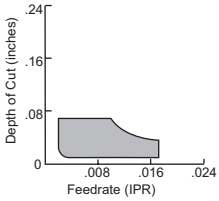
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

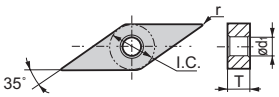
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

VNMG ELU

Rake Angle: 10°





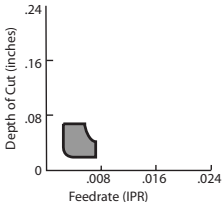


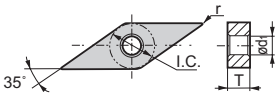
Cutting Conditions:	Coated					Cermet					Uncoated						
Continuous Cut	●	●	●			●	●		●								
Medium Cut	●	●	●			●	●	●	●								
Interrupted Cut		●	●					●									

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G			T1500Z	T2000Z	T3000Z	T1500A							
VNMG331ELU	VNMG160404N-LU	.375	.1875	.0156	.150	●	●	●			●	●	●	●							
VNMG332ELU	VNMG160408N-LU			.0313		●	●	●			●	●	●	●							
VNMG333ELU	VNMG160412N-LU			.0469		●															

VNMG EEF

Rake Angle: 0°



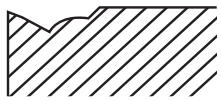


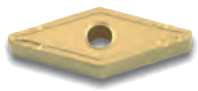
Cutting Conditions:	Coated					Cermet					Uncoated						
Continuous Cut	●	●	●	●							●						
Medium Cut	●	●	●	●	●						●	●					
Interrupted Cut	●	●	●		●												

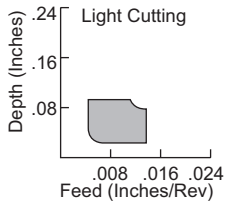
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC6030M	AC6040M	AC630M	AC510U	AC520U						EH510	EH520				
VNMG331EEF	VNMG160404N-EF	.375	.1875	.0156	.150	○	○	●	●	●						●	●				
VNMG332EEF	VNMG160408N-EF			.0313		○	○	●	●	●						●	●				

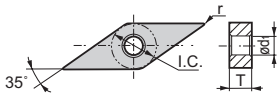
VNMG ESX

Rake Angle: 3°









Cutting Conditions:	Coated					Cermet					Uncoated						
Continuous Cut	●	●		●		●	●										
Medium Cut	●	●	●	●		●	●										
Interrupted Cut		●	●	●													

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G			T1500A	T1200A								
VNMG331ESX	VNMG160404N-SX	.375	.1875	.0156	.150	●	●	●	●			★	●								
VNMG332ESX	VNMG160408N-SX			.0313		●	●	●	●												

35° DIAMOND TYPE
NEGATIVE INSERT

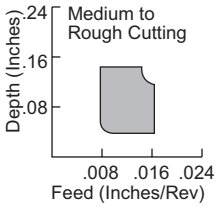
VN
35° Diamond Type
Negative
With Insert Hole

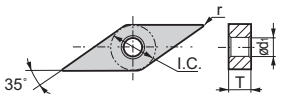
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

VNMG ENG

Rake Angle: 4°



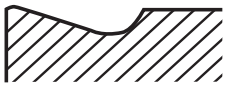


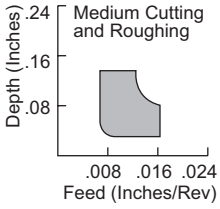
Cutting Conditions:	AC820P	AC830P	AC700G	T1200A
Continuous Cut	●		●	●
Medium Cut	●	●	●	●
Interrupted Cut	●	●	●	●

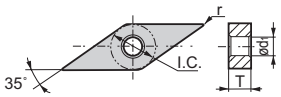
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC700G	T1200A
VNMG331ENG	VNMG160404N-UG	.375	.1875	.0156	.150	●	●	●	●
VNMG332ENG	VNMG160408N-UG			.0313		●	●	●	●

VNMG ENZ/FNZ

Rake Angle: 4°





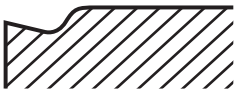


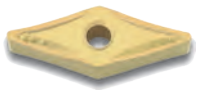
Cutting Conditions:	AC820P	AC830P	AC405K	AC410K	AC415K	AC420K	G10E
Continuous Cut	●		●	●	●		
Medium Cut	●	●		●	●	●	●
Interrupted Cut	●	●				●	

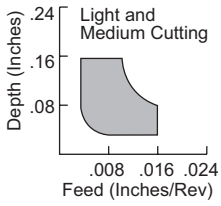
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC405K	AC410K	AC415K	AC420K	G10E
VNMG331ENZ	VNMG160404N-UZ	.375	.1875	.0156	.150	●	●	●	▲	●	●	
VNMG332ENZ	VNMG160408N-UZ			.0313		●	●	●	▲	●	●	
VNMG333ENZ	VNMG160412N-UZ			.0469		●	●				●	
VNMG432ENZ	VNMG220408N-UZ	.500		.0313	.2031	●	●					
VNMG433ENZ	VNMG220412N-UZ			.0469		●	●					
VNMG331FNZ	VNMG160404N-UZ	.375	.1875	.0156	.150							●
VNMG332FNZ	VNMG160408N-UZ			.0313								●

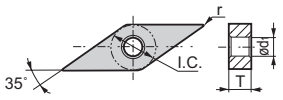
VNMG EUP

Rake Angle: 10°









Cutting Conditions:	AC820P	AC830P	AC510U	AC520U	G10E
Continuous Cut	●		●		
Medium Cut	●	●	●	●	●
Interrupted Cut	●	●		●	

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC510U	AC520U	G10E
VNMG331EUP	VNMG160404N-UP	.375	.1875	.0156	.150	●	●	●	●	●
VNMG332EUP	VNMG160408N-UP			.0313		●	●	●	●	●

35° DIAMOND TYPE
NEGATIVE INSERT

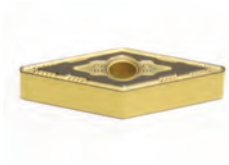
VN — 35° Diamond Type | Negative | With Insert Hole

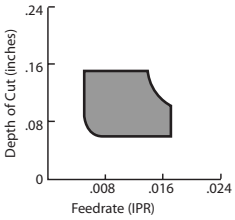
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

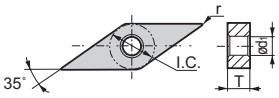
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

VNMG EEG

Rake Angle: 0°





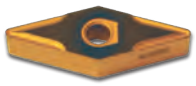


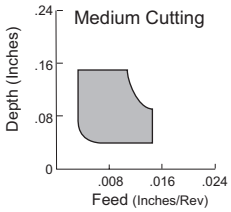
Cutting Conditions:	Coated					Cermet				Uncoated							
	AC6030M	AC6040M	AC630M	AC510U	AC520U												
Continuous Cut	○	○	○	●													
Medium Cut	○	○	○	●	●												
Interrupted Cut	○	○	○		●												

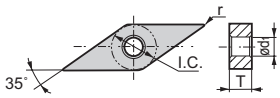
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC6030M	AC6040M	AC630M	AC510U	AC520U
VNMG332EEG	VNMG160408N-EG	.375	.1875	.0313	.150	○	○	●	●	●

VNMG EEX

Rake Angle: 16°





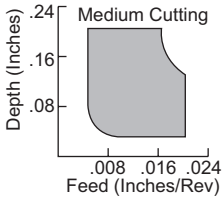


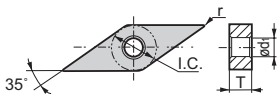
Cutting Conditions:	Coated										Uncoated							
	AC610M	AC630M	AC520U															
Continuous Cut	○	○																
Medium Cut	○	○	●															
Interrupted Cut		○	●															

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC610M	AC630M	AC520U
VNMG331EEX	VNMG160404N-EX	.375	.1875	.0156	.150	●	●	
VNMG332EEX	VNMG160408N-EX			.0313		●	●	●

VNMG EGU

Rake Angle: 7°





Cutting Conditions:	Coated										Cermet		Uncoated					
	AC810P	AC820P	AC830P	AC700G	YB100	AC610M	AC630M	AC530U			T1500A	T1200A						
Continuous Cut	●	●		●	●	●	●	●			●	●						
Medium Cut	●	●	●	●	●	●	●	●			●	●						
Interrupted Cut		●	●	●	●		●	●			●	●						

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC610M	AC630M	AC530U	T1500A	T1200A
VNMG331EGU	VNMG160404N-GU	.375	.1875	.0156	.150	●	●	●	●	▲	●	●	★	●	●
VNMG332EGU	VNMG160408N-GU			.0313		●	●	●	●	▲	●	●	★	●	●
VNMG333EGU	VNMG160412N-GU			.0469			●	★					★		

35° DIAMOND TYPE
NEGATIVE INSERT

VN
35° Diamond Type
Negative
With Insert Hole

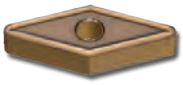
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

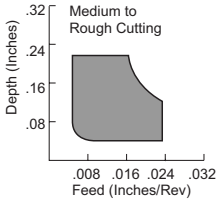
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

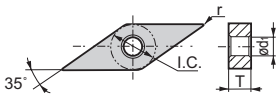
VNMG EGZ

Rake Angle: 0°

Cutting Conditions:	Coated			Cermet	Uncoated
Continuous Cut	○	○			
Medium Cut		○	○		
Interrupted Cut			○		



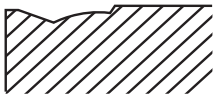




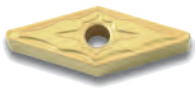
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC405K	AC415K	AC420K
VNMG331EGZ	VNMG160404N-GZ	.375	.1875	.0156	.150	●	●	●
VNMG332EGZ	VNMG160408N-GZ			.0313		●	●	●
VNMG333EGZ	VNMG160412N-GZ			.0469			●	●

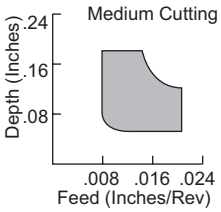
VNMG EUX

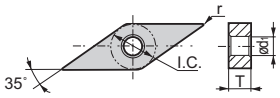
Rake Angle: 0°



Cutting Conditions:	Coated						Cermet
Continuous Cut	○	○		○	○	○	
Medium Cut	○	○	○	○	○	○	
Interrupted Cut		○	○	○	○		



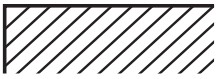




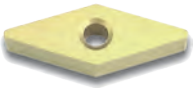
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC410K
VNMG331EUX	VNMG160404N-UX	.375	.1875	.0156	.150	●	●	●	●		▲
VNMG332EUX	VNMG160408N-UX			.0313		●	●	●	●	▲	▲
VNMG333EUX	VNMG160412N-UX			.0469		●	●	★	●		

VNMA —

No Breaker



Cutting Conditions:	Coated					Uncoated
Continuous Cut	○	○	○	○		
Medium Cut	○		○	○	○	
Interrupted Cut	○				○	



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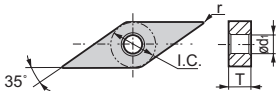


Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC700G	AC405K	AC410K	AC415K	AC420K
VNMA331	VNMA160404	.375	.1875	.0156	.150	★	●		●	●
VNMA332	VNMA160408			.0313		●	●	▲	●	●
VNMA333	VNMA160412			.0469		●	●	▲	●	

TRIGON TYPE
NEGATIVE INSERT

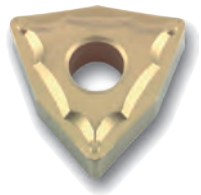
WN — Trigon Type / Negative / With Insert Hole

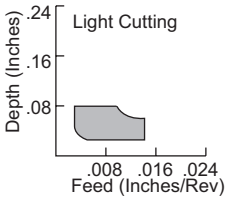
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

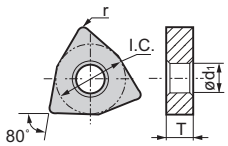
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

WNGG ESU

Rake Angle: 13°





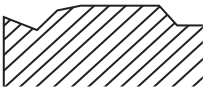


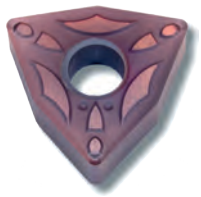
Cutting Conditions:	Coated			Cermet				Uncoated
	AC520U			T1500Z	T2000Z	T3000Z	T1500A	
Continuous Cut				○	○		○	
Medium Cut	⬡			⬡	⬡	⬡	⬡	
Interrupted Cut	⬡					⬡	⬡	

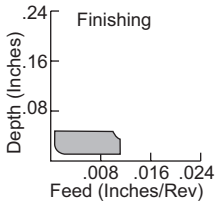
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC520U				T1500Z	T2000Z	T3000Z	T1500A								
WNGG431ESU	WNGG080404N-SU	.500	.1875	.0156	.2031	●				★	★	★	●								

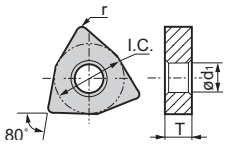
WNMG EFA

Rake Angle: 20°







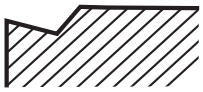


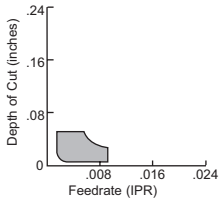
Cutting Conditions:	Coated			Cermet					Uncoated
				T1500Z	T2000Z	T3000Z	T1500A	T1200A	
Continuous Cut				○	○		○	○	
Medium Cut				⬡	⬡	⬡	⬡	⬡	
Interrupted Cut						⬡	⬡	⬡	

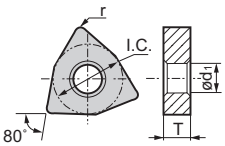
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1					T1500Z	T2000Z	T3000Z	T1500A	T1200A							
WNMG430.5EFA	WNMG080402N-FA	.500	.1875	.0078	.2031					●	●	●	●	●							
WNMG431EFA	WNMG080404N-FA			.0156						●	●	★	●	●							
WNMG432EFA	WNMG080408N-FA			.0313						●	●	★	●	●							

WNMG EFL

Rake Angle: 10°







Cutting Conditions:	Coated					Cermet				Uncoated
Continuous Cut	○	○	○			○	○			
Medium Cut	⬡	⬡	⬡			⬡	⬡	⬡		
Interrupted Cut		⬡	⬡					⬡		

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	YB100			T1500Z	T2000Z	T3000Z								
WNMG431EFL	WNMG080404N-FL	.500	.1875	.0156	.2031		●				●	●	★								
WNMG432EFL	WNMG080408N-FL			.0313		●	●	▲			●	●	★								

TRIGON TYPE
NEGATIVE INSERT

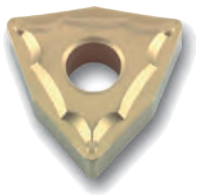
WN	Trigon Type
	Negative
	With Insert Hole

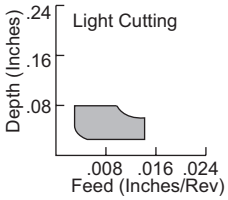
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

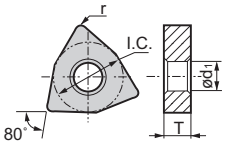
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

WNMG ESU

Rake Angle: 13°





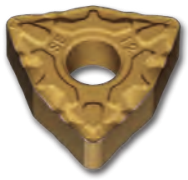


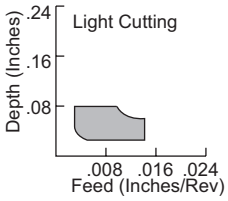
Cutting Conditions:	AC810P	AC820P	AC830P	AC700G	YB100	AC6030M	AC6040M	AC630M	AC530U	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A
	Coated											Cermet				
Continuous Cut	●	●		●	●	●	●	●	●			●	●		●	●
Medium Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Interrupted Cut		●	●	●	●	●	●	●	●	●	●			●	●	●

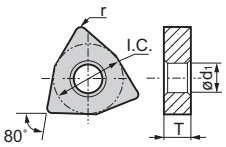
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC6030M	AC6040M	AC630M	AC530U	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A
WNMG331ESU	WNMG060404N-SU	.375	.1875	.0156	.150		●	●	●		○	○	●		●	●					
WNMG332ESU	WNMG060408N-SU			.0313		●	●	●	●	▲	○	○	●		●	●					
WNMG431ESU	WNMG080404N-SU	.500		.0156	.2031	●	●	●	●	▲	○	○	●	★	●	●	●	●	●	●	●
WNMG432ESU	WNMG080408N-SU			.0313		●	●	●	●		○	○	●	★	●	●	●	●	●	●	●
WNMG433ESU	WNMG080412N-SU			.0469		●	●		●	▲	○	○	●	★	●	●	●	●		★	

WNMG ESE

Rake Angle: 13°





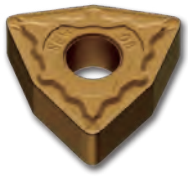


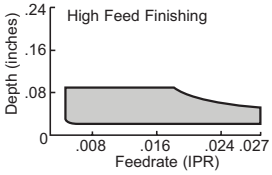
Cutting Conditions:	AC810P	AC820P	AC830P	T1500A
	Coated			Cermet
Continuous Cut	●	●		●
Medium Cut	●	●	●	●
Interrupted Cut		●	●	●

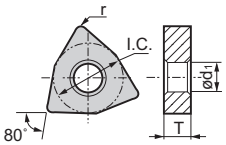
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	T1500A
WNMG431ESE	WNMG080404N-SE	.500	.1875	.0156	.2031	●		★	●
WNMG432ESE	WNMG080408N-SE			.0313		●	●	●	●
WNMG433ESE	WNMG080412N-SE			.0469		●		●	

WNMG ESEW
Wiper Insert

Rake Angle: 13°







Cutting Conditions:	AC810P	AC820P	T1500A
	Coated		Cermet
Continuous Cut	●	●	●
Medium Cut	●	●	●
Interrupted Cut		●	●

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	T1500A
WNMG431ESEW	WNMG080404N-SEW	.500	.1875	.0156	.2031	★		
WNMG432ESEW	WNMG080408N-SEW			.0313		●	●	●
WNMG433ESEW	WNMG080412N-SEW			.0469			●	

TRIGON TYPE
NEGATIVE INSERT

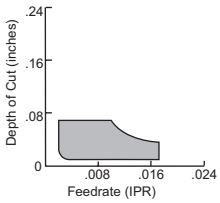
WN — Trigon Type / Negative / With Insert Hole

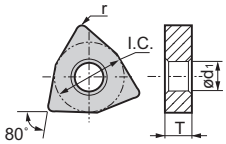
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

WNMG ELU

Rake Angle: 10°



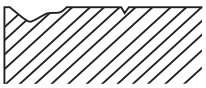


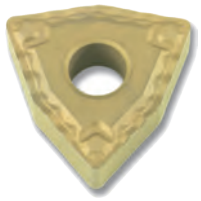
Cutting Conditions:	Coated									Cermet					Uncoated						
Continuous Cut	●	●		●						●	●		●	●							
Medium Cut	●	●	●	●						●	●	●	●	●							
Interrupted Cut		●	●	●								●	●	●							

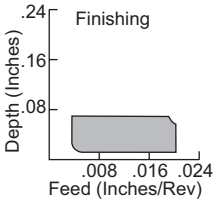
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	T1500Z	T2000Z	T3000Z	T1500A	T1200A
WNMG431ELU	WNMG080404N-LU	.500	.1875	.0156	.2031	●	●		●	●	●	●	★	★
WNMG432ELU	WNMG080408N-LU			.0313		●	●	★	●	●	●	●	★	★
WNMG433ELU	WNMG080412N-LU			.0469		●	●		●	●	●	●	★	★

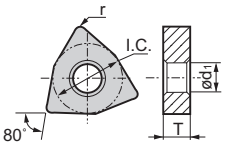
WNMG ELUW
Wiper Insert

Rake Angle: 10°







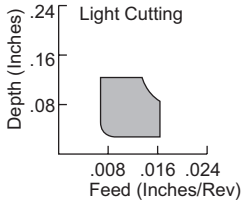


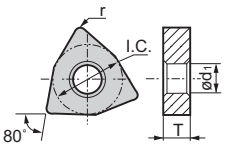
Cutting Conditions:	Coated							Cermet				Uncoated						
Continuous Cut	●	●	●	●	○	○	○	●	●		●							
Medium Cut	●	●	●	●	○	○	○	●	●	●	●							
Interrupted Cut		●	●	●	○	○	○			●	●							

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	YB100	AC6030M	AC6040M	AC630M	T1500Z	T2000Z	T3000Z	T1500A
WNMG331ELUW	WNMG060404N-LUW	.375	.1875	.0156	.150	●	●	●		○	○	●	●	●	●	●
WNMG332ELUW	WNMG060408N-LUW			.0313		●	●	●		○	○	●	●	●	●	●
WNMG431ELUW	WNMG080404N-LUW	.500		.0156	.2031	●	●	●	▲				●	●	●	●
WNMG432ELUW	WNMG080408N-LUW			.0313		●	●	●	▲				●	●	●	●
WNMG433ELUW	WNMG080412N-LUW			.0469		●	●	●					●	●	●	●

WNMG ENK

Rake Angle: 10°





Cutting Conditions:	Coated				Cermet				Uncoated						
Continuous Cut	●														
Medium Cut	●														
Interrupted Cut	●														

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P
WNMG431ENK	WNMG080404N-SK	.500	.1875	.0156	.2031	●
WNMG432ENK	WNMG080408N-SK			.0313		●

TRIGON TYPE
NEGATIVE INSERT

WN
- Trigon Type
- Negative
- With Insert Hole

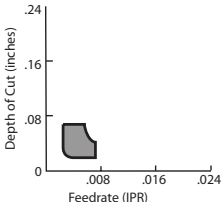
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

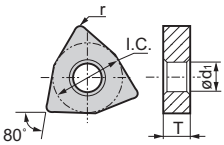
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

WNMG EEF

Rake Angle: 0°

Cutting Conditions:	AC6030M	AC6040M	AC630M	AC510U	AC520U	EH510	EH520
	Coated					Uncoated	
Continuous Cut	○	○	○	●		●	
Medium Cut	○	○	○	●	●	●	●
Interrupted Cut	○	○	○		●		

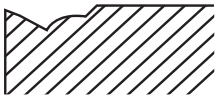




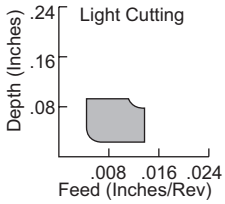
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC6030M	AC6040M	AC630M	AC510U	AC520U	EH510	EH520
WNMG331EEF	WNMG060404N-EF	.375	.1875	.0156	.150	○	○	○	○	○	○	○
WNMG332EEF	WNMG060408N-EF			.0313		○	○	○	○	○	○	○
WNMG431EEF	WNMG080404N-EF	.500		.0156	.2031	○	○	●	●	●	●	●
WNMG432EEF	WNMG080408N-EF			.0313		○	○	●	●	●	●	●

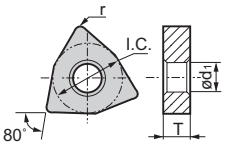
WNMG ESX

Rake Angle: 3°



Cutting Conditions:	AC810P	AC820P	AC830P	AC700G	T1500Z	T2000Z	T3000Z	T1500A	T1200A
	Coated				Cermet				
Continuous Cut	●	●		●	●	●		●	●
Medium Cut	●	●	●	●	●	●	●	●	●
Interrupted Cut		●	●	●			●	●	●

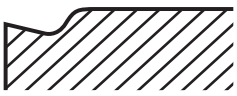




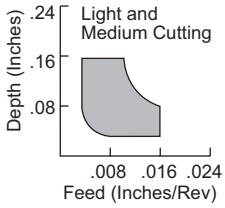
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	T1500Z	T2000Z	T3000Z	T1500A	T1200A
WNMG431ESX	WNMG080404N-SX	.500	.1875	.0156	.2031	●	●	●	●	●	●	★	●	●
WNMG432ESX	WNMG080408N-SX			.0313		●	●	●	●	●	●	★	★	●
WNMG433ESX	WNMG080412N-SX			.0469		●	●	●	●					

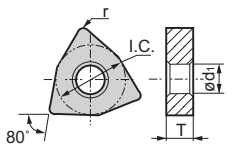
WNMG EUP

Rake Angle: 10°



Cutting Conditions:	AC820P	AC830P	AC530U	AC630M	AC510U	AC520U	G10E
	Coated						Uncoated
Continuous Cut	●		●	●	●		
Medium Cut	●	●	●	●	●	●	●
Interrupted Cut	●	●	●	●		●	





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC530U	AC630M	AC510U	AC520U	G10E
WNMG432EUP	WNMG080408N-UP	.500	.1875	.0313	.2031	●	●	★	●	●	●	●
WNMG433EUP	WNMG080412N-UP			.0469		●	●	★	●	●	●	

TRIGON TYPE
NEGATIVE INSERT

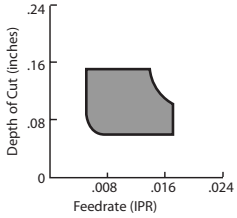
WN	Trigon Type
	Negative
	With Insert Hole

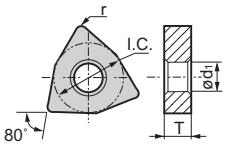
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

WNMG EEG

Rake Angle: 0°



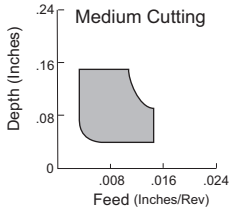


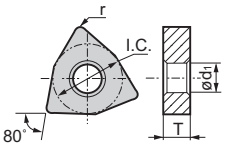
Cutting Conditions:	AC6030M	AC6040M	AC630M	AC510U	AC520U	EH510	EH520
	Coated					Cermet	Uncoated
Continuous Cut	○	○	○	●			●
Medium Cut	○	○	○	●	●		● ●
Interrupted Cut	○	○	○		●		

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC6030M	AC6040M	AC630M	AC510U	AC520U	EH510	EH520
WNMG331EEG	WNMG060404N-EG	.375	.1875	.0156	.150	○	○	○	○	○	○	○
WNMG332EEG	WNMG060408N-EG			.0313		○	○	○	○	○	○	○
WNMG432EEG	WNMG080408N-EG	.500		.0313	.2031	●	●	●	●	●	●	●
WNMG433EEG	WNMG080412N-EG			.0469		●	●	●	●	●	●	●

WNMG EEX

Rake Angle: 16°



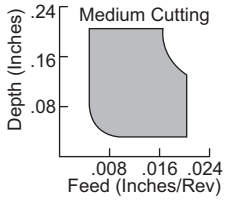


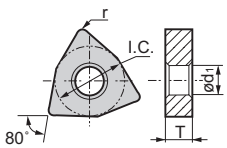
Cutting Conditions:	AC530U	AC610M	AC630M	AC510U	AC520U	EH510	EH520
	Coated					Uncoated	
Continuous Cut	●	○	○	●		●	
Medium Cut	● ○	○	○	●	●	●	●
Interrupted Cut	○		○		●		

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U	AC610M	AC630M	AC510U	AC520U	EH510	EH520
WNMG331EEX	WNMG060404N-EX	.375	.1875	.0156	.150				●	●		
WNMG332EEX	WNMG060408N-EX			.0313					●	●		
WNMG431EEX	WNMG080404N-EX	.500		.0156	.2031	★	●	●	●	●	●	●
WNMG432EEX	WNMG080408N-EX			.0313		★	●	●	●	●	●	●
WNMG433EEX	WNMG080412N-EX			.0469		★	●	●				

WNMG EGU

Rake Angle: 7°





Cutting Conditions:	AC810P	AC820P	AC830P	AC700G	YB100	AC530U	AC610M	AC630M	T1500A	T1200A
	Coated								Cermet	Uncoated
Continuous Cut	●	●		●	●	●	○	○	●	●
Medium Cut	●	●	●	●	●	●	○	○	●	●
Interrupted Cut		●	●	●	●	○		○	●	●

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC530U	AC610M	AC630M	T1500A	T1200A
WNMG332 EGU	WNMG060408N-GU	.375	.1875	.0313	.150		●								
WNMG333 EGU	WNMG060412N-GU			.0469			●								
WNMG431EGU	WNMG080404N-GU	.500		.0156	.2031	●	●	●	●		★	●	●	★	★
WNMG432EGU	WNMG080408N-GU			.0313		●	●	●	●	▲	★	●	●	★	★
WNMG433EGU	WNMG080412N-GU			.0469		●	●	●	●		★	●	●		

TRIGON TYPE
NEGATIVE INSERT

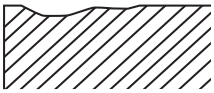
WN
- Trigon Type
- Negative
- With Insert Hole

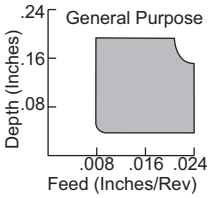
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

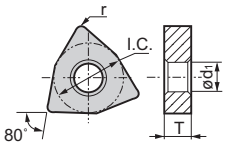
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

WNMG EGUW
Wiper Insert

Rake Angle: 0°





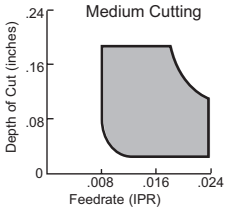


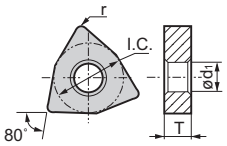
Cutting Conditions:	AC810P	AC820P	AC700G	AC630M	AC405K	AC410K	AC415K
	Coated						
Continuous Cut	●	●	●	●	●	●	●
Medium Cut	●	●	●	●		●	●
Interrupted Cut		●	●	●			

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	AC630M	AC405K	AC410K	AC415K
WNMG432EGUW	WNMG080408N-GUW	.500	.1875	.0313	.2031	●	●	●	●	●	▲	●
WNMG433EGUW	WNMG080412N-GUW			.0469		●	●	●	●	●	▲	●

WNMG EGE

Rake Angle: 3°



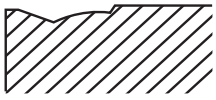


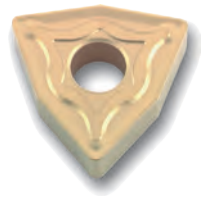
Cutting Conditions:	AC810P	AC820P	AC830P	AC700G
	Coated			
Continuous Cut	●	●		●
Medium Cut	●	●	●	●
Interrupted Cut		●	●	●

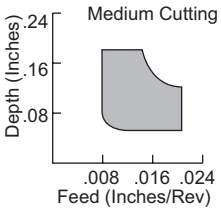
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G
WNMG332EGE	WNMG060408N-GE	.375	.1875	.0313	.150	●	●	●	
WNMG333EGE	WNMG060412N-GE			.0469		●	●	●	●
WNMG432EGE	WNMG080408N-GE	.500		.0313	.2031	●	●	●	●
WNMG433EGE	WNMG080412N-GE			.0469		●	●	●	●
WNMG434EGE	WNMG080416N-GE			.0625			●	●	

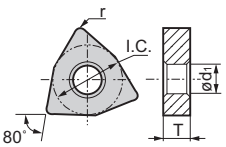
WNMG EUX

Rake Angle: 0°









Cutting Conditions:	AC810P	AC820P	AC830P	AC700G	YB100	AC410K
	Coated					
Continuous Cut	●	●		●	●	●
Medium Cut	●	●	●	●	●	●
Interrupted Cut	●	●	●	●	●	

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC410K
WNMG431EUX	WNMG080404N-UX	.500	.1875	.0156	.2031	●	●	●	●		▲
WNMG432EUX	WNMG080408N-UX			.0313		●	●	●	●	▲	▲
WNMG433EUX	WNMG080412N-UX			.0469		●	●	●	●	▲	▲

WN

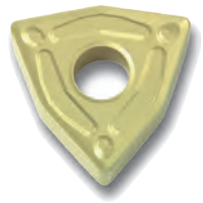
Trigon Type
Negative
With Insert Hole

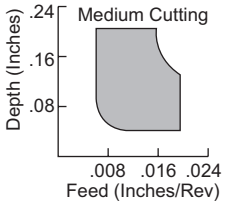
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

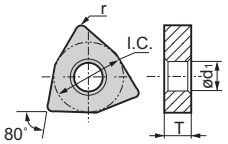
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

WNMG ENG

Rake Angle: 4°





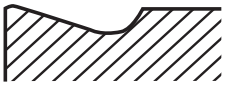


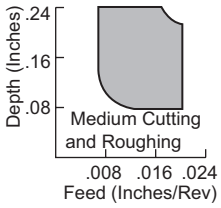
Cutting Conditions:	Coated									Cermet							
Continuous Cut	●		●														
Medium Cut	●	●	●														
Interrupted Cut	●	●	●														

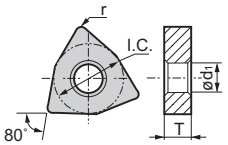
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC700G
WNMG431ENG	WNMG080404N-UG	.500	.1875	.0156	.2031	●	●	●
WNMG432ENG	WNMG080408N-UG			.0313		●	●	●
WNMG433ENG	WNMG080412N-UG			.0469		●	●	●
WNMG543ENG	WNMG160612N-UG	.625	.250	.0469	.250	●	●	●

WNMG ENZ

Rake Angle: 4°





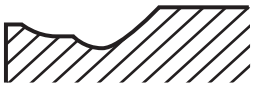


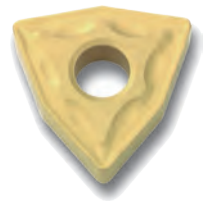
Cutting Conditions:	Coated											Uncoated					
Continuous Cut	●		●	●	●	●											
Medium Cut	●	●	●		●	●	●					●					
Interrupted Cut	●	●	●				●										

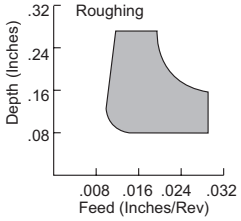
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC700G	AC405K	AC410K	AC415K	AC420K	G10E
WNMG431ENZ	WNMG080412N-UZ	.500	.1875	.0156	.2031	●	●		●		●	●	
WNMG432ENZ	WNMG080408N-UZ			.0313		●	●	●	●	▲	●	●	▲
WNMG433ENZ	WNMG080412N-UZ			.0469		●	●	●	●	▲	●	●	

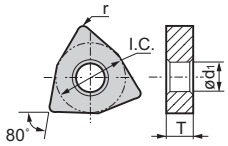
WNMG EMU

Rake Angle: 4°









Cutting Conditions:	Coated															Uncoated				
Continuous Cut	●	●		●	●	●	●	●	●	●	●									
Medium Cut	●	●	●	●	●	●	●	●	●	●	●	●								
Interrupted Cut		●	●	●	●	●		●	●	●		●								

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC530U	AC610M	AC6030M	AC6040M	AC630M	AC510U	AC520U
WNMG332EMU	WNMG060408N-MU	.375	.1875	.0313	.150	●	●	●	●				○	○	●	●	●
WNMG333EMU	WNMG060412N-MU			.0469			●	●	●				○	○	●		
WNMG432EMU	WNMG080408N-MU	.500		.0313	.2031	●	●	●	●	▲	★	●	○	○	●	●	●
WNMG433EMU	WNMG080412N-MU			.0469		●	●	●	●	▲	★	●	○	○	●	●	●
WNMG543EMU	WNMG160612N-MU	.625	.250	.0469	.250	●	●	●	●								

TRIGON TYPE
NEGATIVE INSERT

WN
- Trigon Type
- Negative
- With Insert Hole

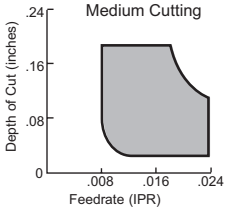
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

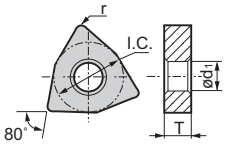
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

WNMG EME

Rake Angle: 3°

Cutting Conditions:	Coated			Uncoated
Continuous Cut	●	●		
Medium Cut	●	●	●	
Interrupted Cut		●	●	

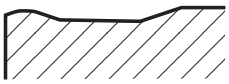




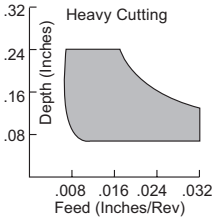
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P
WNMG332EME	WNMG060408N-ME	.375	.1875	.0313	.150	●	●	●
WNMG333EME	WNMG060412N-ME			.0469		●	●	●
WNMG432EME	WNMG080408N-ME	.500		.0313	.2031	●	●	●
WNMG433EME	WNMG080412N-ME			.0469		●	●	●
WNMG434EME	WNMG080416N-ME			.0625		●	●	●

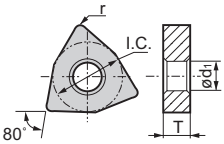
WNMG EMX

Rake Angle: -15°



Cutting Conditions:	Coated		Uncoated
Continuous Cut	●		
Medium Cut	●	●	
Interrupted Cut	●	●	



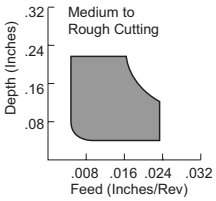


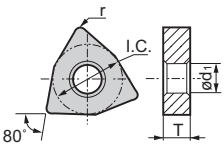
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P
WNMG432EMX	WNMG080408N-MX	.500	.1875	.0313	.2031	●	●
WNMG433EMX	WNMG080412N-MX			.0469		●	●

WNMG EGZ

Rake Angle: 0°

Cutting Conditions:	Coated				Uncoated
Continuous Cut	●	●	●		
Medium Cut		●	●	●	
Interrupted Cut				●	





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC405K	AC410K	AC415K	AC420K
WNMG332EGZ	WNMG060408N-GZ	.375	.1875	.0313	.150	○		○	○
WNMG333EGZ	WNMG060412N-GZ			.0469		○		○	○
WNMG431EGZ	WNMG080404N-GZ	.500		.0156	.2031	●	▲	●	●
WNMG432EGZ	WNMG080408N-GZ			.0313		●	▲	●	●
WNMG433EGZ	WNMG080412N-GZ			.0469		●	▲	●	●

TRIGON TYPE
NEGATIVE INSERT

WN	Trigon Type
	Negative
	With Insert Hole

- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

WNMA

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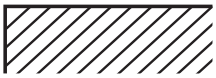
No Breaker



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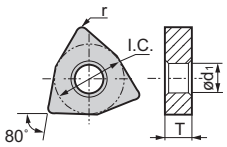


Cutting Conditions:	AC500G	AC700G	AC405K	AC410K	AC415K	AC420K										
	Coated												Uncoated			
Continuous Cut	●	●	●	●	●											
Medium Cut	●	●		●	●	●										
Interrupted Cut	●	●				●										

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC500G	AC700G	AC405K	AC410K	AC415K	AC420K
WNMA432	WNMA080408	.500	.1875	.0313	.2031		●	●	▲	●	●
WNMA433	WNMA080412			.0469		▲	●	●	▲	●	●
WNMA434	WNMA080416			.0625			●	●	▲	●	●

80° DIAMOND TYPE
POSITIVE INSERT

CC
- 80° Diamond Type
- 7° Relief
- With Insert Hole

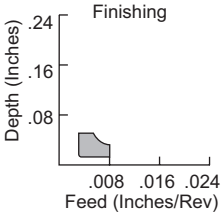
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

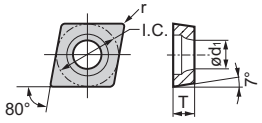
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

CCGT FX

Rake Angle: 15°

Cutting Conditions:	Coated				Cermet				Uncoated							
	AC530U				T1500Z	T2000Z	T1500A	T1200A								
Continuous Cut	●				●	●	●	●								
Medium Cut	◐				◐	◐	◐	◐								
Interrupted Cut	◌						◌	◌								



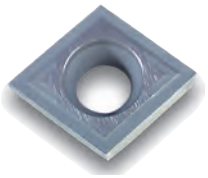


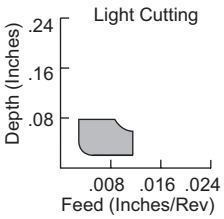
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U				T1500Z	T2000Z	T1500A	T1200A								
CCGT21.5.001RFX	CCGT0602003R-FX	.250	.094	.0012	.110	★						★	●								
CCGT21.5.001LFX	CCGT0602003L-FX			.0012		★						★	●								
CCGT21.50RFX	CCGT060201R-FX			.0039		★						●									
CCGT21.50LFX	CCGT060201L-FX			.0039		●						★	●								
CCGT21.50.5RFX	CCGT060202R-FX			.0078		★						★	●								
CCGT21.50.5LFX	CCGT060202L-FX			.0078		●				●	●	★	●								
CCGT21.51RFX	CCGT060204R-FX			.0156		★															
CCGT21.51LFX	CCGT060204L-FX			.0156		★					●										
CCGT32.5.001RFX	CCGT09T3003R-FX	.375	.156	.0012	.1732	★						★	●								
CCGT32.5.001LFX	CCGT09T3003L-FX			.0012		★						★									
CCGT32.50RFX	CCGT09T301R-FX			.0039		★						●	●								
CCGT32.50LFX	CCGT09T301L-FX			.0039		★						★	●								
CCGT32.50.5RFX	CCGT09T302R-FX			.0078		★						●	●								
CCGT32.50.5LFX	CCGT09T302L-FX			.0078		★						★	●								
CCGT32.51RFX	CCGT09T304R-FX			.0156		●															
CCGT32.51LFX	CCGT09T304L-FX			.0156		★															

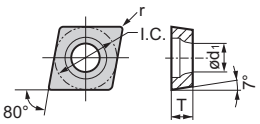
CCGT EFM

Rake Angle: 6°

Cutting Conditions:	Coated				Cermet				Uncoated							
	AC530U				T1500Z	T2000Z	T1500A	T1200A								
Continuous Cut	●				●	●	●	●								
Medium Cut	◐				◐	◐	◐	◐								
Interrupted Cut	◌						◌	◌								







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U				T1500Z	T2000Z	T1500A	T1200A								
CCGT21.5.001EFM	CCGT0602003N-SC	.250	.094	.0012	.110	●						★	●								
CCGT21.50EFM	CCGT060201N-SC			.0039		★					●		●								
CCGT21.50MEFM	CCGT060201MN-SC			.0039								●									
CCGT21.50.5EFM	CCGT060202N-SC			.0078		●				●	●		●								
CCGT21.50.5MEFM	CCGT060202MN-SC			.0078																	
CCGT2.51.50EFM	CCGT080201N-SC	.3125		.0039	.134							★	●								
CCGT2.51.50.5EFM	CCGT080202N-SC			.0078								●	●								
CCGT32.5.001EFM	CCGT09T3003N-SC	.375	.156	.0012	.1732	●						★	●								
CCGT32.50EFM	CCGT09T301N-SC			.0039		●					●		●								
CCGT32.50MEFM	CCGT09T301MN-SC			.0039						●		●									
CCGT32.50.5EFM	CCGT09T302N-SC			.0078		●					●		●								
CCGT32.50.5MEFM	CCGT09T302MN-SC			.0078						●		●									

M = Negative nose radius tolerance (-0.0001" to -0.0004")

80° DIAMOND TYPE
POSITIVE INSERT

CC
80° Diamond Type
7° Relief
With Insert Hole

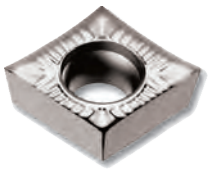
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

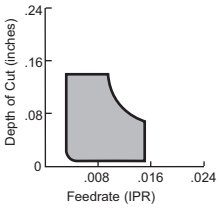
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

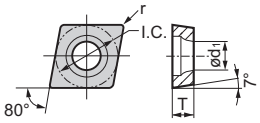
CCGT NAG

Rake Angle: 20°

Cutting Conditions:	Coated	Cermet	Uncoated
Continuous Cut			●
Medium Cut			●
Interrupted Cut			





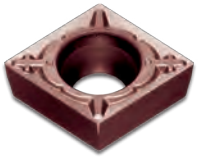


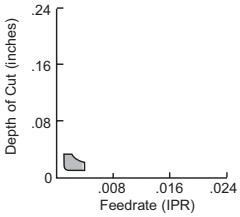
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	H1
CCGT21.51NAG	CCGT060204N-AG	.250	.094	.0156	.110	●
CCGT32.51NAG	CCGT09T304N-AG	.375	.156	.0156	.1732	●
CCGT32.52NAG	CCGT09T308N-AG			.0078		●

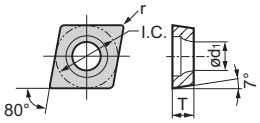
CCGT EFC

Rake Angle: 15°

Cutting Conditions:	Coated	Cermet	Uncoated
Continuous Cut	●	●	
Medium Cut	●	●	
Interrupted Cut	●	●	







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U	T1500A
CCGT21.50EFC	CCGT060201N-FC	.250	.094	.0039	.110	●	●
CCGT21.50MEFC	CCGT060201MN-FC			.0039			●
CCGT21.50.5EFC	CCGT060202N-FC			.0078		●	●
CCGT21.50.5MEFC	CCGT060202MN-FC			.0078			●
CCGT21.51EFC	CCGT060204N-FC			.0156		●	●
CCGT21.51MEFC	CCGT060204MN-FC			.0156			●
CCGT32.5.001EFC	CCGT09T3003N-FC	.375	.156	.0012	.1732	●	
CCGT32.50EFC	CCGT09T301N-FC			.0039		●	●
CCGT32.50MEFC	CCGT09T301MN-FC			.0039			●
CCGT32.50.5EFC	CCGT09T302N-FC			.0078		●	●
CCGT32.50.5MEFC	CCGT09T302MN-FC			.0078			●
CCGT32.51EFC	CCGT09T304N-FC			.0156		●	●
CCGT32.51MEFC	CCGT09T304MN-FC			.0156			●

M = Negative nose radius tolerance (-0.0001" to -0.0004")

80° DIAMOND TYPE
POSITIVE INSERT

CC
- 80° Diamond Type
- 7° Relief
- With Insert Hole

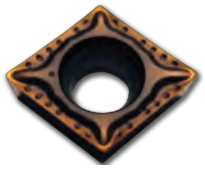
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

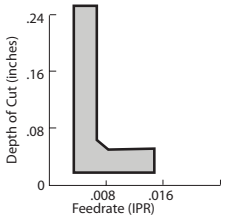
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

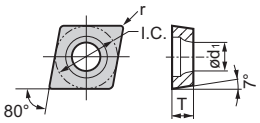
CCGT ESI

Rake Angle: 15°

Cutting Conditions:	AC530U	AC610M	AC6030M	AC6040M	AC630M	AC510U	AC520U	T1500Z	T1500A
	Coated							Cermet	
Continuous Cut	●	●	●	●	●	●		●	●
Medium Cut	●	●	●	●	●	●	●	●	●
Interrupted Cut	●		●	●	●		●		●







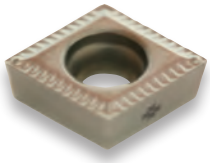
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U	AC610M	AC6030M	AC6040M	AC630M	AC510U	AC520U	T1500Z	T1500A
CCGT32.50MESI	CCGT09T301MN-SI	.375	.156	.0039	.1372	●	●	○	○	●	●	●	●	●
CCGT32.50.5MESI	CCGT09T302MN-SI			.0078		●	●	○	○	●	●	●	●	●
CCGT32.51MESI	CCGT09T304MN-SI			.0156		●	●	○	○	●	●	●	●	●

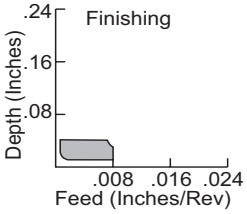
M = Negative nose radius tolerance (-0.0001" to -0.0004")

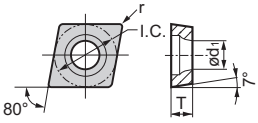
CCMT EFB

Rake Angle: 20°

Cutting Conditions:	Coated				Cermet					Uncoated							
Continuous Cut					●	●											
Medium Cut					●	●											
Interrupted Cut						●											



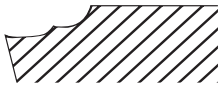




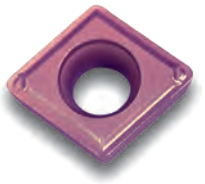
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z	T1500A
CCMT21.51EFB	CCMT060204N-FB	.250	.094	.0156	.110	●	
CCMT32.51EFB	CCMT09T304N-FB	.375	.156	.0156	.1732	●	●
CCMT32.52EFB	CCMT09T308N-FB			.0313		●	●

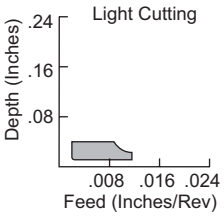
CCMT EFP

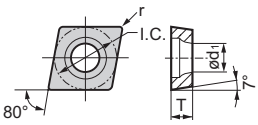
Rake Angle: 10°



Cutting Conditions:	Coated				Cermet					Uncoated							
Continuous Cut					●	●	●										
Medium Cut					●	●	●										
Interrupted Cut						●	●										







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T2000Z	T1500A	T1200A
CCMT21.51EFP	CCMT060204N-FP	.250	.094	.0156	.110	●		●
CCMT32.51EFP	CCMT09T304N-FP	.375	.156	.0156	.1732	●	●	●
CCMT32.52EFP	CCMT09T308N-FP			.0313		●		●

80° DIAMOND TYPE
POSITIVE INSERT

CC
80° Diamond Type
7° Relief
With Insert Hole

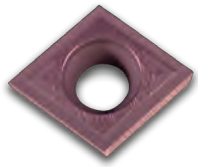
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

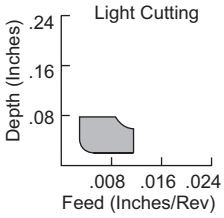
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

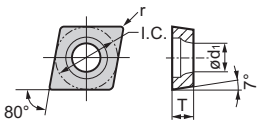
CCMT EFM

Rake Angle: 6°

Cutting Conditions:	Coated								Cermet								Uncoated							
	AC820P																							
Continuous Cut	●																							
Medium Cut	◐																							
Interrupted Cut	◌																							





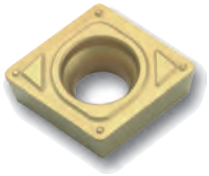


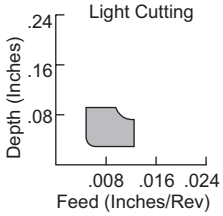
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P
CCMT21.51EFM	CCMT060204N-SC	.250	.094	.0156	.110	●
CCMT322EFM	CCMT090308N-SC	.375	.125	.0313	.1732	★

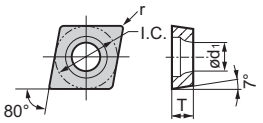
CCMT ENK

Rake Angle: 8°

Cutting Conditions:	Coated									Cermet			Uncoated				
	AC820P	AC830P	AC700G														
Continuous Cut	●		●														
Medium Cut	◐	◐	◐														
Interrupted Cut	◌	◌	◌														





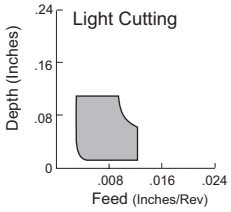


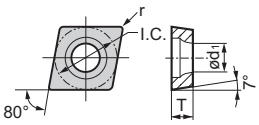
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC700G
CCMT21.51ENK	CCMT060204N-SK	.250	.094	.0156	.110	●	●	●
CCMT21.52ENK	CCMT060208N-SK			.0313		●	●	●
CCMT32.51ENK	CCMT09T304N-SK	.375	.156	.0156	.1732	●	●	●
CCMT32.52ENK	CCMT09T308N-SK			.0313		●	●	●
CCMT431ENK	CCMT120404N-SK	.500	.1875	.0156	.2165	●	●	
CCMT432ENK	CCMT120408N-SK			.0313		●	●	

CCMT ESU

Rake Angle: 8°

Cutting Conditions:	Coated															Cermet				
	AC810P	AC820P	AC830P	AC700G	AC530U	AC610M	AC6030M	AC6040M	AC630M	AC405K	AC410K	AC415K	AC420K	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A
Continuous Cut	●	●		●	●	◐	◐	◐	◐	●	●	●		●		●	●		●	●
Medium Cut	◐	◐	◐	◐	◐	◐	◐	◐	◐		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
Interrupted Cut		◌	◌	◌	◌		◌	◌	◌				◌		◌			◌	◌	◌





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	AC530U	AC610M	AC6030M	AC6040M	AC630M	AC405K	AC410K	AC415K	AC420K	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A
CCMT21.50.5ESU	CCMT060202N-SU	.250	.094	.0078	.110		●	●			●	○	○	●					●	●	●	●	●	●	●
CCMT21.51ESU	CCMT060204N-SU			.0156		●	●	●	●	●	●	○	○	●	●	▲	●	●	●	●	●	●	●	●	●
CCMT21.52ESU	CCMT060208N-SU			.0313		●	●	●	●	●	●	○	○	●	●	▲	●		●	●	●	●		●	●
CCMT32.50.5ESU	CCMT09T302N-SU	.375	.156	.0078	.1732		●	●			●	○	○	●					●	●	●	●	●		
CCMT32.51ESU	CCMT09T304N-SU			.0156		●	●	●	●	●	●	○	○	●	●	▲	●		●	●	●	●	●	●	●
CCMT32.52ESU	CCMT09T308N-SU			.0313		●	●	●	●	●	●	○	○	●	●	▲	●		●	●	●	●	●	●	●
CCMT431ESU	CCMT120404N-SU	.500	.1875	.0156	.2165		●	●																	
CCMT432ESU	CCMT120408N-SU			.0313			●	●										●							

80° DIAMOND TYPE
POSITIVE INSERT

CC
- 80° Diamond Type
- 7° Relief
- With Insert Hole

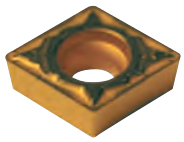
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

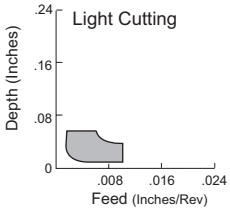
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ New Product Arriving January 2015

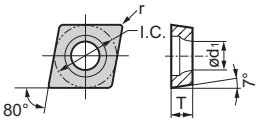
CCMT ELU

Rake Angle: 12°

Cutting Conditions:	AC810P	AC820P	AC700G	AC6030M	AC6040M	AC630M	T1500Z	T2000Z	T3000Z
	Coated						Cermet		
Continuous Cut	●	●	●	○	○	○	●	●	
Medium Cut	●	●	●	○	○	○	●	●	●
Interrupted Cut		●	●	○	○	○			●





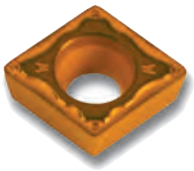


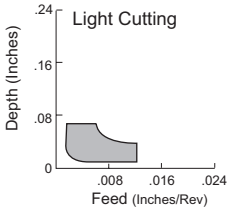
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	AC6030M	AC6040M	AC630M	T1500Z	T2000Z	T3000Z
CCMT21.50.5ELU	CCMT060202N-LU	.250	.094	.0078	.110	●	●	●	○	○	●	●	●	●
CCMT21.51ELU	CCMT060204N-LU			.0156		●	●	●	○	○	●	●	●	●
CCMT32.51ELU	CCMT09T304N-LU	.375	.156	.0156	.1732	●	●	●	○	○	●	●	●	●
CCMT32.52ELU	CCMT09T308N-LU			.0313		●	●	●	○	○	●	●	●	●

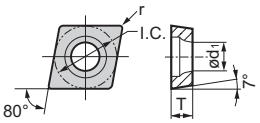
CCMT ELUW
Wiper Insert

Rake Angle: 12°

Cutting Conditions:	AC810P	AC820P	AC700G	AC405K	AC415K	AC420K	T1500Z	T2000Z	T3000Z	T1500A
	Coated						Cermet			
Continuous Cut	●	●	●	●	●		●	●		●
Medium Cut	●	●	●		●	●	●	●	●	●
Interrupted Cut		●	●			●			●	●







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	AC405K	AC415K	AC420K	T1500Z	T2000Z	T3000Z	T1500A
CCMT32.51ELUW	CCMT09T304N-LUW	.375	.156	.0156	.1732	●	●	●	●	●	●	●	●	●	●
CCMT32.52ELUW	CCMT09T308N-LUW			.0313		●	●	●	●	●	●	●	●	●	●

80° DIAMOND TYPE
POSITIVE INSERT

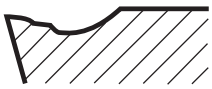
CC
- 80° Diamond Type
- 7° Relief
- With Insert Hole

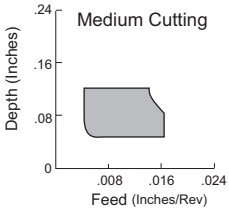
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

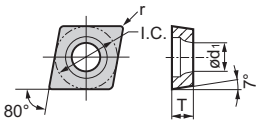
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ New Product Arriving January 2015

CCMT EMU

Rake Angle: 0°





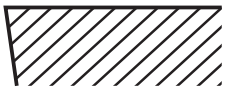


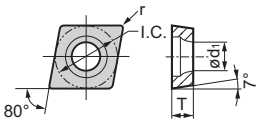
Cutting Conditions:	AC810P	AC820P	AC830P	AC700G	AC405K	AC410K	AC415K	AC420K
	Coated							
Continuous Cut	●	●		●	●	●	●	
Medium Cut	●	●	●	●		●	●	●
Interrupted Cut		●	●	●				●

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	AC405K	AC410K	AC415K	AC420K
CCMT32.51EMU	CCMT09T304N-MU	.375	.156	.0156	.1732	●	●		●	●	▲	●	●
CCMT32.52EMU	CCMT09T308N-MU			.0313		●	●	●	●	●	▲	●	●

CCMA

Rake Angle: 0°





Cutting Conditions:	AC700G	AC405K	AC410K	AC415K	AC420K
	Coated				
Continuous Cut	●	●	●	●	
Medium Cut	●		●	●	●
Interrupted Cut	●				●

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC700G	AC405K	AC410K	AC415K	AC420K
CCMA21.51	CCMA060204	.250	.094	.0156	.110	●	●			●
CCMA32.51	CCMA09T304	.375	.156	.0156	.1732	●	●	▲	●	●
CCMA32.52	CCMA09T308			.0313		●	●	▲	●	●

80° DIAMOND TYPE
POSITIVE INSERT

CP

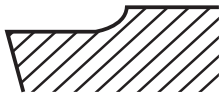
80° Diamond Type
11° Relief
With Insert Hole

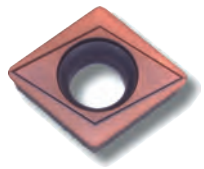
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

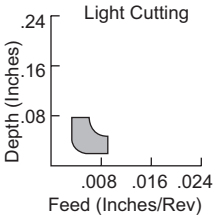
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ New Product Arriving January 2015

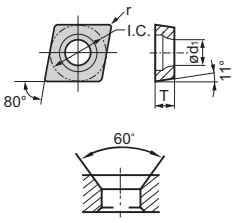
CPGT

Rake Angle: 0°







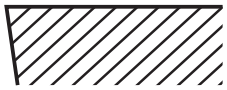


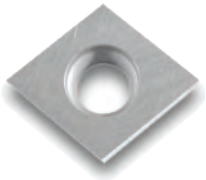
Cutting Conditions:	Coated							Cermet					Uncoated				
Continuous Cut	○							○	○		○	○		○			
Medium Cut	♡	♡						♡	♡	♡	♡	♡	♡	♡			
Interrupted Cut		♡								♡	♡	♡					

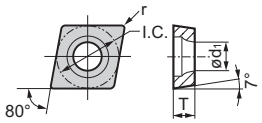
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A	G10E	EH510
CPGT2.51.50.5	CPGT080202N-SD	.3125	.094	.0078	.134	●	●	●	●		●	●		●
CPGT2.51.51	CPGT080204N-SD			.0156				●	●	●	●	●	●	
CPGT2.51.52	CPGT080208N-SD			.0313				●	●		●	●		
CPGT320.5	CPGT090302N-SD	.375	.125	.0078	.1732			●	●		●	●		
CPGT321	CPGT090304N-SD			.0156				●	●	●	●	●	●	
CPGT322	CPGT090308N-SD			.0313				●	●		●	●		
CPGT430.5	CPGT120402N-SD	.500	.1875	.0078	.2165						●	●		
CPGT431	CPGT120404N-SD			.0156				●	●		●	●		
CPGT432	CPGT120408N-SD			.0313							●	●		

CPEW

Rake Angle: 0°







Cutting Conditions:	Coated							Cermet					Uncoated				
Continuous Cut										○							
Medium Cut										♡							
Interrupted Cut																	

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	H1
CPEW1.81.51	CPEW050204	.219	.094	.0156	.102	●
CPEW21.51	CPEW060204	.250		.0156	.110	●
CPEW32.51	CPEW09T304	.375	.156	.0156	.1732	●
CPEW32.52	CPEW09T308			.0313		●
CPEW432	CPEW120408	.500	.1875	.0313	.2165	●

80° DIAMOND TYPE
POSITIVE INSERT

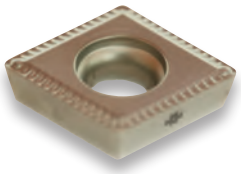
CP
80° Diamond Type
11° Relief
With Insert Hole

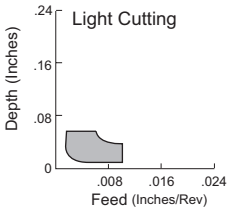
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

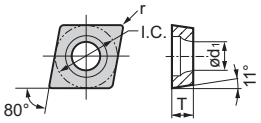
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ New Product Arriving January 2015

CPMT EFB

Rake Angle: 20°





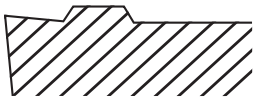


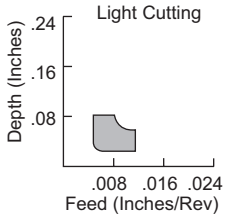
Cutting Conditions:	Coated										Cermet				Uncoated		
Continuous Cut											○						
Medium Cut											○						
Interrupted Cut											○						

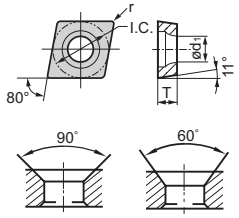
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500A
CPMT2.51.51EFB	CPMT080204N-FB	.375	.125	.0313	.1732	●

CPMT ENS

Rake Angle: 10°





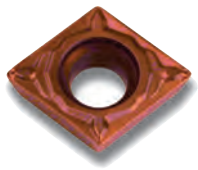


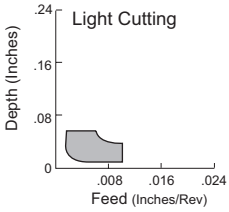
Cutting Conditions:	Coated										Cermet				Uncoated		
Continuous Cut	○	○															
Medium Cut	○	○															
Interrupted Cut	○	○															

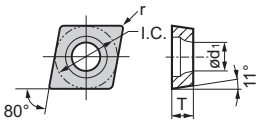
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC6030M	AC630M
CPMT21.51ENS	CPMT060204N-US	.250	.094	.0156	.110	○	●
CPMT2.51.52ENS	CPMT080208N-US	.3125		.0313	.134	○	●
CPMT322ENS	CPMT090308N-US	.375	.125	.0313	.1732	○	●
CPMT32.52ENX	CPMT09T308N-US	.375	.156	.0156	.1732	○	●
CPMT432ENS	CPMH120408N-US	.500	.1875	.0313	.2165	○	●

CPMT ELU

Rake Angle: 12°







Cutting Conditions:	Coated										Cermet				Uncoated		
Continuous Cut	○	○	○	○	○	○					○	○					
Medium Cut	○	○	○	○	○	○					○	○	○				
Interrupted Cut		○	○	○	○	○							○				

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	AC6030M	AC6040M	AC630M	T1500Z	T2000Z	T3000Z
CPMT321ELU	CPMT090304N-LU	.375	.125	.0156	.1732	★	●	●	○	○	●	★	●	●
CPMT322ELU	CPMT090308N-LU			.0313		★			○	○		★	●	●

80° DIAMOND TYPE
POSITIVE INSERT

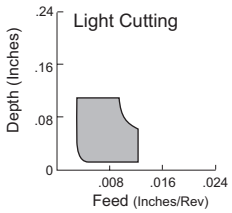
CP
- 80° Diamond Type
- 11° Relief
- With Insert Hole

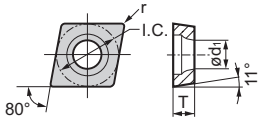
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ New Product Arriving January 2015

CPMT ESU

Rake Angle: 8°



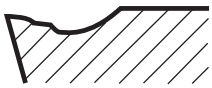


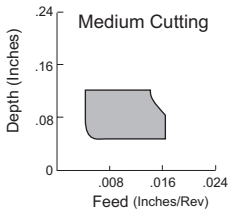
Cutting Conditions:	AC810P	AC820P	AC830P	AC700G	AC610M	AC6030M	AC6040M	AC630M	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A
											Cermet				
Continuous Cut	◐	◐		◐	◐	◐	◐	◐	◐		◐	◐		◐	◐
Medium Cut	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
Interrupted Cut		◐	◐	◐		◐	◐	◐		◐			◐	◐	◐

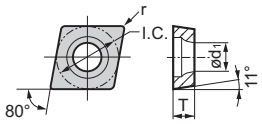
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	AC610M	AC6030M	AC6040M	AC630M	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A
CPMT21.51ESU	CPMT060204N-SU	.250	.094	.0156	.110	●	●		●					●	●	●	●	●	●	●
CPMT21.52ESU	CPMT060208N-SU			.0313		●	●		●					●	●	●	●		●	●
CPMT2.51.51ESU	CPMT080204N-SU	.3125		.0156	.134	★	●	★		●	○	○	●			●	●			
CPMT2.51.52ESU	CPMT080208N-SU			.0313		★	●	★		●	○	○	●			●	●		●	●
CPMT321ESU	CPMT090304N-SU	.375	.125	.0156	.1732		●			●	○	○	●			★			★	●
CPMT322ESU	CPMT090308N-SU			.0313			●	●		●	○	○	●			★	●	●	★	●
CPMT32.51ESU	CPMT09T304N-SU		.156	.0156		●	●		●					●	●	●	●	●	●	●
CPMT32.52ESU	CPMT09T308N-SU			.0313		●	●		●					●	●	●	●	●	●	●

CPMT EMU

Rake Angle: 0°







Cutting Conditions:	AC810P	AC820P	AC700G	AC410K	AC415K	AC420K
	Coated					
Continuous Cut	◐	◐	◐	◐	◐	
Medium Cut	◐	◐	◐	◐	◐	◐
Interrupted Cut		◐	◐			◐

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	AC410K	AC415K	AC420K
CPMT2.51.51EMU	CPMT080204N-MU	.3125	.094	.0156	.134		●			●	●
CPMT2.51.52EMU	CPMT080208N-MU			0313			●				●
CPMT321EMU	CPMT090304N-MU	.375	.125	.0156	.1732	★	●	●		●	●
CPMT322EMU	CPMT090308N-MU			.0313		★	●		▲	●	●

80° DIAMOND TYPE
POSITIVE INSERT

CP
80° Diamond Type
11° Relief
With Insert Hole

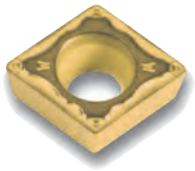
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

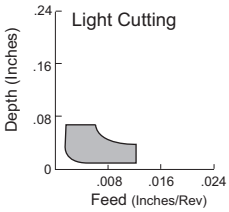
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ New Product Arriving January 2015

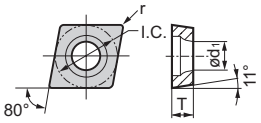
CPMT ELUW
Wiper Insert

Rake Angle: 12°

Cutting Conditions:	AC810P	AC820P	AC700G	T1500Z	T2000Z	T3000Z
	Coated			Cermet		
Continuous Cut	●	●	●	●	●	
Medium Cut	◐	◐	◐	◐	◐	◐
Interrupted Cut		◐	◐			◐



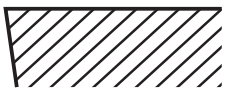




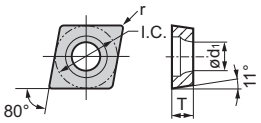
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	T1500Z	T2000Z	T3000Z
CPMT321ELUW	CPMT090304N-LUW	.375	.125	.0156	.1732	★	★		★	●	●
CPMT322ELUW	CPMT090308N-LUW			.0313		★	★	●	★	●	●

CPMA
—

Rake Angle: 0°



Cutting Conditions:	AC700G	AC410K	AC415K	AC420K
	Coated			
Continuous Cut	●	●	●	
Medium Cut	◐	◐	◐	◐
Interrupted Cut	◐			◐



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC700G	AC410K	AC415K	AC420K
CPMA2.51.51	CPMA080204	.3125	.094	.0156	.134				●
CPMA2.51.52	CPMA080208			0313					●
CPMA321	CPMA090304	.375	.125	.0156	.1732	★	▲	●	●
CPMA322	CPMA090308			.0313				●	●

55° DIAMOND TYPE
POSITIVE INSERT

DC
- 55° Diamond Type
- 7° Relief
- With Insert Hole

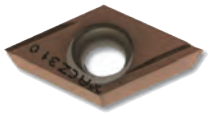
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

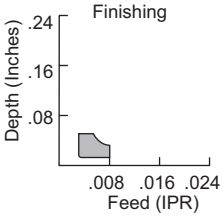
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ New Product Arriving January 2015

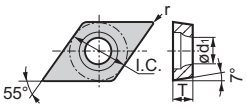
DCGT FX

Rake Angle: 15°

Cutting Conditions:	Coated				Cermet				Uncoated							
Continuous Cut	●				●	●										
Medium Cut	◐				◐	◐										
Interrupted Cut	◌				◌	◌										





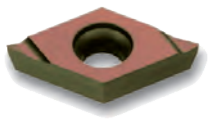


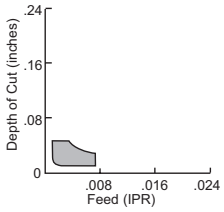
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U				T1500A	T1200A									
DCGT21.5.001RFX	DCGT0702003R-FX	.250	.094	.0012	.110	●				●	●									
DCGT21.5.001LFX	DCGT0702003L-FX			.0012		●				★	●									
DCGT21.50 RFX	DCGT070201R-FX			.0039		★				★	●									
DCGT21.50LFX	DCGT070201L-FX			.0039		●				★										
DCGT21.50.5RFX	DCGT070202R-FX			.0078		●				●	●									
DCGT21.50.5LFX	DCGT070202L-FX			.0078		●				★	●									
DCGT32.5.001RFX	DCGT11T3003R-FX	.375	.156	.0012	.1732	★				★	●									
DCGT32.5.001LFX	DCGT11T3003L-FX			.0012		★				★	●									
DCGT32.50RFX	DCGT11T301R-FX			.0039		★				★	●									
DCGT32.50LFX	DCGT11T301L-FX			.0039		★				★	●									
DCGT32.50.5RFX	DCGT11T302R-FX			.0078		★				★	●									
DCGT32.50.5LFX	DCGT11T302L-FX			.0078		★				★	●									

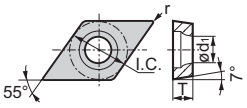
DCGT FY

Rake Angle: 15°

Cutting Conditions:	Coated				Cermet				Uncoated							
Continuous Cut	●															
Medium Cut	◐															
Interrupted Cut	◌															







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U														
DCGT21.51RFY	DCGT070204L-FY	.250	.094	.0156	.110	★														
DCGT21.51LFY	DCGT070204L-FY			.0156		★														
DCGT32.51LFY	DCGT11T304L-FY	.375	.156	.0156	.1732	★														

55° DIAMOND TYPE
POSITIVE INSERT

DC
55° Diamond Type
7° Relief
With Insert Hole

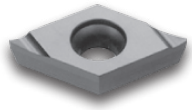
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

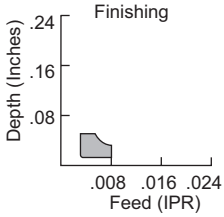
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ New Product Arriving January 2015

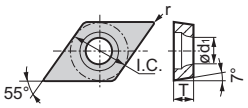
DCGT W

Rake Angle: 10°

Cutting Conditions:	Coated				Cermet					Uncoated							
					T1500A	T1200A											
Continuous Cut					●	●											
Medium Cut					●	●											
Interrupted Cut					●	●											





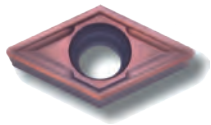


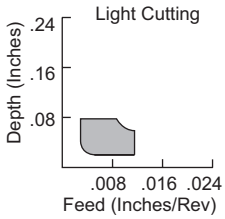
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500A	T1200A
DCGT21.50.5R	DCGT070202R-W	.250	.094	.0078	.110	★	●
DCGT21.50.5L	DCGT070202L-W			.0078		★	●
DCGT21.51R	DCGT070204R-W			.0156		★	●
DCGT21.51L	DCGT070204L-W			.0156		★	●
DCGT32.51R	DCGT11T304R-W	.375	.156	.0156	.1732	●	●
DCGT32.51L	DCGT11T304L-W			.0156		★	●
DCGT32.52R	DCGT11T308R-W			.0313		★	●
DCGT32.52L	DCGT11T308L-W			.0313		★	

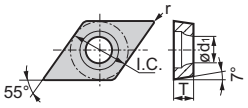
DCGT EFM

Rake Angle: 6°

Cutting Conditions:	Coated				Cermet					Uncoated							
	AC530U				T1500Z	T2000Z	T3000Z	T1500A	T1200A								
Continuous Cut	●				●	●		●	●								
Medium Cut	◐				●	●	●	●	●								
Interrupted Cut	◐						●	●	●								







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U	T1500Z	T2000Z	T3000Z	T1500A	T1200A
DCGT21.5.001EFM	DCGT0702003N-SC	.250	.094	.0012	.110	★				★	●
DCGT21.50EFM	DCGT070201N-SC			.0039		●		●	●		●
DCGT21.50MEFM	DCGT070201MN-SC			.0039			●			●	
DCGT21.50.5EFM	DCGT070202N-SC			.0078		★		●	●		●
DCGT21.50.5MEFM	DCGT070202MN-SC			.0078			●			●	
DCGT21.51EFM	DCGT070204N-SC			.0156				●	●		●
DCGT21.51MEFM	DCGT070204MN-SC			.0156			●			●	
DCGT21.52EFM	DCGT070208N-SC			.0313				●			●
DCGT21.52MEFM	DCGT070208MN-SC			.0313						●	
DCGT2.51.50EFM	DCGT090201N-SC	.3125		.0039	.134					★	●
DCGT2.51.50.5EFM	DCGT090202N-SC			.0078						★	
DCGT32.5.001EFM	DCGT11T3003N-SC	.375	.156	.0012	.1732	★				●	●
DCGT32.50EFM	DCGT11T301N-SC			.0039		●		●			●
DCGT32.50MEFM	DCGT11T301MN-SC			.0039			●			●	
DCGT32.50.5EFM	DCGT11T302N-SC			.0078		●		●			●
DCGT32.50.5MEFM	DCGT11T302MN-SC			.0078			●			●	
DCGT32.51EFM	DCGT11T304N-SC			.0156		●		●			●
DCGT32.51MEFM	DCGT11T304MN-SC			.0156			●			●	
DCGT32.52EFM	DCGT11T308N-SC			.0313							
DCGT32.52MEFM	DCGT11T308MN-SC			.0313			●	●		●	●

M = Negative nose radius tolerance (-0.0001" to -0.0004")

55° DIAMOND TYPE
POSITIVE INSERT

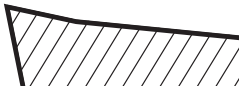
DC
- 55° Diamond Type
- 7° Relief
- With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

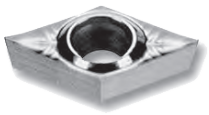
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ New Product Arriving January 2015

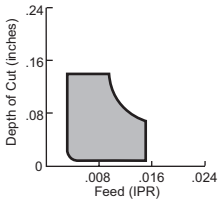
DCGT NAG

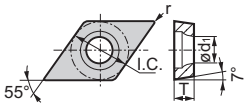
Rake Angle: 20°



Cutting Conditions:	Coated				Cermet					Uncoated							
Continuous Cut										●							
Medium Cut										●							
Interrupted Cut																	





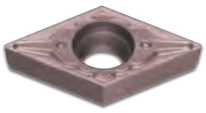


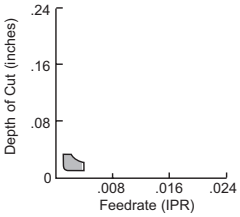
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	H1
DCGT21.50.5NAG	DCGT070202N-AG	.250	.094	.0078	.110	●
DCGT21.51NAG	DCGT070204N-AG			.0156		●
DCGT32.50.5NAG	DCGT11T302N-AG	.375	.156	.0078	.1732	●
DCGT32.51NAG	DCGT11T304N-AG			.0156		●
DCGT32.52NAG	DCGT11T308N-AG			.0313		●

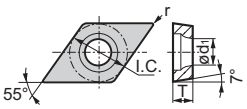
DCGT EFC

Rake Angle: 15°

Cutting Conditions:	Coated				Cermet					Uncoated							
Continuous Cut	●				●												
Medium Cut	●	●			●												
Interrupted Cut	●	●			●												







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U	AC520U	T1500A
DCGT21.5.001EFC	DCGT0702003N-FC	.250	.094	.0012	.110	●		
DCGT21.50EFC	DCGT070201N-FC			.0039		●		●
DCGT21.50MEFC	DCGT070201MN-FC			.0039				●
DCGT21.50.5EFC	DCGT070202N-FC			.0078		●		●
DCGT21.50.5MEFC	DCGT070202MN-FC			.0078				●
DCGT21.51EFC	DCGT070204N-FC	.3125		.0156	.134	●		●
DCGT21.51MEFC	DCGT070204MN-FC			.0156				●
DCGT32.5.001EFC	DCGT11T3003N-FC	.375	.156	.0012	.1732	●		
DCGT32.50EFC	DCGT11T301N-FC			.0039		●	●	●
DCGT32.50MEFC	DCGT11T301MN-FC			.0039				●
DCGT32.50.5EFC	DCGT11T302N-FC			.0078		●	●	●
DCGT32.50.5MEFC	DCGT11T302MN-FC			.0078				●
DCGT32.51EFC	DCGT11T304N-FC			.0156		●	●	●
DCGT32.51MEFC	DCGT11T304N-FC			.0156				●

M = Negative nose radius tolerance (-0.0001" to -0.0004")

55° DIAMOND TYPE
POSITIVE INSERT

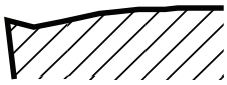
DC
- 55° Diamond Type
- 7° Relief
- With Insert Hole

- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

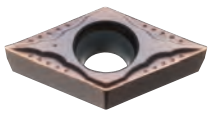
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ New Product Arriving January 2015

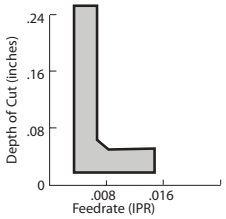
DCGT ESI

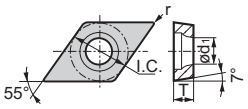
Rake Angle: 15°



Cutting Conditions:	AC530U	AC610M	AC6030M	AC6040M	AC630M	AC510U	AC520U	T1500Z	T1500A
	Coated							Cermet	
Continuous Cut	●	●	●	●	●	●		●	●
Medium Cut	◐	●	●	●	●	◐	◐	◐	◐
Interrupted Cut	◐		◐	◐	◐		◐		◐







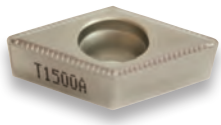
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U	AC610M	AC6030M	AC6040M	AC630M	AC510U	AC520U	T1500Z	T1500A
DCGT21.50MESI	DCGT070201MN-SI	.250	.094	.0039	.110	●	●	○	○	●	●	●	●	●
DCGT21.50.5MESI	DCGT070202MN-SI			.0078		●	●	○	○	●	●	●	●	●
DCGT21.51MESI	DCGT070204MN-SI			.0156		●	●	○	○	●	●	●	●	●
DCGT32.50MESI	DCGT11T301MN-SI	.375	.156	.0039	.1732			○	○				●	●
DCGT32.50.5MESI	DCGT11T302MN-SI			.0078				○	○				●	●
DCGT32.51MESI	DCGT11T304MN-SI			.0156		●	●	○	○	●	●	●	●	●
DCGT32.52MESI	DCGT11T308MN-SI			.0313		●	●	○	○	●	●	●	●	●

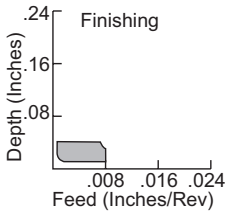
M = Negative nose radius tolerance (-0.0001" to -0.0004")

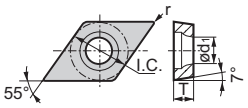
DCMT EFB

Rake Angle: 20°

Cutting Conditions:	T1500A	T1500Z
	Cermet	
Continuous Cut	●	●
Medium Cut	◐	◐
Interrupted Cut	◐	







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500A	T1500Z
DCMT21.50.5EFB	DCMT070202N-FB	.250	.094	.0078	.110	●	
DCMT21.51EFB	DCMT070204N-FB			.0156		●	
DCMT21.52EFB	DCMT060208N-FB			.0313		●	
DCMT32.50.5EFB	DCMT11T302N-FB	.375	.156	.0078	.1732	●	
DCMT32.52EFB	DCMT11T308N-FB			.0313		●	●

55° DIAMOND TYPE
POSITIVE INSERT

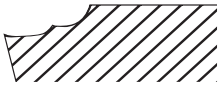
DC
- 55° Diamond Type
- 7° Relief
- With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

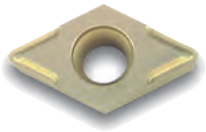
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ New Product Arriving January 2015

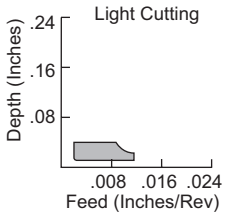
DCMT EFP

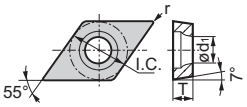
Rake Angle: 10°



Cutting Conditions:	Coated				Cermet				Uncoated							
Continuous Cut					●	●										
Medium Cut					●	●										
Interrupted Cut					●	●										
					T1500A	T1200A										





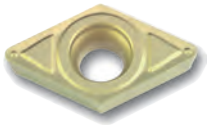


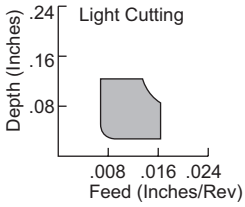
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500A	T1200A
DCMT21.50.5EFP	DCMT070202N-FP	.250	.094	.0078	.110	●	●
DCMT21.51EFP	DCMT070204N-FP			.0156		●	●
DCMT32.51EFP	DCMT11T304N-FP	.375	.156	.0156	.1732		●
DCMT32.52EFP	DCMT11T308N-FP			.0313		●	●

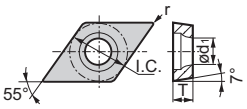
DCMT ENK

Rake Angle: 8°

Cutting Conditions:	Coated							Cermet					Uncoated				
Continuous Cut	●																
Medium Cut	●	●															
Interrupted Cut	●	●															
	AC820P	AC830P															





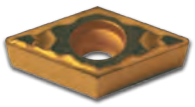


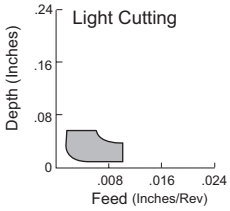
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P
DCMT21.51ENK	DCMT070204N-SK	.250	.094	.0156	.110	●	●
DCMT32.51ENK	DCMT11T304N-SK	.375	.156	.0156	.1732	●	●
DCMT32.52ENK	DCMT11T308N-SK			.0313		●	●

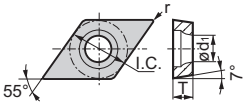
DCMT ELU

Rake Angle: 12°

Cutting Conditions:	Coated											Cermet			Uncoated		
Continuous Cut	●	●	●	●	●	●	●					●	●				
Medium Cut	●	●	●	●	●	●	●					●	●	●			
Interrupted Cut		●	●	●	●	●	●							●			
	AC810P	AC820P	AC700G	AC530U	AC6030M	AC6040M	AC630M					T1500Z	T2000Z	T3000Z			







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	AC530U	AC6030M	AC6040M	AC630M	T1500Z	T2000Z	T3000Z
DCMT21.50.5ELU	DCMT070202N-LU	.250	.094	.0078	.110	●	●		★	○	○	●	●	●	▲
DCMT21.51ELU	DCMT070204N-LU			.0156		●	●	●	●	○	○	●	●	●	●
DCMT32.50.5ELU	DCMT11T302N-LU			.0078			●						●	●	●
DCMT32.51ELU	DCMT11T304N-LU	.375	.156	.0156	.1732	●	●	●	●	○	○	●	●	●	●
DCMT32.52ELU	DCMT11T308N-LU			.0313		●	●	●	●	○	○	●	●	●	●

55° DIAMOND TYPE
POSITIVE INSERT

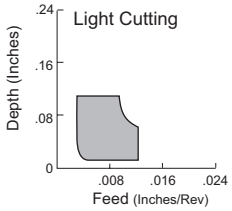
DC
55° Diamond Type
7° Relief
With Insert Hole

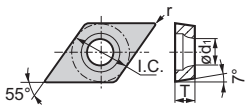
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ New Product Arriving January 2015

DCMT ESU

Rake Angle: 8°



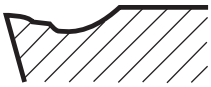


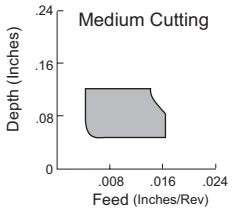
Cutting Conditions:	Coated													Cermet				
Continuous Cut	●	●		●	●	●	●	●	●	●	●	●		●	●		●	●
Medium Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Interrupted Cut		●	●	●	●		●	●	●				●			●	●	●

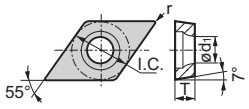
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	AC530U	AC610M	AC6030M	AC6040M	AC630M	AC410K	AC415K	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A
DCMT21.50.5ESU	DCMT070202N-SU	.250	.094	.0078	.110		●	●			●	○	○	●			●	●	●	●	●	★	●
DCMT21.51ESU	DCMT070204N-SU			.0156		●	●	●	●	●	●	○	○	●	▲	●	●	●	●	●	●	●	●
DCMT21.52ESU	DCMT070208N-SU			.0313		●	●	●	●	●	●	○	○	●	▲	●	●	●	●	●	●	★	●
DCMT32.50.5ESU	DCMT11T302N-SU	.375	.156	.0078	.1732		●	●			●	○	○	●			●	●	●	●	●	●	●
DCMT32.51ESU	DCMT11T304N-SU			.0156		●	●	●	●	●	●	○	○	●	▲	●	●	●	●	●	●	●	●
DCMT32.52ESU	DCMT11T308N-SU			.0313		●	●	●	●	●	●	○	○	●	▲	●	●	●	●	●	●	●	●

DCMT EMU

Rake Angle: 0°





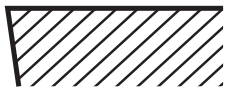


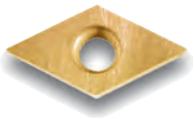
Cutting Conditions:	Coated								Cermet			Uncoated		
Continuous Cut	●	●		●	●	●	●							
Medium Cut	●	●	●	●		●	●	●						
Interrupted Cut		●	●	●				●						

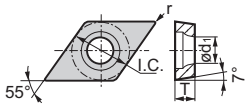
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	AC405K	AC410K	AC415K	AC420K
DCMT32.51EMU	DCMT11T304N-MU	.375	.156	.0156	.1732	●	●		●	●	▲	●	●
DCMT32.52EMU	DCMT11T308N-MU			.0313		●	●	●	●	●	▲	●	●

DCMA

No Breaker







Cutting Conditions:	Coated					Cermet			Uncoated		
Continuous Cut	●	●	●	●							
Medium Cut	●		●	●	●						
Interrupted Cut	●				●						

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC700G	AC405K	AC410K	AC415K	AC420K
DCMA21.51	DCMA070204	.250	.094	.0156	.110	●	●	▲	●	●
DCMA21.52	DCMA070208			.0313			●	▲	●	●
DCMA32.51	DCMA11T304	.375	.156	.0156	.1732	●	●		●	●
DCMA32.52	DCMA11T308			.0313		●	●	▲	●	●

55° DIAMOND TYPE
POSITIVE INSERT

DP
- 55° Diamond Type
- 11° Relief
- With Insert Hole

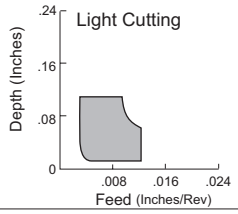
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

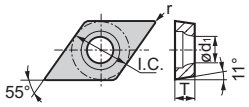
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ New Product Arriving January 2015

DPMT ESU

Rake Angle: 8°

Cutting Conditions:	AC820P	AC510U	AC520U	T1500A (Cermet)	T1200A (Cermet)
Continuous Cut	●	●		●	●
Medium Cut	●	●	●	●	●
Interrupted Cut	●		●	●	●





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC510U	AC520U	T1500A	T1200A
DPMT 21.51ESU	DPMT 070204N-SU	.250	.094	.0156	.110	●	●	●	●	●
DPMT 32.51ESU	DPMT 11T304N-SU	.375	.156	.0156	.1732	●	●	●	●	●
DPMT 32.52ESU	DPMT 11T308N-SU			.0313		●	●	●	●	●

ROUND TYPE
POSITIVE INSERT

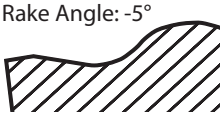
RC
- Round Type
- 7° Relief
- With Insert Hole

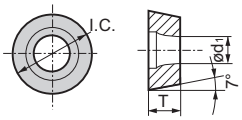
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ New Product Arriving January 2015

RCMT
RX

Rake Angle: -5°



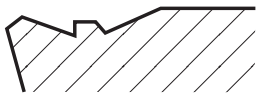


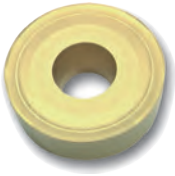
Cutting Conditions:	Coated						Cermet						Uncoated				
Continuous Cut	○	○															
Medium Cut	○	○	○														
Interrupted Cut		○	○														

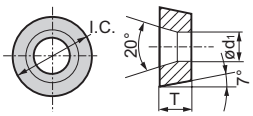
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P
RCMT100300	RCMT1003M0N-RX	.394	.125	-	.1417	●	●	●
RCMT120400	RCMT1204M0N-RX	.472	.1875		.1654	●	●	●
RCMT160600	RCMT1606M0N-RX	.630	.250		.2047	●	●	●
RCMT200600	RCMT2006M0N-RX	.787			.2559	●	●	●
RCMT250700	RCMT2507M0N-RX	.984	.313		.2835	●	●	●

RCMX
RP

Rake Angle: -15°







Cutting Conditions:	Coated								Uncoated				
Continuous Cut	○	○		○	○	○		○					
Medium Cut	○	○	○	○	○	○	○	○					
Interrupted Cut		○	○	○			○						

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	AC410K	AC415K	AC420K	AC510U
RCMX100300	RCMX1003M0N-RP	.394	.125	-	.1417	●	●	●	●	▲	★	●	
RCMX120400	RCMX1204M0N-RP	.472	.1875		.1654	●	●	●	●	▲	★	●	
RCMX160600	RCMX1606M0N-RP	.630	.250		.2047	●	●	●	●	▲	★	●	
RCMX200600	RCMX2006M0N-RP	.787			.2559	●	●	●					●
RCMX250700	RCMX2507M0N-RP	.984	.313		.2835	●	●	●					

90° SQUARE TYPE
POSITIVE INSERT

SC
- 90° Square Type
- 7° Relief
- With Insert Hole

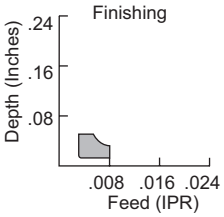
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

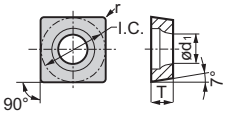
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ New Product Arriving January 2015

SCGT FX

Rake Angle: 15°

Cutting Conditions:	Coated				Cermet				Uncoated							
Continuous Cut	●															
Medium Cut	●															
Interrupted Cut	●															
	AC530U															



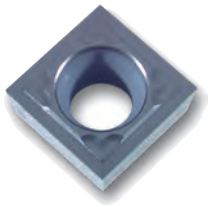


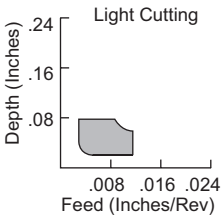
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U
SCGT32.50.5RFX	SCGT09T302R-FX	.375	.156	.0078	.1732	★
SCGT32.50.5LFX	SCGT09T302L-FX			.0078		★
SCGT32.51RFX	SCGT09T304R-FX			.0156		★
SCGT32.51LFX	SCGT09T304L-FX			.0156		★

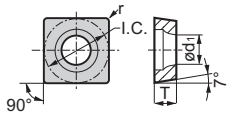
SCGT EFM

Rake Angle: 6°

Cutting Conditions:	Coated				Cermet				Uncoated							
Continuous Cut	●				●	●										
Medium Cut	●				●	●										
Interrupted Cut	●				●	●										
	AC530U				T1500A	T1200A										





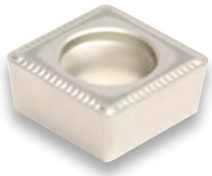


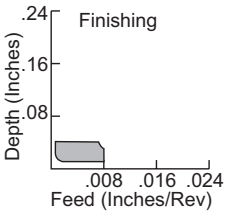
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U	T1500A	T1200A
SCGT2.51.50EFM	SCGT070201N-SC	.3125	.094	.0039	.134	★	★	●
SCGT2.51.50.5EFM	SCGT070202N-SC			.0078			●	●
SCGT32.50EFM	SCGT09T301N-SC	.375	.156	.0039	.1732	★		
SCGT32.50.5EFM	SCGT09T302N-SC			.0078		●	★	●

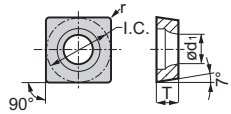
SCMT EFB

Rake Angle: 20°

Cutting Conditions:	Coated				Cermet				Uncoated							
Continuous Cut					●	●										
Medium Cut					●	●										
Interrupted Cut						●										
					T1500Z	T1500A										







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z	T1500A
SCMT32.51EFB	SCMT09T304N-FB	.375	.156	.0156	.1732	●	●
SCMT32.52EFB	SCMT09T308N-FB			.0313		●	●

90° SQUARE TYPE
POSITIVE INSERT

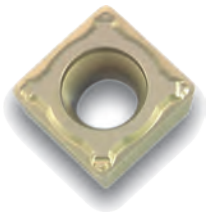
SC
- 90° Square Type
- 7° Relief
- With Insert Hole

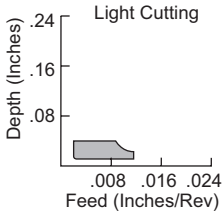
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

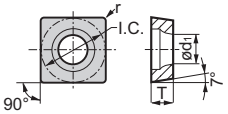
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ New Product Arriving January 2015

SCMT EFP

Rake Angle: 10°





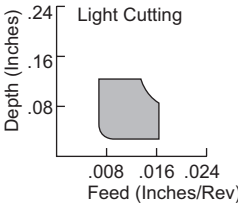


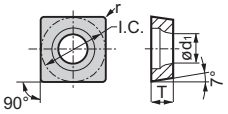
Cutting Conditions:	Coated				Cermet				Uncoated							
Continuous Cut					●	●										
Medium Cut					●	●										
Interrupted Cut					●	●										

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500A	T1200A
SCMT32.51EFP	SCMT09T304N-FP	.375	.156	.0156	.1732	★	●
SCMT32.52EFP	SCMT09T308N-FP			.0313		●	●

SCMT ENK

Rake Angle: 8°



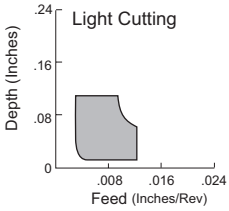


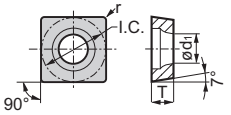
Cutting Conditions:	Coated								Cermet		Uncoated			
Continuous Cut	●		●											
Medium Cut	●	●	●											
Interrupted Cut	●	●	●											

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC700G
SCMT32.51ENK	SCMT09T304N-SK	.375	.156	.0156	.1732	●	●	
SCMT32.52ENK	SCMT09T308N-SK			.0313		●	●	●
SCMT431ENK	SCMT120404N-SK	.500	.1875	.0156	.2165	●	●	
SCMT432ENK	SCMT120408N-SK			.0313		●	●	
SCMT433ENK	SCMT120412N-SK			.0469			●	

SCMT ESU

Rake Angle: 8°





Cutting Conditions:	Coated										Cermet				Uncoated		
Continuous Cut	●	●		●	●	●	●	●			●	●					
Medium Cut	●	●	●	●	●	●	●	●			●	●					
Interrupted Cut		●	●	●		●	●	●									

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	AC610M	AC6030M	AC6040M	AC630M	T1500Z	T2000Z
SCMT32.51ESU	SCMT09T304N-SU	.375	.156	.0156	.1732	●	●	●	●	★	○	○	●	●	●
SCMT32.52ESU	SCMT09T308N-SU			.0313		●	●	●	●	●	○	○	●		
SCMT431ESU	SCMT120404N-SU	.500	.1875	.0156	.2165		●								
SCMT432ESU	SCMT120408N-SU			.0313			●	★							

90° SQUARE TYPE
POSITIVE INSERT

SC
- 90° Square Type
- 7° Relief
- With Insert Hole

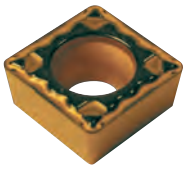
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

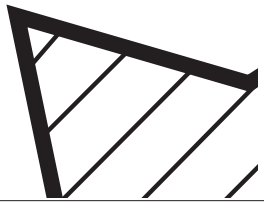
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

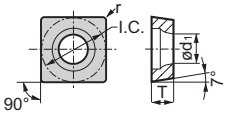
SCMT ELU

Rake Angle: 12°

Cutting Conditions:	AC810P	AC820P	AC700G	AC6030M	AC6040M	AC630M	T1500Z	T2000Z	T3000Z
	Coated						Cermet		
Continuous Cut	●	●	●	○	○	○	●	●	
Medium Cut	●	●	●	○	○	○	●	●	●
Interrupted Cut		●	●	○	○	○			●



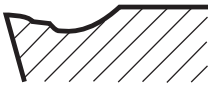




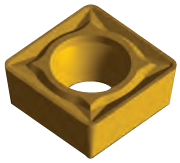
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	AC6030M	AC6040M	AC630M	T1500Z	T2000Z	T3000Z
SCMT32.51ELU	SCMT09T304N-LU	.375	.156	.0156	.1732	●	●	●	○	○	●	●	●	●
SCMT32.52ELU	SCMT09T308N-LU			.0313		●	●	●	○	○	●			

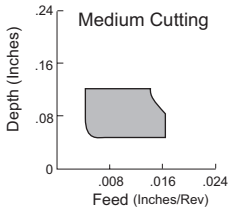
SCMT EMU

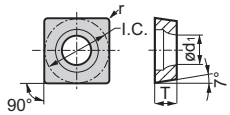
Rake Angle: 0°



Cutting Conditions:	AC810P	AC820P	AC700G	AC405K	AC415K	AC420K
	Coated					Cermet / Uncoated
Continuous Cut	●	●	●	●	●	
Medium Cut	●	●	●		●	●
Interrupted Cut		●	●			●



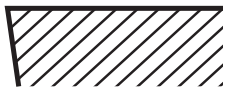




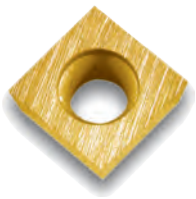
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	AC405K	AC415K	AC420K
SCMT32.52EMU	SCMT09T308N-MU	.375	.156	.0313	.1732	★	●		★	★	●
SCMT432EMU	SCMT120408N-MU	.500	.1875	.0313	.2165	★	★	★	★	★	●

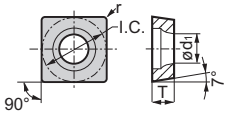
SCMA

No Breaker



Cutting Conditions:	AC700G	AC420K
	Coated	Cermet / Uncoated
Continuous Cut	●	
Medium Cut	●	●
Interrupted Cut	●	●





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC700G	AC420K
SCMA32.52	SCMA09T308	.375	.156	.0313	.1732	●	●
SCMA432	SCMA120408	.500	.1875	.0313	.2165	★	●
SCMA433	SCMA120412			.0469		★	●

90° SQUARE TYPE
POSITIVE INSERT

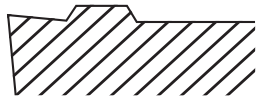
SP
- 90° Square Type
- 11° Relief
- With Insert Hole

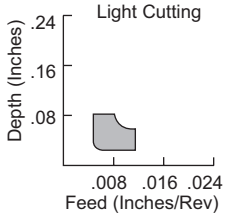
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

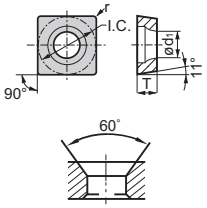
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

SPMT ENS

Rake Angle: 10°





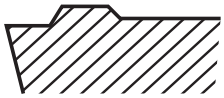


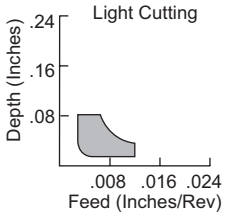
Cutting Conditions:	Coated			Cermet					Uncoated							
Continuous Cut	○	○	○													
Medium Cut	◐	◐	◐													
Interrupted Cut	◐	◐	◐													

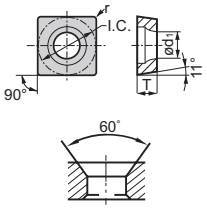
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC6030M	AC6040M	AC630M
SPMT21.51ENS	SPMT060204N-US	.250	.094	.0156	.1102	○	○	●
SPMT2.522ENS	SPMT070308N-US	.3125	.125	.0313	.134	○	○	●
SPMT322ENS	SPMT090308N-US	.375		.0313	.130	○	○	●
SPMT32.52ENX	SPMT09T308N-US	.375	.156	0.313	.1732	○	○	●
SPMT432ENS	SPMT120408N-US	.500	.1875	.0313	.2165	○	○	●

SPMT EFK

Rake Angle: 0°





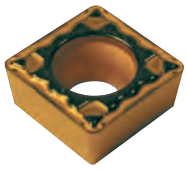


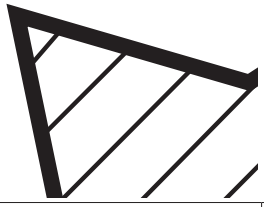
Cutting Conditions:	Coated				Cermet					Uncoated							
Continuous Cut					●	●	●	●									
Medium Cut					◐	◐	◐	◐									
Interrupted Cut							◐	◐									

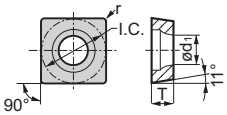
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z	T2000Z	T1500A	T1200A
SPMT321EFK	SPMT090304N-FK	.375	.125	.0156	.130				●
SPMT322EFK	SPMT090308N-FK			.0313		●	●	●	●

SPMT ELU

Rake Angle: 12°







Cutting Conditions:	Coated						Cermet	Uncoated
Continuous Cut	●	●	●	○	○	○		
Medium Cut	◐	◐	◐	◐	◐	◐		
Interrupted Cut		◐	◐	◐	◐	◐		

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	AC6030M	AC6040M	AC630M
SPMT321ELU	SPMT090304N-LU	.375	.125	.0156	.130			●	○	○	●
SPMT322ELU	SPMT090308N-LU			.0313		★	★	●	○	○	●

90° SQUARE TYPE
POSITIVE INSERT

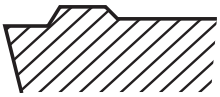
SP
- 90° Square Type
- 11° Relief
- Without Insert Hole

- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

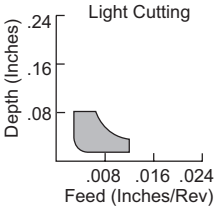
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

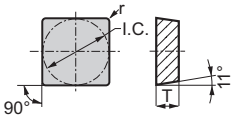
SPMR EFK

Rake Angle: 0°



Cutting Conditions:	Coated							Cermet						Uncoated					
Continuous Cut								●	●	●	●								
Medium Cut								●	●	●	●								
Interrupted Cut										●	●								



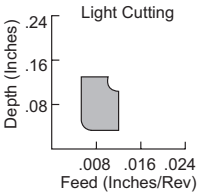


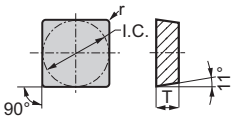
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z	T2000Z	T1500A	T1200A
SPMR321EFK	SPMR090304N-FK	.375	.125	.0156	-			●	●
SPMR322EFK	SPMR090308N-FK			.0313		●	●	●	●
SPMR421EFK	SPMR120304N-FK	.500		.0156				★	
SPMR422EFK	SPMR120308N-FK			.0313		●	●	●	●
SPMR423EFK	SPMR120312N-FK			.0469				●	●

SPMR ENF

Rake Angle: 0°

Cutting Conditions:	Coated							Cermet						Uncoated					
Continuous Cut	●																		
Medium Cut	●	●																	
Interrupted Cut	●	●																	





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P
SPMR321ENF	SPMR090304N-SF	.375	.125	.0156	-	●	●
SPMR322ENF	SPMR090308N-SF			.0313		●	●
SPMR421ENF	SPMR120304N-SF	.500		.0156		●	●
SPMR422ENF	SPMR120308N-SF			.0313		●	●
SPMR423ENF	SPMR120312N-SF			.0469		●	●

90° SQUARE TYPE
POSITIVE INSERT

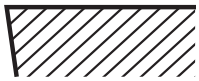
SP
- 90° Square Type
- 11° Relief
- Without Insert Hole

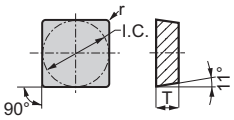
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

SPG

No Breaker



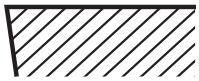


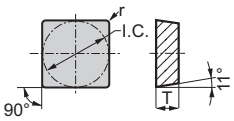
Cutting Conditions:	AC820P	AC510U	T1500Z	T2000Z	T1500A	T1200A	G10E
Coated							
Cermet							
Uncoated							
Continuous Cut	●	●	●	●	●	●	
Medium Cut	●	●	●	●	●	●	●
Interrupted Cut	●				●	●	

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC510U	T1500Z	T2000Z	T1500A	T1200A	G10E
SPG321	SPGN090304	.375	.125	.0156	-					●	●	●
SPG322	SPGN090308			.0313					●	●	●	
SPG421	SPGN120304	.500		.0156						●	★	●
SPG422	SPGN120308			.0313		●	●	●	●	●	●	▲
SPG423	SPGN120312			.0469		●						
SPG424	SPGN120316			.0625							●	
SPG432	SPGN120408		.1875	.0313		●			●			
SPG433	SPGN120412			.0469		●						
SPG632	SPGN190408	.750		.0313		●						
SPG633	SPGN190412			.0469		●					●	
SPG634	SPGN190416			.0625		●						

SPMN

No Breaker





Cutting Conditions:	AC820P	AC700G	AC410K	AC415K	AC420K	T1500A	T1200A	G10E
Coated								
Cermet								
Uncoated								
Continuous Cut	●	●	●	●		●	●	
Medium Cut	●	●	●	●	●	●	●	●
Interrupted Cut	●	●			●	●	●	

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC700G	AC410K	AC415K	AC420K	T1500A	T1200A	G10E
SPMN321	SPMN090304	.375	.125	.0156	-			▲	●	●			
SPMN322	SPMN090308			.0313		●	●	▲	★	●	★	★	
SPMN421	SPMN120304	.500		.0156		●	★	▲	●	●			
SPMN422	SPMN120308			.0313		●		▲	●	●	★	★	
SPMN423	SPMN120312			.0469						●	★	★	★
SPMN532	SPMN150408	.625	.1875	.0313									★
SPMN533	SPMN150412			.0469									★
SPMN634	SPMN190416	.750		.0625		●							

TRIANGULAR TYPE
POSITIVE INSERT

TB

Triangular Type
5° Relief
With Insert Hole

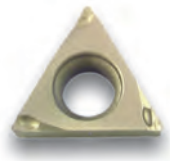
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

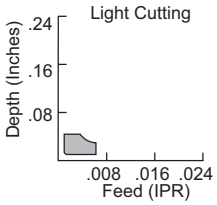
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

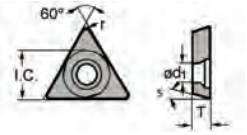
TBGT FW

Rake Angle: 20°

Cutting Conditions:	Coated				Cermet				Uncoated							
					T1500Z	T2000Z	T1500A	T1200A								
Continuous Cut					●	●	●	●								
Medium Cut					●	●	●	●								
Interrupted Cut							●	●								







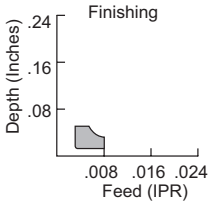
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
TBGT520.5RFW	TBGT060102R-FW	.156	.0625	.0078	.090
TBGT520.5LFW	TBGT060102L-FW			.0078	
TBGT521RFW	TBGT060104R-FW			.0156	
TBGT521LFW	TBGT060104L-FW			.0156	

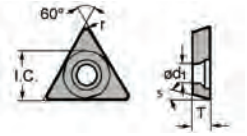
Sumitomo Catalog #	T1500Z	T2000Z	T1500A	T1200A
TBGT520.5RFW			★	●
TBGT520.5LFW	●	●	●	●
TBGT521RFW			★	●
TBGT521LFW	●	●	●	●

TBGT FX

Rake Angle: 15°

Cutting Conditions:	Coated											Cermet			Uncoated		
	AC820P	AC530U	AC510U														
Continuous Cut	●	●	●														
Medium Cut	●	●	●														
Interrupted Cut	●	●															





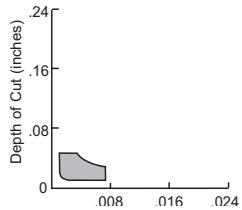
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
TBGT520.5RFX	TBGT060102R-FX	.156	.0625	.0078	.090
TBGT520.5LFX	TBGT060102L-FX			.0078	
TBGT521RFX	TBGT060104R-FX			.0156	
TBGT521LFX	TBGT060104L-FX			.0156	

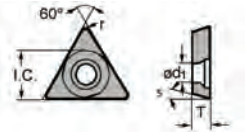
Sumitomo Catalog #	AC820P	AC530U	AC510U
TBGT520.5RFX		●	
TBGT520.5LFX	●	★	●
TBGT521RFX		★	●
TBGT521LFX	●	★	●

TBGT FY

Rake Angle: 15°

Cutting Conditions:	Coated				Cermet				Uncoated							
	AC530U				T1500A	T1200A										
Continuous Cut	●				●	●										
Medium Cut	●				●	●										
Interrupted Cut	●				●	●										





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
TBGT520RFY	TBGT060101R-FY	.156	.0625	.0039	.090
TBGT520LFY	TBGT060101L-FY			.0039	
TBGT520.5RFY	TBGT060102R-FY			.0078	
TBGT521RFY	TBGT060104R-FY			.0156	
TBGT521LFY	TBGT060104L-FY			.0156	

Sumitomo Catalog #	AC530U	T1500A	T1200A
TBGT520RFY	★		
TBGT520LFY	●		
TBGT520.5RFY		★	
TBGT521RFY		★	●
TBGT521LFY	★	●	●

TRIANGULAR TYPE
POSITIVE INSERT

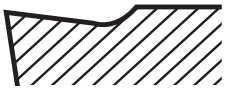
TB
- Triangular Type
- 5° Relief
- With Insert Hole

- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

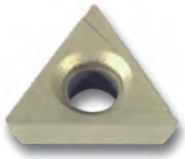
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

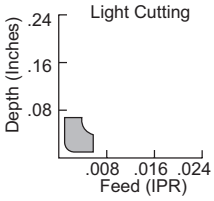
TBGT W

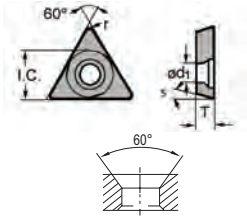
Rake Angle: 10°



Cutting Conditions:	Coated				Cermet				Uncoated							
Continuous Cut					●	●										
Medium Cut					●	●										
Interrupted Cut						●										
					T1500Z	T1500A										





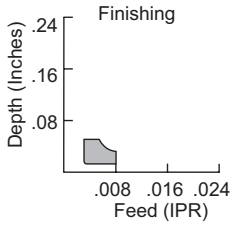


Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
TBGT520.5R	TBGT060102R-W	.156	.0625	.0078	.090
TBGT520.5L	TBGT060102L-W			.0078	
TBGT521R	TBGT060104R-W			.0156	
TBGT521L	TBGT060104L-W			.0156	

TCGT FX

Rake Angle: 15°

Cutting Conditions:	Coated				Cermet				Uncoated							
Continuous Cut	●															
Medium Cut	◐															
Interrupted Cut	◐															
	AC530U															

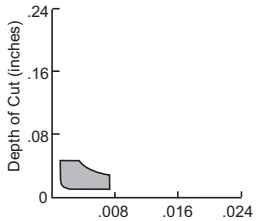


Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
TCGT1.81.50RFX	TCGT090201R-FX	.219	.094	.0039	.098
TCGT1.81.50.5RFX	TCGT090202R-FX			.0078	
TCGT1.81.50.5LFX	TCGT090202L-FX			.0078	
TCGT21.50RFX	TCGT110201R-FX	.250		.0039	.110
TCGT21.50LFX	TCGT110201L-FX			.0039	
TCGT21.50.5RFX	TCGT110202R-FX			.0078	

TCGT FY

Rake Angle: 15°

Cutting Conditions:	Coated										Cermet			Uncoated		
Continuous Cut	●															
Medium Cut	◐															
Interrupted Cut	◐															
	AC530U															



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
TCGT1.81.50LFY	TCGT090201L-FY	.219	.094	.0039	.098
TCGT21.50.5LFY	TCGT110202L-FY	.250		.0078	.110

TRIANGULAR TYPE
POSITIVE INSERT

TC
- Triangular Type
- 7° Relief
- With Insert Hole

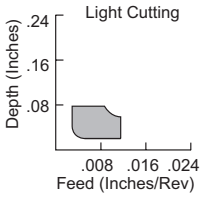
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

TCGT EFM

Rake Angle: 6°

Cutting Conditions:	Coated				Cermet				Uncoated							
	AC530U				T1500Z	T2000Z	T1500A	T1200A								
Continuous Cut	●				●	●	●	●								
Medium Cut	●				●	●	●	●								
Interrupted Cut	●						●	●								



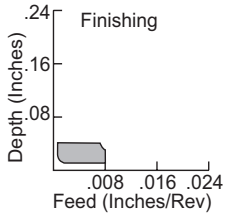
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U	T1500Z	T2000Z	T1500A	T1200A
TCGT630EFM	TCGT080201N-SC	.1875	.094	.0039	.090	●				●
TCGT630MEFM	TCGT080201MN-SC			.0039					●	
TCGT630.5EFM	TCGT080202N-SC			.0078		●				●
TCGT630.5MEFM	TCGT080202MN-SC			.0078					●	
TCGT1.81.50EFM	TCGT090201N-SC	.219		.0039	.098				★	▲
TCGT1.81.50.5EFM	TCGT090202N-SC			.0078		●			●	●
TCGT21.50EFM	TCGT110201N-SC	.250		.0039	.110	★				●
TCGT21.50MEFM	TCGT110201MN-SC			.0039					●	
TCGT21.50.5EFM	TCGT110202N-SC			.0078				●		●
TCGT21.50.5MEFM	TCGT110202MN-SC			.0078		●	●		●	

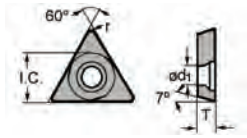
M = Negative nose radius tolerance (-0.0001″ to -0.0004″)

TCMT EFB

Rake Angle: 20°

Cutting Conditions:	Coated				Cermet				Uncoated							
					T1500Z	T1500A										
Continuous Cut					●	●										
Medium Cut					●	●										
Interrupted Cut						●										





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z	T1500A
TCMT21.51EFB	TCMT110204N-FB	.250	.094	.0156	.110	●	●
TCMT21.52EFB	TCMT110208N-FB			.0313		●	●

TRIANGULAR TYPE
POSITIVE INSERT

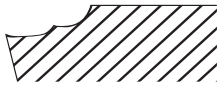
TC
- Triangular Type
- 7° Relief
- With Insert Hole

- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

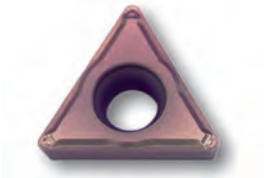
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

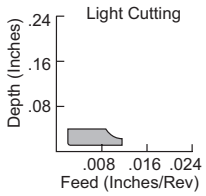
TCMT EFP

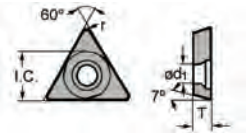
Rake Angle: 10°



Cutting Conditions:	Coated				Cermet				Uncoated							
Continuous Cut					●	●	●	●								
Medium Cut					●	●	●	●								
Interrupted Cut							●	●								





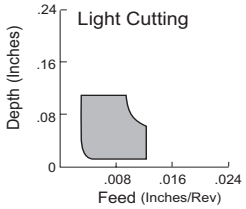


Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z	T2000A	T1500A	T1200A
TCMT21.51EFP	TCMT110204N-FP	.250	.094	.0156	.110	●	●	●	●
TCMT21.52EFP	TCMT110208N-FP			.0313		●	●	●	●
TCMT32.51EFP	TCMT16T304N-FP	.375	.156	.0156	.1693	●	●	●	●
TCMT32.52EFP	TCMT16T308N-FP			.0313		●	●	●	●

TCMT ESU

Rake Angle: 8°

Cutting Conditions:	Coated													Cermet		
Continuous Cut	●	●		●	●	●	●	●	●	●	●	●		●	●	●
Medium Cut	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●
Interrupted Cut		●	●	●		●	●	●					●			●

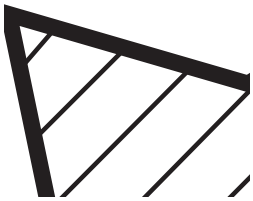


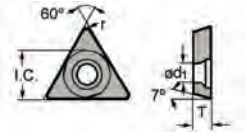
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	AC610M	AC6030M	AC6040M	AC630M	AC405K	AC410K	AC415K	AC510U	AC520U	T1500Z	T2000Z	T1500A
TCMT21.51ESU	TCMT110204N-SU	.250	.094	.0156	.110	●	●	●	●	●	○	○	●	●	▲	●	●	●	●	●	
TCMT21.52ESU	TCMT110208N-SU			.0313		●	●		●	●	○	○	●	●	▲	●	●	●			
TCMT32.51ESU	TCMT16T304N-SU	.375	.156	.0156	.1693	●	●		●	●	○	○	●	●	▲	●	●	●			●
TCMT32.52ESU	TCMT16T308N-SU			.0313		●	●	●	●	●	○	○	●	●	▲	●	●	●			●

TCMT ELU

Rake Angle: 12°

Cutting Conditions:	Coated									Cermet			Uncoated		
Continuous Cut	●	●	●	●	●	●				●	●				
Medium Cut	●	●	●	●	●	●				●	●	●			
Interrupted Cut	●	●	●	●	●	●						●			





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	AC6030M	AC6040M	AC630M	T1500Z	T2000Z	T3000Z
TCMT21.51ELU	TCMT110204N-LU	.250	.094	.0156	.110	●	●	●	○	○	●	●	●	●
TCMT32.52ELU	TCMT16T308N-LU	.375	.0156	.0313	.1693	●	●	●	○	○	●	●	●	●

TRIANGULAR TYPE
POSITIVE INSERT

TC
- Triangular Type
- 7° Relief
- With Insert Hole

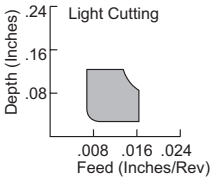
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

TCMT ENK

Rake Angle: 8°

Cutting Conditions:	AC810P (Coated)	AC820P (Coated)	AC830P (Coated)	AC700G (Coated)
Continuous Cut	○	○		○
Medium Cut	○	○	○	○
Interrupted Cut		○	○	○



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G
TCMT21.51ENK	TCMT110204N-SK	.250	.094	.0156	.110	●	●	●	●
TCMT21.52ENK	TCMT110208N-SK			.0313		●	●	●	●
TCMT32.51ENK	TCMT16T304N-SK	.375	.156	.0156	.1693	●	●	●	●
TCMT32.52ENK	TCMT16T308N-SK			.0313		●	●	●	●
TCMT32.53ENK	TCMT16T312N-SK			.0469		●	●	●	

TCMA -

No Breaker

Cutting Conditions:	AC700G (Coated)	AC405K (Cermet)	AC410K (Cermet)	AC415K (Cermet)	AC420K (Uncoated)
Continuous Cut	○	○	○	○	
Medium Cut	○		○	○	○
Interrupted Cut	○				○

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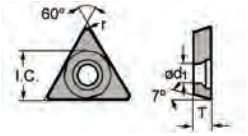


Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC700G	AC405K	AC410K	AC415K	AC420K
TCMA21.51	TCMW 110204	.250	.094	.0156	.110	●	●	▲	●	●
TCMA21.52	TCMW 110208			.0313		●	●	▲	●	●
TCMA32.51	TCMW 16T304	.375	.156	.0156	.1693	●	●	▲	●	●
TCMA32.52	TCMW 16T308			.0313		●	●	▲	●	●
TCMA32.53	TCMW 16T312			.0469		●				●

TP

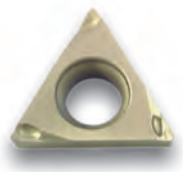
Triangular Type
11° Relief
With Insert Hole

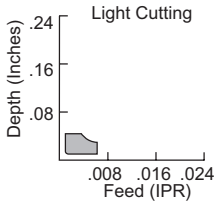
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

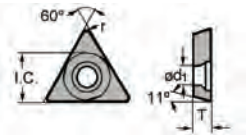
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

TPGT FW

Rake Angle: 20°





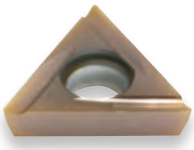


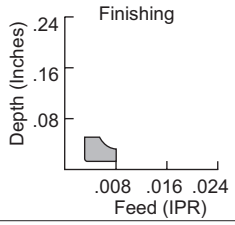
Cutting Conditions:	T1500Z	T2000Z	T1500A	T1200A
Continuous Cut	●	●	●	●
Medium Cut	●	●	●	●
Interrupted Cut			●	●

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z	T2000Z	T1500A	T1200A
TPGT630.5RFW	TPGT080202R-FW	.1875	.094	.0078	.090			●	●
TPGT630.5LFW	TPGT080202L-FW			.0078		●	●	★	●
TPGT631RFW	TPGT080204R-FW			.0156		●	●	★	●
TPGT631LFW	TPGT080204L-FW			.0156		●	●	●	●
TPGT21.50.5RFW	TPGT110202R-FW	.250		.0078	.110	●	●	★	●
TPGT21.50.5LFW	TPGT110202L-FW			.0078		●	●	●	●
TPGT21.51RFW	TPGT110204R-FW			.0156		●	●	★	●
TPGT21.51LFW	TPGT110204L-FW			.0156		●	●	●	●

TPGT FX

Rake Angle: 15°





Cutting Conditions:	AC530U	AC510U	T1500A	T1200A
Continuous Cut	●	●	●	●
Medium Cut	●	●	●	●
Interrupted Cut	●		●	●

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U	AC510U	T1500A	T1200A
TPGT630.5RFX	TPGT080202R-FX	.1875	.094	.0078	.090	★	●		
TPGT630.5LFX	TPGT080202L-FX			.0078		★	●		
TPGT631RFX	TPGT080204R-FX			.0156		★	●		
TPGT631LFX	TPGT080204L-FX			.0156		●	●		
TPGT1.81.51LFX	TPGT090204L-FX	.219		.0156	.102			●	●
TPGT21.50.5RFX	TPGT110202R-FX	.250		.0078	.110		●		
TPGT21.50.5LFX	TPGT110202L-FX			.0078			●		
TPGT21.51RFX	TPGT110204R-FX			.0156			●		
TPGT21.51LFX	TPGT110204L-FX			.0156			●		
TPGT21.52LFX	TPGT110208L-FX			.0313			●		
TPGT220.5RFX	TPGT110302R-FX		.125	.0078	.130	★			
TPGT220.5LFX	TPGT110302L-FX			.0078		★			
TPGT221RFX	TPGT110304R-FX			.0156		★			
TPGT221LFX	TPGT110304L-FX			.0156		●			

TRIANGULAR TYPE
POSITIVE INSERT

TP
- Triangular Type
- 11° Relief
- With Insert Hole

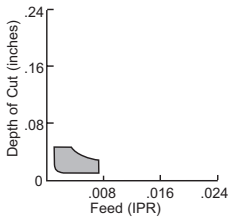
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

TPGT FY

Rake Angle: 15°

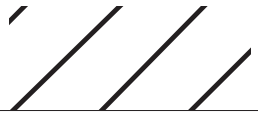
Cutting Conditions:	Coated				Cermet																Uncoated									
	AC530U				T1500Z					T2000Z					T3000Z					T1500A						T1200A					
Continuous Cut	○				○					○					○					○						○					
Medium Cut	◐				◐					◐					◐					◐						◐					
Interrupted Cut	◌														◌					◌						◌					



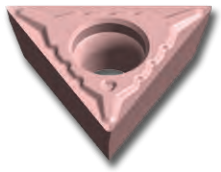
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U	T1500Z	T2000Z	T3000Z	T1500A	T1200A
TPGT630RFY	TPGT080201R-FY	.1875	.094	.0039	.090	★					
TPGT630LFY	TPGT080201L-FY			.0039		★					
TPGT630.5RFY	TPGT080202R-FY			.0078		★				★	●
TPGT630.5LFY	TPGT080202L-FY			.0078		★				★	●
TPGT631RFY	TPGT080204R-FY			.0156						●	●
TPGT631LFY	TPGT080204L-FY			.0156		★				★	●
TPGT21.50.5RFY	TPGT110202R-FY			.0078	.110					★	●
TPGT21.50.5LFY	TPGT110202L-FY			.0078						★	●
TPGT21.51RFY	TPGT110204R-FY			.0156						★	●
TPGT21.51LFY	TPGT110204L-FY			.0156						★	●
TPGT21.52LFY	TPGT110208L-FY			.0313						●	●
TPGT220RFY	TPGT110301R-FY	.250	.125	.0039	.130	★	●	●			
TPGT220LFY	TPGT110301L-FY			.0039		★					
TPGT220.5RFY	TPGT110302R-FY			.0078						★	▲
TPGT220.5LFY	TPGT110302L-FY			.0078			●	●	●	★	●
TPGT221RFY	TPGT110304R-FY			.0156			●	●		★	●
TPGT221LFY	TPGT110304L-FY			.0156		★	●	●		●	●
TPGT222RFY	TPGT110308R-FY			.0313		★				★	●
TPGT222LFY	TPGT110308L-FY			.0313		●					

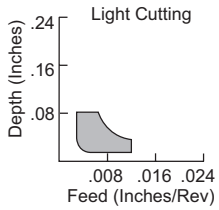
TPGT EFC

Rake Angle: 15°



Cutting Conditions:	Coated				Cermet										Uncoated					
	AC530U				T1500A															
Continuous Cut	○				○															
Medium Cut	◐				◐															
Interrupted Cut	◌				◌															





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U	T1500A
TPGT220.5EFC	TPGT110302N-FC	.250	.125	.0078	.130	●	
TPGT220.5MEFC	TPGT110302MN-FC			.0078			●
TPGT221EFC	TPGT110304N-FC			.0156		●	
TPGT221MEFC	TPGT110304MN-FC			.0156			●

M = Negative nose radius tolerance (-0.0001" to -0.0004")

TRIANGULAR TYPE
POSITIVE INSERT

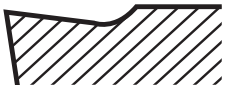
TP
- Triangular Type
- 11° Relief
- With Insert Hole

- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

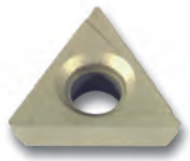
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

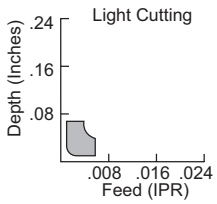
TPGT W

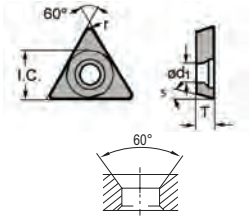
Rake Angle: 10°



Cutting Conditions:	Coated				Cermet					Uncoated							
	AC530U	AC510U			T1500Z	T2000Z	T3000Z	T1500A	T1200A	G10E							
Continuous Cut	●	●			●	●		●	●								
Medium Cut	◐	◐			◐	◐	◐	◐	◐	◐							
Interrupted Cut	◌						◌	◌	◌								



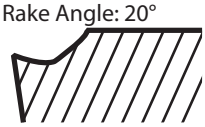




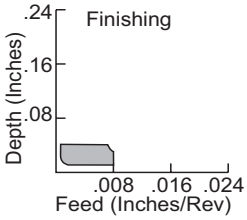
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U	AC510U			T1500Z	T2000Z	T3000Z	T1500A	T1200A	G10E							
TPGT630.5R	TPGT080202R-W	.1875	.094	.0078	.090	★				●	●		●	●	▲							
TPGT630.5L	TPGT080202L-W			.0078		★	●			●	●	●	●	●	●							
TPGT631R	TPGT080204R-W			.0156		●				★	●		●	●								
TPGT631L	TPGT080204L-W			.0156		★				●	●	●	●	●								

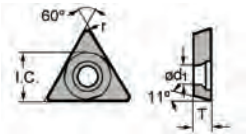
TPMT EFB

Rake Angle: 20°



Cutting Conditions:	Coated				Cermet					Uncoated							
					T1500Z												
Continuous Cut					●												
Medium Cut					◐												
Interrupted Cut																	

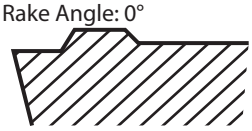




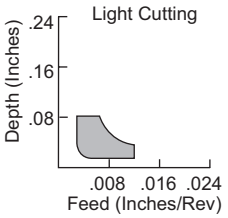
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z
TPMT222EFB	TPMT110308N-FB	.250	.125	.0156	.110	●

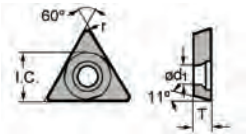
TPMT EFK

Rake Angle: 0°



Cutting Conditions:	Coated				Cermet					Uncoated							
					T1500Z	T2000Z	T1500A	T1200A									
Continuous Cut					●	●	●	●									
Medium Cut					◐	◐	◐	◐									
Interrupted Cut							◌	◌									





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z	T2000Z	T1500A	T1200A
TPMT221EFK	TPMT110304N-FK	.250	.125	.0156	.110	●	●	●	●
TPMT222EFK	TPMT110308N-FK			.0313			●	●	●
TPMT331EFK	TPMT160404N-FK	.375	.1875	.0156	.1693		●	●	●
TPMT332EFK	TPMT160408N-FK			.0313			●	●	●

TRIANGULAR TYPE
POSITIVE INSERT

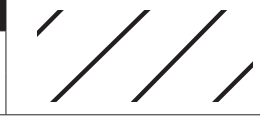
TP
- Triangular Type
- 11° Relief
- With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

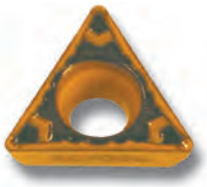
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

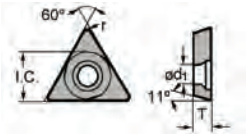
TPMT ELU

Rake Angle: 12°



Cutting Conditions:	AC810P	AC820P	AC700G	AC530U	AC6030M	AC6040M	AC630M	T1500Z	T2000Z	T3000Z
	Coated							Cermet		
Continuous Cut	●	●	●	●	●	●	●	●	●	
Medium Cut	●	●	●	●	●	●	●	●	●	●
Interrupted Cut		●	●	●	●	●	●			●



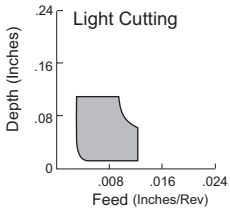


Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	AC530U	AC6030M	AC6040M	AC630M	T1500Z	T2000Z	T3000Z
TPMT1.81.50.5ELU	TPMT090202N-LU	.219	.094	.0078	.110		●								
TPMT1.81.51ELU	TPMT090204N-LU			.0156			●								
TPMT221ELU	TPMT110304N-LU	.250	.125	.0156		●	●	●	★	○	○	●	●	●	●
TPMT222ELU	TPMT110308N-LU			.0313		●	●	●	★	○	○	●	●	●	

TPMT ESU

Rake Angle: 8°

Cutting Conditions:	AC810P	AC820P	AC830P	AC700G	AC610M	AC6030M	AC6040M	AC630M	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A	UC
	Coated										Cermet					UC
Continuous Cut	●	●		●	●	●	●	●	●		●	●		●	●	
Medium Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Interrupted Cut		●	●	●		●	●	●		●			●	●	●	



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	AC610M	AC6030M	AC6040M	AC630M	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A
TPMT1.81.50.5ESU	TPMT090202N-SU	.219	.094	.0078	.102		●													▲
TPMT1.81.51ESU	TPMT090204N-SU			.0156			●												●	●
TPMT21.50.5ESU	TPMT110202N-SU	.250		.0078	.107	●	●		●					●	●				●	●
TPMT21.51ESU	TPMT110204N-SU			.0156		●	●		●					●	●				●	●
TPMT21.52ESU	TPMT110208N-SU			.0313		●	●		●					●	●				●	●
TPMT220.5ESU	TPMT110302N-SU		.125	.0078	.130		●	★		●	○	○	●			●	●		●	●
TPMT221ESU	TPMT110304N-SU			.0156		●	●	★		●	○	○	●			●	●	●	●	●
TPMT222ESU	TPMT110308N-SU			.0313		●	●	★		●	○	○	●			●	●	●	●	●
TPMT32.51ESU	TPMT16T304N-SU	.375	.156	.0156	.1693	●	●		●					●	●				●	●
TPMT32.52ESU	TPMT16T308N-SU			.0313		●	●		●					●	●				●	●
TPMT331ESU	TPMT160404N-SU		.1875	.0156			●	●		●	○	○	●			●	●	●	★	●
TPMT332ESU	TPMT160408N-SU			.0313			●	●		●	○	○	●			●	●	●	★	●

TRIANGULAR TYPE
POSITIVE INSERT

TP
- Triangular Type
- 11° Relief
- With Insert Hole

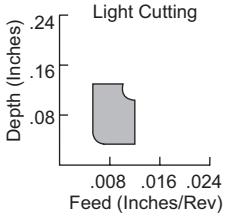
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

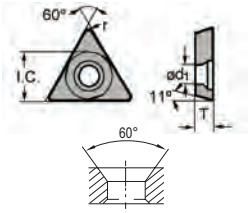
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

TPMT ENF

Rake Angle: 0°

Cutting Conditions:	Coated								Cermet				Uncoated							
	AC820P	AC830P	AC700G	AC510U																
Continuous Cut	●		●	●																
Medium Cut	●	●	●	●																
Interrupted Cut	●	●	●																	

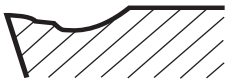




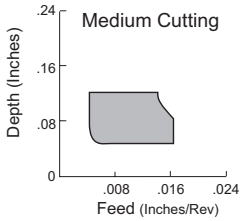
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC700G	AC510U
TPMT221ENF	TPMT110304N-SF	.250	.125	.0156	.130	●	●	●	●
TPMT222ENF	TPMT110308N-SF			.0313		●	●	●	●
TPMT331ENF	TPMT160404N-SF	.375	.1875	.0156	.1693	●	●	●	●
TPMT332ENF	TPMT160408N-SF			.0313		●	●	●	●

TPMT EMU

Rake Angle: 0°



Cutting Conditions:	Coated					Cermet				Uncoated							
	AC810P	AC820P	AC700G	AC410K	AC420K												
Continuous Cut	●	●	●	●													
Medium Cut	●	●	●	●	●												
Interrupted Cut		●	●		●												



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	AC410K	AC420K
TPMT221EMU	TPMT110304N-MU	.250	.125	.0156	.130	●	●	●	▲	●
TPMT222EMU	TPMT110308N-MU			.0313		●	●	●	▲	●
TPMT331EMU	TPMT160404N-MU	.375	.1875	.0156	.1693	●	●	●	▲	●
TPMT332EMU	TPMT160408N-MU			.0313		●	●	●	▲	●

TRIANGULAR TYPE
POSITIVE INSERT

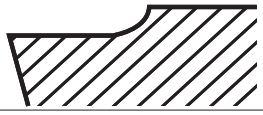
TP
- Triangular Type
- 11°Relief
- With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

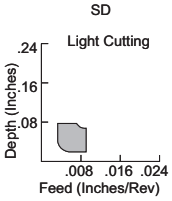
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USALimited Availability Item
- ○ New Product Arriving 1st Quarter 2015

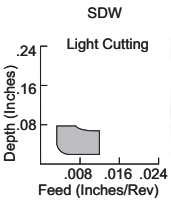
TPGG
SD

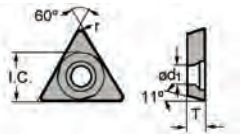
Rake Angle: 0°



Cutting Conditions:	Coated								Cermet						Uncoated		
Continuous Cut	●	●							●	●		●	●				
Medium Cut	●	●							●	●	●	●	●		●		
Interrupted Cut	●										●	●	●				





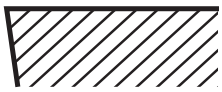


Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U	AC510U	T1500Z	T2000Z	T3000Z	T1500A	T1200A	G10E
TPGG220.5R	TPGT110302R-SD	.250	.125	.0078	.130	★		●	●		●	●	
TPGG220.5L	TPGT110302L-SD			.0078				★	●	●	●	●	
TPGG221R	TPGT110304R-SD			.0156		★	●	●	●	★	●	●	
TPGG221RW	TPGT110304RW-SD			.0156					●				
TPGG221L	TPGT110304L-SD			.0156		★	●		●	★	●	●	●
TPGG221LW	TPGT110304LW-SD			.0156					●				
TPGG222R	TPGT110308R-SD			.0313		★					●	●	
TPGG222RW	TPGT110308RW-SD			.0313					●	●			
TPGG222L	TPGT110308L-SD			.0313				●	●	★	●	●	
TPGG222LW	TPGT110308LW-SD			.0313						●			
TPGG321R	TPGT160304R-SD	.375		.0156	.1693						●	●	
TPGG321L	TPGT160304L-SD			.0156					●		●	●	
TPGG322R	TPGT160308R-SD			.0156							●	●	
TPGG322L	TPGT160308L-SD			.0156							●	●	
TPGG330R	TPGT160401R-SD		.1875	.0039									●
TPGG330L	TPGT160401L-SD			.0039							●	●	●
TPGG330.5R	TPGT160402R-SD			.0078							●	●	
TPGG330.5L	TPGT160402L-SD			.0078				●	●		●	●	
TPGG331R	TPGT160404R-SD			.0156			●	●	●	★	●	●	●
TPGG331L	TPGT160404L-SD			.0156			●	●	●	★	●	●	●
TPGG332R	TPGT160408R-SD			.0313							●	●	★
TPGG332L	TPGT160408L-SD			.0313				●	●		●	●	

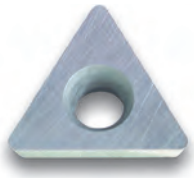
W = Wiper insert

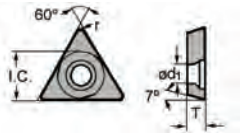
TPGA

No Breaker



Cutting Conditions:	Coated				Cermet				Uncoated							
Continuous Cut					●	●										
Medium Cut					●	●			●							
Interrupted Cut					●	●										





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500A	T1200A	G10E
TPGA220.5	TPGW110302	.250	.125	.0078	.130	●	●	
TPGA221	TPGW110304			.0156		●	●	★
TPGA222	TPGW110308			.0313		●	●	●
TPGA331	TPGW160404			.0313				▲

TP

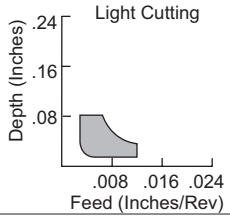
Triangular Type
11°Relief
Without Insert Hole

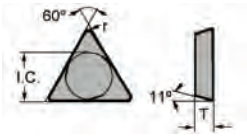
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USALimited Availability Item
- ○ New Product Arriving 1st Quarter 2015

TPMR EFK

Rake Angle: 0°



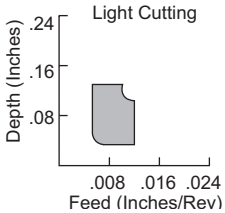


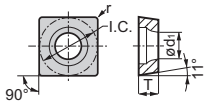
Cutting Conditions:	Coated				Cermet				Uncoated							
Continuous Cut					○	○	○	○								
Medium Cut					○	○	○	○								
Interrupted Cut							○	○								

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z	T2000Z	T1500A	T1200A
TPMR1.81.50.5EFK	TPMR090202N-FK	.219	.094	.0078	-				●
TPMR1.81.51EFK	TPMR090204N-FK			.0156		●	●	●	●
TPMR1.81.52EFK	TPMR090208N-FK			.0313		●	●		●
TPMR220.5EFK	TPMR110302N-FK	.250	.125	.0078				★	●
TPMR221EFK	TPMR110304N-FK			.0156		●	●	●	●
TPMR222EFK	TPMR110308N-FK			.0313		●	●	●	●
TPMR321EFK	TPMR160304N-FK	.375		.0156		●	●	●	●
TPMR322EFK	TPMR160308N-FK			.0313		●	●	●	●
TPMR323ENK	TPMR160312N-FK			.0469				★	

TPMR ENF

Rake Angle: 0°





Cutting Conditions:	Coated			Cermet	Uncoated
Continuous Cut	○		○		
Medium Cut	○	○	○		
Interrupted Cut	○	○	○		

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P	AC700G
TPMR221ENF	TPMR110304N-SF	.250	.125	.0156	-	●	●	
TPMR222ENF	TPMR110308N-SF			.0313		●	●	●
TPMR321ENF	TPMR160304N-SF	.375		.0156		●	●	
TPMR322ENF	TPMR160308N-SF			.0313		●	●	●
TPMR323ENF	TPMR160312N-SF			.0469		●	●	
TPMR432ENF	TPMR220408N-SF	.500	.1875	.0313		●	●	
TPMR433ENF	TPMR220412N-SF			.0469		●	●	

TRIANGULAR TYPE
POSITIVE INSERT

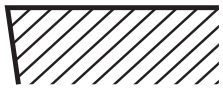
TP
- Triangular Type
- 11°Relief
- Without Insert Hole

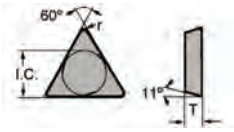
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USALimited Availability Item
- ○ New Product Arriving 1st Quarter 2015

TPG

No Breaker



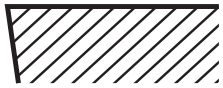


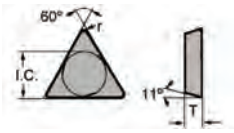
Cutting Conditions:	Coated				Cermet					Uncoated							
Continuous Cut	●	●			●	●	●	●				●					
Medium Cut	●	●			●	●	●	●		●	●	●					
Interrupted Cut	●						●	●		●							

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC510U			T1500Z	T2000Z	T1500A	T1200A		A30		G10E	H1					
TPG220.5	TPGN110302			.0078								●	●					●					
TPG221	TPGN110304	.250		.0156		●					●	●	●					★					
TPG222	TPGN110308			.0313		●					●	●	●					★					
TPG320.5	TPGN160302		.125	.0078						●	●	●	●				●						
TPG321	TPGN160304			.0156		●	●			●	●	●	●		▲		●						
TPG322	TPGN160308	.375		.0313		●	●			●	●	●	●		★		●						
TPG323	TPGN160312			.0469		●											●						
TPG324	TPGN160316			.0625	-	●																	
TPG332	TPGN160408			.0313		●																	
TPG431	TPGN220404			.0156		●						●	●										
TPG432	TPGN220408		.1875	.0313		●	●					●	●		★		●						
TPG433	TPGN220412	.500		.0469		●							▲										
TPG434	TPGN220416			.0625		●							●										
TPG436	TPGN220424			.0938		●																	

TPMN

No Breaker





Cutting Conditions:	Coated							Cermet					Uncoated				
Continuous Cut	●	●	●					●	●								
Medium Cut	●	●	●	●				●	●				●				
Interrupted Cut	●	●		●				●	●				●				

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC700G	AC410K	AC420K				T1500A	T1200A				A30				
TPMN221	TPMN110304	.250		.0156			★	▲	●									★				
TPMN222	TPMN110308			.0313			★	▲	●									★				
TPMN321	TPMN160304		.125	.0156		●		▲	●									★				
TPMN322	TPMN160308	.375		.0313		●	●	▲	●				★	★				●				
TPMN323	TPMN160312			.0469	-		★	▲	●									★				
TPMN431	TPMN220404			.0156														★				
TPMN432	TPMN220408		.1875	.0313		●	●						★	★				●				
TPMN433	TPMN220412	.500		.0469		●	●															
TPMN434	TPMN220416			.0625														★				

TRIANGULAR TYPE
POSITIVE INSERT

TE

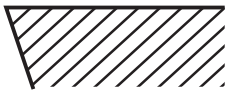
Triangular Type
20°Relief
Without Insert Hole

- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

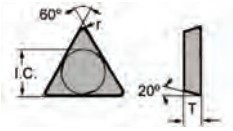
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USALimited Availability Item
- ○ New Product Arriving 1st Quarter 2015

TEGE

No Breaker



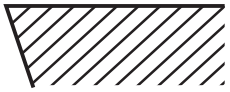
Cutting Conditions:	Coated				Cermet				Uncoated							
									H1							
Continuous Cut									●							
Medium Cut									◐							
Interrupted Cut																



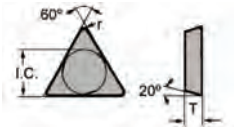
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
TEGE21.50.5	TEGE110202	.250	.094	.0078	-

TEGN

No Breaker



Cutting Conditions:	Coated				Cermet				Uncoated							
					T1500A	T1200A			H1							
Continuous Cut					●	●			●							
Medium Cut					◐	◐			◐							
Interrupted Cut					◌	◌										



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
TEGN220.5	TEGN110302	.250	.125	.0078	-
TEGN222	TEGN110308			.0313	
TEGN320.5	TEGN160302	.375		.0078	
TEGN322	TEGN160308			.0313	

35° DIAMOND TYPE
POSITIVE INSERT

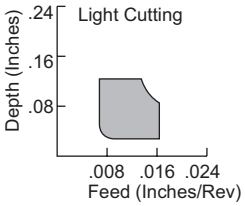
VB
35° Diamond Type
5°Relief
With Insert Hole

- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USALimited Availability Item
- ○ New Product Arriving 1st Quarter 2015

VBMT ENK

Rake Angle: 8°

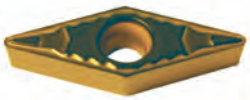


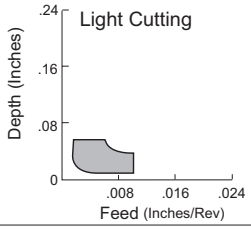
Cutting Conditions:	Coated	Cermet	Uncoated
Continuous Cut	●		
Medium Cut	●		
Interrupted Cut	●		

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P
VBMT332ENK	VBMT160408N-SK	.375	.1875	.0313	.1732	●

VBMT ELU

Rake Angle: 12°



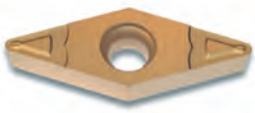


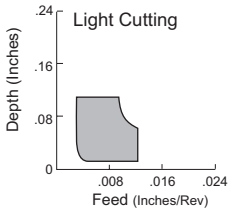
Cutting Conditions:	Coated							Cermet			Uncoated
Continuous Cut	●	●	●	●	●	●	●	●	●		
Medium Cut	●	●	●	●	●	●	●	●	●	●	
Interrupted Cut		●	●	●	●	●	●			●	

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	AC530U	AC6030M	AC6040M	AC630M	T1500Z	T2000Z	T3000Z
VBMT221ELU	VBMT110304N-LU	.250	.125	.0156	.134	●	★	●	●	○	○	●	●	●	●
VBMT331ELU	VBMT110404N-LU	.375	.1875	.0156	.1732	●	★	●		○	○	●	●	●	●
VBMT332ELU	VBMT110408N-LU			.0313		●	●	●	★	○	○	●	●	●	●

VBMT ESU

Rake Angle: 8°





Cutting Conditions:	Coated										Cermet				
Continuous Cut	●	●		●	●	●	●	●	●		●	●		●	●
Medium Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Interrupted Cut		●	●	●		●	●	●		●			●	●	●

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	AC610M	AC6030M	AC6040M	AC630M	AC510U	AC520U	T1500Z	T2000Z	T3000Z	T1500A	T1200A
VBMT221ESU	VBMT110304N-SU	.250	.125	.0156	.134	●	●		●	●	○	○	●	●	●	●	●	●	●	●
VBMT222ESU	VBMT110308N-SU			.0313			●		●	●	○	○	●	●	●	●	●	●	●	●
VBMT331ESU	VBMT160404N-SU	.375	.1875	.0156	.1732	●	●	●	●	●	○	○	●	●	●				●	●
VBMT332ESU	VBMT160408N-SU			.0313		●	●	●	●	●	○	○	●	●	●				●	●

35° DIAMOND TYPE
POSITIVE INSERT

VB
35° Diamond Type
5°Relief
With Insert Hole

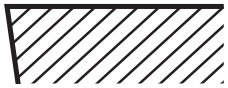
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USALimited Availability Item
- ○ New Product Arriving 1st Quarter 2015

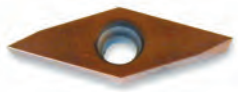
VBMA

—

No Breaker



Cutting Conditions:	Coated			Cermet					Uncoated							
Continuous Cut	●	●														
Medium Cut	●	●	●													
Interrupted Cut	●		●													



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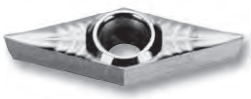
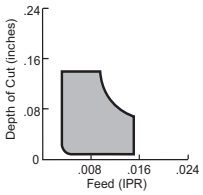
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC700G	AC410K	AC420K
VBMA331	VBMA160404	.375	.1875	.0156	.1732	★	▲	●
VBMA332	VBMA160408			.0313		★	▲	●

VCGT NAG

Rake Angle: 8°

Cutting Conditions:	Coated						Cermet				Uncoated					
Continuous Cut											●					
Medium Cut											●					
Interrupted Cut																



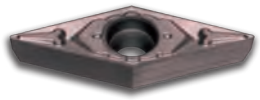


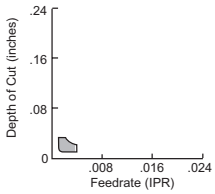
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	H1
VCMT220.5NAG	VCMT110302N-AG	.250	.125	.0078	.134	●
VCMT221NAG	VCMT110304N-AG			.0156		●
VCMT332NAG	VCMT160408N-AG	.375	.1875	.0313	.1732	★

VCGT EFC

Rake Angle: 15°

Cutting Conditions:	Coated						Cermet				Uncoated					
Continuous Cut	●						●									
Medium Cut	●						●									
Interrupted Cut	●						●									





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U	T1500A
VCGT220EFC	VCGT110301N-FC	.250	.125	.0039	.134	●	●
VCGT220MEFC	VCGT110301MN-FC			.0039			●
VCGT220.5EFC	VCGT110302N-FC			.0078		●	●
VCGT220.5MEFC	VCGT110302MN-FC			.0078			●
VCGT221EFC	VCGT110304N-FC			.0156		●	●
VCGT221MEFC	VCGT110304MN-FC			.0156			●

M = Negative nose radius tolerance (-0.0001" to -0.0004")

35° DIAMOND TYPE
POSITIVE INSERT

VC
- 35° Diamond Type
- 7°Relief
- With Insert Hole

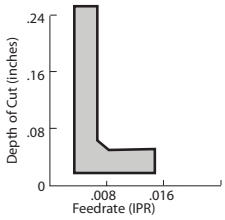
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USALimited Availability Item
- ○ New Product Arriving 1st Quarter 2015

VCGT ESI

Rake Angle: 15°

Cutting Conditions:	AC530U	AC610M	AC6030M	AC630M	AC510U	AC520U
Continuous Cut	●	●	●	●	●	
Medium Cut	●	●	●	●	●	●
Interrupted Cut	●		●	●		●



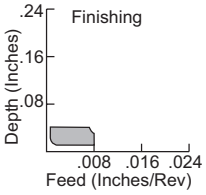
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U	AC610M	AC6030M	AC630M	AC510U	AC520U
VCGT220MESI	VCGT1103M01MN-SI	.250	.125	.0039	.134	●	●	○	●	●	●
VCGT220.5MESI	VCGT1103M02MN-SI			.0078		●	●	○	●	●	●
VCGT221MESI	VCGT1103M04MN-SI			.0156		●	●	○	●	●	●
VCGT222MESI	VCGT1103M08MN-SI			.0313		●	●	○	●	●	●
VCGT330MESI	VCGT1604M02MN-SI			.0039		●	●	○	●	●	●
VCGT331MESI	VCGT1604M04MN-SI			.0156		●	●	○	●	●	●

M = Negative nose radius tolerance (-0.0001" to -0.0004")

VCMT EFB

Rake Angle: 20°

Cutting Conditions:	T1500Z	T1500A
Continuous Cut	●	●
Medium Cut	●	●
Interrupted Cut		●

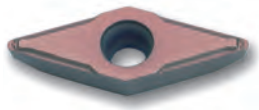


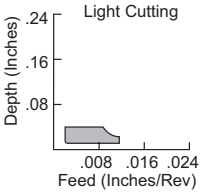
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z	T1500A
VCMT331EFB	VCMT160404N-FB	.375	.1875	.0156	.1732	●	●
VCMT332EFB	VCMT160408N-FB			.0313		●	●

VCMT EFP

Rake Angle: 10°

Cutting Conditions:	T2000Z	T1200A
Continuous Cut	●	●
Medium Cut	●	●
Interrupted Cut		●





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T2000Z	T1200A
VCMT331EFP	VCMT160404N-FP	.375	.1875	.0156	.1732	●	●
VCMT332EFP	VCMT160408N-FP			.0313		●	●

35° DIAMOND TYPE
POSITIVE INSERT

VC
- 35° Diamond Type
- 7°Relief
- With Insert Hole

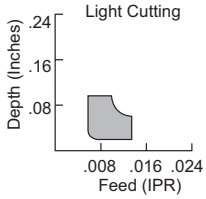
- **P** Steel
- **M** Stainless Steel
- **K** Cast Iron
- **N** Non-ferrous
- **S** Exotic Materials
- **H** Hardened Steel

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USALimited Availability Item
- ○ New Product Arriving 1st Quarter 2015

VCMT ENK

Rake Angle: 8°

Cutting Conditions:	Coated								Cermet								Uncoated							
Continuous Cut	●																							
Medium Cut	●	●																						
Interrupted Cut	●	●																						

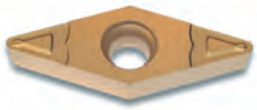


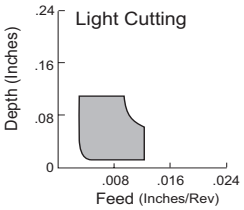
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P	AC830P
VCMT331ENK	VCMT160404N-SK	.375	.1875	.0156	.1732	●	●
VCMT332ENK	VCMT160408N-SK			.0313		●	●

VCMT ESU

Rake Angle: 8°

Cutting Conditions:	Coated										Cermet			Uncoated		
Continuous Cut	●	●		●	●	●	●	●								
Medium Cut	●	●	●	●	●	●	●	●	●							
Interrupted Cut		●	●		●	●	●		●							



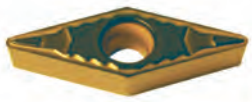


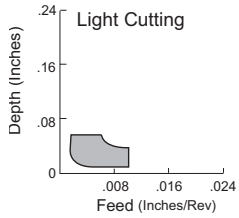
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC610M	AC6030M	AC6040M	AC630M	AC510U	AC520U
VCMT331ESU	VCMT160404N-SU	.375	.1875	.0156	.1732	●	●	●	●	○	○	●	●	●
VCMT332ESU	VCMT160408N-SU			.0313		●	●	●	●	○	○	●	●	●

VCMT ELU

Rake Angle: 12°

Cutting Conditions:	Coated										Cermet			Uncoated		
Continuous Cut	●	●	●	●	●	●					●	●				
Medium Cut	●	●	●	●	●	●					●	●	●			
Interrupted Cut		●	●	●	●	●							●			





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC700G	AC6030M	AC6040M	AC630M	T1500Z	T2000Z	T3000Z
VCMT331ELU	VCMT160404N-LU	.375	.1875	.0156	.1732	●	●	●	○	○	●	●	●	●
VCMT332ELU	VCMT160408N-LU			.0313		●	●	●	○	○	●	●	●	●

80° TRIGON TYPE
POSITIVE INSERT

WB
- 80° Trigon Type
- 5°Relief
- With Insert Hole

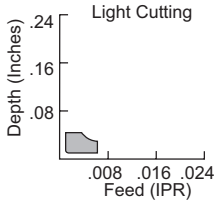
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

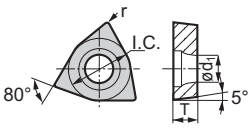
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USALimited Availability Item
- ○ New Product Arriving 1st Quarter 2015

WBGT FW

Rake Angle: 15°

Cutting Conditions:	Coated							Cermet					Uncoated				
Continuous Cut								●	●	●	●						
Medium Cut								◐	◐	◐	◐						
Interrupted Cut										◐	◐						



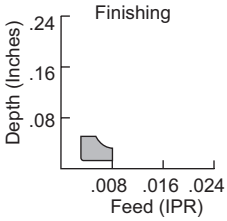


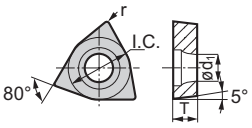
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z	T2000Z	T1500A	T1200A
WBGT520.5RFW	WBGT060102R-FW	.156	.0625	.0078	.090			★	
WBGT520.5LFW	WBGT060102L-FW			.0078		●		★	●
WBGT521RFW	WBGT060104R-FW			.0156				★	●
WBGT521LFW	WBGT060104L-FW			.0156		●	●	★	●
WBGT630.5RFW	WBGT080202R-FW	.1875	.094	.0078				★	●
WBGT630.5LFW	WBGT080202L-FW			.0078		★	●	★	●
WBGT631RFW	WBGT080204R-FW			.0156				★	●
WBGT631LFW	WBGT080204L-FW			.0156				★	●

WBGT FX

Rake Angle: 15°

Cutting Conditions:	Coated											Cermet			Uncoated		
Continuous Cut	●																
Medium Cut	◐																
Interrupted Cut	◐																





Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC530U
WBGT630.5RFX	WBGT080202R-FX	.1875	.094	.0078	.090	★
WBGT630.5LFX	WBGT080202L-FX			.0078		★
WBGT631RFX	WBGT080204R-FX			.0156		★
WBGT631LFX	WBGT080204L-FX			.0156		★

80° TRIGON TYPE
POSITIVE INSERT

WB
- 80° Trigon Type
- 5°Relief
- With Insert Hole

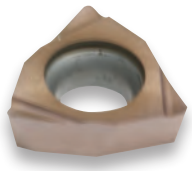
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-ferrous
- S Exotic Materials
- H Hardened Steel

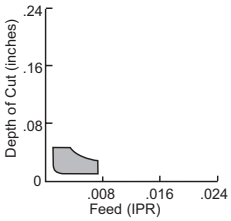
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USALimited Availability Item
- ○ New Product Arriving 1st Quarter 2015

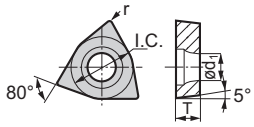
WBGT FY

Rake Angle: 15°

Cutting Conditions:	Coated				Cermet						Uncoated					
					T1500A	T1200A										
Continuous Cut					●	●										
Medium Cut					●	●										
Interrupted Cut					●	●										





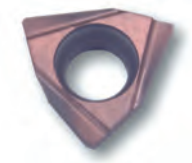


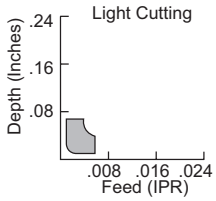
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500A	T1200A
WBGT520.5RFY	WBGT060102R-FY	.156	.0625	.0078	.090	★	●
WBGT520.5LFY	WBGT060102L-FY			.0078		★	●
WBGT521RFY	WBGT060104R-FY			.0156		★	●
WBGT521LFY	WBGT060104L-FY			.0156		●	●

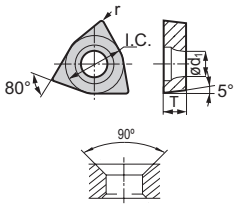
WBGT W

Rake Angle: 10°

Cutting Conditions:	Coated				Cermet				Uncoated					
					T1500Z	T1500A								
Continuous Cut					●	●								
Medium Cut					●	●								
Interrupted Cut						●								







Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	T1500Z	T1500A
WBGT520.5L	WBGT060102L-W	.156	.0625	.0078	.090		●
WBGT521R	WBGT060104R-W			.0156			★
WBGT521L	WBGT060104L-W			.0156		●	★

Swiss Tooling Inserts

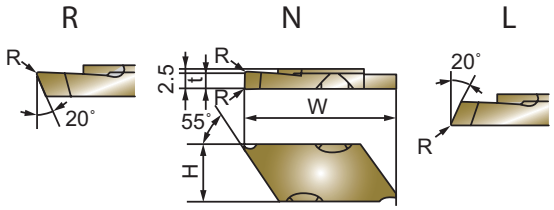
for precision turning applications:
- *Cut-off*
- *Back Turn*
- *BoringRoughing*
- *Boring Finishing*

P Steel
M Stainless Steel
K Cast Iron
N Non-ferrous
S Exotic Materials
H Hardened Steel

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USALimited Availability Item
○ New Product Arriving 1st Quarter 2015

CTL CTR

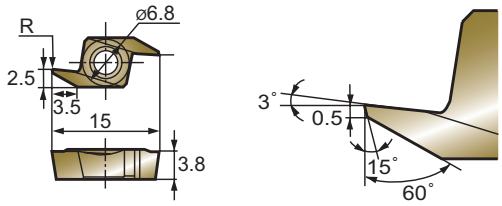
for SCT Type Holder (p. 200)



Sumitomo Catalog #	ISO Catalog #	t	R	W	H	Coated: AC530U	Cermet	Uncoated
CTL121005R	CTL121005R	1.0	0.05	19.0	7.0	★		
CTL121005N	CTL121005N					★		
CTL121005L	CTL121005L					★		
CTL121505R	CTL121505R	1.0				★		
CTL121505N	CTL121505N					★		
CTL121505L	CTL121505L					★		
CTL122005R	CTL122005R	2.0				★		
CTL122005N	CTL122005N					★		
CTL122005L	CTL122005L					★		
CTR121005R	CTR121005R	1.0				●		
CTR121005N	CTR121005N					●		
CTR121005L	CTR121005L					●		
CTR121505R	CTR121505R	1.5				●		
CTR121505N	CTR121505N					●		
CTR121505L	CTR121505L					●		
CTR122005R	CTR122005R	2.0				●		
CTR122005N	CTR122005N					●		

BTR

for SBT Type Holder (p. 200)



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	Coated: AC530U	Cermet: T1500A	Cermet: T1200A	Uncoated
BTR3505	BTR3505	6.8	3.8	0.05	●	★	★	
BTR3515	BTR3515			0.15	●	★	★	
BTR5505	BTR5505			0.05	★			
BTR5515	BTR5515			0.15	★			
BTR8005	BTR8005			0.05	★			
BTR8015	BTR8015			0.15	★			

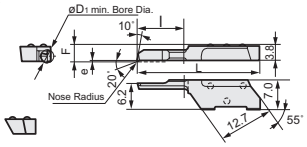
Swiss Tooling Inserts *(cont.)*

for precision turning applications:
- *Cut-off*
- *Back Turn*
- *Boring Rough*
- *Boring Finishing*

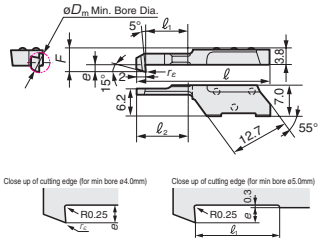
P Steel
M Stainless Steel
K Cast Iron
N Non-ferrous
S Exotic Materials
H Hardened Steel

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ New Product Arriving 1st Quarter 2015

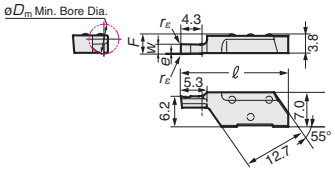
KBMXR



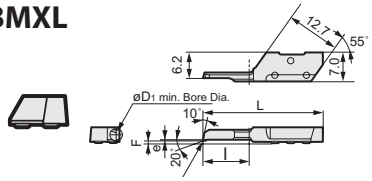
KBMZ



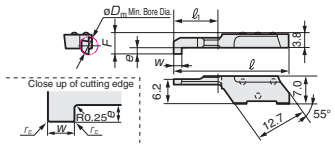
KBMFR



KBMXL



KBMG



Boring Rough Inserts *(p. 201 for holder)*								
Sumitomo Catalog #	Dimensions (mm)						ACZ310	DA2200
	Min. Bore Dia.	F	e	Nose Radius	L	ℓ		
KBMXR0103-05	1.0	4.00	0.20	0.05	20.5	3	▲	
KBMXR0103-20	1.0	4.00	0.20	0.20	20.5	3	★	
KBMXR01506-05	1.5	4.05	0.25	0.05	23.5	6	★	
KBMXR01506-20	1.5	4.05	0.25	0.20	23.5	6	★	
KBMXR0206-05	2.0	4.05	0.25	0.05	23.5	6	▲	
KBMXR0206-20	2.0	4.05	0.25	0.20	23.5	6	★	
KBMXR0311-05	3.0	4.10	0.30	0.05	28.5	11	★	
KBMXR0311-10	3.0	4.10	0.30	0.05	28.5	11		★
KBMXR0311-20	3.0	4.10	0.30	0.20	28.5	11	★	
KBMXR0411-05	4.0	4.30	0.50	0.05	28.5	11	▲	
KBMXR0411-10	4.0	4.30	0.50	0.05	28.5	11		★
KBMXR0411-20	4.0	4.30	0.50	0.20	28.5	11	▲	
KBMXR0511-05	5.0	4.50	0.70	0.05	28.5	11	▲	
KBMXR0511-10	5.0	4.50	0.70	0.05	28.5	11		★
KBMXR0511-20	5.0	4.50	0.70	0.20	28.5	11	▲	
KBMXR0520-05	5.0	4.50	0.70	0.05	37.5	20	★	
KBMXR0520-20	5.0	4.50	0.70	0.20	37.5	20	★	

Boring Rough Inserts *(p. 201 for holder)*							
Sumitomo Catalog #	Dimensions (mm)						ACZ310
	Min. Bore Dia.	F	e	Nose Radius	L	ℓ	
KBMXL0206-05R	2.0	4.05	0.25	0.05	23.5	6	▲
KBMXL0206-20R	2.0	4.05	0.25	0.05	23.5	6	★
KBMXL0311-05	3.0	4.10	0.30	0.05	28.5	11	★
KBMXL0311-20	3.0	4.10	0.30	0.20	28.5	11	★
KBMXL0411-05R	4.0	4.30	0.50	0.05	28.5	11	▲
KBMXL0411-20R	4.0	4.30	0.50	0.20	28.5	11	▲
KBMXL0511-05	5.0	4.50	0.70	0.05	28.5	11	★
KBMXL0511-20	5.0	4.50	0.70	0.20	28.5	11	★
KBMXL0520-05	5.0	4.50	0.70	0.05	37.5	20	★
KBMXL0520-20	5.0	4.50	0.70	0.20	37.5	20	★

BackBoring *(p. 201 for holder)*								
Sumitomo Catalog #	Dimensions (mm)							ACZ310
	Min. Bore Dia.	F	e	Nose Radius	L	ℓ1	ℓ2	
KBMZR0411-05	4.0	5.10	1.10	0.05	28.5	9	11	★
KBMZR0411-20				0.20				★
KBMZR0511-05	5.0	5.10	1.30	0.05	28.5	9	11	★
KBMZR0511-20				0.20				★

Boring Finishing Inserts *(p. 201 for holder)*								
Sumitomo Catalog #	Dimensions (mm)						ACZ310	ACZ150
	Min. Bore Dia.	F	e	Nose Radius	L	ℓ		
KBMXR0103-05T	1.0	4.00	0.20	0.05	20.5	3	▲	
KBMXR0103-20T	1.0	4.00	0.20	0.20	20.5	3		★
KBMXR01506-05T	1.5	4.05	0.25	0.05	23.5	6		★
KBMXR01506-20T	1.5	4.05	0.25	0.20	23.5	6		★
KBMXR0206-05T	2.0	4.05	0.25	0.05	23.5	6	▲	
KBMXR0206-20T	2.0	4.05	0.25	0.20	23.5	6		★
KBMXR0311-05T	3.0	4.10	0.30	0.05	28.5	11		★
KBMXR0311-20T	3.0	4.10	0.30	0.20	28.5	11		★
KBMXR0411-05T	4.0	4.30	0.50	0.05	28.5	11	▲	
KBMXR0411-20T	4.0	4.30	0.50	0.20	28.5	11	▲	
KBMXR0511-05T	5.0	4.50	0.70	0.05	28.5	11	▲	
KBMXR0511-20T	5.0	4.50	0.70	0.20	28.5	11	▲	

T = Free cutting

End Grooving *(p. 201 for holder)*							
Sumitomo Catalog #	Dimensions (mm)						ACZ150
	Min. Bore Dia.	F	e	Nose Radius	L	Maximum groove depth	
KBMFR0615-05	6.0	4.00	0.20	0.05	21.8	4.0	★
KBMFR0620-05	6.0	4.00	0.20	0.05	21.8	4.0	★
KBMFR0630-05	6.0	4.00	0.20	0.05	21.8	4.0	★

InternalGrooving *(p. 201 for holder)*							
Sumitomo Catalog #	Dimensions (mm)						ACZ310
	Min. Bore Dia.	F	e	Nose Radius	L	ℓ	
KBMGR0411-05	4.0	4.90	1.10	0.05	28.5	11	★
KBMGR0411-10				0.10			★
KBMGR0511-05	5.0	5.10	1.30	0.05	28.5	11	★
KBMGR0511-10				0.10			★

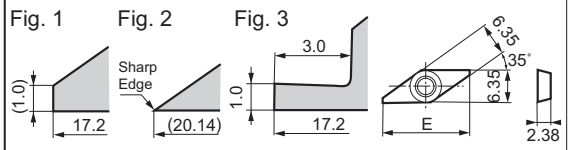
Swiss Tooling Inserts

for precision turning applications:
- *Cut-off*
- *Back Turn*
- *BoringRoughing*
- *Boring Finishing*

P Steel
M Stainless Steel
K Cast Iron
N Non-ferrous
S Exotic Materials
H Hardened Steel

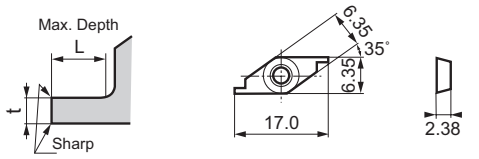
● USA Stocked Item
★ Worldwide Warehouse Item
▲ USALimited Availability Item
○ New Product Arriving 1st Quarter 2015

Blank Inserts *for SPB Type holder (p. 201)* — *Uncoated*



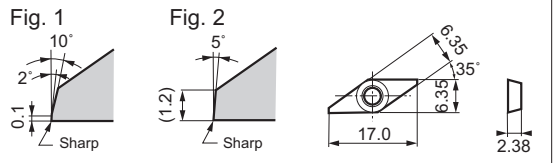
Sumitomo Catalog #	Dim. E (mm)	Application	Fig.	BL130
PBVX1102R-NB	17.20	General	1	●
PBVX1102R-SB	20.14	Sharp Edge	2	●
PBVX1102R-BB	14.20	Special	3	●

Grooving Inserts *for SPB Type holder (p. 201)* — *Uncoated*



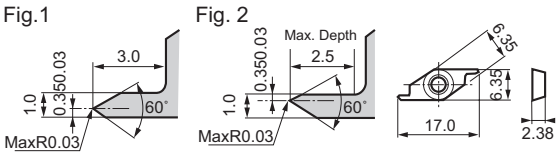
Sumitomo Catalog #	Dimensions (mm)		BL130
	Groove Depth	t	
PBVG1102R-030	0.5	0.3	●
PBVG1102R-050	1.0	0.5	●
PBVG1102R-100	2.0	1.0	●

Turning Inserts *for SPB Type holder (p. 201)* — *Uncoated*



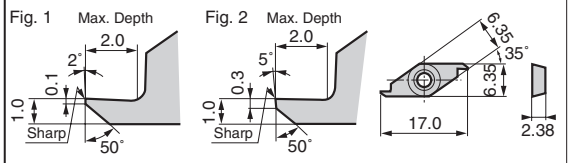
Sumitomo Catalog #	Dim. Cutter Edge (mm)	Wiper Edge	Fig.	BL130
PBVFW1102R	1.0	Yes	1	●
PBVFN1102R	1.0	No	2	●

Threading Inserts *for SPB Type holder (p. 201)* — *Uncoated*



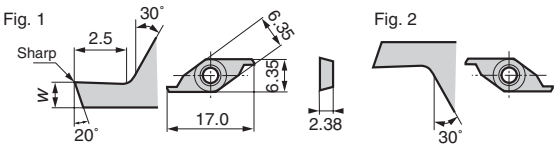
Sumitomo Catalog #	Dimension Pitch (mm)	Fig.	BL130
PBVTF1102R	0.2 ~ 0.5	1	●
PBVTB1102R	0.2 ~ 0.5	2	●

Turning Inserts *for SPB Type holder (p. 201)* — *Uncoated*



Sumitomo Catalog #	Dim. Cutter Edge (mm)	Wiper Edge	Fig.	BL130
PBVBN1102R	1.0	Yes	1	★
PBVBW1102R	1.0	No	2	★

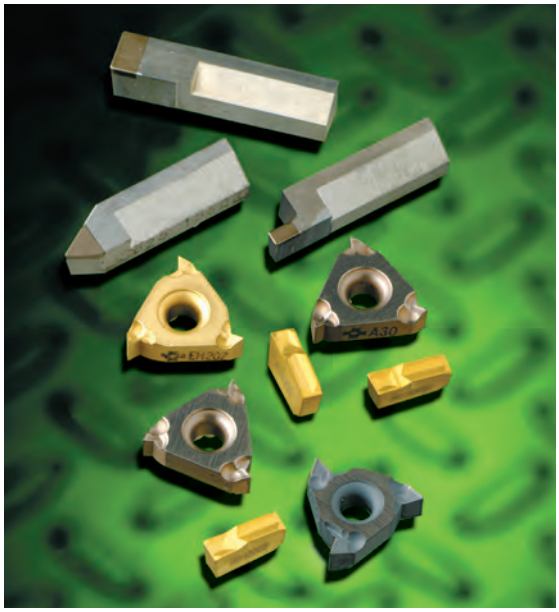
Turning Inserts *for SPB Type holder (p. 201)* — *Uncoated*



Sumitomo Catalog #	Dim. Cutter Edge (mm)	Wiper Edge	Fig.	BL130
PBVC1102L-50	1.0	Yes	1	★
PBVC1102R-50	1.0	No	2	★

Grooving, Cut-off & Threading Inserts

Pages 126-131



GROOVING, CUT-OFF & THREADING INSERTS **PAGES**

GND SERIES

Grooving Toolholders

GND Series - Inserts

Fig. 1

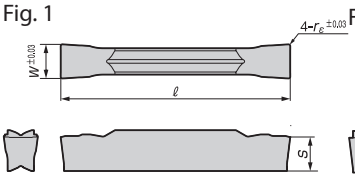
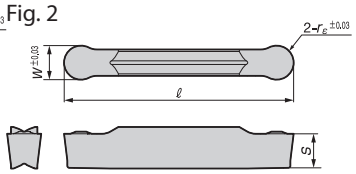
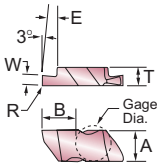


Fig. 2



Type		Cat. No.	Coated Carbide				Dimensions (inch)					Figure
			S		P	K						
			AC520U	AC530U	AC830P	AC425K	W	rε	ℓ	Seat	S	
Deep Grooving Cut Off	General Feed GG Type	GCMN2002-GG	●	●	●	●	.078	.0078	.831	2	.142	1
		GCMN2094R0.5-GG	●	●	●	●	.094	.0078	.831	2	.142	
		GCMN3002-GG	●	●	●	●	.118	.0078	.831	3	.150	
		GCMN3004-GG	●	●	●	●	.118	.0156	.831	3	.150	
		GCMN3125R0.5-GG	●	●	●	●	.125	.0078	.831	3	.150	
		GCMN4002-GG	●	●	●	●	.157	.0078	1.039	4	.157	
		GCMN4004-GG	●	●	●	●	.157	.0156	1.039	4	.157	
		GCMN5187R0.5-GG	●	●	●	●	.187	.0078	1.039	5	.161	
		GCMN5002-GG	●	●	●	●	.197	.0078	1.039	5	.161	
		GCMN5004-GG	●	●	●	●	.197	.0156	1.039	5	.161	
		GCMN6002-GG	●	●	●	●	.236	.0078	1.039	6	.177	
		GCMN6004-GG	●	●	●	●	.236	.0156	1.039	6	.177	
		GCMN6250R0.5-GG	●	●	●	●	.250	.0078	1.039	6	.177	
		GCMN6250R1.0-GG	●	●	●	●	.250	.0156	1.039	6	.177	
	Low Feed GL Type	GCMN2002-GL	●	●	●	●	.078	.0078	.831	2	.142	
		GCMN2094R0.5-GL	●	●	●	●	.094	.0078	.831	2	.142	
		GCMN3002-GL	●	●	●	●	.118	.0078	.831	3	.150	
		GCMN3125R0.5-GL	●	●	●	●	.125	.0078	.831	3	.150	
		GCMN4002-GL	●	●	●	●	.157	.0078	1.039	4	.157	
		GCMN5187R0.5-GL	●	●	●	●	.187	.0078	1.039	5	.161	
		GCMN5002-GL	●	●	●	●	.197	.0078	1.039	5	.161	
		GCMN6002-GL	●	●	●	●	.236	.0078	1.039	6	.177	
		GCMN6250R0.5-GL	●	●	●	●	.250	.0078	1.039	6	.177	
Multi function (traversing)	General Feed MG Type	GCMN3004-MG	●	●	●	●	.118	.0156	.831	3	.150	
		GCMN3125R1.0-MG	●	●	●	●	.125	.0156	.831	3	.150	
		GCMN4008-MG	●	●	●	●	.157	.0312	1.039	4	.157	
		GCMN5187R2.0-MG	●	●	●	●	.187	.0312	1.039	5	.161	
		GCMN5008-MG	●	●	●	●	.197	.0312	1.039	5	.161	
		GCMN6008-MG	●	●	●	●	.236	.0312	1.039	6	.177	
		GCMN6250R2.0-MG	●	●	●	●	.250	.0312	1.039	6	.177	
	Low Feed ML Type	GCMN3002-ML	●	●	●	●	.118	.0078	.831	3	.150	
		GCMN3125R0.5-ML	●	●	●	●	.125	.0078	.831	3	.150	
		GCMN4004-ML	●	●	●	●	.157	.0156	1.039	4	.157	
		GCMN5187R1.0-ML	●	●	●	●	.187	.0156	1.039	5	.161	
		GCMN5004-ML	●	●	●	●	.197	.0156	1.039	5	.161	
		GCMN6004-ML	●	●	●	●	.236	.0156	1.039	6	.177	
		GCMN6250R1.0-ML	●	●	●	●	.250	.0156	1.039	6	.177	
Profiling	General Feed RG Type	GCMN3015-RG	●	●	●	●	.118	.059	.831	3	.150	2
		GCMN3125-RG	●	●	●	●	.125	.0625	.831	3	.150	
		GCMN4020-RG	●	●	●	●	.157	.078	1.039	4	.157	
		GCMN5187-RG	●	●	●	●	.187	.0938	1.039	5	.161	
		GCMN5025-RG	●	●	●	●	.197	.098	1.039	5	.161	
		GCMN6030-RG	●	●	●	●	.236	.118	1.039	6	.177	
		GCMN6250-RG	●	●	●	●	.250	.125	1.039	6	.177	

Type		Cat. No.	Coated Carbide								Dimensions (inch)					Figure
			S				P		K							
			AC520U		AC530U		AC830P		AC425K		W	rε	ℓ	Seat	S	
			R	L	R	L	R	L	R	L						
Cut-off (Handed)	CG-05 Type	GCM_2002-CG-05	●	●	●	●	●	●	●	●	.078	.0078	.831	2	.142	1
		GCM_3002-CG-05	●	●	●	●	●	●	●	●	.118	.0078	.831	3	.150	
		GCM_4002-CG-05	●	●	●	●	●	●	●	●	.157	.0078	1.039	4	.157	



● USA Stocked Item

★ Worldwide Warehouse Item

▲ USA Limited Availability Item

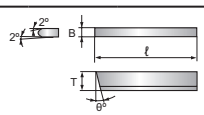
SumiNotch GROOVING INSERTS

Left				Dimension (in)							Right				
	Coated	CBN										Coated	CBN		Ceramic
SG	EH520V	BN2000	BN350	W ± .001	R	E ± .001	T	A	B	Gage Dia.	SG	EH520V	BN2000	BN350	SN2000K
SG-2031L	●			.031	.002/.005	.050	.150	.219	.2700	.1875	SG-2031R	●			
SG-2041L	●			.041	.002/.005	.050					SG-2041R	●			
SG-2047L	●			.047	.002/.005	.050					SG-2047R	●			
SG-2058L	●			.058	.005/.010	.050					SG-2058R	●			
SG-2062L	●			.062	.005/.010	.110					SG-2062R	●			
SG-2094L	●			.094	.005/.010	.110					SG-2094R	●			
SG-2125L	●			.125	.005/.010	.110					SG-2125R	●			
SG-3047L	●			.047	.005/.010	.120	.195	.344	.4050	.3750	SG-3047R	●	●	●	●
SG-3062L	●	●	●	.062	.005/.010	.120					SG-3062R	●	●	●	●
SG-3072L	●			.072	.005/.010	.120					SG-3072R	●			
SG-3088L	●			.088	.005/.010	.180					SG-3088R	●			
SG-3094L	●	●	●	.094	.005/.010	.180					SG-3094R	●	●	●	●
SG-3097L	●			.097	.005/.010	.180					SG-3097R	●			
SG-3105L	●			.105	.005/.010	.180					SG-3105R	●			
SG-3110L	●			.110	.005/.010	.180					SG-3110R	●			
SG-3122L	●			.122	.005/.010	.180					SG-3122R	●			
SG-3125L	●	●	●	.125	.005/.010	.180					SG-3125R	●	●	●	●
SG-3142L	●			.142	.005/.010	.180					SG-3142R	●			
SG-3156L	●			.156	.005/.010	.180					SG-3156R	●			
SG-3178L	●			.178	.005/.010	.180					SG-3178R	●			
SG-3185L	●			.185	.020/.025	.180					SG-3185R	●			
SG-3189L	●			.189	.020/.025	.180					SG-3189R	●		●	

Left		Dimension (in)							Right	
	Coated									Coated
SG-CB	EH520V	W ± .001	R	E ± .001	T	A	B	Gage Dia.	SG	EH520V
SG-2047L-CB	●	.047	.002/.005	.050	.150	.219	.2700	.1875	SG-2047R-CB	●
SG-2062L-CB	●	.062	.005/.010	.110					SG-2062R-CB	●
SG-2078L-CB	●	.078	.005/.010	.110					SG-2078R-CB	●
SG-2094L-CB	●	.094	.005/.010	.110					SG-2094R-CB	●
SG-2125L-CB	●	.125	.005/.010	.110					SG-2125R-CB	●
SG-3047L-CB	●	.047	.005/.010	.075	.195	.344	.4050	.3750	SG-3047R-CB	●
SG-3062L-CB	●	.062	.005/.010	.094					SG-3062R-CB	●
SG-3072L-CB	●	.072	.005/.010	.094					SG-3072R-CB	●
SG-3078L-CB	●	.078	.005/.010	.094					SG-3078R-CB	●
SG-3088L-CB	●	.088	.005/.010	.094					SG-3088R-CB	●
SG-3094L-CB	●	.094	.005/.010	.150					SG-3094R-CB	●
SG-3189L-CB	●	.189	.020/.025	.150					SG-3189R-CB	●

GROOVING INSERTS FOR CF HOLDERS

CFB

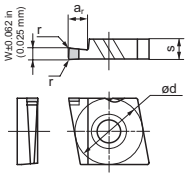


Sumitomo Catalog No.	Uncoated	Dimensions (in)		Holder
	G10E	B	T	
CFB3	●	.118	.1875	CF3-3
CFB3T	●			

Indexable Inserts for Grooving

BNC30G

BN2000



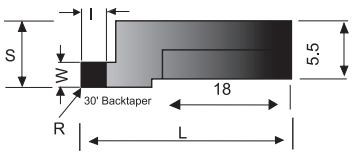
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item

GROOVING INSERTS FOR GWB HOLDERS

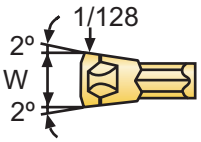
CGA	Coated BNC30G	Uncoated BN2000	Dimensions W ± .001 in. ± .025 (mm)	a_r in (mm)	r in (mm)	ød in (mm)	s in (mm)
CGAR4062	●	●	.062 (1.575)	.1378 (3.5)	.0078 (.2)	.625 (15.875)	.1875 (4.76)
CGAL4062							
CGAR4094	●	●	.094 (2.388)	.1575 (4.0)			
CGAL4094							
CGAR4125	●	●	.125 (3.175)	.1969 (5.0)			
CGAL4125							
CGAR6189	●	●	.189 (4.801)				.25 (6.35)
CGAL6189							
CGAR1504150	●		.0591 (1.5)	.1378 (3.5)	.0078 (.2)	.625 (15.875)	.1875 (4.76)
CGAL1504150		●					
CGAR1504200	●	●	.0787 (2.0)				
CGAL1504200							
CGAR1504250	●		.0984 (2.5)	.1575 (4.0)			
CGAL1504250		●					
CGAR1504300	●	●	.1181 (3.0)				
CGAL1504300							
CGAR1504350	●		.1378 (3.5)	.1969 (5.0)			
CGAL1504350							
CGAR1504400	●	●	.1575 (4.0)				
CGAL1504400							
CGAR1504450	●		.1772 (4.5)				
CGAL1504450							
CGAR1506500	●	●	.1969 (5.0)				.25 (6.35)
CGAL1506500							
CGAR1506550	●		.2165 (5.5)				
CGAL1506550							
CGAR1506600	●	●	.2362 (6.0)				
CGAL1506600							

GROOVING INSERTS FOR BNGG HOLDERS

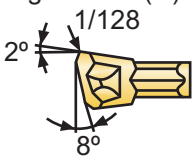
BNGNT	CBN BN250	CBN BN350	Dimensions (mm) W	I	R	L	S
BNGNT0200L	●		2.0	4.0	0.2	25.0	6.0
BNGNT0200R	●	●					
BNGNT0250L	●		2.5	4.0	0.2	25.0	6.0
BNGNT0250R	●						
BNGNT0300L	●		3.0	5.0	0.4	25.0	6.0
BNGNT0300R	●	●					
BNGNT0400L	●		4.0	6.0	0.4	26.0	6.0
BNGNT0400R	●	●					
BNGNT0500L			5.0	6.0	0.4	26.0	6.0
BNGNT0500R	●						
BNGNT0600L			6.0	7.0	0.4	27.0	6.0
BNGNT0600R	●						



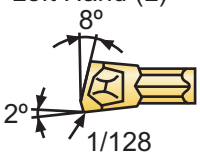
Neutral (N)



Right Hand (R)



Left Hand (L)



- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item

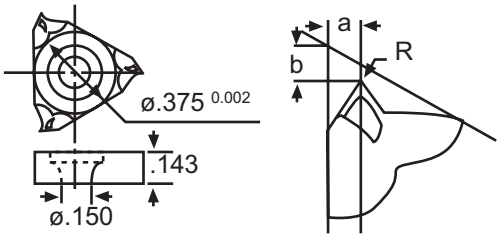
WCF□○□
General Steel

WCF□○A
Hard-to-cut metals
Slow feed

WCF□○B
Cast iron
Aluminum alloy

Catalog Number	Coated AC830P	W	Catalog Number	Coated AC225	Cermet T130A	Uncoated A30	Uncoated G10E	W	Catalog Number	Uncoated G10E	W
WCFN2T	●	.0787									
WCFR2T	●										
WCFN3	●	.1181	WCFN3A	●	●	●	●	.1181	WCFN3B	●	.1181
WCFR3	●		WCFR3A	●	●		▲		WCFR3B	●	
WCFL3	●		WCFL3A	●	●	●	●		WCFL3B	●	
WCFN4	●	.1575	WCFN4A	●	●		●	.1575	WCFN4B	●	.1575
WCFR4	●		WCFR4A	●					WCFR4B		
WCFL4	●		WCFL4A						WCFL4B	●	
WCFN5	●	.1969	WCFN5A	●	●		●	.1969	WCFN5B	●	.1969
WCFR5	●		WCFR5A	●					WCFR5B		
WCFL5	●		WCFL5A						WCFL5B		

Threading Inserts



● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item

EXTERNAL LAYDOWN - Full Profile (ISO Metric)

Sumitomo Catalog Number	Pitch (mm)	Threads/ in	Stock Grade		R	Included Angle θ°	a	b
			Coated	Cermet				
			AC225	T130A				
TME100R	1.00	-	●	●	.0050	60	.031	.047
TME125R	1.25	-	●	●	.0067			
TME150R	1.50	-	●	●	.0080		.039	
TME175R	1.75	-	●	●	.0094		.047	
TME200R	2.00	-	●	●	.0106		.055	
TME250R	2.50	-	●	●	.0140			
TME300R	3.00	-	●	●	.0165		.071	

Full Profile (Inch)

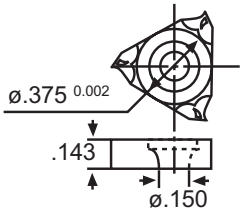
Sumitomo Catalog Number	Pitch (mm)	Threads/ in	Stock Grade		R	Included Angle θ°	a	b
			Coated	Cermet				
			AC225	T130A				
TUE24R	-	24	●	●	.0047	60	.031	.047
TUE20R	-	20	●	●	.0059			
TUE18R	-	18	●	●	.0067		.039	
TUE16R	-	16	●	●	.0079		.047	
TUE14R	-	14	●	●	.0091			
TUE12R	-	12	●	●	.0110		.055	
TUE08R	-	8	●	●	.0169		.071	

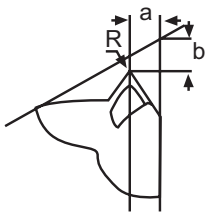
Partial Profile (60°)

Sumitomo Catalog Number	Pitch (mm)	Threads/ in	Stock Grade		R	Included Angle θ°	a	b
			Coated	Cermet				
			AC225	T130A				
TME1020R	1.0 ~ 2.0	24 ~ 12	●	●	.005	60	.043	.047
TME1530R	1.50 ~ 3.00	16 ~ 8	●	●	.008		.063	.039

Partial Profile (55°)

Sumitomo Catalog Number	Inch	Threads/ in	Stock Grade		R	Included Angle θ°	a	b
			Coated	Cermet				
			AC225	T130A				
TWE1410R	-	14 ~ 10	●	●	.009	55	.055	.047
TWE2416R	-	24 ~ 16	●	●	.005			





● USA Stocked Item

★ Worldwide Warehouse Item

▲ USA Limited Availability Item

INTERNAL LAYDOWN - Full Profile (ISO Metric)

Sumitomo Catalog Number	Pitch (mm)	Threads/ in	Stock Grade		R	Included Angle θ°	a	b
			Coated AC225	Cermet T130A				
TMI100R	1.00	-	●		.0024	60	.031	.047
TMI125R	1.25	-	●		.0030			
TMI150R	1.50	-	●	●	.0035		.039	
TMI175R	1.75	-	●		.0043		.047	
TMI200R	2.00	-	●	●	.0050		.055	
TMI250R	2.50	-	●		.0063			
TMI300R	3.00	-	●	●	.0080		.071	

Partial Profile (60°)

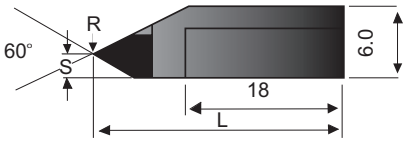
Sumitomo Catalog Number	Pitch (mm)	Threads/ in	Stock Grade		R	Included Angle θ°	a	b
			Coated AC225	Cermet T130A				
TMI1020R	1.0 ~ 2.0	24 ~ 12	●	●	.0024	60	.039	.047
TMI1530R	1.50 ~ 3.00	16 ~ 8	●	●	.0035		.060	

Partial Profile (NPT)

Sumitomo Catalog Number	Pitch (mm)	Threads/ in	Stock Grade		R	Included Angle θ°	a	b
			Coated AC225	Cermet T130A				
TNPTI1115R	-	11.5	●	●	.0004	60	.059	.043

THREADING INSERTS FOR BNGG HOLDERS

Sumitomo Catalog Number	Pitch (mm)	Threads/ in	Stock Grade	R	Included Angle θ°	a	b
			CBN BN250				
BNTT1020R	1.0 ~ 2.0	-	●	.0024	60	.039	.047
BNTT1530R	1.50 ~ 3.00	-	●	.0035		.060	



SUMITOMO

CARBIDE - CBN - DIAMOND

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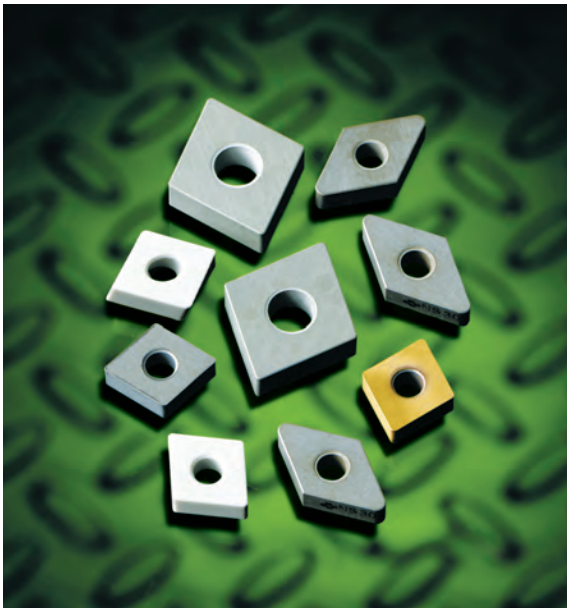
Ceramic Inserts

Pages 134-137



SN2000K* → Finishing and roughing of cast iron

SN2100K* → Interrupted turning /milling of cast iron

NB90S → High speed finishing of hardened steels

WX2000 → High speed turning of super alloys

***SN2000K** & **SN2100K** grades not shown in stock can be made to order. Call for price and delivery.

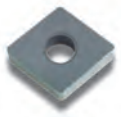
K Cast Iron
S Exotic Materials
H Hardened Steel

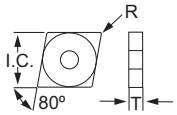
● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item

■ NEGATIVE

CNMA

Cutting Conditions:	
Continuous Cut	●
Medium Cut	●
Interrupted Cut	

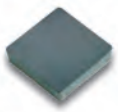


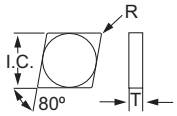


Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K
CNMA432	.500	.1875	.0313	.2031	●
CNMA433			.0469		●
CNMA434			.0625		●
CNMA454		.3125	.0625		●
CNMA543	.625	.250	.0469	.250	●
CNMA544			.0625		●

CNMN

Cutting Conditions:	
Continuous Cut	●
Medium Cut	●
Interrupted Cut	

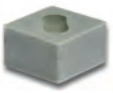


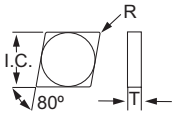


Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K
CNMN434	.500	.1875	.0625	-	●

CNGX

Cutting Conditions:	
Continuous Cut	●
Medium Cut	●
Interrupted Cut	

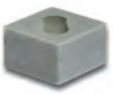


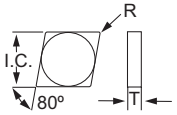


Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K
CNGX452	.500	.3125	.0313	-	●

CNMX

Cutting Conditions:	
Continuous Cut	●
Medium Cut	●
Interrupted Cut	

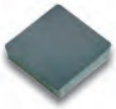


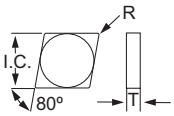


Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K
CNMX453	.500	.3125	.0469	-	●
CNMX454	.500	.3125	.0625		●

CNG

Cutting Conditions:	Grades		
Continuous Cut	●	●	●
Medium Cut	●	●	
Interrupted Cut		●	

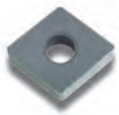


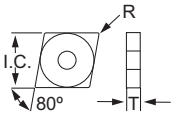


Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	WX2000	NB90S
CNG432	.500	.1875	.0313	-	●	●	●
CNG433			.0469		●	●	●
CNG434			.0625		●	●	
CNG452		.3125	.0313		●		●
CNG453			.0469		●		●
CNG454			.0625		●		●
CNG643	.750	.250	.0469				●

CNGA

Cutting Conditions:	Grades			
Continuous Cut	●		●	●
Medium Cut	●	●	●	
Interrupted Cut		●	●	

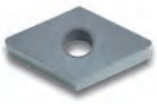


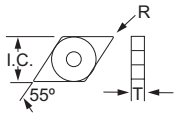


Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
CNGA431	.500	.1875	.0156	.2031				●
CNGA432			.0313		●	●	●	●
CNGA433			.0469		●	●	●	●
CNGA434			.0625		●	●	●	●
CNGA542	.625	.250	.0313	.250	●			
CNGA543			.0469		●			●
CNGA544			.0625		●			
CNGA643	.750		.0469	.3126	●			
CNGA644			.0625		●			

DNGA

Cutting Conditions:	Grades		
Continuous Cut	●	●	●
Medium Cut	●	●	
Interrupted Cut		●	





Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	WX2000	NB90S
DNGA432	.500	.1875	.0313	.2031	●	●	●
DNGA433			.0469		●	●	●
DNGA434			.0625		●		●

SN2000K* → Finishing and roughing of cast iron

SN2100K* → Interrupted turning /milling of cast iron

NB90S → High speed finishing of hardened steels

WX2000 → High speed turning of super alloys

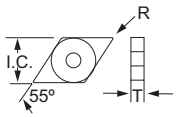
*__SN2000K__ & __SN2100K__ grades not shown in stock can be made to order. Call for price and delivery.

K Cast Iron
S Exotic Materials
H Hardened Steel

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item

DNMX

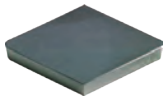
Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut

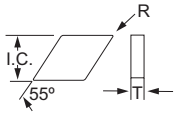


Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K
DNMX354	.375	.3125	.0625	.2031	●
DNMX454	.500		.0625		●

DNG

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut



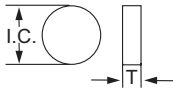


Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K
DNG432	.500	.1875	.0313	.2031	●
DNG433			.0469		●
DNG434			.0625		●

RNG

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut

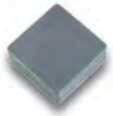
Grades

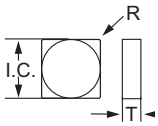


Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
RNG32	.375	.125	-	-	●	●		●
RNG33		.1875						●
RNG42	.500	.125			●	●		
RNG43		.1875			●	●	●	●
RNG45		.3125			●	●	●	●
RNG55	.625				●	●		
RNG65	.750						●	

SNMN

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut

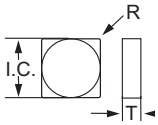




Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K
SNMN434	.500	.1875	.0625	.2031	●

SNMX

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut

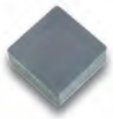


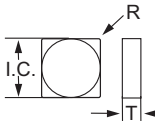
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K
SNMX453	.500	.3125	.0469	-	●
SNMX454	.500		.0625		●
SNMX554	.625		.0625		●

SNG

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut

Grades



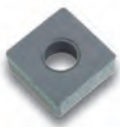


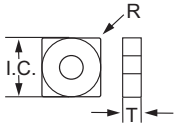
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000
SNG432	.500	.1875	.0313	-	●	●	●
SNG433			.0469		●	●	●
SNG434			.0625		●	●	

SNGA

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut

Grades





Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	WX2000	NB90S
SNGA432	.500	.1875	.0313	.2031	●	●	●
SNGA433			.0469		●	●	●
SNGA434			.0625		●		

SN2000K* → Finishing and roughing of cast iron

SN2100K* → Interrupted turning /milling of cast iron

NB90S → High speed finishing of hardened steels

WX2000 → High speed turning of super alloys

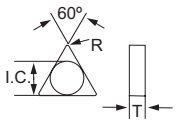
***SN2000K** & **SN2100K** grades not shown in stock can be made to order. Call for price and delivery.

K Cast Iron
S Exotic Materials
H Hardened Steel

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item

TNG

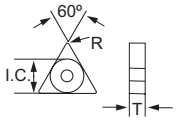
Cutting Conditions:	Grades	
Continuous Cut	●	●
Medium Cut	●	
Interrupted Cut		



Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	NB90S
TNG321	.375	.125	.0156	-		●
TNG322			.0313			●
TNG331		.1875	.0156			●
TNG332			.0313		●	●
TNG333			.0469		●	
TNG334			.0625		●	
TNG352		.3125	.0313		●	
TNG353			.0469		●	
TNG432	.500	.3125	.0313		●	●
TNG433			.0469		●	●
TNG434			.0625		●	
TNG436			.0938		●	

TNGA

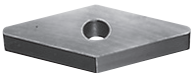
Cutting Conditions:	Grades	
Continuous Cut	●	●
Medium Cut	●	
Interrupted Cut		

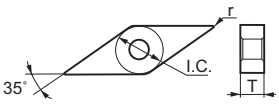


Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	NB90S
TNGA321	.375	.125	.0156	.150		●
TNGA322			.0313			●
TNGA332		.1875	.0313		●	●
TNGA333			.0469		●	●
TNGA334			.0625		●	
TNGA432	.500		.0313	.2031	●	●
TNGA433			.0469		●	●
TNGA434			.0625		●	●
TNGA436			.0938		●	
TNGA438			.1250		●	
TNGA543	.625	.250	.0469	.250	●	
TNGA544			.0625		●	

VNGA

Cutting Conditions:	Grades		
Continuous Cut	●	●	●
Medium Cut	●	●	
Interrupted Cut		●	

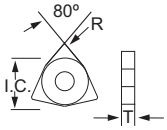




Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	WX2000	NB90S
VNGA331	.375	.1875	.0156	.150			●
VNGA332			.0313		●	●	●
VNGA333			.0469		●	●	●
VNGA432	.500		.0313	.2031			●
VNGA433			.0469				●

WNGA

Cutting Conditions:	Grades		
Continuous Cut	●		●
Medium Cut	●	●	●
Interrupted Cut		●	●

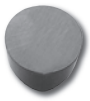


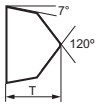
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000
WNGA432	.500	.1875	.0313	.2031	●	●	●
WNGA433			.0469		●		●

■ POSITIVE

RCGX

Cutting Conditions:	Grades	
Continuous Cut	●	●
Medium Cut	●	●
Interrupted Cut		●

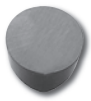


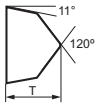


Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	WX2000
RCGX35	.375	.3125	-	-	●	
RCGX45	.500				●	●

RPGX

Cutting Conditions:	
Continuous Cut	●
Medium Cut	●
Interrupted Cut	●





Sumitomo Catalog #	I.C.	T	r	Hole Dia.	WX2000
RPGX35	.375	.3125	-	-	●
RPGX45	.500				●

SN2000K* → Finishing and roughing of cast iron

SN2100K* → Interrupted turning /milling of cast iron

NB90S → High speed finishing of hardened steels

WX2000 → High speed turning of super alloys

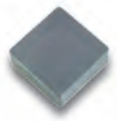
K Cast Iron
S Exotic Materials
H Hardened Steel

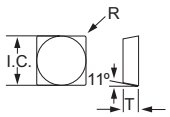
● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item

*SN2000K & SN2100K grades not shown in stock can be made to order. Call for price and delivery.

SPG

Cutting Conditions:	SN2000K	SN2100K	NB90S
Continuous Cut	○		●
Medium Cut	◐	◐	
Interrupted Cut		◐	

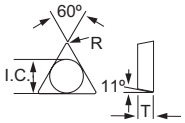




Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	NB90S
SPG422	.500	.125	.0313	-	●	●	●
SPG423			.0469			●	
SPG424			.0625			●	
SPG432		.1875	.0313		●	●	
SPG433			.0469		●	●	
SPG632	.750		.0313			●	
SPG633			.0469			●	
SPG634			.0625			●	

TPG

Cutting Conditions:	SN2000K	SN2100K	NB90S
Continuous Cut	○		●
Medium Cut	◐	◐	
Interrupted Cut		◐	

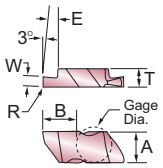


Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	NB90S
TPG221	.250	.125	.0156	-			●
TPG222			.0313				●
TPG321	.375		.0156				●
TPG322			.0313		●	●	●
TPG323			.0156		●	●	●
TPG332		.1875	.0313				●
TPG432	.500		.0313		●	●	●
TPG433			.0469		●	●	●

For GROOVING

SG

Cutting Conditions:	SN2000K	SN2100K	WX2000	NB90S
Continuous Cut	○		●	●
Medium Cut	◐	◐	◐	
Interrupted Cut		◐	◐	

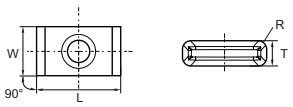


Sumitomo Catalog #	W ± .001	R	E ± .001	T	A	B	Gage Dia.	SN2000K	SN2100K	WX2000	NB90S
SG-3047R	.047	.005/.010	.075	.195	.344	.4050	.3750	●			
SG-3062R	.062	.005/.010	.094					●			
SG-3094R	.094	.005/.010	.150					●			
SG-3125R	.125	.005/.010	.150					●			

For MILLING

LNGX

Cutting Conditions:	SN2000K	SN2100K	WX2000	NB90S
Continuous Cut	○		●	●
Medium Cut	◐	◐	◐	
Interrupted Cut		◐	◐	



Sumitomo Catalog #	L	W	T	R	SN2000K	SN2100K	WX2000	NB90S
LNGX160516PNFN-W	.625	.375	.187	.063	●			

SUMITOMO

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PCBN & PCD INSERTS

Pages 140-177

Cubic Boron Nitride (CBN) Inserts

See pages 562 - 563 for running parameters.

CN

80° Diamond Type

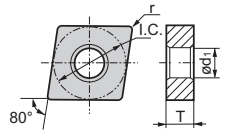
Negative

- K Cast Iron
- S Exotic Materials
- H Hardened Steel
- S/M Sintered Materials

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

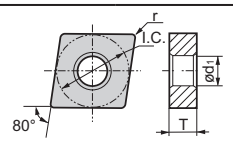
CNMA



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K BN7000	Uncoated K BN700	Uncoated S BNS800	Uncoated S/M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Full Tip	CNMA431	CNMA120404									▲			★	●						.500	.1875	.0156	.020	.2031
	CNMA432	CNMA120408									▲			★	●			●			.500	.1875	.0313	.020	.2031
	CNMA433	CNMA120412									▲			★	●			●			.500	.1875	.0469	.020	.2031
Multi-Mid Tip	2MD-CNMA431	2MD-CNMA120404									▲				●						.500	.1875	.0156	.020	.2031
	2MD-CNMA432	2MD-CNMA120408									▲				●			●			.500	.1875	.0313	.020	.2031
	2MD-CNMA433	2MD-CNMA120412									▲				●			●			.500	.1875	.0469	.020	.2031
Mini Tip	NS-CNMA431	NS-CNMA120404										▲									.500	.1875	.0156	.015	.2031
	NS-CNMA432	NS-CNMA120408										▲									.500	.1875	.0313	.015	.2031
	NS-CNMA433	NS-CNMA120412										▲									.500	.1875	.0469	.015	.2031
	NU-CNMA430.5	NU-CNMA120402												●							.500	.1875	.0078	.015	.2031
	NU-CNMA431	NU-CNMA120404								▲	▲		●	●	●	●					.500	.1875	.0156	.015	.2031
	NU-CNMA432	NU-CNMA120408								▲	▲		●	●	●	●	●				.500	.1875	.0313	.015	.2031
	NU-CNMA433	NU-CNMA120412								▲	▲		●	●	●	●	●				.500	.1875	.0469	.015	.2031

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

CNGA



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K BN7000	Uncoated K BN700	Uncoated S BNS800	Uncoated S/M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Coated Mini Tip	2NC-CNGA432	2NC-CNGA120408	○	○	●	●	●	●													.500	.1875	.0313	.015	.2031
	2NC-CNGA432LS*	2NC-CNGA120408LS		○	●		●														.500	.1875	.0313	.015	.2031
	2NC-CNGA432HS*	2NC-CNGA120408HS	○	○		●	●	●													.500	.1875	.0313	.015	.2031
	2NC-CNGA433	2NC-CNGA120412	○	○	●	●	●	●													.500	.1875	.0469	.015	.2031
	2NC-CNGA433LS*	2NC-CNGA120412LS		○	●		●														.500	.1875	.0469	.015	.2031
	2NC-CNGA433HS*	2NC-CNGA120412HS	○	○		●	●	●													.500	.1875	.0469	.015	.2031
	4NC-CNGA431	4NC-CNGA120404	○	○	●	●	●	●	★												.500	.1875	.0156	.015	.2031
	4NC-CNGA431LS*	4NC-CNGA120404LS	○	○	●	●	★														.500	.1875	.0156	.015	.2031
	4NC-CNGA431HS*	4NC-CNGA120404HS	○	○		●	●		★												.500	.1875	.0156	.015	.2031
	4NC-CNGA431W*	4NC-CNGA120404W	○	○	●	●	●	●													.500	.1875	.0156	.015	.2031
	4NC-CNGA431WG	4NC-CNGA120404WH	○	○		●	●														.500	.1875	.0156	.015	.2031
	4NC-CNGA431WH	4NC-CNGA120404WH	○	○		●	●														.500	.1875	.0156	.015	.2031
	4NC-CNGA432	4NC-CNGA120408	○	○	●	●	●	●	★												.500	.1875	.0313	.015	.2031
	4NC-CNGA432LS*	4NC-CNGA120408LS	○	○	●	●	●														.500	.1875	.0313	.015	.2031
	4NC-CNGA432HS*	4NC-CNGA120408HS	○	○		●	●		★												.500	.1875	.0313	.015	.2031
	4NC-CNGA432W*	4NC-CNGA120408W	○	○	●	●	●	●	★												.500	.1875	.0313	.015	.2031
	4NC-CNGA432WG	4NC-CNGA120408WG	○	○		●	●														.500	.1875	.0313	.015	.2031
	4NC-CNGA432WH	4NC-CNGA120408WH	○	○		●	●														.500	.1875	.0313	.015	.2031
	4NC-CNGA433	4NC-CNGA120412	○	○	●	●	●	●	★												.500	.1875	.0469	.015	.2031
	4NC-CNGA433LS*	4NC-CNGA120412LS	○	○	●	●	★														.500	.1875	.0469	.015	.2031
	4NC-CNGA433HS*	4NC-CNGA120412HS	○	○		●	●		★												.500	.1875	.0469	.015	.2031
	4NC-CNGA433W*	4NC-CNGA120412W	○	○	●	●	●	●													.500	.1875	.0469	.015	.2031
	4NC-CNGA433WG	4NC-CNGA120412WG		○			●														.500	.1875	.0469	.015	.2031
Multi-Mini Tip	2NU-CNGA431	2NU-CNGA120404								▲	▲		●	●	●	●	●	●		●	.500	.1875	.0156	.015	.2031
	2NU-CNGA431HS*	2NU-CNGA120404HS												●			●				.500	.1875	.0156	.015	.2031
	2NU-CNGA431F*	2NU-CNGA120404F																●			.500	.1875	.0156	.015	.2031
	2NU-CNGA431T*	2NU-CNGA120404T																★			.500	.1875	.0156	.015	.2031
	2NU-CNGA431W*	2NU-CNGA120404W																●			.500	.1875	.0156	.015	.2031
	2NU-CNGA431WG	2NU-CNGA120404WG												●						●	.500	.1875	.0156	.015	.2031
	2NU-CNGA431WH	2NU-CNGA120404WH												●						●	.500	.1875	.0156	.015	.2031
	2NU-CNGA431LE*	2NU-CNGA120404LE																		●	.500	.1875	.0156	.015	.2031
	2NU-CNGA431LF*	2NU-CNGA120404LF															●			●	.500	.1875	.0156	.015	.2031

See pages 562 - 563 for running parameters.

CN

80° Diamond Type

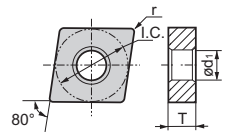
Negative

K Cast Iron
S Exotic Materials
H Hardened Steel
S/M Sintered Materials

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

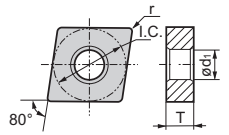
CNGA (cont.)



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Multi-Mini Tip	2NU-CNGA431LS*	2NU-CNGA120404LS																		●	.500	.1875	.0156	.015	.2031
	2NU-CNGA431LT*	2NU-CNGA120404LT											●	●							.500	.1875	.0156	.015	.2031
	2NU-CNGA432	2NU-CNGA120408									▲		●	●	●	●	●	●		●	.500	.1875	.0313	.015	.2031
	2NU-CNGA432HS*	2NU-CNGA120408HS												●			●				.500	.1875	.0313	.015	.2031
	2NU-CNGA432F*	2NU-CNGA120408F																●			.500	.1875	.0313	.015	.2031
	2NU-CNGA432T*	2NU-CNGA120408T																●			.500	.1875	.0313	.015	.2031
	2NU-CNGA432W*	2NU-CNGA120408W														●		●			.500	.1875	.0313	.015	.2031
	2NU-CNGA432WG	2NU-CNGA120408WG												●						●	.500	.1875	.0313	.015	.2031
	2NU-CNGA432WH	2NU-CNGA120408WH												●						●	.500	.1875	.0313	.015	.2031
	2NU-CNGA432LE*	2NU-CNGA120408LE																		●	.500	.1875	.0313	.015	.2031
	2NU-CNGA432LF*	2NU-CNGA120408LF															●			●	.500	.1875	.0313	.015	.2031
	2NU-CNGA432LS*	2NU-CNGA120408LS																		●	.500	.1875	.0313	.015	.2031
	2NU-CNGA432LT*	2NU-CNGA120408LT											●	●							.500	.1875	.0313	.015	.2031
	2NU-CNGA433	2NU-CNGA120412									▲		●	●	●	●	●	●		●	.500	.1875	.0469	.015	.2031
	2NU-CNGA433HS*	2NU-CNGA120412HS												●							.500	.1875	.0469	.015	.2031
	2NU-CNGA433W*	2NU-CNGA120412T																			.500	.1875	.0469	.015	.2031
	2NU-CNGA433T*	2NU-CNGA120412T																●			.500	.1875	.0469	.015	.2031
	2NU-CNGA433LT*	2NU-CNGA120412LT											●	●							.500	.1875	.0469	.015	.2031
Solid	CNGA432	CNGA120408																	●		.500	.1875	.0313	.150	.2031
	CNGA433	CNGA120412																	●		.500	.1875	.0469	.150	.2031

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

CNGG



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Coated Mini	2NU-CNGG431FV	2NC-CNGG120404FV												●							.500	.1875	.0156	.015	.2031
	2NU-CNGG431LV	2NC-CNGG120404LV												●							.500	.1875	.0156	.015	.2031
	2NU-CNGG432FV	2NC-CNGG120408FV												●							.500	.1875	.0313	.015	.2031
	2NU-CNGG432LV	2NC-CNGG120408LV												●							.500	.1875	.0313	.015	.2031
	4NC-CNGG431FV	4NC-CNGG120404FV	○	○		●	●														.500	.1875	.0156	.015	.2031
	4NC-CNGG431LV	4NC-CNGG120404LV	○	○		●	●														.500	.1875	.0156	.015	.2031
	4NC-CNGG432FV	4NC-CNGG120408FV	○	○		●	●														.500	.1875	.0313	.015	.2031
	4NC-CNGG432LV	4NC-CNGG120408LV	○	○		●	●														.500	.1875	.0313	.015	.2031
	4NC-CNGG432SV	4NC-CNGG120408SV		○			●														.500	.1875	.0313	.015	.2031
	4NC-CNGG432SVW	4NC-CNGG120408SVW		○			●														.500	.1875	.0313	.015	.2031
	4NC-CNGG433SV	4NC-CNGG120412SV		○			●														.500	.1875	.0469	.015	.2031

Note: SV style chipbreaker (see page 262 for more info).

Cubic Boron Nitride (CBN) Inserts

See pages 562 - 563 for running parameters.

CN

80° Diamond Type

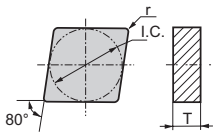
Negative

- **K Cast Iron**
- **S Exotic Materials**
- **H Hardened Steel**
- **S/M Sintered Materials**

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

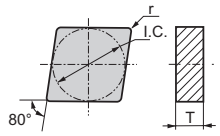
***EDGE PREPARATIONS:**
Please see page 555 for descriptions and performance ranges of CBN edge treatments.

CNGX



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Uncoated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Solid	CNGX433	CNGX120412																	★		.500	.1875	.0469	.150	-
	CNGX434	CNGX120416																	★		.500	.1875	.0625	.150	-

CNG



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Uncoated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Solid	CNG322	CNGN090308																	●		.375	.125	.0313	.150	-
	CNG322F	CNGN090308F																	★		.375	.125	.0313	.150	-
	CNG323	CNGN090312																	●		.375	.125	.0469	.150	-
	CNG323F	CNGN090312F																	★		.375	.125	.0469	.150	-
	CNG432	CNGN120408																	★		.500	.1875	.0313	.150	-
	CNG433	CNGN120412																	●		.500	.1875	.0469	.150	-
	CNG434	CNGN120416																	★		.500	.1875	.0625	.150	-

See pages 562 - 563 for running parameters.

DN

55° Diamond Type

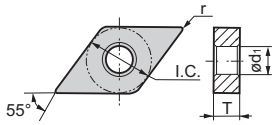
Negative

- K Cast Iron
- S Exotic Materials
- H Hardened Steel
- S/M Sintered Materials

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

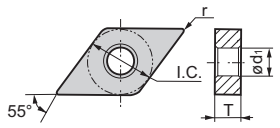
DNMA



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Full Tip	DNMA431	DNMA150404									●			★	●						.500	.1875	.0156	.020	.2031
	DNMA432	DNMA150408									●			★	●		●	●			.500	.1875	.0313	.020	.2031
	DNMA433	DNMA150412									●			★	●		●	●			.500	.1875	.0469	.020	.2031
Multi-Mid Tip	2MD-DNMA431	2MD-DNMA150404													●						.500	.1875	.0156	.020	.2031
	2MD-DNMA432	2MD-DNMA150408									●				●			●			.500	.1875	.0313	.020	.2031
	2MD-DNMA433	2MD-DNMA150412													●			●			.500	.1875	.0469	.020	.2031
Single Mini Tip	NS-DNMA431	NS-DNMA150404										●									.500	.1875	.0156	.015	.2031
	NS-DNMA432	NS-DNMA150408										●									.500	.1875	.0313	.015	.2031
	NS-DNMA433	NS-DNMA150412										●									.500	.1875	.0469	.015	.2031
	NU-DNMA430	NU-DNMA150401												●							.500	.1875	.0039	.015	.2031
	NU-DNMA430.5	NU-DNMA150402												●							.500	.1875	.0078	.015	.2031
	NU-DNMA431	NU-DNMA150404								●	●		●	●	●	●					.500	.1875	.0156	.015	.2031
	NU-DNMA432	NU-DNMA150408								●	●		●	●	●	●					.500	.1875	.0313	.015	.2031
	NU-DNMA433	NU-DNMA150412								●	●		●	●	●						.500	.1875	.0469	.015	.2031

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

DNGA



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Coated Mini Tip	2MD-DNGA432	2MD-DNGA150408															●		S		.500	.1875	.0313	.020	.2031
	2NC-DNGA330.5	2NC-DNGA110402	○	○																	.375	.1875	.0078	.015	.150
	2NC-DNGA330.5LS	2NC-DNGA110402LS	○	○																	.375	.1875	.0078	.015	.150
	2NC-DNGA331	2NC-DNGA110404	○	○																	.375	.1875	.0078	.015	.150
	2NC-DNGA331LS	2NC-DNGA110404LS	○	○																	.375	.1875	.0078	.015	.150
	2NC-DNGA332	2NC-DNGA110408	○	○																	.375	.1875	.0078	.015	.150
	2NC-DNGA333	2NC-DNGA110412	○	○																	.375	.1875	.0078	.015	.150
	2NC-DNGA432	2NC-DNGA150408	○	○	●	●	●	●													.500	.1875	.0313	.015	.2031
	2NC-DNGA432LS*	2NC-DNGA150408LS		○	●		●														.500	.1875	.0313	.015	.2031
	2NC-DNGA432HS*	2NC-DNGA150408HS	○	○		●	●	●													.500	.1875	.0313	.015	.2031
	2NC-DNGA433	2NC-DNGA150412	○	○	●	●	●	●													.500	.1875	.0469	.015	.2031
	2NC-DNGA433LS*	2NC-DNGA150412LS		○	●		●														.500	.1875	.0469	.015	.2031
	2NC-DNGA433HS*	2NC-DNGA150412HS	○	○		●	●	●													.500	.1875	.0469	.015	.2031
	4NC-DNGA431	4NC-DNGA150404	○	○	●	●	●	●	★												.500	.1875	.0156	.015	.2031
	4NC-DNGA431LS*	4NC-DNGA150404LS	○	○	●	●	★														.500	.1875	.0156	.015	.2031
	4NC-DNGA431HS*	4NC-DNGA150404HS	○	○		●	●		★												.500	.1875	.0156	.015	.2031
	4NC-DNGA431WG	4NC-DNGA150404WG	○			●															.500	.1875	.0156	.015	.2031
	4NC-DNGA431WH	4NC-DNGA150404WH	○			●															.500	.1875	.0156	.015	.2031
	4NC-DNGA432	4NC-DNGA150408	○	○	●	●	●	●	★												.500	.1875	.0313	.015	.2031
	4NC-DNGA432LS*	4NC-DNGA150408LS	○	○	●	●	★														.500	.1875	.0313	.015	.2031
	4NC-DNGA432HS*	4NC-DNGA150408HS	○	○		●	●		★												.500	.1875	.0313	.015	.2031
	4NC-DNGA432WG	4NC-DNGA150408WG	○			●															.500	.1875	.0313	.015	.2031
	4NC-DNGA432WH	4NC-DNGA150408WH	○			●															.500	.1875	.0313	.015	.2031
	4NC-DNGA433	4NC-DNGA150412	○	○	●	●	●	●	★												.500	.1875	.0469	.015	.2031
	4NC-DNGA433LS*	4NC-DNGA150412LS	○	○	●	●	★														.500	.1875	.0469	.015	.2031
	4NC-DNGA433HS*	4NC-DNGA150412HS	○	○		●	●		★												.500	.1875	.0469	.015	.2031
Multi-Mini Tip	2NU-DNGA330.5	2NU-DNGA110402															○			○	.375	.1875	.0078	.015	.150
	2NU-DNGA330.5LF*	2NU-DNGA110402LF															○			○	.375	.1875	.0078	.015	.150
	2NU-DNGA331	2NU-DNGA110404															○			○	.375	.1875	.0078	.015	.150
	2NU-DNGA331LF*	2NU-DNGA110404LF															○			○	.375	.1875	.0078	.015	.150
	2NU-DNGA332	2NU-DNGA110408															○			○	.375	.1875	.0078	.015	.150
	2NU-DNGA333	2NU-DNGA110412															○			○	.375	.1875	.0078	.015	.150

Cubic Boron Nitride (CBN) Inserts

See pages 562 - 563 for running parameters.

DN

55° Diamond Type

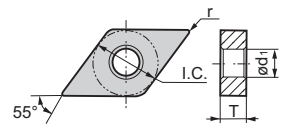
Negative

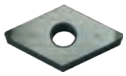
- K Cast Iron
- S Exotic Materials
- H Hardened Steel
- S/M Sintered Materials

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

DNGA (cont.)



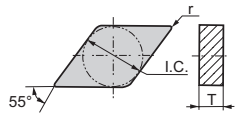


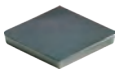
Multi-Mini Tip

Catalog No.	ISO Cat. No.	Coated H BNC80	Coated H BNC100	Coated H BNC150	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
2NU-DNGA431	2NU-DNGA150404											●	●	●	●	●	●		●	.500	.1875	.0156	.015	.2031
2NU-DNGA431HS*	2NU-DNGA15040HS												●							.500	.1875	.0156	.015	.2031
2NU-DNGA431F*	2NU-DNGA150404F																●			.500	.1875	.0156	.015	.2031
2NU-DNGA431T*	2NU-DNGA150404T																★			.500	.1875	.0156	.015	.2031
2NU-DNGA431LF*	2NU-DNGA150404LF															●				.500	.1875	.0156	.015	.2031
2NU-DNGA431LT*	2NU-DNGA150404LT												●							.500	.1875	.0156	.015	.2031
2NU-DNGA431WH	2NU-DNGA150404WH																		●	.500	.1875	.0156	.015	.2031
2NU-DNGA432	2NU-DNGA150408									▲		●	●	●	●	●	●		●	.500	.1875	.0313	.015	.2031
2NU-DNGA432HS*	2NU-DNGA150408HS												●			●				.500	.1875	.0313	.015	.2031
2NU-DNGA432F*	2NU-DNGA150408F																●			.500	.1875	.0313	.015	.2031
2NU-DNGA432T*	2NU-DNGA150408T																●			.500	.1875	.0313	.015	.2031
2NU-DNGA432LF*	2NU-DNGA150408LF															●				.500	.1875	.0313	.015	.2031
2NU-DNGA432LT*	2NU-DNGA150408LT												●							.500	.1875	.0313	.015	.2031
2NU-DNGA432WG	2NU-DNGA150408WG												●							.500	.1875	.0313	.015	.2031
2NU-DNGA432WH	2NU-DNGA150408WH												●						●	.500	.1875	.0313	.015	.2031
2NU-DNGA433	2NU-DNGA150412									▲		●	●	●	●	●	●			.500	.1875	.0469	.015	.2031
2NU-DNGA433HS*	2NU-DNGA150412HS												●			●				.500	.1875	.0469	.015	.2031
2NU-DNGA433T*	2NU-DNGA150412T																●			.500	.1875	.0469	.015	.2031
2NU-DNGA433LT*	2NU-DNGA150412LT											●	●							.500	.1875	.0469	.015	.2031

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

DNG



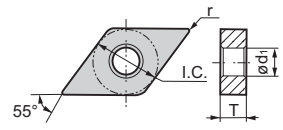


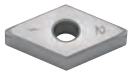
Solid

Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
DNG322	DNGN110308																	★		.375	.125	.0313	.150	-
DNG322F	DNGN110308F																	★		.375	.125	.0313	.150	-
DNG323	DNGN110312																	★		.375	.125	.0469	.150	-
DNG323F	DNGN110312F																	★		.375	.125	.0469	.150	-

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

DNGG





Coated Mini

Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
2NU-DNGG431FV	2NU-DNGG150404FV												●							.500	.1875	.0156	.015	.2031
2NU-DNGG431LV	2NU-DNGG150404LV												●							.500	.1875	.0156	.015	.2031
2NU-DNGG432FV	2NU-DNGG150408FV												●							.500	.1875	.0313	.015	.2031
2NU-DNGG432LV	2NU-DNGG150408LV												●							.500	.1875	.0313	.015	.2031
4NC-DNGG431FV	4NC-DNGG150404FV	○	○		●	●														.500	.1875	.0156	.015	.2031
4NC-DNGG431LV	4NC-DNGG150404LV	○	○		●	●														.500	.1875	.0156	.015	.2031
4NC-DNGG432FV	4NC-DNGG150408FV	○	○		●	●														.500	.1875	.0313	.015	.2031
4NC-DNGG432LV	4NC-DNGG150408LV	○	○		●	●														.500	.1875	.0313	.015	.2031
4NC-DNGG432SV	4NC-DNGG150408SV		○			●														.500	.1875	.0313	.015	.2031
4NC-DNGG433SV	4NC-DNGG150412SV		○			●														.500	.1875	.0469	.015	.2031

Note: SV style chipbreaker (see page 262 for more info).

See pages 562 - 563 for running parameters.

RN

Round Type

Negative

K Cast Iron
S Exotic Materials
H Hardened Steel
S/M Sintered Materials

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

***EDGE PREPARATIONS:**
Please see page 555 for descriptions and performance ranges of CBN edge treatments.

RNG

Fig. 1

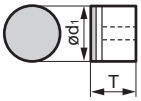
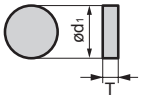


Fig. 2



		Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Fig.
Full Top		RNG32B	RNGN090300B									▲						●	●			.375	.125	-	.020	1
		RNG43B	RNGN120400B									▲						●	●			.500	.1875	-	.020	1
Solid		RNG32	RNGN090300																	●		.375	.125	-	.150	2
		RNG32F	RNGN090300F																	★		.375	.125	-	.150	2
		RNG42	RNGN120300																	●		.500	.125	-	.150	2
		RNG42F	RNGN120300F																	★		.500	.125	-	.150	2
		RNG43	RNGN120400																	●		.500	.1875	-	.150	2

Note: Holders available for RNG inserts. Contact the Engineering Department.

Cubic Boron Nitride (CBN) Inserts

See pages 562 - 563 for running parameters.

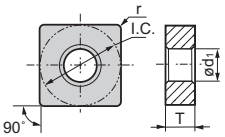
SN — Square Type — Negative

- **K Cast Iron**
- **S Exotic Materials**
- **H Hardened Steel**
- **S/M Sintered Materials**

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

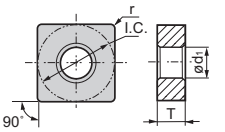
SNMA



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Full Tip	SNMA432	SNMA120408												★	●		●	●			.500	.1875	.0313	.020	.2031
	SNMA433	SNMA120412									▲			★	●		●				.500	.1875	.0469	.020	.2031
Multi-Mid Tip	2MD-SNMA431	2MD-SNMA120404													●						.500	.1875	.0156	.020	.2031
	2MD-SNMA432	2MD-SNMA120408													●			●			.500	.1875	.0313	.020	.2031
	2MD-SNMA433	2MD-SNMA120412																●			.500	.1875	.0469	.020	.2031
Mini Tip	NS-SNMA433	NS-SNMA120412										▲									.500	.1875	.0469	.015	.2031
	NU-SNMA431	NU-SNMA120404								▲			●	★	●						.500	.1875	.0156	.015	.2031
	NU-SNMA432	NU-SNMA120408											●	★	●	●					.500	.1875	.0313	.015	.2031
	NU-SNMA433	NU-SNMA120412											●	★	●	●					.500	.1875	.0469	.015	.2031

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

SNGA



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Coated Mini Tip	2NC-SNGA432	2NC-SNGA120408		○			●		★												.500	.1875	.0313	.015	.2031
	2NC-SNGA433	2NC-SNGA120412		○			●		★												.500	.1875	.0469	.015	.2031
Multi-Mini Tip	2NU-SNGA431	2NU-SNGA120404												●	★						.500	.1875	.0156	.015	.2031
	2NU-SNGA431HS*	2NU-SNGA120404HS												★							.500	.1875	.0156	.015	.2031
	2NU-SNGA431LT*	2NU-SNGA120404LT												★							.500	.1875	.0156	.015	.2031
	2NU-SNGA432	2NU-SNGA120408											●	●	●	●		●			.500	.1875	.0313	.015	.2031
	2NU-SNGA432HS*	2NU-SNGA120408HS												★							.500	.1875	.0313	.015	.2031
	2NU-SNGA432LT*	2NU-SNGA120408LT												★							.500	.1875	.0313	.015	.2031
	2NU-SNGA433	2NU-SNGA120412											●	●	●	●	●	●			.500	.1875	.0469	.015	.2031
	2NU-SNGA433HS*	2NU-SNGA120412HS												★			●				.500	.1875	.0469	.015	.2031
	2NU-SNGA433T*	2NU-SNGA120412T																●			.500	.1875	.0469	.015	.2031
	2NU-SNGA433LT*	2NU-SNGA120412LT												★							.500	.1875	.0469	.015	.2031
Solid	SNGA432	SNGA120408																	★		.500	.1875	.0313	.150	.2031
	SNGA433	SNGA120412																	★		.500	.1875	.0469	.150	.2031

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

See pages 562 - 563 for running parameters.

SN

Square Type

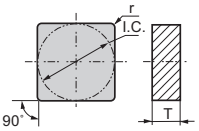
Negative

- K Cast Iron
- S Exotic Materials
- H Hardened Steel
- S/M Sintered Materials

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

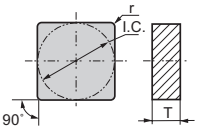
***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

SNGX



	Catalog No.	ISO Cat. No.	Coated H BNC2010	BNC2020	BNC100	BNC160	BNC200	BNC300	Coated K BNC500	Uncoated H BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	Uncoated K S BN7000	BN700	Uncoated S M BNS800	BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Solid CBN	SNGX433	SNGX120412																	★		.500	.1875	.0469	.150	-
	SNGX434	SNGX120416																	●		.500	.1875	.0625	.150	-

SNG



	Catalog No.	ISO Cat. No.	Coated H BNC2010	BNC2020	BNC100	BNC160	BNC200	BNC300	Coated K BNC500	Uncoated H BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	Uncoated K S BN7000	BN700	Uncoated S M BNS800	BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Solid	SNG322	SNGN090308																	●		.375	.125	.0313	.150	-
	SNG322F*	SNGN090308F																	★		.375	.125	.0313	.150	-
	SNG323	SNGN090312																	●		.375	.125	.0469	.150	-
	SNG323F*	SNGN090312F																	★		.375	.125	.0469	.150	-
	SNG422	SNGN120308																	●		.500	.125	.0313	.150	-
	SNG422F*	SNGN120308F																	★		.500	.125	.0313	.150	-
	SNG423	SNGN120312																	●		.500	.125	.0469	.150	-
	SNG423F*	SNGN120312F																	★		.500	.125	.0469	.150	-
	SNG424	SNGN120316																	●		.500	.125	.0625	.150	-
	SNG432	SNGN120408									▲			★					●		.500	.1875	.0313	.150	-
	SNG433	SNGN120412												★					●		.500	.1875	.0469	.150	-
	SNG434	SNGN120416																	●		.500	.1875	.0625	.150	-

Cubic Boron Nitride (CBN) Inserts

See pages 562 - 563 for running parameters.

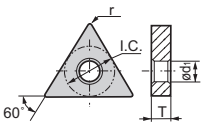
TN — 60º Triangle Type — Negative

- **K Cast Iron**
- **S Exotic Materials**
- **H Hardened Steel**
- **S/M Sintered Materials**

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

TNMA



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Full Tip	TNMA330.5	TNMA160402									▲			★							.375	.1875	.0078	.020	.150
	TNMA331	TNMA160404									▲			★	●						.375	.1875	.0156	.020	.150
	TNMA332	TNMA160408									▲			★	●			●			.375	.1875	.0313	.020	.150
	TNMA333	TNMA160412												★				●			.375	.1875	.0469	.020	.150
	TNMA431	TNMA220404									▲										.500	.1875	.0156	.020	.2031
	TNMA432	TNMA220408									▲			★	●						.500	.1875	.0313	.020	.2031
	TNMA433	TNMA220412												★	●						.500	.1875	.0469	.020	.2031
Multi-Mid Tip	3MD-TNMA331	3MD-TNMA160404													●						.375	.1875	.0156	.020	.150
	3MD-TNMA332	3MD-TNMA160408													●			●			.375	.1875	.0313	.020	.150
Mini Tip	NS-TNMA331	NS-TNMA160404										▲									.375	.1875	.0156	.015	.150
	NS-TNMA332	NS-TNMA160408										▲									.375	.1875	.0313	.015	.150
	NU-TNMA330	NU-TNMA160401												●							.375	.1875	.0039	.015	.150
	NU-TNMA330.5	NU-TNMA160402												●							.375	.1875	.0078	.015	.150
	NU-TNMA331	NU-TNMA160404									▲		●	●	●	●					.375	.1875	.0156	.015	.150
	NU-TNMA331F*	NU-TNMA160404F																			.375	.1875	.0156	.015	.150
	NU-TNMA332	NU-TNMA160408								▲	▲		●	●	●	●					.375	.1875	.0313	.015	.150
	NU-TNMA332F*	NU-TNMA160408F																			.375	.1875	.0313	.015	.150
	NU-TNMA333	NU-TNMA160412									▲		●	●	●	●					.375	.1875	.0469	.015	.150
	NU-TNMA431	NU-TNMA220404									▲		●		●						.500	.1875	.0156	.015	.2031
	NU-TNMA432	NU-TNMA220408								▲	▲		●		●						.500	.1875	.0313	.015	.2031
	NU-TNMA433	NU-TNMA150412									▲		●		●						.500	.1875	.0469	.015	.2031

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

See pages 562 - 563 for running parameters.

TN

60º Triangle Type

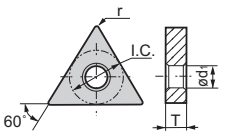
Negative

- K Cast Iron
- S Exotic Materials
- H Hardened Steel
- S/M Sintered Materials

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

TNGA



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated S M BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Coated Mini-Tip	3NC-TNGA332	3NC-TNGA160408	○	○	●	●	●	●													.375	.1875	.0313	.015	.150
	3NC-TNGA332LS*	3NC-TNGA160408LS		○	●		●														.375	.1875	.0313	.015	.150
	3NC-TNGA332HS*	3NC-TNGA160408HS		○			●	●													.375	.1875	.0313	.015	.150
	6NC-TNGA331	6NC-TNGA160404	○	●	●	●	●	●	★												.375	.1875	.0156	.015	.150
	6NC-TNGA331LS*	6NC-TNGA160404LS	○	○		●	★														.375	.1875	.0156	.015	.150
	6NC-TNGA331HS*	6NC-TNGA160404HS	○	○		●	●		★												.375	.1875	.0156	.015	.150
	6NC-TNGA332	6NC-TNGA160408	○	○	●	●	●	●	★												.375	.1875	.0313	.015	.150
	6NC-TNGA332LS*	6NC-TNGA160408LS	○	○	●	●	★														.375	.1875	.0313	.015	.150
	6NC-TNGA332HS*	6NC-TNGA160408HS	○	○		●	●		★												.375	.1875	.0313	.015	.150
	6NC-TNGA333	6NC-TNGA160412	○	○	●	●	●	●	★												.375	.1875	.0469	.015	.150
	6NC-TNGA333LS*	6NC-TNGA160412LS	○	○	●	●	★														.375	.1875	.0469	.015	.150
	6NC-TNGA333HS*	6NC-TNGA160412HS	○	○		●	●		★												.375	.1875	.0469	.015	.150
Multi-Mini Tip	3NU-TNGA331	3NU-TNGA160404											●	●	●	●	●	●		●	.375	.1875	.0156	.015	.150
	3NU-TNGA331LS*	3NU-TNGA160404LS																		●	.375	.1875	.0156	.015	.150
	3NU-TNGA331HS*	3NU-TNGA160404HS												●						●	.375	.1875	.0156	.015	.150
	3NU-TNGA331LE*	3NU-TNGA160404LE																		●	.375	.1875	.0156	.015	.150
	3NU-TNGA331LF*	3NU-TNGA160404LF																		●	.375	.1875	.0156	.015	.150
	3NU-TNGA331LT*	3NU-TNGA160404LT											●	●							.375	.1875	.0156	.015	.150
	3NU-TNGA332	3NU-TNGA160408											●	●	●	●	●	●		●	.375	.1875	.0313	.015	.150
	3NU-TNGA332LS*	3NU-TNGA160408LS																		●	.375	.1875	.0313	.015	.150
	3NU-TNGA332HS*	3NU-TNGA160408HS												●			●			●	.375	.1875	.0313	.015	.150
	3NU-TNGA332T*	3NU-TNGA160408T																●			.375	.1875	.0313	.015	.150
	3NU-TNGA332LE*	3NU-TNGA160408LE																		●	.375	.1875	.0313	.015	.150
	3NU-TNGA332LF*	3NU-TNGA160408LF																		●	.375	.1875	.0313	.015	.150
	3NU-TNGA332LT*	3NU-TNGA160408LT											●	●							.375	.1875	.0313	.015	.150
	3NU-TNGA333	3NU-TNGA160412											●	●	●	●		●		●	.375	.1875	.0469	.015	.150
	3NU-TNGA333HS*	3NU-TNGA160412HS												●							.375	.1875	.0469	.015	.150
	3NU-TNGA333LT*	3NU-TNGA160412LT											●	●							.375	.1875	.0469	.015	.150
Solid CBN	TNGA332	TNGA160408																	★		.375	.1875	.0313	.150	.150
	TNGA333	TNGA160412																	★		.375	.1875	.0469	.150	.150

Cubic Boron Nitride (PCBN) Inserts

See pages 562 - 563 for running parameters.

TN

60° Triangle Type

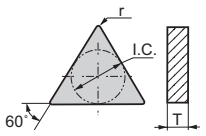
Negative

- K Cast Iron
- S Exotic Materials
- H Hardened Steel
- S/M Sintered Materials

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

TNG



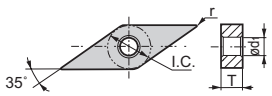
	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated S M BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Full Tip	TNG331	TNGN160408												★							.375	.1875	.0156	.150	-
	TNG332	TNGN160408									▲			★							.375	.1875	.0313	.150	-
	TNG333	TNGN160412												★							.375	.1875	.0469	.150	-
Solid CBN	TNG222	TNGN110308																	●		.250	.125	.0313	.150	-
	TNG223	TNGN110312																	★		.250	.125	.0469	.150	-
	TNG223F*	TNGN110312F																	★		.250	.125	.0469	.150	-
	TNG332	TNGN160408																	●		.375	.1875	.0313	.150	-
	TNG333	TNGN160412																	●		.375	.1875	.0469	.150	-
	TNG334	TNGN160416																	★		.375	.1875	.0625	.150	-

VN

35° Diamond Type

Negative

VNMA



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated S M BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Full Tip	VNMA331	VNMA160404									▲			★	●		●				.375	.1875	.0156	.020	.150
	VNMA332	VNMA160408									▲			★	●		●	●			.375	.1875	.0313	.020	.150
Multi-Mid Tip	2MD-VNMA331	2MD-VNMA160404													●						.375	.1875	.0156	.020	.150
	2MD-VNMA332	2MD-VNMA160408									▲				●			●			.375	.1875	.0313	.020	.150
	2MD-VNMA333	2MD-VNMA160412													●						.375	.1875	.0469	.020	.150
Mini Tip	NS-VNMA331	NS-VNMA160404										▲									.375	.1875	.0156	.015	.150
	NS-VNMA332	NS-VNMA160408										▲									.375	.1875	.0313	.015	.150
	NU-VNMA330	NU-VNMA160401												●							.375	.1875	.0039	.015	.150
	NU-VNMA330.5	NU-VNMA160402												●							.375	.1875	.0078	.015	.150
	NU-VNMA331	NU-VNMA160404								▲	▲		●	●	●	●					.375	.1875	.0156	.015	.150
	NU-VNMA332	NU-VNMA160408								▲	▲		●	●	●	●					.375	.1875	.0313	.015	.150
	NU-VNMA333	NU-VNMA160412								▲	▲		●	●	●	●					.375	.1875	.0469	.015	.150

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

See pages 562 - 563 for running parameters.

VN

35° Diamond Type

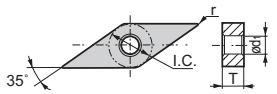
Negative

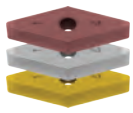
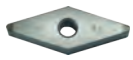
- **K Cast Iron**
- **S Exotic Materials**
- **H Hardened Steel**
- **S/M Sintered Materials**

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

VNGA



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Coated Mini Tip 	2NC-VNGA332	2NC-VNGA160408	○	○	●	●	●	●													.375	.1875	.0313	.015	.150
	2NC-VNGA332LS*	2NC-VNGA160408LS		○			●														.375	.1875	.0313	.015	.150
	2NC-VNGA332HS*	2NC-VNGA160408HS		○			●	●													.375	.1875	.0313	.015	.150
	4NC-VNGA331	4NC-VNGA160404	○	○	●	●	●	●	★												.375	.1875	.0156	.015	.150
	4NC-VNGA331LS*	4NC-VNGA160404LS	○	○	●	●	●														.375	.1875	.0156	.015	.150
	4NC-VNGA331HS*	4NC-VNGA160404HS	○	○		●	●		★												.375	.1875	.0156	.015	.150
	4NC-VNGA332	4NC-VNGA160408	○	○	●	●	●	●	★												.375	.1875	.0313	.015	.150
	4NC-VNGA332LS*	4NC-VNGA160408LS	○	○	●	●	●														.375	.1875	.0313	.015	.150
	4NC-VNGA332HS*	4NC-VNGA160408HS	○	○		●	●		★												.375	.1875	.0313	.015	.150
	4NC-VNGA333	4NC-VNGA160412		○			●														.375	.1875	.0469	.015	.150
Multi-Mini Tip 	2NU-VNGA331	2NU-VNGA160404									▲		●	●	●	●	●	●		●	.375	.1875	.0156	.015	.150
	2NU-VNGA331HS*	2NU-VNGA160404HS												●							.375	.1875	.0156	.015	.150
	2NU-VNGA331LT*	2NU-VNGA160404LT											●	●							.375	.1875	.0156	.015	.150
	2NU-VNGA332	2NU-VNGA160408									▲		●	●	●	●	●	●		●	.375	.1875	.0313	.015	.150
	2NU-VNGA332HS*	2NU-VNGA160408HS												●			●				.375	.1875	.0313	.015	.150
	2NU-VNGA332F*	2NU-VNGA160408F																●			.375	.1875	.0313	.015	.150
	2NU-VNGA332T*	2NU-VNGA160408T																●			.375	.1875	.0313	.015	.150
	2NU-VNGA332LF*	2NU-VNGA160408LF															●				.375	.1875	.0313	.015	.150
	2NU-VNGA332LT*	2NU-VNGA160408LT											●	●							.375	.1875	.0313	.015	.150
	2NU-VNGA333	2NU-VNGA160412															●				.375	.1875	.0469	.015	.150

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

Cubic Boron Nitride (PCBN) Inserts

See pages 562 - 563 for running parameters.

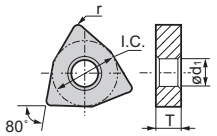
WN — 80° Trigon Type — Negative

- **K** Cast Iron
- **S** Exotic Materials
- **H** Hardened Steel
- **S/M** Sintered Materials

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

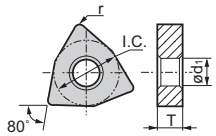
***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

WNMA



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Mini Tip 	NU-WNMA431	NU-WNMA080404											●	●	●	●					.500	.1875	.0156	.015	.2031
	NU-WNMA432	NU-WNMA080408									▲		●	●	●	●					.500	.1875	.0313	.015	.2031
	NU-WNMA433	NU-WNMA080412													●						.500	.1875	.0469	.015	.2031

WNGA



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Coated Mini Tip 	6NC-WNGA432	6NC-WNGA080408	○	○	●	●	●														.500	.1875	.0313	.015	.2031
	6NC-WNGA432LS	6NC-WNGA080408LS		○			★														.500	.1875	.0313	.015	.2031
	6NC-WNGA432HS	6NC-WNGA080408HS		○			★														.500	.1875	.0313	.015	.2031
	6NC-WNGA432WG	6NC-WNGA080408WG	○	○		●	●																		
	6NC-WNGA432WH	6NC-WNGA080408WH	○	○		●	●																		
	6NC-WNGA433WG	6NC-WNGA080412WG	○	○		●	●																		
	6NC-WNGA433WH	6NC-WNGA080412WH	○	○		●	●																		
Multi-Mini Tip 	3NU-WNGA432	3NU-WNGA080408											●			●	●	●			.500	.1875	.0313	.015	.2031
	3NU-WNGA433	3NU-WNGA080412														●	●	●			.500	.1875	.0469	.015	.2031

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

See pages 562 - 563 for running parameters.

CC

80° Diamond Type

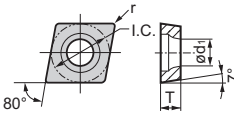
7° Relief

- K Cast Iron
- S Exotic Materials
- H Hardened Steel
- S/M Sintered Materials

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

CCGA



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Coated Mini Tip	NC-CCGA21.51	NC-CCGW060204	○	○	●	●	●														.250	.094	.0156	.015	.110
	2NC-CCGA21.50.5	2NC-CCGW060202		○			●		★												.250	.094	.0078	.015	.110
	2NC-CCGA21.50.5WG	2NC-CCGW060202WG	○	○		●	●														.250	.094	.0078	.015	.110
	2NC-CCGA21.51	2NC-CCGW060204		○			●		★												.250	.094	.0156	.015	.110
	2NC-CCGA21.51WG	2NC-CCGW060204WG	○	○		●	●														.250	.094	.0156	.015	.110
	2NC-CCGA21.52	2NC-CCGW060208							★												.250	.094	.0156	.015	.110
	2NC-CCGA21.52WG	2NC-CCGW060208WG	○	○		●	●														.250	.094	.0156	.015	.110
	2NC-CCGA32.50.5	2NC-CCGW09T302		○			●		★												.375	.156	.0078	.015	.1732
	2NC-CCGA32.50.5WG	2NC-CCGW09T302WG	○	○		●	●														.375	.156	.0078	.015	.1732
	2NC-CCGA32.51	2NC-CCGW09T304	○	○	●	●	●	●	★												.375	.156	.0156	.015	.1732
	2NC-CCGA32.51LS	2NC-CCGW09T304LS	○	○	●	●	●														.375	.156	.0156	.015	.1732
	2NC-CCGA32.51W	2NC-CCGW09T304W	○	○	●	●	●														.375	.156	.0156	.015	.1732
	2NC-CCGA32.51WG	2NC-CCGW09T304WG		○			●														.375	.156	.0156	.015	.1732
	2NC-CCGA32.52	2NC-CCGW09T308	○	○	●	●	●	●	★												.375	.156	.0313	.015	.1732
	2NC-CCGA32.52LS	2NC-CCGA32.52LS	○	○	●	●	●														.375	.156	.0313	.015	.1732
	2NC-CCGA32.52WG	2NC-CCGA32.52WG	○	○		●	●														.375	.156	.0313	.015	.1732
Mini Tip	NU-CCGA21.50.5	NU-CCGW060202												●	●						.250	.094	.0078	.015	.110
	NU-CCGA21.50.5HS*	NU-CCGW060202HS												●							.250	.094	.0078	.015	.110
	NU-CCGA21.50.5LT*	NU-CCGW060202LT												●							.250	.094	.0078	.015	.110
	NU-CCGA21.51	NU-CCGW060204											●	●	●						.250	.094	.0156	.015	.110
	NU-CCGA21.51HS*	NU-CCGW060204HS												●							.250	.094	.0156	.015	.110
	NU-CCGA21.51LT*	NU-CCGW060204LT												●							.250	.094	.0156	.015	.110
	NU-CCGA21.52	NU-CCGW060208												●							.250	.094	.0313	.015	.110
	NU-CCGA21.52LT*	NU-CCGW060208LT												●							.250	.094	.0313	.015	.110
	NU-CCGA32.50.5	NU-CCGW09T302											●	●	●						.375	.156	.0078	.015	.1732
	NU-CCGA32.50.5HS*	NU-CCGW09T302HS												●							.375	.156	.0078	.015	.1732
	NU-CCGA32.50.5LT*	NU-CCGW09T302LT												●							.375	.156	.0078	.015	.1732
	NU-CCGA32.51	NU-CCGW09T304											●	●	●						.375	.156	.0156	.015	.1732
	NU-CCGA32.51HS*	NU-CCGW09T304HS												●							.375	.156	.0156	.015	.1732
	NU-CCGA32.51LT*	NU-CCGW09T304LT												●							.375	.156	.0156	.015	.1732
	NU-CCGA32.52	2NU-CCGW09T308												●							.375	.156	.0313	.015	.1732
	NU-CCGA32.52HS*	2NU-CCGW09T308HS												●							.375	.156	.0313	.015	.1732
	NU-CCGA32.52LT*	2NU-CCGW09T308LT*												●							.375	.156	.0313	.015	.1732
Multi-Mini Tip	2NU-CCGA21.50.5	2NU-CCGW060202															●	●			.250	.094	.0078	.015	.110
	2NU-CCGA21.50.5WG	2NU-CCGW060202WG												●						●	.250	.094	.0156	.015	.110
	2NU-CCGA21.51	2NU-CCGW060204															●	●		●	.250	.094	.0156	.015	.110
	2NU-CCGA21.51WG	2NU-CCGW060204WG												●						●	.250	.094	.0156	.015	.110
	2NU-CCGA21.52	2NU-CCGW060208															●	●		●	.250	.094	.0313	.015	.110
	2NU-CCGA21.52WG	2NU-CCGW060208WG												●						●	.250	.094	.0313	.015	.110
	2NU-CCGA32.50.5WG	2NU-CCGW09T302WG												●						●	.250	.094	.0313	.015	.110
	2NU-CCGA32.51	2NU-CCGW09T304											●			●	●	●		●	.375	.156	.0156	.015	.1732
	2NU-CCGA32.51W	2NU-CCGW09T304W																●			.375	.156	.0156	.015	.1732
	2NU-CCGA32.51WG	2NU-CCGW09T304WG												●						●	.375	.156	.0156	.015	.1732
	2NU-CCGA32.52	2NU-CCGW09T308											●			●	●	●		●	.375	.156	.0313	.015	.1732
	2NU-CCGA32.52LT	2NU-CCGW09T308LT											●								.375	.156	.0313	.015	.1732
	2NU-CCGA32.52W	2NU-CCGW09T308W																			.375	.156	.0313	.015	.1732
	2NU-CCGA32.52WG	2NU-CCGW09T308WG												●						●	.375	.156	.0313	.015	.1732
	2NU-CCGA431	2NU-CCGW120404															●	●			.500	.1875	.0156	.015	.2165
	2NU-CCGA432	2NU-CCGW120408															●	●			.500	.1875	.0313	.015	.2165

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

Cubic Boron Nitride (PCBN) Inserts

See pages 562 - 563 for running parameters.

CC

80° Diamond Type

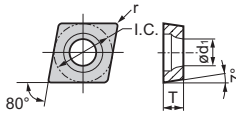
7° Relief

K Cast Iron
S Exotic Materials
H Hardened Steel
S/M Sintered Materials

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

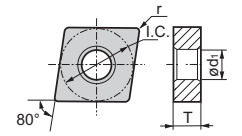
***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

CCGE



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
Mini Tip	NU-CCGE621	NU-CCGW040104												★	●						.1875	.062	.0156	.015	-
	NU-CCGE621HS*	NU-CCGW040104HS												★							.1875	.062	.0156	.015	-
	NU-CCGE622	NU-CCGW040108												★	●						.1875	.062	.0313	.015	-
	NU-CCGE622HS*	NU-CCGW040108HS												★							.1875	.062	.0313	.015	-

CCGT



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Coated Mini Tip	2NCCCGT21.50.5FV	2NC-CCGT060202N-FV	○	○		●	●														.250	.094	.0078	.015	.110
	2NCCCGT21.51FV	2NC-CCGT060204N-FV	○	○		●	●														.250	.094	.0156	.015	.110
	2NCCCGT21.52FV	2NC-CCGT060208N-FV	○	○		●	●														.250	.094	.0313	.015	.110
	2NCCCGT32.50.5LV	2NC-CCGT09T302N-LV	○	○		●	●														.375	.156	.0078	.015	.1732
	2NCCCGT32.51LV	2NC-CCGT09T304N-LV	○	○		●	●														.375	.156	.0156	.015	.1732
	2NCCCGT32.52LV	2NC-CCGT09T384N-LV	○	○		●	●														.375	.156	.0313	.015	.1732
Mini Tip	2NUCCGT21.50.5FV	2NU-CCGT060202N-FV												●							.250	.094	.0078	.015	.110
	2NUCCGT21.51FV	2NU-CCGT060204N-FV												●							.250	.094	.0156	.015	.110
	2NUCCGT21.52FV	2NU-CCGT060208N-FV												●							.250	.094	.0313	.015	.110
	2NUCCGT32.50.5LV	2NU-CCGT09T302N-LV												●							.375	.156	.0078	.015	.1732
	2NUCCGT32.51LV	2NU-CCGT09T304N-LV												●							.375	.156	.0156	.015	.1732
	2NUCCGT32.52LV	2NU-CCGT09T308N-LV												●							.375	.156	.0313	.015	.1732

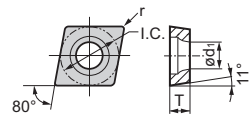
Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

CP

80° Diamond Type

11° Relief

CPGA



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Mini Tip	NU-CPGA2.51.50.5	NU-CPGW080202												●	●						.3125	.094	.0078	.015	.134
	NU-CPGA2.51.50.5HS*	NU-CPGW080202HS												★							.3125	.094	.0078	.015	.134
	NU-CPGA2.51.51	NU-CPGW080204												●	●						.3125	.094	.0156	.015	.134
	NU-CPGA2.51.51HS*	NU-CPGW080204HS												★							.3125	.094	.0156	.015	.134
	NU-CPGA2.51.51LT*	NU-CPGW080204LT												★							.3125	.094	.0156	.015	.134
	NU-CPGA2.51.52	NU-CPGW080208												●	●						.3125	.094	.0313	.015	.134
	NU-CPGA2.51.52HS*	NU-CPGW080208HS												★							.3125	.094	.0313	.015	.134
	NU-CPGA320.5	NU-CPGW090302												★	●						.375	.125	.0078	.015	.1732
	NU-CPGA320.5HS*	NU-CPGW090302HS												★							.375	.125	.0078	.015	.1732
	NU-CPGA320.5LT*	NU-CPGW090302LT												★							.375	.125	.0078	.015	.1732
	NU-CPGA321	NU-CPGW090304												★	●						.375	.125	.0156	.015	.1732
	NU-CPGA321HS*	NU-CPGW090304HS												★							.375	.125	.0156	.015	.1732
	NU-CPGA321LT*	NU-CPGW090304LT												★							.375	.125	.0156	.015	.1732
	NU-CPGA322	NU-CPGW090308												★	★						.375	.125	.0313	.015	.1732
	NU-CPGA322HS*	NU-CPGW090308HS												★							.375	.125	.0313	.015	.1732
	NU-CPGA322LT*	NU-CPGW090308LT												★							.375	.125	.0313	.015	.1732
Multi-Mini Tip	2NU-CPGA32.51	2NU-CPGW09T304															●	●			.375	.156	.0156	.015	.1732
	2NU-CPGA32.52	2NU-CPGW09T308															●	●			.375	.156	.0313	.015	.1732

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

See pages 562 - 563 for running parameters.

DC

55° Diamond Type

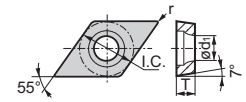
7° Relief

K Cast Iron
S Exotic Materials
H Hardened Steel
S/M Sintered Materials

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

DCGA DCGD



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Coated Mini Tip	2NC-DCGA21.50.5	2NC-DCGW070202		○			●														.250	.094	.0078	.015	.110
	2NC-DCGA21.50.5WG	2NC-DCGW070202WG	○	○		●	●														.250	.094	.0156	.015	.110
	2NC-DCGA21.51	2NC-DCGW070204	○	○	●	●	●		★												.250	.094	.0156	.015	.110
	2NC-DCGA21.51LS*	2NC-DCGW070204LS	○	○		●	●														.250	.094	.0156	.015	.110
	2NC-DCGA21.51WG	2NC-DCGW070204WG		○	●		●														.250	.094	.0156	.015	.110
	2NC-DCGA21.52WG	2NC-DCGW070208WG	○	○		●	●														.250	.094	.0156	.015	.110
	2NC-DCGA32.50.5	2NC-DCGW11T302		○			●		★												.375	.156	.0078	.015	.1732
	2NC-DCGA32.50.5WG	2NC-DCGW11T302WG	○	○		●	●														.375	.156	.0078	.015	.1732
	2NC-DCGA32.51	2NC-DCGW11T304	○	○	●	●	●	●	★												.375	.156	.0156	.015	.1732
	2NC-DCGA32.51LS*	2NC-DCGW11T304LS	○	○		●	●														.375	.156	.0156	.015	.1732
	2NC-DCGA32.51WG	2NC-DCGW11T304WG		○	●		●														.375	.156	.0156	.015	.1732
	2NC-DCGA32.52	2NC-DCGW11T308	○	○	●	●	●	●	★												.375	.156	.0313	.015	.1732
	2NC-DCGA32.52LS*	2NC-DCGW11T308LS		○	●		●														.375	.156	.0313	.015	.1732
	2NC-DCGA32.52WG	2NC-DCGW11T308WG	○	○		●	●														.375	.156	.0313	.015	.1732
Mini Tip	NU-DCGD21.50.5	NU-DCGW070202													●						.250	.094	.0078	.015	.110
	NU-DCGD21.51	NU-DCGW070204													●						.250	.094	.0156	.015	.110
	NU-DCGA21.50.5	NU-DCGW070202												●							.250	.094	.0078	.015	.110
	NU-DCGA21.50.5HS*	NU-DCGW070202HS												●							.250	.094	.0078	.015	.110
	NU-DCGA21.50.5LT*	NU-DCGW070202LT												●							.250	.094	.0078	.015	.110
	NU-DCGA21.51	NU-DCGW070204												●							.250	.094	.0156	.015	.110
	NU-DCGA21.51HS*	NU-DCGW070204HS												●							.250	.094	.0156	.015	.110
	NU-DCGA21.51LT*	NU-DCGW070204LT												●							.250	.094	.0156	.015	.110
	NU-DCGA21.52	NU-DCGW070208												●							.250	.094	.0313	.015	.110
	NU-DCGA21.52LT*	NU-DCGW070208LT												●							.250	.094	.0313	.015	.110
	NU-DCGA32.50.5	NU-DCGW11T302												●							.375	.156	.0078	.015	.1732
	NU-DCGA32.50.5HS*	NU-DCGW11T302HS												●							.375	.156	.0078	.015	.1732
	NU-DCGA32.50.5LT*	NU-DCGW11T302LT												●							.375	.156	.0078	.015	.1732
	NU-DCGA32.51	NU-DCGW11T304									▲			●	●						.375	.156	.0156	.015	.1732
	NU-DCGA32.51HS*	NU-DCGW11T304HS												●							.375	.156	.0156	.015	.1732
	NU-DCGA32.51LT*	NU-DCGW11T304LT												●							.375	.156	.0156	.015	.1732
	NU-DCGA32.52	NU-DCGW11T308												●							.375	.156	.0313	.015	.1732
	NU-DCGA32.52LS*	NU-DCGW11T308LS												●							.375	.156	.0313	.015	.1732
	NU-DCGA32.52LE*	NU-DCGW11T308LE												●							.375	.156	.0313	.015	.1732
	NU-DCGA32.53	NU-DCGW11T312												●							.375	.156	.0469	.015	.1732
	NU-DCGA32.53LT*	NU-DCGW11T312LT												●							.375	.156	.0469	.015	.1732
Multi-Mini Tip	2NU-DCGA21.50.5	2NU-DCGW070202															●	●			.250	.094	.0078	.015	.110
	2NU-DCGA21.50.5WG	2NU-DCGW070202WG												●						●	.250	.094	.0156	.015	.110
	2NU-DCGA21.51	2NU-DCGW070204											●				●	●		●	.250	.094	.0156	.015	.110
	2NU-DCGA21.51W	2NU-DCGW070204W															●				.250	.094	.0156	.015	.110
	2NU-DCGA21.51WG	2NU-DCGW070204WG												●						●	.250	.094	.0156	.015	.110
	2NU-DCGA21.52	2NU-DCGW070208											●				●	●		●	.250	.094	.0313	.015	.110
	2NU-DCGA21.52WG	2NU-DCGW070208WG												●						●	.250	.094	.0313	.015	.110
	2NU-DCGA32.50.5	2NU-DCGW11T302																		●	.375	.156	.0078	.015	.1732
	2NU-DCGA32.50.5LS*	2NU-DCGW11T302LS																		●	.375	.156	.0078	.015	.1732
	2NU-DCGA32.50.5LE*	2NU-DCGW11T302LE																		●	.375	.156	.0078	.015	.1732
	2NU-DCGA32.50.5LF*	2NU-DCGW11T302LF																		●	.375	.156	.0078	.015	.1732
	2NU-DCGA32.50.5WG	2NU-DCGW11T302WG												●						●	.375	.156	.0078	.015	.1732
	2NU-DCGA32.51	2NU-DCGW11T304											●			●	●	●		●	.375	.156	.0156	.015	.1732
	2NU-DCGA32.51LS*	2NU-DCGW11T304LS																		●	.375	.156	.0156	.015	.1732
	2NU-DCGA32.51LE*	2NU-DCGW11T304LE																		●	.375	.156	.0156	.015	.1732
	2NU-DCGA32.51LF*	2NU-DCGW11T304LF																		●	.375	.156	.0156	.015	.1732
	2NU-DCGA32.51W	2NU-DCGW11T304W															●				.375	.156	.0156	.015	.1732
	2NU-DCGA32.51WG	2NU-DCGW11T304WG												●						●	.375	.156	.0156	.015	.1732
	2NU-DCGA32.52	2NU-DCGW11T308											●			●	●	●		●	.375	.156	.0313	.015	.1732
	2NU-DCGA32.52LS*	2NU-DCGW11T308LS																		●	.375	.156	.0313	.015	.1732
	2NU-DCGA32.52LE*	2NU-DCGW11T308LE																		●	.375	.156	.0313	.015	.1732
	2NU-DCGA32.52LF*	2NU-DCGW11T308LF																		●	.375	.156	.0313	.015	.1732
	2NU-DCGA32.52W	2NU-DCGW11T308W															●				.375	.156	.0313	.015	.1732
	2NU-DCGA32.52WG	2NU-DCGW11T308WG												●						●	.375	.156	.0313	.015	.1732

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

Cubic Boron Nitride (PCBN) Inserts

See pages 562 - 563 for running parameters.

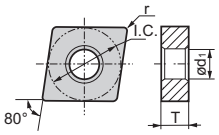
DC — 55° Diamond Type — 7° Relief

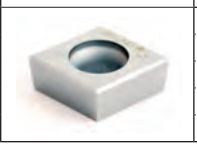
K Cast Iron
S Exotic Materials
H Hardened Steel
S/M Sintered Materials

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

DCGT



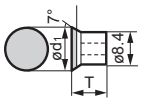
	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
Coated Mini Tip 	2NCDCGT21.50.5FV	2NC-DCGT070202N-FV	○	○		●	●														.250	.094	.0078	.015	.110
	2NCDCGT21.51FV	2NC-DCGT070204N-FV	○	○		●	●														.250	.094	.0156	.015	.110
	2NCDCGT21.52FV	2NC-DCGT070208N-FV	○	○		●	●														.250	.094	.0313	.015	.110
	2NCDCGT32.50.5LV	2NC-DCGT11T302N-FV	○	○		●	●														.375	.156	.0078	.015	.1732
	2NCDCGT32.51LV	2NC-DCGT11T304N-FV	○	○		●	●														.375	.156	.0156	.015	.1732
	2NCDCGT32.52LV	2NC-DCGT11T308N-FV	○	○		●	●														.375	.156	.0313	.015	.1732
Mini Tip 	2NUDCGT21.50.5FV	2NU-DCGT070202N-FV												●							.250	.094	.0078	.015	.110
	2NUDCGT32.50.5FV	2NU-DCGT11T302N-FV												●							.375	.156	.0078	.015	.1732
	2NUDCGT32.50.5LV	2NU-DCGT11T302N-LV												●							.375	.156	.0078	.015	.1732
	2NUDCGT32.51LV	2NU-DCGT11T304N-LV												●							.375	.156	.0156	.015	.1732
	2NUDCGT32.52LV	2NU-DCGT11T308N-LV												●							.375	.156	.0313	.015	.1732

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

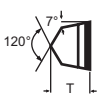
RC — Round Type — 7° Relief

RCGA RCGX

RCGA



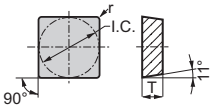
RCGX



		Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
Full Tip	RCGA 	RCGA094	RCGA0906MO													★						.354	.250	-	.040	-
	RCGX 	RCGX25	RCGX060700																●			.250	.309	-	.040	-
		RCGX35	RCGX090700																●			.375	.309	-	.040	-
		RCGX45	RCGX120700																●			.500	.312	-	.040	-

SP — Square Type — 11° Relief

SPG



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
Full Tip 	SPG322	SPGN090308																●			.375	.125	.0313	.020	-
	SPG421	SPGN120304													●						.500	.125	.0156	.020	-
Mini Tip 	NU-SPG321	NU-SPGN090304												●							.375	.125	.0156	.015	-
	NU-SPG321HS*	NU-SPGN090304HS												★							.375	.125	.0156	.015	-
	NU-SPG321LT*	NU-SPGN090304LT												★							.375	.125	.0156	.015	-
	NU-SPG322	NU-SPGN090308												●	●						.375	.125	.0313	.015	-
	NU-SPG322HS*	NU-SPGN090308HS												★							.375	.125	.0313	.015	-
	NU-SPG322LT*	NU-SPGN090308LT												★							.375	.125	.0313	.015	-

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

See pages 562 - 563 for running parameters.

SP

Square Type

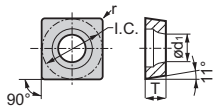
11° Relief

- K Cast Iron
- S Exotic Materials
- H Hardened Steel
- S/M Sintered Materials

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

SPGA



	Catalog No.	ISO Cat. No.	Coated H BNC80	Coated H BNC100	Coated H BNC150	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
Full Tip 	SPGA321	SPGW090304													▲						.375	.125	.0156	.020	.130
	SPGA322	SPGW090308													●						.375	.125	.0313	.020	.130

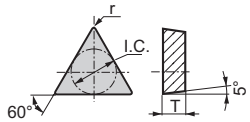
Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

TB

60° Triangle Type

5° Relief

TBGE



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
Full Top 	TBGE520.5B	TBGE060102B									▲			●	●						.156	.0625	.0078	.020	-
	TBGE520.5BSN	TBGE060102-BSN									▲										.156	.0625	.0078	.020	-
	TBGE521B	TBGE060104B								▲				●	●		●	●			.156	.0625	.0156	.020	-
	TBGE522B	TBGE060108B												●	●						.156	.0625	.0313	.020	-

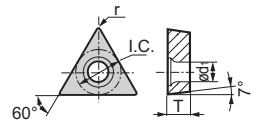
Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.
BSN = Light edge preparation

TC

60° Triangle Type

7° Relief

TCGA



	Catalog No.	ISO Cat. No.	Coated H BNC160	Coated H BNC200	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
Coated Mini Tip 	3NU-TCGA21.51	3NU-TCGW110204															●	●			.250	.094	.0156	.015	.110
	3NU-TCGA21.52	3NU-TCGW110208															●	●			.250	.094	.0313	.015	.110
	3NU-TCGA32.51	3NU-TCGW160204																			.375	.1875	.0156	.015	.1693
	3NU-TCGA32.52	3NU-TCGW160208															●				.375	.1875	.0313	.015	.1693
	3NC-TCGA32.52	3NC-TCGW160208							●																
Multi-Mini Tip 	NC-TCGA21.51	NC-TCGW110204	○	○	●	●	●														.250	.094	.0156	.015	.110
	NC-TCGA21.52	NC-TCGW110208	○	○	●	●	●														.250	.094	.0313	.015	.110

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

Cubic Boron Nitride (PCBN) Inserts

See pages 562 - 563 for running parameters.

TP

60° Triangle Type

11° Relief

- K Cast Iron
- S Exotic Materials
- H Hardened Steel
- S/M Sintered Materials

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

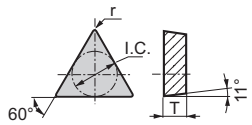
***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

TPEE

	Catalog No.	ISO Cat. No.	Coated H BNC80	Coated H BNC100	Coated H BNC150	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K BN500	Uncoated K BN7000	Uncoated K S BN700	Uncoated K BNS800	Uncoated S/M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
Full Top	TPEE632B	TPEE080208B																	●			.1875	.094	.0313	.020	-
	TPEE632BH	TPEE080208BH																	●			.1875	.094	.0313	.020	-

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.
H = Hone only

TPG



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K BN7000	Uncoated K BN700	Uncoated K BNS800	Uncoated S/M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
Full Tip	TPG1.81.51	TPGN090204												★								.219	.094	.0156	.020	-
	TPG1.81.51HS*	TPGN090204HS												★								.219	.094	.0156	.020	-
	TPG221	TPGN110304									▲			★	●		●	●				.250	.125	.0156	.020	-
	TPG221HS*	TPGN110304HS												★								.250	.125	.0156	.020	-
	TPG222	TPGN110308									▲			★	●		●	●				.250	.125	.0313	.020	-
	TPG222HS*	TPGN110308HS												★								.250	.125	.0313	.020	-
	TPG321	TPGN160304									▲			★	●							.375	.125	.0156	.020	-
	TPG321HS*	TPGN160304HS												★								.375	.125	.0156	.020	-
	TPG322	TPGN160308									▲			★	●		●	●				.375	.125	.0313	.020	-
	TPG322HS*	TPGN160308HS												★								.375	.125	.0313	.020	-
	TPG323	TPGN160312															●	●				.375	.125	.0469	.020	-
	TPG432	TPGN220408									▲			★								.500	.1875	.0313	.020	-
	TPG432HS*	TPGN220408HS												★								.500	.1875	.0313	.020	-
Multi-Mini Tip	3NU-TPG221	3NU-TPGN110304															●	●				.250	.125	.0156	.015	-
	3NU-TPG222	3NU-TPGN110308															●	●				.250	.125	.0313	.015	-
	3NU-TPG321	3NU-TPGN160304																●				.375	.125	.0156	.015	-
	3NU-TPG322	3NU-TPGN160308															●	●				.375	.125	.0313	.015	-
Mini Tip	NU-TPG220.5	NU-TPGN110302												●								.250	.125	.0078	.015	-
	NU-TPG220.5LT*	NU-TPGN110302LT												●								.250	.125	.0078	.015	-
	NU-TPG221	NU-TPGN110304									▲		●	●	●	●						.250	.125	.0156	.015	-
	NU-TPG221HS*	NU-TPGN110304HS												●								.250	.125	.0156	.015	-
	NU-TPG221LT*	NU-TPGN110304LT												●								.250	.125	.0156	.015	-
	NU-TPG222	NU-TPGN110308									▲		●	●	●	●						.250	.125	.0313	.015	-
	NU-TPG222HS*	NU-TPGN110308HS												●								.250	.125	.0313	.015	-
	NU-TPG222LT*	NU-TPGN110308LT												●								.250	.125	.0313	.015	-
	NU-TPG320.5	NU-TPGN160302												●								.375	.125	.0078	.015	-
	NU-TPG321	NU-TPGN160304								▲	▲		●	●	●	●						.375	.125	.0156	.015	-
	NU-TPG321HS*	NU-TPGN160304HS												●								.375	.125	.0156	.015	-
	NU-TPG321LT*	NU-TPGN160304LT												●								.375	.125	.0156	.015	-
	NU-TPG322	NU-TPGN160308								▲	▲		●	●	●	●						.375	.125	.0313	.015	-
	NU-TPG322HS*	NU-TPGN160308HS												●								.375	.125	.0313	.015	-
	NU-TPG322LT*	NU-TPGN160308LT												●								.375	.125	.0313	.015	-

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

See pages 562 - 563 for running parameters.

TP

60° Triangle Type

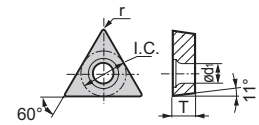
11° Relief

- K Cast Iron
- S Exotic Materials
- H Hardened Steel
- S/M Sintered Materials

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

TPGA TPGD TPGX



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
Coated Mini Tip	NC-TPGA221	NC-TPGW110304	○	○	●	●	●														.250	.125	.0156	.015	.130
	NC-TPGA222	NC-TPGW110308	○	○	●	●	●														.250	.125	.0313	.015	.130
	3NC-TPGA1.81.50.5	3NC-TPGW090202							★												.219	.094	.0078	.015	.102
	3NC-TPGA1.81.51	3NC-TPGW090204							★												.219	.094	.0156	.015	.102
	3NC-TPGA221	3NC-TPGW110304		○			●		★												.250	.125	.0156	.015	.130
	3NC-TPGA221LS	3NC-TPGW110304LS	○	○	★	●	●														.250	.125	.0156	.015	.130
	3NC-TPGA222	3NC-TPGW110308		○			●		★												.250	.125	.0313	.015	.130
	3NC-TPGA222LS	3NC-TPGW110308LS		○			●														.250	.125	.0313	.015	.130
	3NC-TPGA331	3NC-TPGW160404	○	○	●	●	★		★				●								.375	.1875	.0156	.015	.1693
	3NC-TPGA331LS	3NC-TPGW160404LS		○	★		★														.375	.1875	.0156	.015	.1693
	3NC-TPGA332	3NC-TPGW160408	○	○	●	●	●		★				●								.375	.1875	.0313	.015	.1693
	3NC-TPGA332LS	3NC-TPGW160408LS		○			★														.375	.1875	.0313	.015	.1693
Full Tip	TPGA221	TPGW110304									▲			★	●						.250	.125	.0156	.020	.130
	TPGA221HS*	TPGW110304HS												★							.250	.125	.0156	.020	.130
	TPGA222	TPGW110308												★	●						.250	.125	.0313	.020	.130
	TPGA222HS*	TPGW110308HS												★							.250	.125	.0313	.020	.130
	TPGA331	TPGW160404									▲			★	●						.375	.1875	.0156	.020	.1693
	TPGA331HS*	TPGW160404HS												★							.375	.1875	.0156	.020	.1693
	TPGA332	TPGW160408									▲			★	●						.375	.1875	.0313	.020	.1693
	TPGA332HS*	TPGW160408HS												★							.375	.1875	.0313	.020	.1693
Multi-Mini Tip	3NU-TPGA21.51	3NU-TPGW110204															●	●		●	.250	.094	.0156	.015	.110
	3NU-TPGA21.51LS*	3NU-TPGW110204LS																		●	.250	.094	.0156	.015	.110
	3NU-TPGA21.51LE*	3NU-TPGW110204LE																		●	.250	.094	.0156	.015	.110
	3NU-TPGA21.51LF*	3NU-TPGW110204LF																		●	.250	.094	.0156	.015	.110
	3NU-TPGA21.52	3NU-TPGW110208															●	●		●	.250	.094	.0313	.015	.110
	3NU-TPGA220.5	3NU-TPGW110302															●	●		●	.250	.125	.0078	.015	.130
	3NU-TPGA220.5LF*	3NU-TPGW110302LF																			.250	.125	.0078	.015	.130
	3NU-TPGA221	3NU-TPGW110304															●	●		●	.250	.125	.0156	.015	.130
	3NU-TPGA221LS*	3NU-TPGW110304LS																		●	.250	.125	.0156	.015	.130
	3NU-TPGA221LE*	3NU-TPGW110304LE																		●	.250	.125	.0156	.015	.130
	3NU-TPGA221LF*	3NU-TPGW110304LF																		●	.250	.125	.0156	.015	.130
	3NU-TPGA222	3NU-TPGW110308															●	●		●	.250	.125	.0313	.015	.130
	3NU-TPGA222LF*	3NU-TPGW110308LF																		●	.250	.125	.0313	.015	.130
	3NU-TPGA331	3NU-TPGW160404												●		●	●	●			.375	.1875	.0156	.015	.1693
	3NU-TPGA332	3NU-TPGW160408												●		●	●	●			.375	.1875	.0313	.015	.1693
Mini-Tip	NU-TPGX21.50.5	NU-TPGW110202													●						.250	.094	.0078	.015	.110
	NU-TPGX21.51	NU-TPGW110204								▲					●						.250	.094	.0156	.015	.110
	NU-TPGX21.51S	NU-TPGW110204S													●						.250	.094	.0156	.015	.110
	NU-TPGD630.5	NU-TPGW080202												●	●		●	●			.094	.1875	.0078	.015	.090
	NU-TPGD630.5HS*	NU-TPGW080202HS												●							.094	.1875	.0078	.015	.090
	NU-TPGD630.5LT*	NU-TPGW080202LT												●							.094	.1875	.0078	.015	.090
	NU-TPGD630.5S	NU-TPGW080202S													●						.094	.1875	.0078	.015	.090
	NU-TPGD631	NU-TPGW080204								▲			●	●	●		●	●			.094	.1875	.0156	.015	.090
	NU-TPGD631HS*	NU-TPGW080204HS												●							.094	.1875	.0156	.015	.090
	NU-TPGD631LT*	NU-TPGW080204LT												●							.094	.1875	.0156	.015	.090
	NU-TPGD631S	NU-TPGW080204S													★						.094	.1875	.0156	.015	.090
	NU-TPGD632	NU-TPGW080208												●							.094	.1875	.0313	.015	.090

S = Edge preparation for hardened steel boring

Cubic Boron Nitride (PCBN) Inserts

See pages 562 - 563 for running parameters.

TP

60° Triangle Type

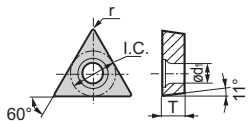
11° Relief

- **K Cast Iron**
- **S Exotic Materials**
- **H Hardened Steel**
- **S/M Sintered Materials**

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

TPGA TPGD TPGX *(cont.)*



Mini-Tip

Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2010	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated K BN250	Uncoated K BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
NU-TPGD632HS*	NU-TPGW080208HS												●							.094	.1875	.0313	.015	.090
NU-TPGA1.81.50.5	NU-TPGW090202												●	●						.219	.094	.0078	.015	.102
NU-TPGA1.81.50.5HS*	NU-TPGW090202HS												●							.219	.094	.0078	.015	.102
NU-TPGA1.81.50.5LT*	NU-TPGW090202LT												●							.219	.094	.0078	.015	.102
NU-TPGA1.81.51	NU-TPGW090204												●	●						.219	.094	.0156	.015	.102
NU-TPGA1.81.51HS*	NU-TPGW090204HS												●							.219	.094	.0156	.015	.102
NU-TPGA1.81.51LT*	NU-TPGW090204LT												●							.219	.094	.0156	.015	.102
NU-TPGA1.81.52	NU-TPGW090208												●							.219	.094	.0313	.015	.102
NU-TPGA21.50.5	NU-TPGW110202												●							.219	.094	.0078	.015	.102
NU-TPGA21.50.5LT*	NU-TPGW110202LT												●							.219	.094	.0078	.015	.102
NU-TPGA21.51	NU-TPGW110204												●							.219	.094	.0156	.015	.102
NU-TPGA21.51HS*	NU-TPGW110204HS												●							.219	.094	.0156	.015	.102
NU-TPGA21.51LT*	NU-TPGW110204LT												●							.219	.094	.0156	.015	.102
NU-TPGA220.5	NU-TPGW110302											●	●	●						.250	.125	.0078	.015	.130
NU-TPGA220.5HS*	NU-TPGW110302HS												●							.250	.125	.0078	.015	.130
NU-TPGA220.5LT*	NU-TPGW110302LT												●							.250	.125	.0078	.015	.130
NU-TPGA221	NU-TPGW110304								▲	▲		●	●	●	●					.250	.125	.0156	.015	.130
NU-TPGA221HS*	NU-TPGW110304HS												●							.250	.125	.0156	.015	.130
NU-TPGA221LT*	NU-TPGW110304LT												●							.250	.125	.0156	.015	.130
NU-TPGA221S	NU-TPGW110304LT									▲				★						.250	.125	.0156	.015	.130
NU-TPGA222	NU-TPGW110308								▲	▲		●	●	●	●					.250	.125	.0313	.015	.130
NU-TPGA222HS*	NU-TPGW110308HS												●							.250	.125	.0313	.015	.130
NU-TPGA222LT*	NU-TPGW110308LT												●							.250	.125	.0313	.015	.130
NU-TPGA222S	NU-TPGW110308S									▲				★						.250	.125	.0313	.015	.130
NU-TPGA320.5	NU-TPGW160302												●							.375	.125	.0078	.015	.1693
NU-TPGA321	NU-TPGW160304											●	●	●	●					.375	.125	.0156	.015	.1693
NU-TPGA322	NU-TPGW160308											●	●	●	●					.375	.125	.0313	.015	.1693
NU-TPGA331	NU-TPGW160404								▲	▲		●	●	●	●					.375	.1875	.0156	.015	.1693
NU-TPGA331HS*	NU-TPGW160404HS												●							.375	.1875	.0156	.015	.1693
NU-TPGA331LT*	NU-TPGW160404LT												●							.375	.1875	.0156	.015	.1693
NU-TPGA331S	NU-TPGW160404S									▲				★						.375	.1875	.0156	.015	.1693
NU-TPGA332	NU-TPGW160408								▲	▲		●	●	●	●					.375	.1875	.0313	.015	.1693
NU-TPGA332HS*	NU-TPGW160408HS												●							.375	.1875	.0313	.015	.1693
NU-TPGA332LT*	NU-TPGW160408LT												●							.375	.1875	.0313	.015	.1693
NU-TPGA332S	NU-TPGW160408S									▲				★						.375	.1875	.0313	.015	.1693

S = Edge preparation for hardened steel boring

See pages 562 - 563 for running parameters.

VB

35° Diamond Type

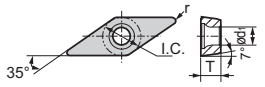
5° Relief

- K Cast Iron
- S Exotic Materials
- H Hardened Steel
- S/M Sintered Materials

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

***EDGE PREPARATIONS:** Please see page 555 for descriptions and performance ranges of CBN edge treatments.

VBGA



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
Coated Mini-Tip	2NC-VBGA221	2NC-VBGW110304	○	○	●	●	●		★												.250	.125	.0156	.015	.134
	2NC-VBGA221LS*	2NC-VBGW110304LS			●																.250	.125	.0156	.015	.134
	2NC-VBGA222	2NC-VBGW110308		○			●		★												.250	.125	.0313	.015	.134
	2NC-VBGA331	2NC-VBGW160404		○			●		★												.375	.1875	.0156	.015	.1732
	2NC-VBGA332	2NC-VBGW160408		○			●		●												.375	.1875	.0313	.015	.1732
Multi-Mini Tip	2NU-VBGA221	2NU-VBGW110304															●	●			.250	.125	.0156	.015	.134
	2NU-VBGA222	2NU-VBGW110308															●	●			.250	.125	.0313	.015	.134
	2NU-VBGA331	2NU-VBGW160404															●				.375	.1875	.0156	.015	.1732
	2NU-VBGA332	2NU-VBGW160408															●				.375	.1875	.0313	.015	.1732
Mini-Tip	NU-VBGA220.5	NU-VBGA110302												●							.250	.125	.0078	.015	.134
	NU-VBGA220.5HS*	NU-VBGA110302HS												●							.250	.125	.0078	.015	.134
	NU-VBGA220.5LT*	NU-VBGA110302LT												●							.250	.125	.0078	.015	.134
	NU-VBGA221	NU-VBGA110304												●							.250	.125	.0156	.015	.134
	NU-VBGA221HS*	NU-VBGA110304HS												●							.250	.125	.0156	.015	.134
	NU-VBGA221LT*	NU-VBGA110304LT												●							.250	.125	.0156	.015	.134
	NU-VBGA222	NU-VBGA110308												●							.250	.125	.0313	.015	.134
	NU-VBGA222HS*	NU-VBGA110308HS												●							.250	.125	.0313	.015	.134
	NU-VBGA222LT*	NU-VBGA110308LT												●							.250	.125	.0313	.015	.134
	NU-VBGA330.5	NU-VBGA160402												●							.375	.1875	.0078	.015	.1732
	NU-VBGA330.5LT*	NU-VBGA160402LT												●							.375	.1875	.0078	.015	.1732
	NU-VBGA331	NU-VBGA160404												●							.375	.1875	.0156	.015	.1732
	NU-VBGA331HS*	NU-VBGA160404HS												●							.375	.1875	.0156	.015	.1732
	NU-VBGA331LT*	NU-VBGA160404LT												●							.375	.1875	.0156	.015	.1732
	NU-VBGA332	NU-VBGA160408												●							.375	.1875	.0313	.015	.1732
	NU-VBGA332HS*	NU-VBGA160408HS												●							.375	.1875	.0313	.015	.1732
	NU-VBGA332LT*	NU-VBGA160408LT												●							.375	.1875	.0313	.015	.1732

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

Cubic Boron Nitride (PCBN) Inserts

See pages 562 - 563 for running parameters.

VC

35° Diamond Type

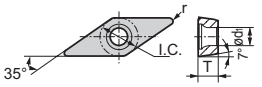
7° Relief

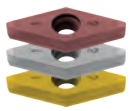
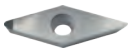
K Cast Iron
S Exotic Materials
H Hardened Steel
S/M Sintered Materials

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

***EDGE PREPARATIONS:**
Please see page 555 for descriptions and performance ranges of CBN edge treatments.

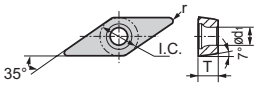
VCGA

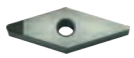


	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
Coated Mini Tip 	2NC-VCGA331	2NC-VCGW160404	○	○	●	●	●														.375	.1875	.0156	.015	.1732
	2NC-VCGA331LS*	2NC-VCGW160404LS		○	★		★														.375	.1875	.0156	.015	.1732
	2NC-VCGA331HS*	2NC-VCGW160404HS		○			★														.375	.1875	.0156	.015	.1732
	2NC-VCGA332	2NC-VCGW160408	○	○	●	●	●														.375	.1875	.0313	.015	.1732
	2NC-VCGA332LS*	2NC-VCGW160408LS		○	★		★														.375	.1875	.0313	.015	.1732
	2NC-VCGA332HS*	2NC-VCGW160408HS		○			★														.375	.1875	.0313	.015	.1732
Mini Tip 	NU-VCGA1.51.50.5	NU-VCGW080202												★							.1874	.094	.0078	.015	.091
	NU-VCGA1.51.50.5LT*	NU-VCGW080202LT												★							.1874	.094	.0078	.015	.091
	NU-VCGA1.51.51	NU-VCGW080204												★							.1874	.094	.0156	.015	.091
	NU-VCGA1.51.51HS*	NU-VCGW080204HS												★							.1874	.094	.0156	.015	.091
	NU-VCGA1.51.51LT*	NU-VCGW080204LT												★							.1874	.094	.0156	.015	.091
	NU-VCGA1.51.52	NU-VCGW080208												★							.1874	.094	.0313	.015	.091
	NU-VCGA1.51.52HS*	NU-VCGW080208HS												★							.1874	.094	.0313	.015	.091
	NU-VCGA1.51.52LT*	NU-VCGW080208LT												★							.1874	.094	.0313	.015	.091
	NU-VCGA220.5	NU-VCGW110302												●	●						.250	.125	.0078	.015	.134
	NU-VCGA220.5HS*	NU-VCGW110302HS												●							.250	.125	.0078	.015	.134
	NU-VCGA221	NU-VCGW110304												●	★						.250	.125	.0156	.015	.134
	NU-VCGA221HS*	NU-VCGW110304												●							.250	.125	.0156	.015	.134

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

VCMA



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC1500	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
Full Tip 	VCMA331	VCMW160404									★										.375	.1875	.0156	.020	.1732
	VCMA332	VCMW160404									★										.375	.1875	.0313	.020	.1732

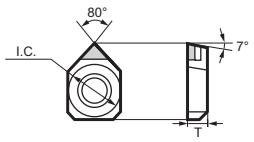
Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

ZN

80° Special Shape

7° Relief

ZNEX



	Catalog No.	ISO Cat. No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN7000	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
Full Tip 	NC-ZNEX620.5	NC-ZNEX040102		○			●														.1875	.0625	.0078	.015	.090
	NC-ZNEX621	NC-ZNEX040104		○			●														.1875	.0625	.0156	.015	.090
	NU-ZNEX620.5	NU-ZNEX040102												●	●			●			.1875	.0625	.0078	.015	.090
	NU-ZNEX621	NU-ZNEX040104												●	●		●	●			.1875	.0625	.0156	.015	.090

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

See pages 562 - 563 for running parameters.

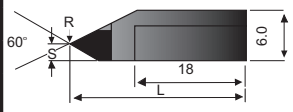
Threading & Grooving

- K Cast Iron
- S Exotic Materials
- H Hardened Steel
- S/M Sintered Materials

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

THREADING INSERTS *for BNGG Holder*

BNTT

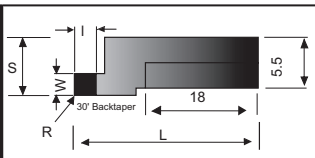


Full Tip

Catalog No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	Pitch	R	L	S
BNTT1020R													●					1.0 ~ 2.0	.13	25.0	2.0
BNTT1530R													●					1.5 ~ 3.0	.20	25.0	2.0

GROOVING INSERTS *for BNGNT Holder*

BNGNT

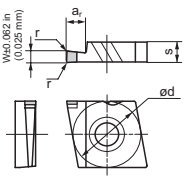


Full Tip

Catalog No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	W	I	R	L	S
BNGNT0200L													●					2.0	4.0	0.2	25.0	6.0
BNGNT0200R													●	●								
BNGNT0250L													●					2.5	4.0	0.2	25.0	6.0
BNGNT0250R													●	●								
BNGNT0300L													●					3.0	5.0	0.4	25.0	6.0
BNGNT0300R													●									
BNGNT0400L													●					4.0	6.0	0.4	26.0	6.0
BNGNT0400R													●	●								
BNGNT0500L																		5.0	6.0	0.4	26.0	6.0
BNGNT0500R													●									
BNGNT0600L																		6.0	7.0	0.4	27.0	6.0
BNGNT0600R													●									

GWB GROOVING INSERTS *for GWB Holder*

Right CGA	CBN BN2000	CBN BN250	CBN BNC30G	W ±.001 in ±.025 (mm)	a_r in (mm)	r in (mm)	ød in (mm)	s in (mm)	Left CGA	CBN BN2000	CBN BN250	CBN BNC30G
CGAR4062	●	●	●	.062 (1.575)	.1378 (3.5)	.0078 (.2)	.625 (15.875)	.1875 (4.76)	CGAL4062	●	●	●
CGAR4094	●	●	●	.094 (2.388)	.1575 (4.0)				CGAL4094	●	●	●
CGAR4125	●	●	●	.125 (3.175)	.1969 (5.0)				CGAL4125	●	●	●
CGAR6189	●	●	●	.189 (4.801)				.25 (6.35)	CGAL6189	●	●	●
CGAR1504150		●	●	.0591 (1.5)	.1378 (3.5)			.1875 (4.76)	CGAL1504150	●	●	●
CGAR1504200	●	●	●	.0787 (2.0)					CGAL1504200	●	●	●
CGAR1504250		●	●	.0984 (2.5)	.1575 (4.0)				CGAL1504250	●	●	●
CGAR1504300	●	●	●	.1181 (3.0)					CGAL1504300	●	●	●
CGAR1504350		●	●	.1378 (3.5)	.1969 (5.0)				CGAL1504350		●	●
CGAR1504400	●	●	●	.1575 (4.0)					CGAL1504400	●	●	●
CGAR1504450		●	●	.1772 (4.5)					CGAL1504450		●	●
CGAR1506500	●	●	●	.1969 (5.0)					CGAL1506500	●	●	●
CGAR1506550		●	●	.2165 (5.5)				.25 (6.35)	CGAL1506550		●	●
CGAR1506600	●	●	●	.2362 (6.0)					CGAL1506600	●	●	●



Cubic Boron Nitride (PCBN) Inserts & Polycrystalline Diamond (PCD) Inserts

Threading & Grooving

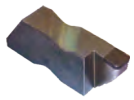
- K Cast Iron
- S Exotic Materials
- H Hardened Steel
- S/M Sintered Materials

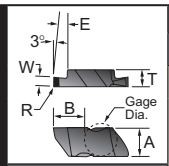
- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

See pages 562 - 563 for running parameters.

SumiNOTCH GROOVING INSERTS *for SS & A-SE Holders*

SG





	Catalog No.	Coated H BNC2010	Coated H BNC2020	Coated H BNC100	Coated H BNC160	Coated H BNC200	Coated H BNC300	Coated K BNC500	Uncoated H BNX10	Uncoated H BNX20	Uncoated H BNX25	Uncoated H BN1000	Uncoated H BN2000	Uncoated H BN250	Uncoated H BN350	Uncoated K S BN700	Uncoated K S BNS800	Uncoated S M BN7500	W ±.001	R	E ±.001	T	A	B	Gage Dia.
Full Tip	SG-3047R												●	●	●				.047	.005/.010	.075	.195	.344	.4050	.3750
	SG-3062L												●	●	●				.062	.005/.010	.094	.195	.344	.4050	.3750
	SG-3062R												●	●	●				.062	.005/.010	.094	.195	.344	.4050	.3750
	SG-3094L												●		●				.094	.005/.010	.150	.195	.344	.4050	.3750
	SG-3094R												●	●	●				.094	.005/.010	.150	.195	.344	.4050	.3750
	SG-3125L												●	●	●				.125	.005/.010	.150	.195	.344	.4050	.3750
	SG-3125R												●	●	●				.125	.005/.010	.150	.195	.344	.4050	.3750
	SG-3189R														●				.189	.020/.025	.150	.195	.344	.4050	.3750

PCD INSERTS - NEGATIVE

CN

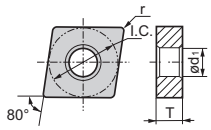
80° Diamond Type

Negative

EDGE PREPARATIONS:

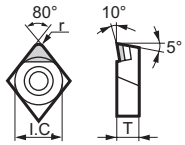
- S Standard
- H Honed
- K Reinforced
- AW Chipbreaker Stud
- WF High Luster "Mirror-Like" Finish

CNMA



	Catalog No.	ISO Cat. No.	Stock N DA90	Stock N DA150	Stock N DA1000	Stock N DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	CNMA432	CNMA120408				●	.500	.1875	.0313	.2031	S	0°
	CNMA432H	CNMA120408H				●	.500	.1875	.0313	.2031	H	0°
NF Tip	NF-CNMA432	NF-CNMA120408			●	●	.500	.1875	.0313	.2031	S	0°
	NF-CNMA432H	NF-CNMA120408H				●	.500	.1875	.0313	.2031	H	0°

CNMX



	Catalog No.	ISO Cat. No.	Stock N DA90	Stock N DA150	Stock N DA1000	Stock N DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	CNMX431	CNMX120404		●		●	.500	.1875	.0156	.2031	S	10°
	CNMX432	CNMX120408		●		●	.500	.1875	.0313	.2031	S	10°
	CNMX433	CNMX120412		●		●	.500	.1875	.0469	.2031	S	10°
NF Tip	NF-CNMX431	NF-CNMX120404			●	●	.500	.1875	.0156	.2031	S	10°
	NF-CNMX432	NF-CNMX120408			●	●	.500	.1875	.0313	.2031	S	10°
	NF-CNMX433	NF-CNMX120412			★	★	.500	.1875	.0469	.2031	S	10°

See page 564 for running parameters.

CN

80° Diamond Type

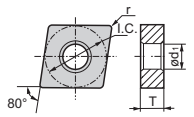
Negative

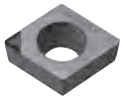
EDGE PREPARATIONS:

S Standard
H Honed
K Reinforced
AW Chipbreaker Stud
WF High Luster "Mirror-Like" Finish

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

CNMX with Chipbreaker





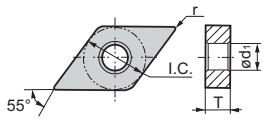
Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA200	DA1000	DA2200	Dimensions Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
NF-CNMX431LD	NF-CNMX120404LD				○		.500	.1875	.0156	.2031	S	0°
NF-CNMX431GD	NF-CNMX120404GD				○		.500	.1875	.0156	.2031	S	0°
NF-CNMX432LD	NF-CNMX120408LD				○		.500	.1875	.0312	.2031	S	0°
NF-CNMX432GD	NF-CNMX120408GD				○		.500	.1875	.0312	.2031	S	0°
NF-CNMX433LD	NF-CNMX120412LD				○		.500	.1875	.0469	.2031	S	0°
NF-CNMX433GD	NF-CNMX120412GD				○		.500	.1875	.0469	.2031	S	0°

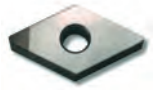
DN

55° Diamond Type

Negative

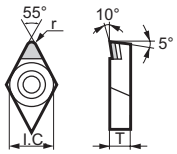
DNMA

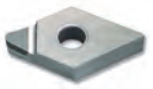




	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Dimensions Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	DNMA432	DNMA150408				●	.500	.1875	.0313	.2031	S	0°
Standard Tip	DNMA432H	DNMA150408H				●	.500	.1875	.0313	.2031	H	0°
NF Tip	NF-DNMA432	NF-DNMA150408				●	.500	.1875	.0313	.2031	S	0°
NF Tip	NF-DNMA432H	NF-DNMA150408H				●	.500	.1875	.0313	.2031	H	0°

DNMX





	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Dimensions Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	DNMX431	DNMX150404		●		●	.500	.1875	.0156	.2031	S	10°
Standard Tip	DNMX432	DNMX150408		●		●	.500	.1875	.0313	.2031	S	10°
Standard Tip	DNMX433	DNMX150412		●		●	.500	.1875	.0469	.2031	S	10°
NF Tip	NF-DNMX430.5	NF-DNMX150402			●	●	.500	.1875	.0078	.2031	S	10°
NF Tip	NF-DNMX431	NF-DNMX150404			●	●	.500	.1875	.0156	.2031	S	10°
NF Tip	NF-DNMX432	NF-DNMX150408			●	●	.500	.1875	.0313	.2031	S	10°
NF Tip	NF-DNMX433	NF-DNMX150412			★	★	.500	.1875	.0469	.2031	S	10°

Polycrystalline Diamond (PCD) Inserts

See page 564 for running parameters.

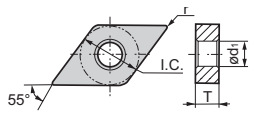
DN — 55° Diamond Type — Negative

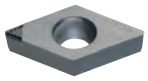
EDGE PREPARATIONS:

- S Standard
- H Honed
- K Reinforced
- AW Chipbreaker Stud
- WF High Luster "Mirror-Like" Finish

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

DNMX with Chipbreaker

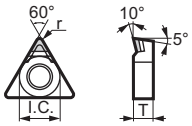




Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA200	DA1000	DA2200	Dimensions Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
NF-DNMX430.5LD	NF-DNMX150402LD				○		.500	.1875	.0078	.2031	S	0°
NF-DNMX430.5GD	NF-DNMX150402GD				○		.500	.1875	.0078	.2031	S	0°
NF-DNMX431LD	NF-DNMX150404LD				○		.500	.1875	.0156	.2031	S	0°
NF-DNMX431GD	NF-DNMX150404GD				○		.500	.1875	.0156	.2031	S	0°
NF-DNMX432LD	NF-DNMX150408LD				○		.500	.1875	.0312	.2031	S	0°
NF-DNMX432GD	NF-DNMX150408GD				○		.500	.1875	.0312	.2031	S	0°
NF-DNMX433LD	NF-DNMX150412LD				○		.500	.1875	.0469	.2031	S	0°
NF-DNMX433GD	NF-DNMX150412GD				○		.500	.1875	.0469	.2031	S	0°

TN — 60° Diamond Type — Negative

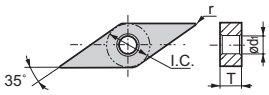
TNMX

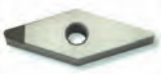


	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Dimensions Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	TNMX331	TNMX160404				★	.375	.1875	.0156	.150	S	10°
Standard Tip	TNMX332	TNMX160408				★	.375	.1875	.0313	.150	S	10°
NF Tip	NF-TNMX330.5	NF-TNMX160402			●	●	.375	.1875	.0078	.150	S	10°
NF Tip	NF-TNMX331	NF-TNMX160404			●	●	.375	.1875	.0156	.150	S	10°
NF Tip	NF-TNMX332	NF-TNMX160408			●	●	.375	.1875	.0313	.150	S	10°

VN — 35° Diamond Type — Negative

VNMA





	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Dimensions Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	VNMA333	VNMA160412	●			●	.375	.1875	.0469	.150	S	0°
Standard Tip	VNMA333H	VNMA160412H	●			●	.375	.1875	.0469	.150	H	0°
NF Tip	NF-VNMA332	NF-VNMA160408			●	●	.375	.1875	.0313	.150	S	0°
NF Tip	NF-VNMA333	NF-VNMA160412			●	●	.375	.1875	.0469	.150	S	0°
NF Tip	NF-VNMA333H	NF-VNMA160412H				●	.375	.1875	.0469	.150	H	0°

See page 564 for running parameters.

VN

35° Diamond Type

Negative

EDGE PREPARATIONS:

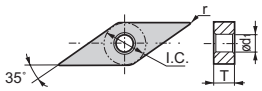
S Standard
H Honed
K Reinforced
AW Chipbreaker Stud
WF High Luster "Mirror-Like" Finish

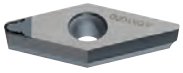
● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

VNMX

	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	VNMX331	VNMX160404		●		●	.375	.1875	.0156	.150	S	10°
	VNMX332	VNMX160408		●		●	.375	.1875	.0313	.150	S	10°
	VNMX333	VNMX160412		●		●	.375	.1875	.0469	.150	S	10°
NF Tip	NF-VNMX330.5	NF-VNMX160402			●	●	.375	.1875	.0078	.150	S	10°
	NF-VNMX331	NF-VNMX160404			●	●	.375	.1875	.0156	.150	S	10°
	NF-VNMX332	NF-VNMX160408			●	●	.375	.1875	.0313	.150	S	10°
	NF-VNMX333	NF-VNMX160412			★	●	.375	.1875	.0469	.150	S	10°

VNMX with Chipbreaker





Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA200	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
NF-VNMX330.5LD	NF-VNMX160402LD				○		.375	.1875	.0078	.150	S	0°
NF-VNMX330.5GD	NF-VNMX160402GD				○		.375	.1875	.0078	.150	S	0°
NF-VNMX331LD	NF-VNMX160404LD				○		.375	.1875	.0156	.150	S	0°
NF-VNMX331GD	NF-VNMX160404GD				○		.375	.1875	.0156	.150	S	0°
NF-VNMX332LD	NF-VNMX160408LD				○		.375	.1875	.0312	.150	S	0°
NF-VNMX332GD	NF-VNMX160408GD				○		.375	.1875	.0312	.150	S	0°
NF-VNMX333LD	NF-VNMX160412LD				○		.375	.1875	.0469	.150	S	0°
NF-VNMX333GD	NF-VNMX160412GD				○		.375	.1875	.0469	.150	S	0°

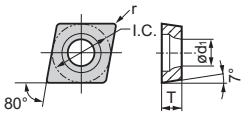
PCD INSERTS - NEGATIVE

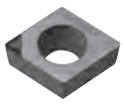
CC

80° Diamond Type

7° Relief

CCMT





Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA200	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
NF-CCMT21.50.5GD	NF-CCMT060202N-GD				○		.250	.094	.0078	.107	S	0°
NF-CCMT21.50.5LD	NF-CCMT060202N-LD				○		.250	.094	.0078	.107	S	0°
NF-CCMT21.51GD	NF-CCMT060204N-GD				○		.250	.094	.0156	.107	S	0°
NF-CCMT21.51LD	NF-CCMT060204N-LD				○		.250	.094	.0156	.107	S	0°
NF-CCMT32.50.5GD	NF-CCMT09T302N-GD				○		.375	.156	.0078	.1732	S	0°
NF-CCMT32.50.5LD	NF-CCMT09T302N-LD				○		.375	.156	.0078	.1732	S	0°
NF-CCMT32.51GD	NF-CCMT09T304N-GD				○		.375	.156	.0156	.1732	S	0°
NF-CCMT32.51LD	NF-CCMT09T304N-LD				○		.375	.156	.0156	.1732	S	0°
NF-CCMT32.52GD	NF-CCMT09T308N-GD				○		.375	.156	.0312	.1732	S	0°
NF-CCMT32.52LD	NF-CCMT09T308N-LD				○		.375	.156	.0312	.1732	S	0°

Polycrystalline Diamond (PCD) Inserts

See page 564 for running parameters.

CC

80° Diamond Type

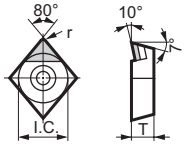
7° Relief

EDGE PREPARATIONS:

- S Standard
- H Honed
- K Reinforced
- AW Chipbreaker Stud
- WF High Luster "Mirror-Like" Finish

- ● USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- ○ Available 1st Quarter 2015

CCMX



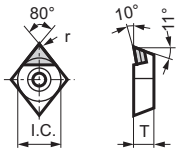
	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
NF Tip	NF-CCMX21.50	NF-CCMT060201			●	●	.250	.094	.0039	.110	S	10°
	NF-CCMX21.50.5	NF-CCMT060202			●	●	.250	.094	.0078	.110	S	10°
	NF-CCMX21.51	NF-CCMT060204			●	●	.250	.094	.0156	.110	S	10°
	NF-CCMX32.50.5	NF-CCMT09T302			●	●	.375	.156	.0078	.1732	S	10°
	NF-CCMX32.51	NF-CCMT09T304			●	●	.375	.156	.0156	.1732	S	10°
	NF-CCMX32.52	NF-CCMT09T308			●	●	.375	.156	.0313	.1732	S	10°

CP

80° Diamond Type

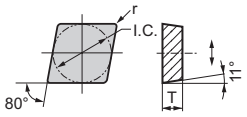
11° Relief

CPMX



	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	CPMX2.51.50.5	CPMT080202				●	.3125	.094	.0078	.134	S	10°
	CPMX2.51.51	CPMT080204				●	.3125	.094	.0156	.134	S	10°
	CPMX2.51.52	CPMT080208				●	.3125	.094	.0313	.134	S	10°
	CPMX320.5	CPMT090302				●	.375	.125	.0078	.1732	S	10°
	CPMX321	CPMT090304				●	.375	.125	.0156	.1732	S	10°
	CPMX322	CPMT090308				●	.375	.125	.0313	.1732	S	10°
NF Tip	NF-CPMX21.51	NF-CPMT060204			●	●	.250	.094	.0156	.110	S	10°
	NF-CPMX21.52	NF-CPMT060208			●	●	.250	.094	.0313	.110	S	10°
	NF-CPMX32.51	NF-CPMT09T304			●	●	.375	.156	.0156	.1732	S	10°
	NF-CPMX32.52	NF-CPMT09T308			●	●	.375	.156	.0313	.1732	S	10°
	NF-CPMX320.5	NF-CPMT090302			●	●	.375	.125	.0078	.1732	S	10°
	NF-CPMX321	NF-CPMT090304			●	●	.375	.125	.0156	.1732	S	10°
	NF-CPMX322	NF-CPMT090308			●	●	.375	.125	.0313	.1732	S	10°

CPG



	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	CPG422	CPGN120308				●	.500	.125	.0313	-	S	0°

See page 564 for running parameters.

CP

80° Diamond Type

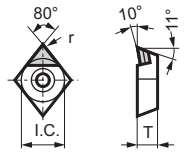
11° Relief

EDGE PREPARATIONS:

S Standard
H Honed
K Reinforced
AW Chipbreaker Stud
WF High Luster "Mirror-Like" Finish

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

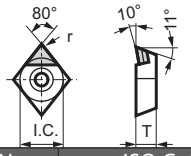
CPGA



NF Tip

Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
NF-CPGA321	NF-CPGW090304			●		.375	.125	.0156	.1732	S	10°
NF-CPGA322	NF-CPGW090308			●		.375	.125	.0313	.1732	S	10°

CPEW



Standard Tip

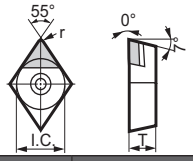
Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
CPEW32.52	CPEW09T308				●	.375	.156	.0313	.1732	S	10°

DC

55° Diamond Type

7° Relief

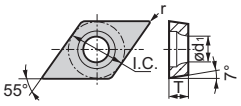
DCGA

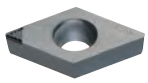


NF Tip

Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
NF-DCGA32.50.5	NF-DCGT11T302			●		.375	.156	.0078	.1732	S	0°
NF-DCGA32.51	NF-DCGT11T304			●		.375	.156	.0156	.1732	S	0°
NF-DCGA32.552	NF-DCGT11T308			●		.375	.156	.0156	.1732	S	0°

DCMT





Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA200	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
NF-DCMT21.50.5GD	NF-DCMT070202N-GD				○		.250	.094	.0078	.107	S	0°
NF-DCMT21.50.5LD	NF-DCMT070202N-LD				○		.250	.094	.0078	.107	S	0°
NF-DCMT21.51GD	NF-DCMT070204N-GD				○		.250	.094	.0156	.107	S	0°
NF-DCMT21.51LD	NF-DCMT070204N-LD				○		.250	.094	.0156	.107	S	0°
NF-DCMT32.50.5GD	NF-DCMT11T302N-GD				○		.375	.156	.0078	.1732	S	0°
NF-DCMT32.50.5LD	NF-DCMT11T302N-LD				○		.375	.156	.0078	.1732	S	0°
NF-DCMT32.51GD	NF-DCMT11T304N-GD				○		.375	.156	.0156	.1732	S	0°
NF-DCMT32.51LD	NF-DCMT11T304N-LD				○		.375	.156	.0156	.1732	S	0°
NF-DCMT32.52GD	NF-DCMT11T308N-GD				○		.375	.156	.0312	.1732	S	0°
NF-DCMT32.52LD	NF-DCMT11T308N-LD				○		.375	.156	.0312	.1732	S	0°

Polycrystalline Diamond (PCD) Inserts

See page 564 for running parameters.

DC

55° Diamond Type

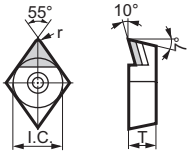
7° Relief

EDGE PREPARATIONS:

S Standard
H Honed
K Reinforced
AW Chipbreaker Stud
WF High Luster "Mirror-Like" Finish

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

DCMX



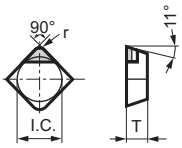
	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Dimensions Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	DCMX21.50	DCMT070201				●	.250	.094	.0039	.110	S	10°
	DCMX21.50.5	DCMT070202				●	.250	.094	.0078	.110	S	10°
	DCMX21.51	DCMT070204				●	.250	.094	.0156	.110	S	10°
	DCMX32.50	DCMT11T301				●	.375	.156	.0039	.1732	S	10°
	DCMX32.50.5	DCMT11T302				●	.375	.156	.0078	.1732	S	10°
	DCMX32.51	DCMT11T304				●	.375	.156	.0156	.1732	S	10°
NF Tip	NF-DCMX21.50	NF-DCMT070201			●	●	.250	.094	.0039	.110	S	10°
	NF-DCMX21.50.5	NF-DCMT070202			●	●	.250	.094	.0078	.110	S	10°
	NF-DCMX21.51	NF-DCMT070204			●	●	.250	.094	.0156	.110	S	10°
	NF-DCMX32.50	NF-DCMT11T301			●	●	.375	.156	.0039	.1732	S	10°
	NF-DCMX32.50.5	NF-DCMT11T302			●	●	.375	.156	.0078	.1732	S	10°
	NF-DCMX32.51	NF-DCMT11T304			●	●	.375	.156	.0156	.1732	S	10°
	NF-DCMX32.52	NF-DCMT11T308			●	●	.375	.156	.0313	.1732	S	10°

SP

Square Type

11° Relief

SPG



	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Dimensions Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	SPG321	SPGN090304		▲			.375	.125	.0156	-	S	0°
	SPG322	SPGN090308		●			.375	.125	.0313	-	S	0°
	SPG421	SPGN120304		●		●	.500	.125	.0156	-	S	0°
	SPG422	SPGN120308		●		●	.500	.125	.0313	-	S	0°
NF Tip	NF-SPG321	NF-SPGN090304			★	●	.375	.125	.0156	-	S	0°
	NF-SPG322	NF-SPGN090308			★	★	.375	.125	.0313	-	S	0°
	NF-SPG421	NF-SPGN120304			★	●	.500	.125	.0156	-	S	0°
	NF-SPG422	NF-SPGN120308			★	●	.500	.125	.0313	-	S	0°

See page 564 for running parameters.

TB

60° Triangle Type

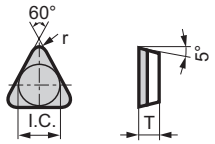
5° Relief

EDGE PREPARATIONS:

S Standard
H Honed
K Reinforced
AW Chipbreaker Stud
WF High Luster "Mirror-Like" Finish

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

TBGE



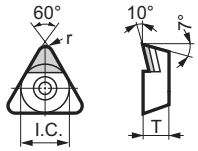
	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Full Top	TBGE520.5B	TBGE060102BSN		●		●	.156	.125	.0078	-	S	0°
Full Top	TBGE521B	TBGE060104BSN		●		●	.156	.125	.0156	-	S	0°
Full Top	TBGE522B	TBGE060108BSN				●	.156	.125	.0313	-	S	0°
NF Tip	NF-TBGE520.5	NF-TBGN060102			●	●	.156	.0625	.0078	-	S	0°
NF Tip	NF-TBGE521	NF-TBGN060104			★	★	.156	.0625	.0156	-	S	0°

TC

60° Triangle Type

7° Relief

TCMX



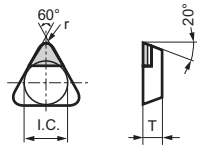
	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	TCMX1.81.50	TCMT090201				▲	.219	.094	.0039	.110	S	10°
Standard Tip	TCMX1.81.50.5	TCMT090202				●	.219	.094	.0078	.110	S	10°
Standard Tip	TCMX1.81.51	TCMT090204				●	.219	.094	.0156	.110	S	10°
Standard Tip	TCMX21.50	TCMT110201				●	.250	.094	.0039	.110	S	10°
Standard Tip	TCMX21.50.5	TCMT110202				▲	.250	.094	.0078	.110	S	10°
Standard Tip	TCMX21.51	TCMT110204				●	.250	.094	.0156	.110	S	10°
NF Tip	NF-TCMX1.81.50.5	NF-TCMT090202			●	▲	.219	.094	.0078	.098	S	10°
NF Tip	NF-TCMX1.81.51	NF-TCMT090204			●	●	.219	.094	.0156	.098	S	10°
NF Tip	NF-TCMX21.50	NF-TCMT110201			●	▲	.250	.094	.0039	.110	S	10°
NF Tip	NF-TCMX21.50.5	NF-TCMT110202			●	●	.250	.094	.0078	.110	S	10°
NF Tip	NF-TCMX21.51	NF-TCMT110204			●	●	.250	.094	.0156	.110	S	10°

TE

60° Triangle Type

20° Relief

TEGN



	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	TEGN321	TEGN160304				★	.375	.125	.0156	-	S	0°

Polycrystalline Diamond (PCD) Inserts

See page 564 for running parameters.

TP

60° Triangle Type

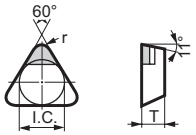
11° Relief

EDGE PREPARATIONS:

S Standard
H Honed
K Reinforced
AW Chipbreaker Stud
WF High Luster "Mirror-Like" Finish

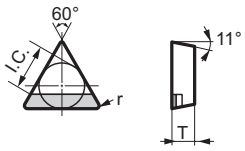
● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

TPG



	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Dimensions Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	TPG221	TPGN110304		●		●	.250	.125	.0156	-	S	0°
	TPG222	TPGN110308		●		●	.250	.125	.0313	-	S	0°
	TPG321	TPGN160304		●		●	.375	.125	.0156	-	S	0°
	TPG322	TPGN160308		●		●	.375	.125	.0313	-	S	0°
	TPG323	TPGN160312	●			●	.375	.125	.0469	-	S	0°
	TPG431	TPGN220404				●	.500	.1875	.0156	-	S	0°
	TPG432	TPGN220408				●	.500	.1875	.0313	-	S	0°
NF Tip	NF-TPG1.81.51	NF-TPGN090204				●	.219	.094	.0156	-	S	0°
	NF-TPG220.5	NF-TPGN110302			●	●	.250	.125	.0078	-	S	0°
	NF-TPG221	NF-TPGN110304			●	●	.250	.125	.0156	-	S	0°
	NF-TPG222	NF-TPGN110308			●	●	.250	.125	.0313	-	S	0°
	NF-TPG320.5	NF-TPGN160302			●	●	.375	.125	.0078	-	S	0°
	NF-TPG321	NF-TPGN160304			●	●	.375	.125	.0156	-	S	0°
	NF-TPG322	NF-TPGN160308			●	●	.375	.125	.0313	-	S	0°

TPG-P



	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Dimensions Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
NF Tip	NF-TPG221P	NF-TPGN110304P			★	★	.250	.125	.0156	-	S	0°
	NF-TPG222P	NF-TPGN110308P			★	★	.250	.125	.0313	-	S	0°
	NF-TPG321P	NF-TPGN160304P			★	★	.375	.125	.0156	-	S	0°

See page 564 for running parameters.

TP

60° Triangle Type

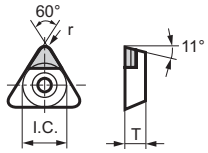
11° Relief

EDGE PREPARATIONS:

S Standard
H Honed
K Reinforced
AW Chipbreaker Stud
WF High Luster "Mirror-Like" Finish

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

TPGA TPGD



	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Dimensions Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	TPGA220	TPGW110301				●	.250	.125	.0039	.130	S	0°
	TPGA220.5	TPGW110302		▲		●	.250	.125	.0078	.130	S	0°
	TPGA221	TPGW110304		●		●	.250	.125	.0156	.130	S	0°
	TPGA222	TPGW110308		▲		●	.250	.125	.0313	.130	S	0°
	TPGA331	TPGW160404		●		●	.375	.1875	.0156	.1693	S	0°
	TPGA332	TPGW160408		●		●	.375	.1875	.0313	.1693	S	0°
	TPGA333	TPGW160412				●	.375	.1875	.0469	.1693	S	0°
NF Tip	NF-TPGD630	NF-TPGW080201			★	★	.1875	.094	.0039	.090	S	0°
	NF-TPGD630.5	NF-TPGW080202			●	●	.1875	.094	.0078	.090	S	0°
	NF-TPGD631	NF-TPGW080204			●	●	.1875	.094	.0156	.090	S	0°
	NF-TPGA1.81.50.5	NF-TPGW090202			●	●	.219	.094	.0078	.102	S	0°
	NF-TPGA1.81.51	NF-TPGW090204			●	●	.219	.094	.0156	.102	S	0°
	NF-TPGA21.50	NF-TPGW110201			●	●	.250	.094	.0039	.107	S	0°
	NF-TPGA21.50.5	NF-TPGW110202			●	●	.250	.094	.0078	.107	S	0°
	NF-TPGA21.51	NF-TPGW110204			●	●	.250	.094	.0156	.107	S	0°
	NF-TPGA220.5	NF-TPGW110302			●	●	.250	.125	.0078	.130	S	0°
	NF-TPGA221	NF-TPGW110304			●	●	.250	.125	.0156	.130	S	0°
	NF-TPGA222	NF-TPGW110308			●	●	.250	.125	.0313	.130	S	0°
	NF-TPGA320.5	NF-TPGW160302			●	●	.375	.125	.0078	.1693	S	0°
	NF-TPGA321	NF-TPGW160304			●	●	.375	.125	.0156	.1693	S	0°
	NF-TPGA322	NF-TPGW160308			●	●	.375	.125	.0313	.1693	S	0°
	NF-TPGA330	NF-TPGW160401			★	●	.375	.1875	.0039	.1693	S	0°
	NF-TPGA330.5	NF-TPGW160402			●	●	.375	.1875	.0078	.1693	S	0°
	NF-TPGA331	NF-TPGW160404			●	●	.375	.1875	.0156	.1693	S	0°
	NF-TPGA332	NF-TPGW160408			●	●	.375	.1875	.0313	.1693	S	0°
	NF-TPGA631	NF-TPGW080204					.1875	.094	.0156	.090	S	0°

Polycrystalline Diamond (PCD) Inserts

See page 564 for running parameters.

TP

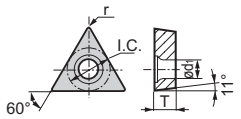
60° Triangle Type

11° Relief

S Standard
H Honed
K Reinforced
AW Chipbreaker Stud
WF High Luster "Mirror-Like" Finish

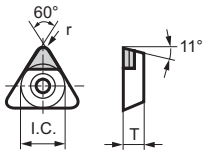
● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

TPMT



Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA200	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
NF-TPMT630.5GD	NF-TPMT080202N-GD				○		.1875	.094	.0078	.090	S	0°
NF-TPMT630.5LD	NF-TPMT080202N-LD				○		.1875	.094	.0078	.090	S	0°
NF-TPMT631GD	NF-TPMT080204N-GD				○		.1875	.094	.0156	.090	S	0°
NF-TPMT631LD	NF-TPMT080204N-LD				○		.1875	.094	.0156	.090	S	0°
NF-TPMT1.81.50.5GD	NF-TPMT090202N-GD				○		.219	.094	.0078	.102	S	0°
NF-TPMT1.81.50.5LD	NF-TPMT090202N-LD				○		.219	.094	.0078	.102	S	0°
NF-TPMT1.81.51GD	NF-TPMT090204N-GD				○		.219	.094	.0156	.102	S	0°
NF-TPMT1.81.51LD	NF-TPMT090204N-LD				○		.219	.094	.0156	.102	S	0°
NF-TPMT21.50.5GD	NF-TPMT110202N-GD				○		.250	.094	.0078	.107	S	0°
NF-TPMT21.50.5LD	NF-TPMT110202N-LD				○		.250	.094	.0078	.107	S	0°
NF-TPMT21.51GD	NF-TPMT110204N-GD				○		.250	.094	.0156	.107	S	0°
NF-TPMT21.51LD	NF-TPMT110204N-LD				○		.250	.094	.0156	.107	S	0°
NF-TPMT220.5GD	NF-TPMT110302N-GD				○		.250	.125	.0078	.130	S	0°
NF-TPMT220.5LD	NF-TPMT110302N-LD				○		.250	.125	.0078	.130	S	0°
NF-TPMT221GD	NF-TPMT110304N-GD				○		.250	.125	.0156	.130	S	0°
NF-TPMT221LD	NF-TPMT110304N-LD				○		.250	.125	.0156	.130	S	0°
NF-TPMT222GD	NF-TPMT110308N-GD				○		.250	.125	.0312	.130	S	0°
NF-TPMT222LD	NF-TPMT110308N-LD				○		.250	.125	.0312	.130	S	0°
NF-TPMT330.5GD	NF-TPMT160402N-GD				○		.375	.1875	.0078	.1693	S	0°
NF-TPMT330.5LD	NF-TPMT160402N-LD				○		.375	.1875	.0078	.1693	S	0°
NF-TPMT331GD	NF-TPMT160404N-GD				○		.375	.1875	.0156	.1693	S	0°
NF-TPMT331LD	NF-TPMT160404N-LD				○		.375	.1875	.0156	.1693	S	0°
NF-TPMT332GD	NF-TPMT160408N-GD				○		.375	.1875	.0312	.1693	S	0°
NF-TPMT332LD	NF-TPMT160408N-LD				○		.375	.1875	.0312	.1693	S	0°

TPMX



	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	TPMX22V	TPMT110300				●	.250	.125	.0020	.130	S	0°
Standard Tip	TPMX220.5	TPMT110302				●	.250	.125	.0078	.130	S	0°
Standard Tip	TPMX221	TPMT110304				●	.250	.125	.0156	.130	S	0°
Standard Tip	TPMX222	TPMT110308				●	.250	.125	.0313	.130	S	0°
NF Tip	NF-TPMX220	NF-TPMT110301			●	●	.250	.125	.0039	.130	S	0°
NF Tip	NF-TPMX220.5	NF-TPMT110302			●	●	.250	.125	.0078	.130	S	0°
NF Tip	NF-TPMX221	NF-TPMT110304			●	●	.250	.125	.0156	.130	S	0°
NF Tip	NF-TPMX222	NF-TPMT110308			●	●	.250	.125	.0313	.130	S	0°

See page 564 for running parameters.

VC

35° Diamond Type

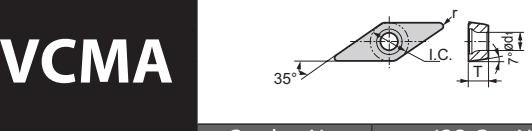
7° Relief

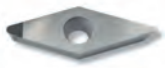
EDGE PREPARATIONS:

S Standard
H Honed
K Reinforced
AW Chipbreaker Stud
WF High Luster "Mirror-Like" Finish

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

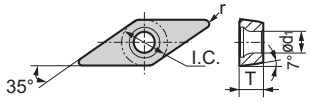
VCMA

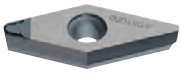




	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	VCMA333	VCMW160412	●			●	.375	.1875	.0469	.1732	S	0°
Standard Tip	VCMA333WF	VCMW160412WF	●			●	.375	.1875	.0469	.1732	WF	0°
Standard Tip	VCMA220520	VCMW220520				●	.500	.219	.3125	.1732	S	0°
NF Tip	NF-VCMA332	NF-VCMW160408			●	●	.375	.1875	.0313	.1732	S	0°
NF Tip	NF-VCMA333	NF-VCMW160412			●	●	.375	.1875	.0469	.1732	S	0°
NF Tip	NF-VCMA333H	NF-VCMW160412H				●	.375	.1875	.0469	.1732	H	0°

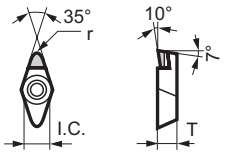
VCMT

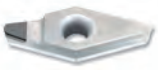




	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA200	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
	NF-VCMT220.5GD	NF-VCMT110302N-GD				○		.250	.125	.0078	.130	S	0°
	NF-VCMT220.5LD	NF-VCMT110302N-LD				○		.250	.125	.0078	.130	S	0°
	NF-VCMT221GD	NF-VCMT110304N-GD				○		.250	.125	.0156	.130	S	0°
	NF-VCMT221LD	NF-VCMT110304N-LD				○		.250	.125	.0156	.130	S	0°
	NF-VCMT331GD	NF-VCMT160404N-GD				○		.375	.1875	.0156	.1693	S	0°
	NF-VCMT331LD	NF-VCMT160404N-LD				○		.375	.1875	.0156	.1693	S	0°
	NF-VCMT332GD	NF-VCMT160408N-GD				○		.375	.1875	.0312	.1693	S	0°
	NF-VCMT332LD	NF-VCMT160408N-LD				○		.375	.1875	.0312	.1693	S	0°
	NF-VCMT333GD	NF-VCMT160412N-GD				○		.375	.1875	.0469	.1693	S	0°
	NF-VCMT333LD	NF-VCMT160412N-LD				○		.375	.1875	.0469	.1693	S	0°

VCMX





	Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	VCMX333	VCMT160412				●	.375	.1875	.0469	.1732	S	10°
Standard Tip	VCMX333WF	VCMT160412WF				●	.375	.1875	.0469	.1732	WF	10°
NF Tip	NF-VCMX220	NF-VCMT110301			●	●	.250	.125	.0039	.134	S	10°
NF Tip	NF-VCMX220.5	NF-VCMT110302			●	●	.250	.125	.0078	.134	S	10°
NF Tip	NF-VCMX221	NF-VCMT110304			●	●	.250	.125	.0156	.134	S	10°
NF Tip	NF-VCMX331	NF-VCMT160404			●	●	.375	.1875	.0156	.1732	S	10°
NF Tip	NF-VCMX332	NF-VCMT160408			●	●	.375	.1875	.0313	.1732	S	10°
NF Tip	NF-VCMX333	NF-VCMT160412			●	●	.375	.1875	.0469	.1732	S	10°

Polycrystalline Diamond (PCD) Inserts

See page 564 for running parameters.

VP

35° Diamond Type

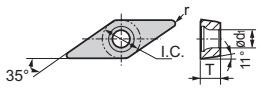
11° Relief

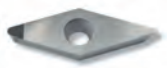
EDGE PREPARATIONS:

S Standard
H Honed
K Reinforced
AW Chipbreaker Stud
WF High Luster "Mirror-Like" Finish

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

VPMA





Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
VPMA443	VPMW220612				●	.500	.250	.0469	.214	S	0°
VPMA443WF	VPMW220612WF				●	.500	.250	.0469	.214	WF	0°

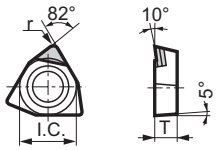
Standard Tip

WB

80° Trigon Type

5° Relief

WBMX



Catalog No.	ISO Cat. No.	Stock N DA90	DA150	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
WBMX520L	WBMT060101L				●	.156	.0625	.0039	.090	S	10°
WBMX520.5L	WBMT060102L				●	.156	.0625	.0078	.090	S	10°
WBMX521L	WBMT060104L				●	.156	.0625	.0156	.090	S	10°

Standard Tip

See page 564 for running parameters.

MDE

Dog Bone Type

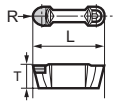
for GDE Style Toolholders

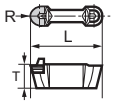
EDGE PREPARATIONS:

S Standard
H Honed
K Reinforced
AW Chipbreaker Stud
WF High Luster "Mirror-Like" Finish

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available 1st Quarter 2015

MDE





AW

Standard Tip

Catalog No.	ISO Cat. No.	Stock N: DA90	DA150	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
MDE3RN7	-				●	-	.335	.118	-	H	-7°
MDE3RN7AW	-				●	-	.335	.118	-	AW	-7°
MDE3RN7WF	-				●	-	.335	.118	-	WF	-7°
MDE3RN7AWWF	-				●	-	.335	.118	-	AW/WF	-7°
MDE4RN7	-				●	-	.335	.157	-	H	-7°
MDE4RN7AW	-				●	-	.335	.157	-	AW	-7°
MDE4RN7WF	-				●	-	.335	.157	-	WF	-7°
MDE4RN7AWWF	-				●	-	.335	.157	-	AW/WF	-7°

Note: MDE inserts are held at a +7° rake angle by the GDER toolholder

SUMITOMO

CARBIDE - CBN - DIAMOND

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TOOLHOLDERS

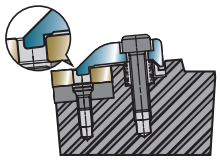
Pages 179-206

TOOLHOLDERS **PAGES**

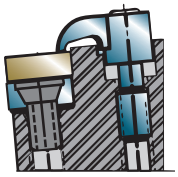
Toolholder Nomenclature

M — Insert Holding

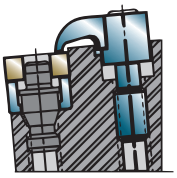
D Clamp Mechanism



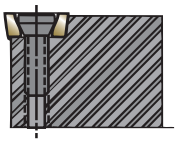
C Clamp



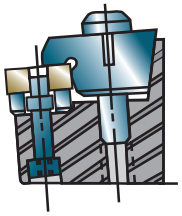
M Clamp and Lock Pin



S Screw Only



W Wedge Clamp*



*Sumitomo Standard Only

W — Insert Shape

C Diamond — 80°

D Diamond — 55°

R Round — 360°

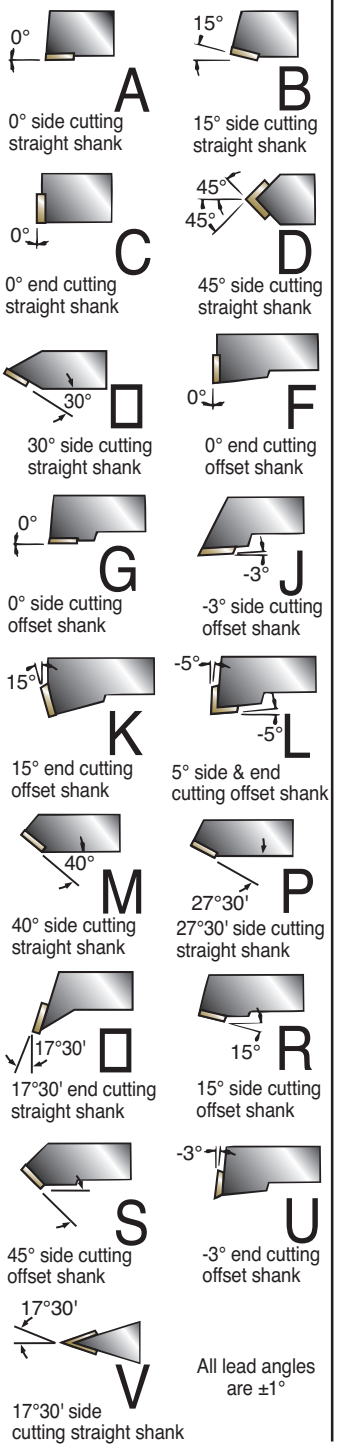
S Square — □0°

T Triangle — □0°

V Diamond — 35°

W Trigon — 80°

L — Toolholder Style



N — Insert Relief Angle

B — 5°

C — 7°

N — 0°

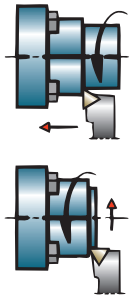
P — 11°

TOOLHOLDER NOMENCLATURE

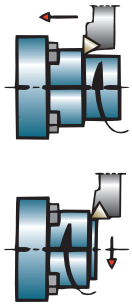
R

Hand

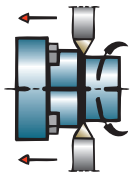
R
Right Hand



L
Left Hand

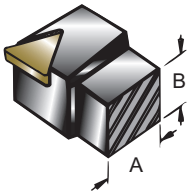


N
Neutral Hand



16

Shank Size



Square Shanks

This indicates the A & B dimensions in sixteenths (1/16).

examples:
12 = 12/16 =3/4 sq.
16 = 16/16 =1.0 sq.
20 = 20/16 =1-1/4 sq.

Rectangle Shanks

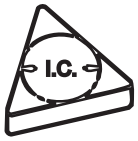
The first digit indicates the "A" dimension in eighths (1/8).

The second digit indicates the "B" dimension in quarters (1/4).

examples:
86 = A x B
1.0 x 1-1/2
85 = A x B
1.0 x 1-1/4

4

Insert Size



For equal sided inserts this indicates the inscribed circle (I.C.) in eighths (1/8)

examples,

6 = 6/8 =
3/4" I.C.

4 = 4/8 =
1/2" I.C.

2.5 = 2.5/8 =
5/16 I.C.

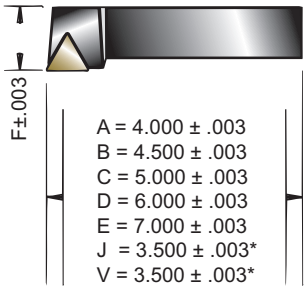
For rectangles and parallelograms two digits are necessary.

1st digit =
number of eighths (1/8)
in width.

2nd digit =
number of quarters (1/4)
in length.

D

Qualifications



*Sumitomo standard only

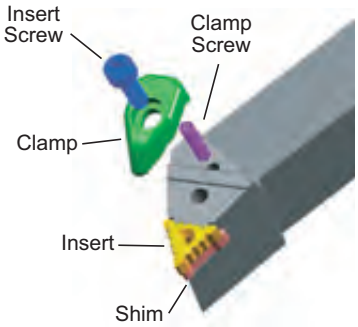
Master Gage Insert Nose Radius Chart for Qualified Holders

Insert I.C.	Nose Radius
1/4, 5/16	.015
3/8, 1/2	.031
5/8, 3/4	.047
1.0	.062

Overview – Insert Holding Methods

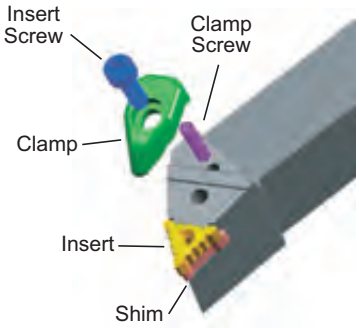
T-Rex Toolholders

- Available in the -LU, -GU and -SU chipbreakers with grades T2000Z, AC700G, AC2000, AC820P, AC830P, AC610M, and AC630M
- Rigid clamping system ensures accurate insert indexing
- Up to 2.5mm (0.100") depth of cut
- **Six** 55° cutting edges versus the standard **four** edges of a DNMG insert
- ***NOW AVAILABLE-Sumiturn Capto System***



D Type Toolholders

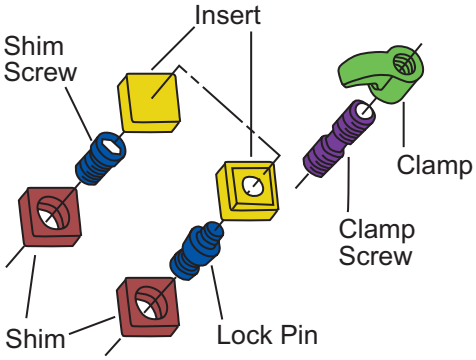
- Stable clamp improves the fracture resistance of the insert
- Better machined workpiece accuracy with improved insert indexing precision
- Easy 1-step insert indexing



ANSI Standard Combination Toolholders

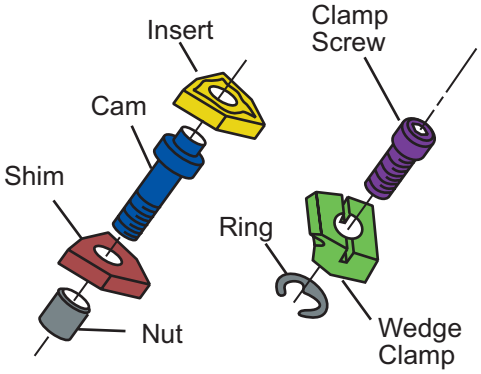
- A multiple-clamp and lock pin design for NC/CNC machines
- Maximum insert locking power with industry-standard NL lock pin mechanism
- Two different assembly options:

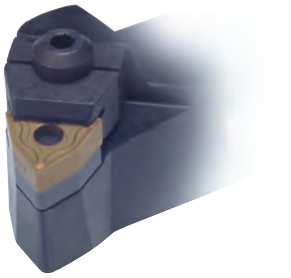
1. for unground P-Type inserts
2. for conventional precision-ground or utility-ground inserts with chipbreaker plates



Wedge Clamp Toolholders

- Unique Sumitomo Standard multiple lock design.
- "Wedge Clamp" holding method also acts as pocket wall for Industry standard WNMG Inserts.
- Can be used for -5° end cutting and -5° side cutting applications.
- Available in 3/4″ to 1-1/4″ square shank sizes.

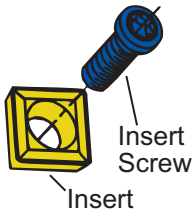


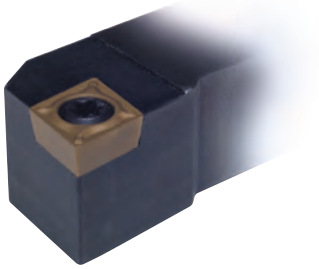


Screw-On Toolholders

- Qualified holders that conform to ISO-ANSI standards and utilize TORX* holding screws
- Shank sizes ranging from 3/8" to 1-1/2″
- Styles available for inserts with 5°, 7°, 11° clearance angles and advanced chip groove geometries

*TORX is a registered trademark of CamCar Division of Textron, Inc.





Replace your costly DNMG applications with the economical T-REX System!

55° DNMG

55° T-REX

Features & Benefits

- Available in the -LU, -GU and -SU chipbreakers with grades T2000Z, AC700G, AC2000, AC820P, AC830P, AC610M, and AC630M
- Rigid clamping system ensures accurate insert indexing
- Up to 2.5mm (0.100") depth of cut
- **Six** 55° cutting edges versus the standard **four** edges of a DNMG insert

Sumiturn Capto Modular Tooling System

Sumiturn Capto System is a quick change modular system for high productivity. The unique tapered polygon coupling provides extreme rigidity and highly dependable accuracy.

Grade Selection

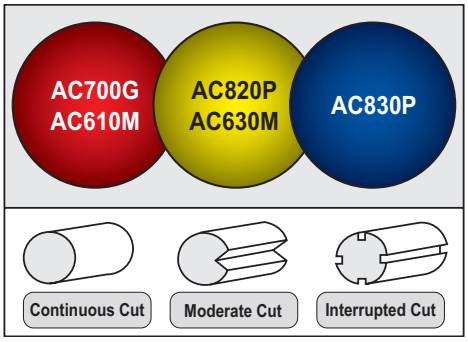
	Speed (SFM)		
Grade	Steels	Stainless Steels	Gray Cast Irons
T2000Z	700 - 1400	600 - 900	–
AC700G	700 - 1200	500 - 800	600 - 1200
AC610M	500 - 1000	400 - 700	–
AC630M	200 - 800	200 - 600	–

Chipbreaker Selection

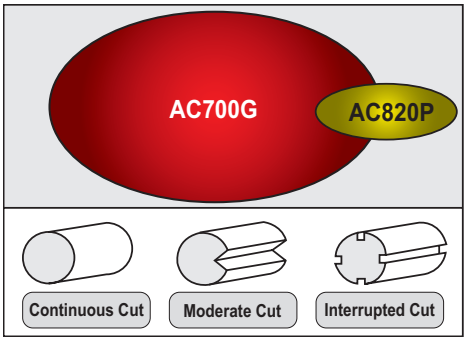
Grade	Applications
-LU	Finish to medium cutting
-SU	Finish to medium cutting
-GU	General purpose cutting

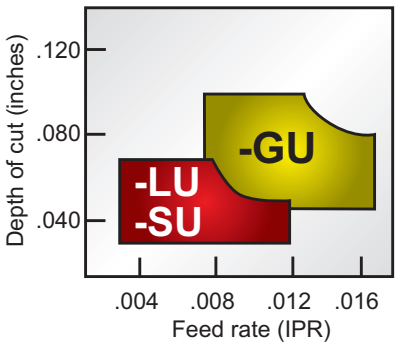
-LU -SU -GU

Steels and Stainless Steels



Gray and Ductile Cast Irons



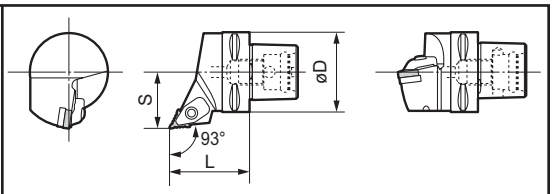


SumiTurn T-REX

Toolholders

T-REX Sumiturn Capto

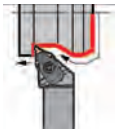
DTR-C Series

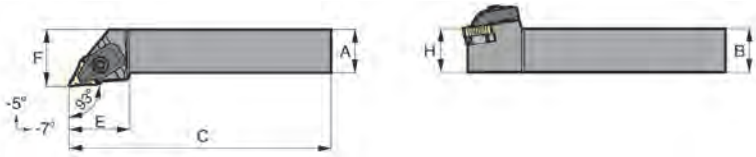


Sumitomo Cat. No.		Dimensions (mm)		
Right Hand	Left Hand	øD	L	S
C4-DTR55CRD17	C4-DTR55CLD17	40mm	60mm	27mm
C5-DTR55CRD17	C5-DTR55CLD17	50mm	60mm	35mm
C6-DTR55CRDX17	C6-DTR55CLDX17	63mm	65mm	45mm

T-REX Toolholder

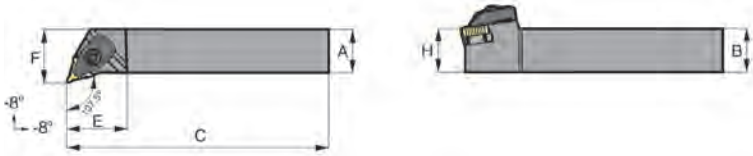
DTR-C Series





Sumitomo Cat. No.		Dimensions					
Right Hand	Left Hand	A	B	C	E	F	H
DTR55CR123B	DTR55CL123B	0.750″	0.750″	4.500″	1.375″	1.000″	0.750″
DTR55CR163D	DTR55CL163D	1.000″	1.000″	6.000″	1.375″	1.250″	1.000″
DTR55CR2525M17	DTR55CL2525M17	25.0mm	25.0mm	150.0mm	35.0mm	32.0mm	25.0mm

DTR-Q Series

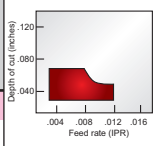


Sumitomo Cat. No.		Dimensions (Inch)					
Right Hand	Left Hand	A	B	C	E	F	H
DTR55QR163D	DTR55QL163D	1.000″	1.000″	6.000″	1.378″	1.260″	1.000″

T-REX Inserts

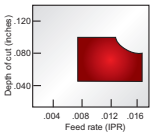
-LU Finishing

Sumitomo Cat. No.	Coated				Dimensions (Inch)		
	AC700G	AC820P	AC830P	T2000Z	Inscribed Circle	Thickness	Radius
TRM551704LU	•	•	★	•	0.394	0.197	0.016
TRM551708LU	•	•	★	•	0.394	0.197	0.031
TRM551712LU	•	•	★	•	0.394	0.197	0.047



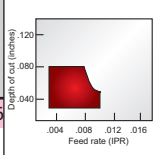
-GU Finishing

Sumitomo Cat. No.	Coated					Dimensions (Inch)		
	AC700G	AC820P	AC830P	AC610M	AC630M	Inscribed Circle	Thickness	Radius
TRM551704GU	•	•	★	•	•	0.394	0.197	0.016
TRM551708GU	•	•	★	•	•	0.394	0.197	0.031
TRM551712GU	•	•	★	•	•	0.394	0.197	0.047

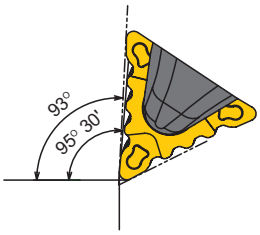


-SU Finishing

Sumitomo Cat. No.	Coated			Dimensions (Inch)		
	AC610M	AC630M		Inscribed Circle	Thickness	Radius
TRM551704SU	•	•		0.394	0.197	0.016
TRM551708SU	•	•		0.394	0.197	0.031
TRM551712SU	•	•		0.394	0.197	0.047



2.5mm (0.100″)
Maximum
Depth of cut

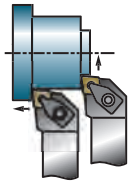


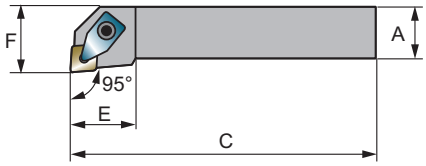
Hardware

						
Clamp	Spring	Clamp Screw	Shim	Shim Screw	Wrench	Torx Wrench
TRCP3	SSP420	BX0520	TRW5505	BFTX0307N	TSW040	TRX10

Torque specifications for BX0520 clamp screw = 31-39 inch/lbs.

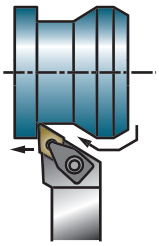
DCL Series

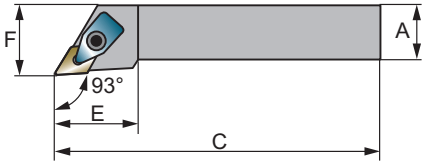




Sumitomo Cat. No.			A	B	C	E	F							
Right Hand	Left Hand	Gage Insert						Clamp	Spring	Cap Screw	Shim	Shim Screw	Wrench	Wrench
DCLNR124B	DCLNL124B	CNMG43-	.750	.750	4.500	1.250	1.000	SCP-2			CNS1204	BFTX0409N	TRX15	LH040
DCLNR164D	DCLNL164D	CNMG43-	1.000	1.000	6.000	1.250	1.250	SCP-2			CNS1204	BFTX0409N	TRX15	LH040

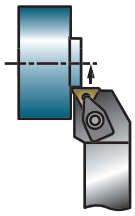
DDJ Series





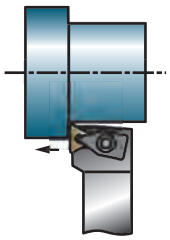
Sumitomo Cat. No.			A	B	C	E	F							
Right Hand	Left Hand	Gage Insert						Clamp	Spring	Cap Screw	Shim	Shim Screw	Wrench	Wrench
DDJNR124B	DDJNL124B	DNMG43-	.750	.750	4.500	1.500	1.000	SCP-2			DNS1504	BFTX0409N	TRX15	LH040
DDJNR164D	DDJNL164D	DNMG43-	1.000	1.000	6.000	1.500	1.250	SCP-2			DNS1504	BFTX0409N	TRX15	LH040

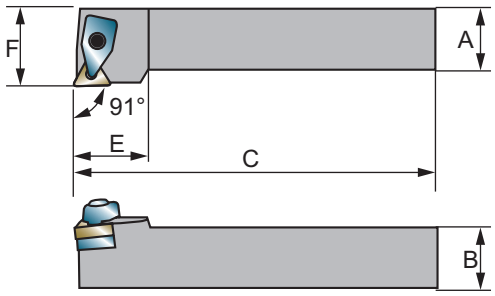
DTF Series



Sumitomo Cat. No.			A	B	C	E	F							
Right Hand	Left Hand	Gage Insert						Clamp	Spring	Cap Screw	Shim	Shim Screw	Wrench	Wrench
DTFNR123B	DTFNL123B	TNMG33-	.750	.750	4.500	1.000	1.000	SCP-1			TNS1604	BFTX0307N	TRX10	LH040
DTFNR163D	DTFNL163D	TNMG33-	1.000	1.000	6.000	1.000	1.250	SCP-1			TNS1604	BFTX0307N	TRX10	LH040

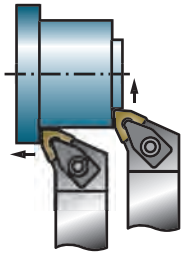
DTG Series

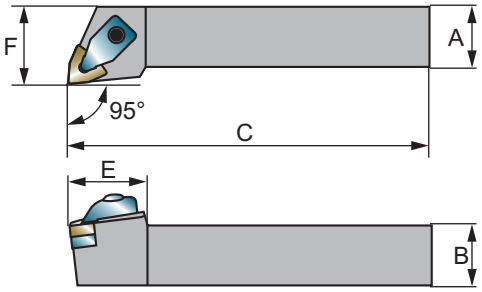




Sumitomo Cat. No.			A	B	C	E	F							
Right Hand	Left Hand	Gage Insert						Clamp	Spring	Cap Screw	Shim	Shim Screw	Wrench	Wrench
DTGNR123B	DTGNL123B	TNMG33-	.750	.750	4.500	1.000	1.000	SCP-1			TNS1604	BFTX0307N	TRX10	LH040
DTGNR163D	DTGNL163D	TNMG33-	1.000	1.000	6.000	1.000	1.250	SCP-1			TNS1604	BFTX0307N	TRX10	LH040

DWL Series

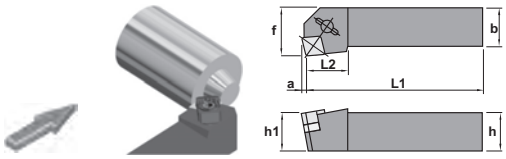




Sumitomo Cat. No.			A	B	C	E	F							
Right Hand	Left Hand	Gage Insert						Clamp	Spring	Cap Screw	Shim	Shim Screw	Wrench	Wrench
DWLNR123B	DWLNL123B	WNMG33-	.750	.750	4.500	1.000	1.000	SCP-1			IWSN322	ST32.5	TRX15	LH040
DWLNR124B	DWLNL124B	WNMG43-	.750	.750	4.500	1.250	1.000	SCP-2			WNS0804	BFTX0409N	TRX15	LH040
DWLNR163D	DWLNL163D	WNMG33-	1.000	1.000	6.000	1.000	1.250	SCP-1			IWSN322	ST32.5	TRX15	LH040
DWLNR164D	DWLNL164D	WNMG43-	1.000	1.000	6.000	1.250	1.250	SCP-2			WNS0804	BFTX0409N	TRX15	LH040

CCKN-CD

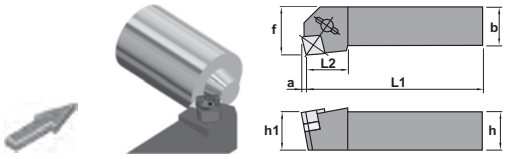
Insert:
CNG45_
CNMN45_



Catalog Number		b	h	h_1	L_1	L_2	f	a					
Right	Left								Shim	Screw	Chipbreaker	Clamp	Wrench
CCKNR164CD	CCKNL164CD	1.000	1.000	1.000	6.000	1.338	1.250	0.122	ICSN434	BXD06135	CBCR45	CLCD45	LH040
CCKNR204CD	CCKNL204CD	1.250	1.250	1.250			1.500						

CCKN-CX

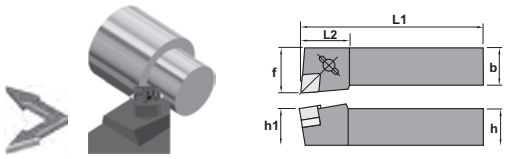
Insert:
CNGX45_



Catalog Number		b	h	h_1	L_1	L_2	f	a					
Right	Left								Shim	Screw	Chipbreaker	Clamp	Wrench
CCKNR164CX	CCKNL164CX	1.000	1.000	1.000	6.000	1.338	1.250	0.122	ICSN434	BXD06135	CBCR45	CLCX45	LH040
CCKNR204CX	CCKNL204CX	1.250	1.250	1.250			1.500						

CCLN-CD

Insert:
CNG45_
CNMN45_



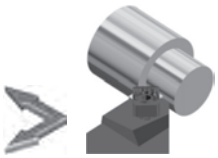
Catalog Number		b	h	h_1	L_1	L_2	f					
Right	Left							Shim	Screw	Chipbreaker	Clamp	Wrench
CCLNR164CD	CCLNL164CD	1.000	1.000	1.000	6.000	1.338	1.250	ICSN434	BXD06135	CBCR45	CLCD45	LH040
CCLNR204CD	CCLNL204CD	1.250	1.250	1.250			1.500					

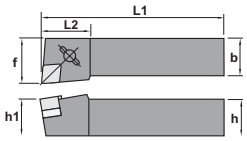
ANSI Combination Toolholders

Toolholders for Ceramic Inserts

CCLN-CX

Insert:
CNGX45_

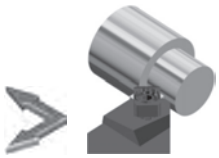


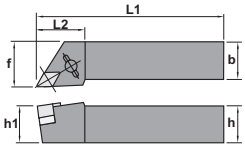


Catalog Number		b	h	h_1	L_1	L_2	f					
Right	Left							Shim	Screw	Chipbreaker	Clamp	Wrench
CCLNR164CX	CCLNL164CX	1.000	1.000	1.000	6.000	1.338	1.250	ICSN434	BXD06135	CBCR45	CLCX44	LH040
CCKNR204CX	CCLNL204CX	1.250	1.250	1.250			1.500					

CDJN-CX

Insert:
DNGX45_

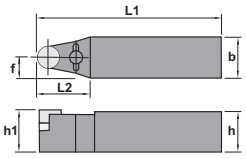




Catalog Number		b	h	h_1	L_1	L_2	f					
Right	Left							Shim	Screw	Chipbreaker	Clamp	Wrench
CDJNR164CX	CDJNL164CX	1.000	1.000	1.000	6.000	1.496	1.250	IDSN434	BXD06135	-	CLCXD45	LH040
CDJNR204CX	CDJNL204CX	1.250	1.250	1.250			1.500					

CRDC-CD

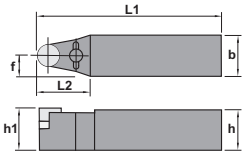
Insert:
RCGX



Catalog Number		b	h	h_1	L_1	L_2	f	Gauge Insert				
Neutral	-								Screw	Seat	Clamp	Wrench
CRDCN163CD	-	1.000	1.000	1.000	6.000	1.420	0.500	RCGX35	BFTX02507	CBRC3	CLCDRC34	LH030
CRDCN203CD	-	1.250	1.250	1.250			0.625	RCGX35				
CRDCN164CD	-	1.000	1.000	1.000		1.300	0.500	RCGX45	BFTX0309	CBRC4		
CRDCN204CD	-	1.250	1.250	1.250			0.625	RCGX45				

CRDN-CD

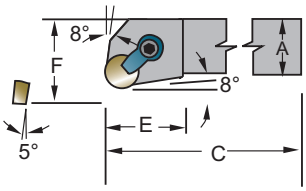
Insert:
RNG

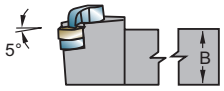


Catalog Number		b	h	h_1	L_1	L_2	f	Gauge Insert	Shim	Screw	Chipbreaker	Clamp	Wrench
Neutral	-												
CRDNN164CD	-	1.000	1.000	1.000	6.000	1.500	0.500	RNG45	IRSN43	BXD06135	CBCR45	CLCD45	LH040
CRDNN205CD	-	1.250	1.250	1.250		1.417	0.625	RNG55	IRSN53	BXD08135			
CRDNN245CD	-	1.500	1.500	1.500			0.750	RNG55					

CRGN-CD

Insert:
RNG

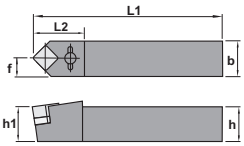




Catalog Number		b	h	h_1	L_1	L_2	f	Gauge Insert	Shim	Screw	Chipbreaker	Clamp	Wrench
Right	Left												
CRGNR124B	-	.750	.750	.750	4.500	1.250	1.000	RNG45	IRSN-43	BXD06135	CBCR45	CLCDRN55	LH040
CRGNR164CD	CRGNL164CD	1.000	1.000	1.000	6.000	1.338	1.250	RNG45	IRSN-43	BXD06135			
CRGNR165CD	CRGNL165CD	1.000	1.000	1.000			1.250	RNG55	IRSN53	BXD08135			
CRGNR204CD	CRGNR204CD	1.250	1.250	1.250			1.500	RNG45	IRSN-43	BXD06135			
CRGNR205CD	CRGNL205CD	1.250	1.250	1.250			1.500	RNG55	IRSN53	BXD08135			

CSDN-CX

Insert:
SNGX45_



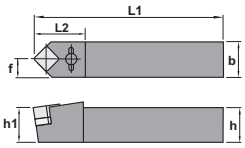
Catalog Number		b	h	h_1	L_1	L_2	f	Shim	Screw	Chipbreaker	Clamp	Wrench
Right	Left											
CSDNR164CX	CSDNL164CX	1.000	1.000	1.000	6.000	1.653	0.500	ISSN434	BXD06135	-	CLCX44	LH040
CSDNR204CX	CSDNL204CX	1.250	1.250	1.250			0.625					

ANSI Combination Toolholders

Toolholders for Ceramic Inserts

CSKN-CX

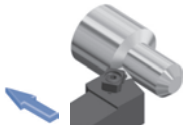
Insert:
SNGX45_

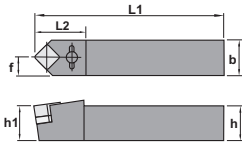


Catalog Number		b	h	h_1	L_1	L_2	f					
Right	Left							Shim	Screw	Chipbreaker	Clamp	Wrench
CSKNR164CX	CSKNL164CX	1.000	1.000	1.000	6.000	1.338	1.250	ISSN434	BXD06135	-	CLCX44	LH040
CSKNR204CX	CSKNL204CX	1.250	1.250	1.250								

CSRN-CX

Insert:
SNGX45_

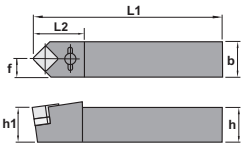




Catalog Number		b	h	h_1	L_1	L_2	f					
Right	Left							Shim	Screw	Chipbreaker	Clamp	Wrench
CSRNR164CX	CSRNL164CX	1.000	1.000	1.000	6.000	1.338	1.130	ISSN434	BXD06135	-	CLCX44	LH040
CSRNR204CX	CSRNL204CX	1.250	1.250	1.250			1.379					

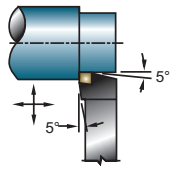
CSSN-CX

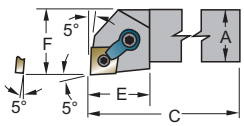
Insert:
SNGX45_

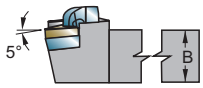


Catalog Number		b	h	h_1	L_1	L_2	f					
Right	Left							Shim	Screw	Chipbreaker	Clamp	Wrench
CSSNR164CX	CSSNL164CX	1.000	1.000	1.000	6.000	1.653	1.250	ISSN434	BXD06135	-	CLCX44	LH040
CSSNR204CX	CSSNL204CX	1.250	1.250	1.250			1.500					

MCL Series

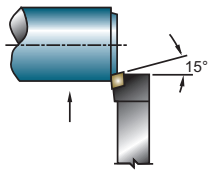


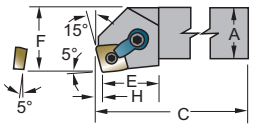




Sumitomo Cat. No.			A	B	C	E	F					OPTIONAL HARDWARE	
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MCLNR083A	MCLNL083A	CNMG32-	.500	.500	4.000	1.000	.750	N/A	NL-33	CL-6	XNS-37	–	–
MCLNR103A	MCLNL103A	CNMG32-	.625	.625	4.000	1.000	.875	N/A	NL-33	CL-6	XNS-37	–	–
MCLNR123B	MCLNL123B	CNMG32-	.750	.750	4.500	1.000	1.000	ICSN-322	NL-34L	CL-6	XNS-37	S-34	–
MCLNR124B	MCLNL124B	CNMG43-	.750	.750	4.500	1.250	1.000	ICSN-433	NL-46	CL-20	XNS-48	S-46	–
MCLNR164C	MCLNL164C	CNMG43-	1.000	1.000	5.000	1.250	1.250	ICSN-433	NL-46	CL-20	XNS-48	S-46	–
MCLNR164D	MCLNL164D	CNMG43-	1.000	1.000	6.000	1.250	1.250	ICSN-433	NL-46	CL-20	XNS-58	S-46	–
MCLNR165D	MCLNL165D	CNMG54-	1.000	1.000	6.000	1.375	1.250	ICSN-533	NL-58	CL-12	XNS-510	S-58	–
MCLNR166D	MCLNL166D	CNMG64-	1.000	1.000	6.000	1.500	1.250	ICSN-633	NL-68	CL-12	XNS-510	S-68	–
MCLNR204D	MCLNL204D	CNMG43-	1.250	1.250	6.000	1.250	1.500	ICSN-433	NL-46	CL-20	XNS-48	S-46	–
MCLNR205D	MCLNL205D	CNMG54-	1.250	1.250	6.000	1.375	1.500	ICSN-533	NL-58	CL-12	XNS-510	S-58	–
MCLNR206D	MCLNL206D	CNMG64-	1.250	1.250	6.000	1.500	1.500	ICSN-633	NL-68	CL-12	XNS-510	S-68	–
MCLNR244D	MCLNL244D	CNMG43-	1.500	1.500	6.000	1.250	2.000	ICSN-433	NL-46	CL-20	XNS-48	S-46	–
MCLNR245E	MCLNL245E	CNMG54-	1.500	1.500	7.000	1.375	2.000	ICSN-533	NL-58	CL-12	XNS-510	S-58	–
MCLNR246E	MCLNL246E	CNMG64-	1.500	1.500	7.000	1.500	2.000	ICSN-633	NL-68	CL-12	XNS-510	S-68	–

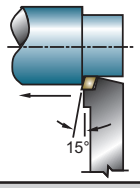
MCK Series

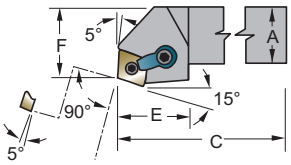


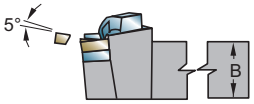


Sumitomo Cat. No.			A	B	C	E	F	H					OPTIONAL HARDWARE	
Right Hand	Left Hand	Gage Insert							Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MCKNR124B	MCKNL124B	CNMG43-	.750	.750	4.500	1.25	1.000	.123	ICSN-433	NL-46	CL-20	XNS-48	S-46	–
MCKNR164D	MCKNL164D	CNMG43-	1.000	1.000	6.000	1.25	1.250	.123	ICSN-433	NL-46	CL-20	XNS-48	S-46	–
MCKNR206D	MCKNL206D	CNMG64-	1.250	1.250	6.000	1.50	1.500	.184	ICSN-633	NL-68	CL-12	XNS-510	S-68	–

MCR Series

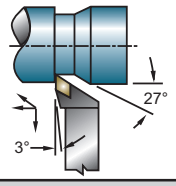


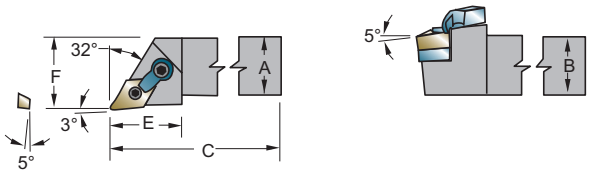




Sumitomo Cat. No.			A	B	C	E	F					OPTIONAL HARDWARE	
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MCRNR124B	MCRNL124B	CNMG43-	.750	.750	4.500	1.250	.750	ICSN-433	NL-46	CL-9	XNS-58	S-46	-
MCRNR164D	MCRNL164D	CNMG43-	1.000	1.000	6.000	1.250	1.250	ICSN-433	NL-46	CL-9	XNS-58	S-46	-
MCRNR204D	MCRNL204D	CNMG43-	1.250	1.250	6.000	1.250	1.500	ICSN-433	NL-46	CL-9	XNS-58	S-46	-
MCRNR246E	MCRNL246E	CNMG64-	1.500	1.500	7.000	1.500	2.000	ICSN-633	NL-68	CL-12	XNS-510	S-68	-

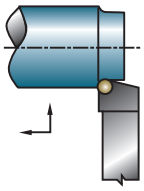
MDJ Series

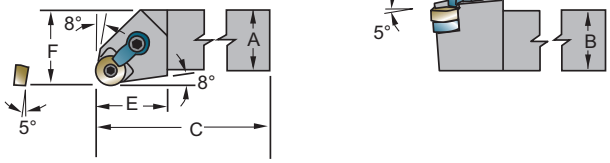




Sumitomo Cat. No.			A	B	C	E	F					OPTIONAL HARDWARE	
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MDJNR123B	MDJNL123B	DNMG33-	.750	.750	4.500	1.250	1.000	IDSN-322	NL-34L	CL-7	XNS-36	S-34	–
MDJNR124B	MDJNL124B	DNMG43-	.750	.750	4.500	1.250	1.000	IDSN-443	NL-46	CL-6	XNS-36	S-46	IDSN-433
MDJNR163D	MDJNL163D	DNMG33-	1.000	1.000	6.000	1.250	1.250	IDSN-322	NL-34L	CL-7	XNS-36	S-34	–
MDJNR164C	MDJNL164C	DNMG43-	1.000	1.000	5.000	1.250	1.250	IDSN-443	NL-46	CL-20	XNS-48	S-46	IDSN-433
MDJNR164D	MDJNL164D	DNMG43-	1.000	1.000	6.000	1.250	1.250	IDSN-443	NL-46	CL-20	XNS-48	S-46	IDSN-433
MDJNR204D	MDJNL204D	DNMG43-	1.250	1.250	6.000	1.250	1.500	IDSN-443	NL-46	CL-20	XNS-48	S-46	IDSN-433

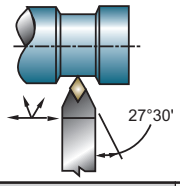
MRG Series

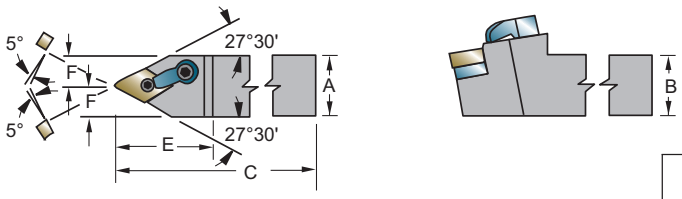




Sumitomo Cat. No.			A	B	C	E	F					OPTIONAL HARDWARE	
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MRGNR124B	MRGNL124B	RNMG43	.750	.750	4.500	1.250	1.000	IRSN-43	NL-46	CL-9	XNS-59	S-46	IRSN-44
MRGNR164D	MRGNL164D	RNMG43	1.000	1.000	6.000	1.250	1.250	IRSN-43	NL-46	CL-9	XNS-59	S-46	IRSN-44
MRGNR204D	MRGNL204D	RNMG43	1.250	1.250	6.000	1.250	1.500	IRSN-43	NL-46	CL-9	XNS-59	S-46	IRSN-44

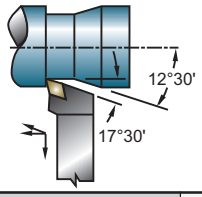
MDP Series

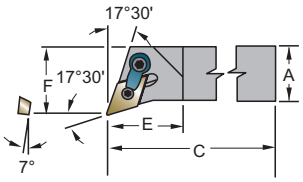


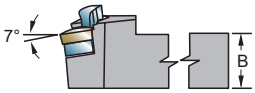


Sumitomo Cat. No.		A	B	C	E	F					OPTIONAL HARDWARE	
Neutral Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MDPNN123B	DNMG33-	.750	.750	4.500	1.500	.375	IDSN-322	NL-34L	CL-7	XNS-36	S-34	–
MDPNN164D	DNMG43-	1.000	1.000	6.000	1.750	.500	IDSN-443	NL-46	CL-12	XNS-510	S-46	IDSN-433

MDQ Series

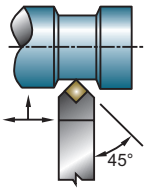


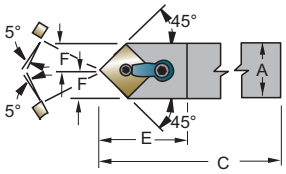


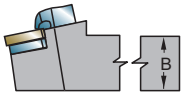


Sumitomo Cat. No.			A	B	C	E	F					OPTIONAL HARDWARE	
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MDQNR124B	MDQNL124B	DNMG43-	.750	.750	4.500	1.370	1.000	IDSN-443	NL-46	CL-12	XNS-510	S-46	IDSN-433
MDQNR164C	MDQNL164C	DNMG43-	1.000	1.000	5.000	1.370	1.250	IDSN-443	NL-46	CL-12	XNS-510	S-46	IDSN-433
MDQNR164D	MDQNL164D	DNMG43-	1.000	1.000	6.000	1.370	1.250	IDSN-443	NL-46	CL-12	XNS-510	S-46	IDSN-433
MDQNR204D	MDQNL204D	DNMG43-	1.250	1.250	6.000	1.370	1.500	IDSN-443	NL-46	CL-12	XNS-510	S-46	IDSN-433

MSD Series

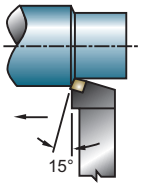


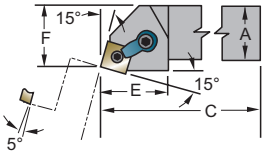




Sumitomo Cat. No.		A	B	C	E	F					OPTIONAL HARDWARE	
Neutral Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MSDNN124B	SNMG43-	.750	.750	4.500	1.375	.375	ISSN-433	NL-46	CL-9	XNS-59	S-46	ISSN-443
MSDNN164D	SNMG43-	1.000	1.000	6.000	1.375	.500	ISSN-433	NL-46	CL-9	XNS-59	S-46	ISSN-443

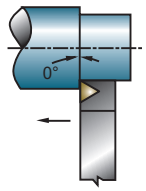
MSR Series

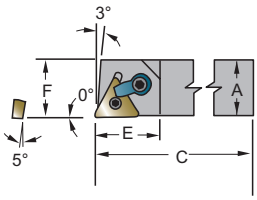




Sumitomo Cat. No.			A	B	C	E	F					OPTIONAL HARDWARE	
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MSRNR124B	MSRNL124B	SNMG43-	.750	.750	4.500	1.250	.880	ISSN-433	NL-46	CL-9	XNS-59	S-46	ISSN-443
MSRNR164D	MSRNL164D	SNMG43-	1.000	1.000	6.000	1.250	1.130	ISSN-433	NL-46	CL-9	XNS-59	S-46	ISSN-443
MSRNR205D	MSRNL205D	SNMG54-	1.250	1.250	6.000	1.375	1.353	ISSN-533	NL-58	CL-12	XNS-510	S-58	ISSN-543
MSRNR206D	MSRNL206D	SNMG64-	1.250	1.250	6.000	1.500	1.315	ISSN-633	NL-68	CL-12	XNS-510	S-68	ISSN-643

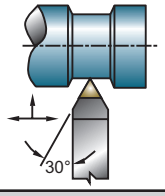
MTA Series

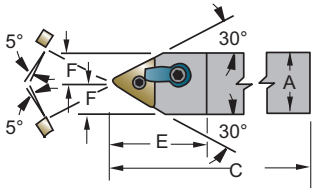


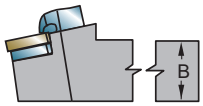


Sumitomo Cat. No.			A	B	C	E	F					OPTIONAL HARDWARE	
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MTANR082A	MTANL082A	TNMG22-	.500	.500	4.000	.875	.500	–	NL-23	CL-19	XNS-36	–	–
MTANR103B	MTANL103B	TNMG32-	.625	.625	4.500	1.000	.625	ITSN-333	NL-34L	CL-6	XNS-36	S-34	ITSN-323
MTANR123B	MTANL123B	TNMG32-	.750	.750	4.500	1.000	.750	ITSN-333	NL-34L	CL-6	XNS-36	S-34	ITSN-323
MTANR164D	MTANL164D	TNMG43-	1.000	1.000	6.000	1.375	1.000	ITSN-433	NL-46	CL-9	XNS-59	S-46	ITSN-423

MTE Series

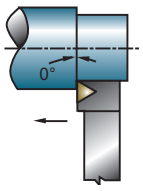


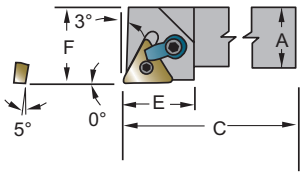


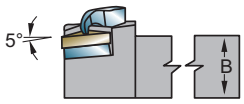


Sumitomo Cat. No.		A	B	C	E	F					OPTIONAL HARDWARE	
Neutral Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MTENN082A	TNMG22-	.500	.500	4.000	1.000	.250	N/A	NL-23	CL-6	XNS-36	–	–
MTENN103B	TNMG32-	.625	.625	4.500	1.125	.312	ITSN-333	NL-34L	CL-6	XNS-36	S-34	ITSN-323
MTENN123B	TNMG32-	.750	.750	4.500	1.125	.375	ITSN-333	NL-34L	CL-6	XNS-36	S-34	ITSN-323
MTENN164D	TNMG43-	1.000	1.000	6.000	1.500	.500	ITSN-433	NL-46	CL-9	XNS-59	S-46	ITSN-423
MTENN205D	TNMG54-	1.250	1.250	6.000	1.625	.625	ITSN-534	NL-58	CL-9	XNS-510	–	–
MTENN205E	TNMG54-	1.250	1.250	7.000	1.625	.625	ITSN-534	NL-58	CL-9	XNS-510	–	–

MTG Series

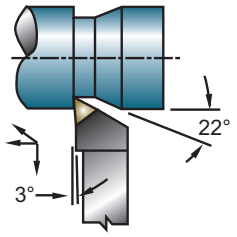


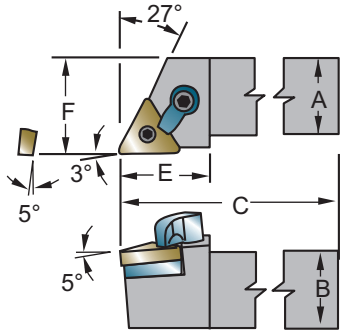




Sumitomo Cat. No.			A	B	C	E	F					OPTIONAL HARDWARE	
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MTGNR103B	MTGNL103B	TNMG32-	.625	.625	4.500	1.000	.875	ITSN-333	NL-34L	CL-6	XNS-36	S-34	ITSN-323
MTGNR123B	MTGNL123B	TNMG32-	.750	.750	4.500	1.000	1.000	ITSN-333	NL-34L	CL-6	XNS-36	S-34	ITSN-323
MTGNR164D	MTGNL164D	TNMG43-	1.000	1.000	6.000	1.375	1.250	ITSN-433	NL-46	CL-9	XNS-59	XNS-510	ITSN-423

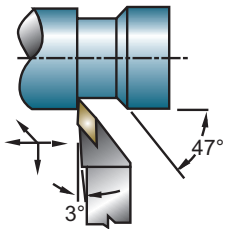
MTJ Series

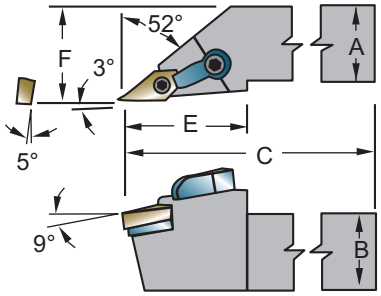




Sumitomo Cat. No.			A	B	C	E	F						
								OPTIONAL HARDWARE					
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MTJNR123B	MTJNL123B	TNMG32-	.750	.750	4.500	1.120	1.000	ITSN-333	NL-34L	CL-6	XNS-36	S-34	ITSN-323
MTJNR124B	–	TNMG43-	.750	.750	4.500	1.190	1.000	ITSN-433	NL-46	CL-9	XNS-58	S-46	ITSN-423
MTJNR163D	MTJNL163D	TNMG32-	1.000	1.000	6.000	1.120	1.250	ITSN-333	NL-34L	CL-6	XNS-36	S-34	ITSN-323
MTJNR164D	MTJNL164D	TNMG43-	1.000	1.000	6.000	1.190	1.250	ITSN-433	NL-46	CL-9	XNS-510	S-46	ITSN-423
MTJNR204E	MTJNL204E	TNMG43-	1.250	1.250	7.000	1.190	1.250	ITSN-433	NL-46	CL-9	XNS-510	S-46	ITSN-423

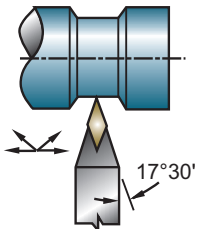
MVJ Series

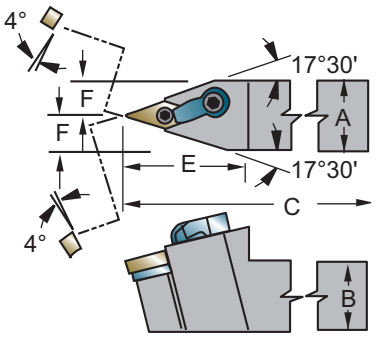




Sumitomo Cat. No.			A	B	C	E	F						
								OPTIONAL HARDWARE					
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MVJNR163D	MVJNL163D	VNMG33-	1.000	1.000	6.000	1.750	1.250	IVSN-322	NL-34L	CL-30	XNS-510	S-34	–
MVJNR164C	MVJNL164C	VNMG43-	1.000	1.000	5.000	2.125	1.250	IVSN-432	NL-46	CL-30	XNS-510	S-46	–
MVJNR164D	MVJNL164D	VNMG43-	1.000	1.000	6.000	2.125	1.250	IVSN-432	NL-46	CL-30	XNS-510	S-46	–
MVJNR203D	MVJNL203D	VNMG33-	1.250	1.250	6.000	1.750	1.500	IVSN-322	NL-34L	CL-30	XNS-510	S-34	–
MVJNR204D	MVJNL204D	VNMG43-	1.250	1.250	6.000	2.125	1.500	IVSN-432	NL-46	CL-30	XNS-510	S-46	–

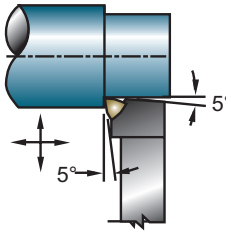
MVV Series

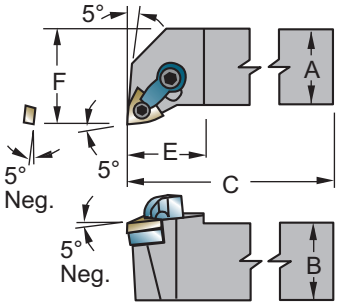




Sumitomo Cat. No.		A	B	C	E	F					OPTIONAL HARDWARE	
Neutral Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MVVNN123B	VNMG33-	.750	.750	4.500	1.750	.375	IVSN-322	NL-34L	CL-30	XNS-510	S-34	–
MVVNN163D	VNMG33-	1.000	1.000	6.000	1.750	.500	IVSN-322	NL-34L	CL-30	XNS-510	S-34	–
MVVNN164D	VNMG43-	1.000	1.000	6.000	2.250	.500	IVSN-433	NL-46	CL-30	XNS-510	S-46	–

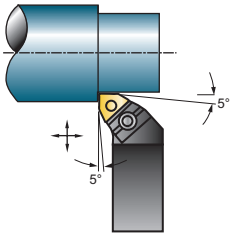
MWL Series

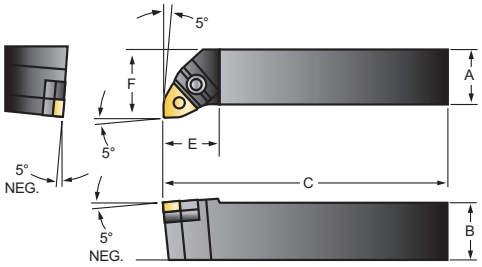




Sumitomo Cat. No.			A	B	C	E	F					OPTIONAL HARDWARE	
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MWLNR124B	MWLNL124B	WNMG43-	.750	.750	4.500	1.250	1.000	IWSN-432	NL-46	CL-20	XNS-59	S-46	–
MWLNR163C	MWLNL163C	WNMG33-	1.000	1.000	5.000	1.000	1.250	IWSN-322	NL-34L	CL-6	XNS-36	S-34	–
MWLNR163D	MWLNL163D	WNMG33-	1.000	1.000	6.000	1.000	1.250	IWSN-322	NL-34L	CL-7	XNS-36	–	–
MWLNR164C	MWLNL164C	WNMG43-	1.000	1.000	5.000	1.125	1.250	IWSN-433	NL-46	CL-20	XNS-48	–	–
MWLNR164D	MWLNL164D	WNMG43-	1.000	1.000	6.000	1.250	1.250	IWSN-432	NL-46	CL-9	XNS-59	S-46	–
MWLNR204D	MWLNL204D	WNMG43-	1.250	1.250	6.000	1.250	1.500	IWSN-432	NL-46	CL-20	XNS-59	S-46	–
MWLNR243D	MWLNL243D	WNMG33-	1.500	1.500	6.000	1.000	2.000	IWSN-322	NL-34L	CL-7	XNS-36	–	–
MWLNR244D	MWLNL244D	WNMG43-	1.500	1.500	6.000	1.125	2.000	IWSN-433	NL-46	CL-20	XNS-48	–	–

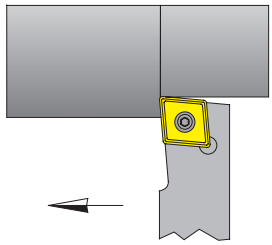
WWL Series

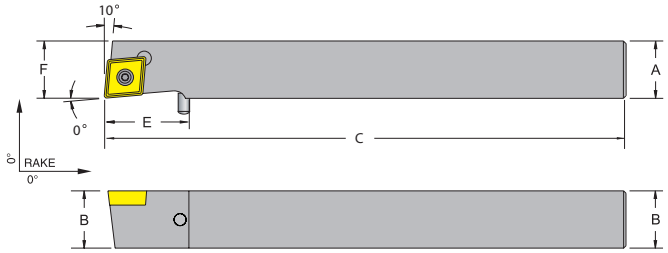


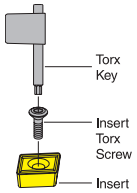


Sumitomo Cat. No.			A	B	C	E	F							
Right Hand	Left Hand	Gage Insert						Shim	Cam	Nut	Wedge Clamp	Clamp Screw	Ring	Wrench
WWLNR124B	WWLNL124B	WNMG43-	.750	.750	4.500	1.250	1.000	SWW-433	MP-416	CPM-43S	MWW-40	BHA-0625	ER05	LH030
WWLNR164D	WWLNL164D	WNMG43-	1.000	1.000	6.000	1.250	1.250	SWW-433	MP-420	CPM-43N	MWW-40	BHA-0625	ER05	LH040
WWLNR165D	WWLNL165D	WNMG54-	1.000	1.000	6.000	1.593	1.500	SWW-544	MP-531	CPM-54N	MWW-50	BHA-0834	ER07	LH040
WWLNR204D	WWLNL204D	WNMG43-	1.250	1.250	6.000	1.250	1.500	SWW-433	MP-420	CPM-43N	MWW-40	BHA-0625	ER05	LH040
WWLNR205D	WWLNL205D	WNMG54-	1.250	1.250	6.000	1.593	1.500	SWW-544	MP-534	CPM-54N	MWW-50	BHA-0834	ER07	LH060

SCAC Series





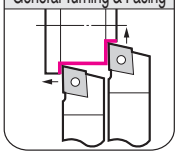


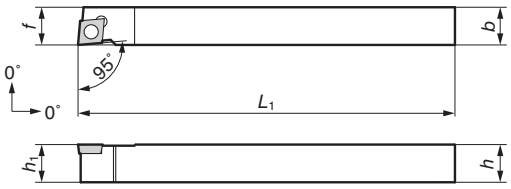
Right Hand Shown, Left Hand Opposite

Catalog Number		A	B	C	E (Tool Stop)	F	Gage Insert	Insert Torx Screw	Torx Key
Right Hand	Left Hand								
SCACR062B	SCACL062B	0.375	0.375	4.500	1.000	0.375	CC__-21.51	TS25.45-6M2	TRX08
SCACR062D	SCACL062D	0.375	0.375	6.000	1.000	0.375			
SCACR083B	SCACL083B	0.500	0.500	4.500	1.000	0.500	CC__-32.52	TS4.7-10M1	TRX15
SCACR083D	SCACL083D	0.500	0.500	6.000	1.000	0.500			
SCACR103B	SCACL103B	0.625	0.625	4.500	1.000	0.625			
SCACR103D	SCACL103D	0.625	0.625	6.000	1.000	0.625			

SCLC-X

General Turning & Facing





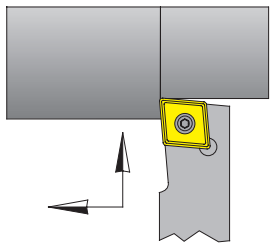
Above figures show right hand tools.

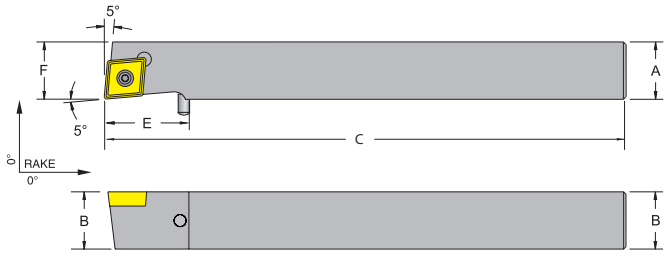
■ Parts

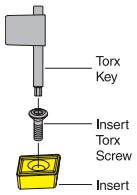
■ Holder

	Catalog Number	Stock		Dimensions (mm)						Applicable Insert	Screw	Wrench
		R	L	h	b	L_1	f	h_1				
85mm Shank	SCLCR/L1010-H06X	★	★	10	10	100	10	10		CC_T21.5	BFTX02506N	TRX08
	SCLCR/L1215-K09X	★	★	12	15	125	15	12		CC_T32.5	BFTX0409N	TRX15
	SCLCR/L1215-F09X	★	★	12	15	85	15	12		CC_T32.5		

SCNC Series



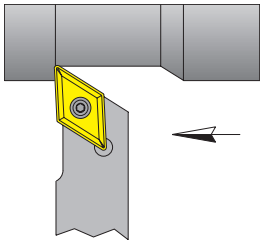


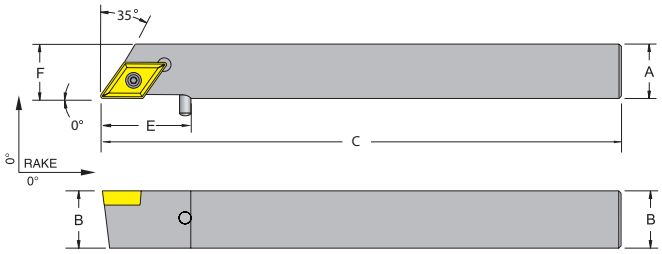


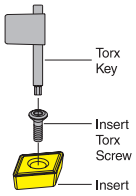
Right Hand Shown, Left Hand Opposite

Catalog Number		A	B	C	E (Tool Stop)	F	Gage Insert	Insert Torx Screw	Torx Key
Right Hand	Left Hand								
SCNCR062B	SCNCL062B	0.375	0.375	4.500	1.000	0.375	CC__21.51	TS25.456M2	TRX08
SCNCR062D	SCNCL062D	0.375	0.375	6.000	1.000	0.375			
SCNCR082B	SCNCL082B	0.500	0.500	4.500	1.000	0.500	CC__32.52	TS4.710M1	TRX15
SCNCR083B	SCNCL083B	0.500	0.500	4.500	1.000	0.500			
SCNCR083D	SCNCL083D	0.500	0.500	6.000	1.000	0.500			
SCNCR103B	SCNCL103B	0.625	0.625	4.500	1.000	0.625			
SCNCR103D	SCNCL103D	0.625	0.625	4.500	1.000	0.625			

SDAC Series







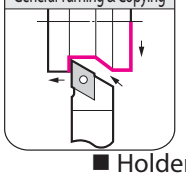
Right Hand Shown, Left Hand Opposite

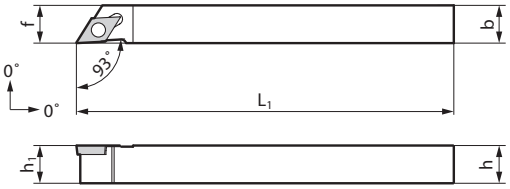
Catalog Number		A	B	C	E (Tool Stop)	F	Gage Insert	Insert Torx Screw	Torx Key
Right Hand	Left Hand								
SDACR062B	SDACL062B	0.375	0.375	4.500	1.000	0.375	DC__21.51	TS25.456M2	TRX08
SDACR062D	SDACL062D	0.375	0.375	6.000	1.000	0.375			
SDACR082B	SDACL082B	0.500	0.500	4.500	1.000	0.500			
SDACR082D	SDACL082D	0.500	0.500	6.000	1.000	0.500			
SDACR083B	SDACL083B	0.500	0.500	4.500	1.000	0.500	DC__32.52	TS4.710M1	TRX15
SDACR083D	SDACL083D	0.500	0.500	6.000	1.000	0.500			
SDACR103B	SDACL103B	0.625	0.625	4.500	1.000	0.625			
SDACR103D	SDACL103D	0.625	0.625	6.000	1.000	0.625			
SDACR123B	SDACL123B	0.750	0.750	4.500	1.000	0.750			
SDACR1010-H07X*	SDACL1010-H07X*	*10*	*10*	*100*	*10*	*10*	DC__21.51	BFTX02506N	TRX08
SDACR1215-K11X*	SDACL1215-K11X*	*12*	*15*	*125*	*15*	*12*	DC__32.52	BFTX0409N	TRX15
SDACR1215-F11X*	SDACL1215-F11X*	*12*	*15*	*85*	*15*	*12*	DC__32.52		

* = Worldwide Warehouse Stock

SDJC-X

General Turning & Copying





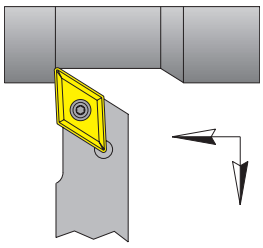
■ Holder

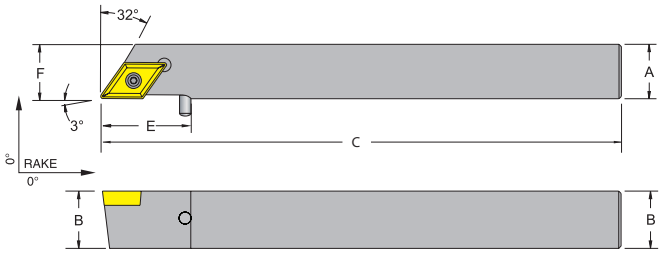
Above figures show right hand tools.

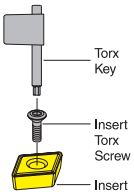
■ Parts

	Catalog Number	Stock		Dimensions (mm)					Applicable Insert	Screw	Wrench
		R	L	h	b	L_1	f	h_1			
85mm Shank	SDJC R/L1010-H07X	★	★	10	10	100	10	10	DC_T21.5	BFTX02506N	TRX08
	SDJC R/L1215-K11X	★	★	12	15	125	15	12	DC_T32.5	BFTX0409N	TRX15
	SDJC R/L1215-F11X	★	★	12	15	85	15	12	DC_T32.5		

SDNC Series



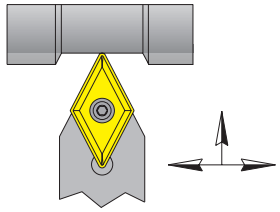


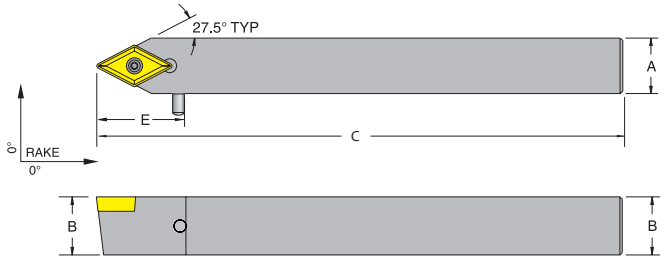


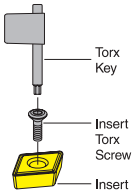
Right Hand Shown, Left Hand Opposite

Catalog Number		A	B	C	E (Tool Stop)	F	Gage Insert	Insert Torx Screw	Torx Key
Right Hand	Left Hand								
SDNCR062B	SDNCL062B	0.375	0.375	4.500	1.000	0.375	DC__21.51	TS25.456M2	TRX08
SDNCR082B	SDNCL082B	0.500	0.500	4.500	1.000	0.500			
SDNCR103B	SDNCL103B	0.625	0.625	4.500	1.000	0.625	DC__32.52	TS4.710M1	TRX15

SDPC Series





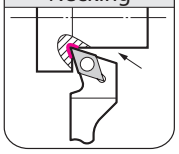


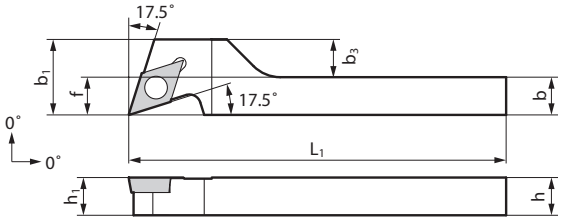
Neutral Hand Shown

Catalog Number Neutral	A	B	C	E (Tool Stop)	Gage Insert	Insert Torx Screw	Torx Key
SDPCN062B	0.375	0.375	4.500	1.000	DC__21.51	TS25.456M2	TRX08
SDPCN062D	0.375	0.375	6.000	1.000			
SDPCN082B	0.500	0.500	4.500	1.000			
SDPCN083B	0.500	0.500	4.500	1.000	DC__32.52	TS4.710M1	TRX15
SDPCN083D	0.500	0.500	6.000	1.000			
SDPCN103B	0.625	0.625	4.500	1.000			
SDPCN103D	0.625	0.625	6.000	1.000			

SDPC-X

Necking





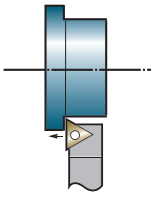
■ Parts

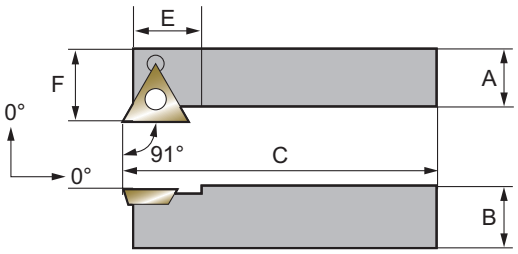
■ Holder

Above figures show right hand tools.

Catalog Number	Stock		Dimensions (mm)							Applicable Insert	Screw	Wrench
	R	L	h	b	L_1	f	h_1	b_1	b_3			
SDPCR/L1010-H11X	★	★	10	10	100	10	10	20	10	DC_T32.5	BFTX0409N	TRX15

STAC R/L Series

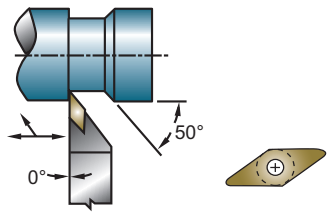


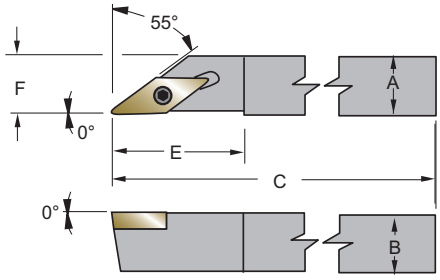


Catalog Number Right Hand	Left Hand	7° Positive Gage Insert	Stock	A	B	C	E	F	Insert Screw	Torque Wrench
STACR062B	STACL062B	TCMT21.51	•	.375	.375	4.500	0.625	0.375	ST-21.5	TRX08
STACR082B	STACL082B	TCMT21.51	•	.500	.500	4.500				
STACR103B	STACL103B	TCMT32.52	•	.625	.625	4.500	0.750	0.625	ST-32.5	TRX15
STACR062D	STACL062D	TCMT21.51	•	.375	.375	6.000	0.625	0.375	ST-21.5	TRX08
STACR082D	STACL082D	TCMT21.51	•	.500	.500	6.000				
STACR103D	STACL103D	TCMT32.52	•	.625	.625	6.000	0.750	0.625	ST-32.5	TRX15
*STACR1010-11**	*STACL1010-11**	TCMT21.51	★	*10.0*	*10.0*	*100.0*	*16.0*	*12.0*	ST-21.5	TRX08
*STACR1212-11**	*STACL1212-11**	TCMT21.51	★	*12.0*	*12.0*	*100.0*	*16.0*	*16.0*	ST-21.5	
*STACR1616-16**	*STACL1616-16**	TCMT32.52	★	*16.0*	*16.0*	*100.0*	*16.0*	*20.0*	ST-32.5	TRX15

* Not zero offset • = USA stocked item ★ = Worldwide Warehouse item

SVAB R/L Series

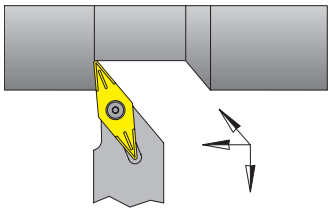


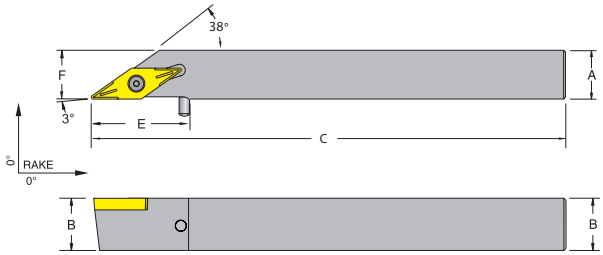


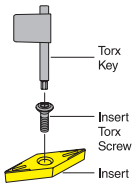
Catalog Number		5° Positive Gage Insert	Stock	A	B	C	E	F	Insert Screw	Torque Wrench
Right Hand	Left Hand									
SVABR103B	SVABL103B	VBMT332	•	.625	.625	4.500	1.375	0.625	ST-32.5	TRX15
SVABR062D	SVABL062D	VBMT221	•	.375	.375	6.000	0.875	0.375	ST-21.5	TRX08
SVABR082D	SVABL082D	VBMT221	•	.500	.500	6.000				
SVABR103D	SVABL103D	VBMT332	•	.625	.625	6.000	1.375	0.625	ST-32.5	TRX15
SVABR1010-11	*SVABL1010-11*	VBMT221		*10.0*	*10.0*	*150.0*	*22.0*	*10.0*	ST-21.5	TRX08
SVABR1212-11	*SVABL1212-11*	VBMT221		*12.0*	*12.0*	*150.0*				
SVABR1616-16	*SVABL1616-16*	VBMT332		*16.0*	*16.0*	*150.0*	*35.0*	*16.0*	ST-32.5	TRX15

• = USA stocked item

SVNB Series





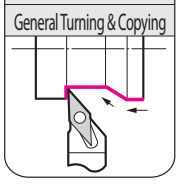


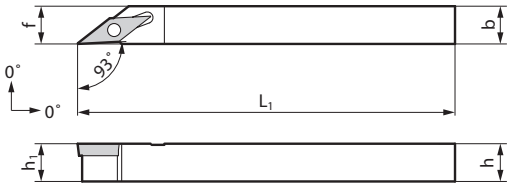
Right Hand Shown, Left Hand Opposite

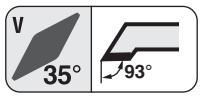
Catalog Number		A	B	C	E (Tool Stop)	F	Gage Insert	Insert Torx Screw	Torx Key
Right Hand	Left Hand								
SVNBR062B	SVNBL062B	0.375	0.375	4.500	1.000	0.375	VB__21.51	TS25.456M2	TRX08
SVNBR062D	SVNBL062D	0.375	0.375	6.000	1.000	0.375			
SVNBR082B	SVNBL082B	0.500	0.500	4.500	1.000	0.500			
SVNBR082D	SVNBL082D	0.500	0.500	6.000	1.000	0.500			
SVNBR103B	SVNBL103B	0.625	0.625	4.500	1.000	0.625	VB__32.52	TS4.710M1	TRX15
SVNBR103D	SVNBL103D	0.625	0.625	6.000	1.000	0.625			

SVJC-X

General Turning & Copying







■ Parts

■ Holder

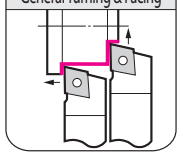
Above figures show right hand tools.

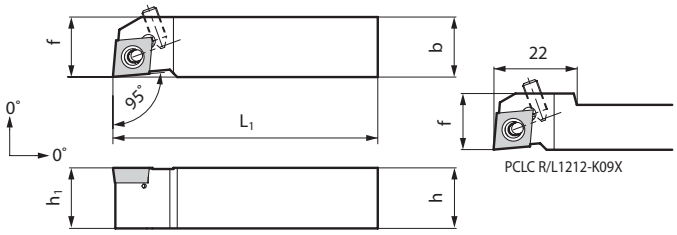
Catalog Number	Stock		Dimensions (mm)					Applicable Insert	Screw	Wrench
	R	L	h	b	L_1	f	h_1			
SVJCR/L1010-H11X	★	★	10	10	100	10	10	VC_T22	BFTX02506N	TRX08
SVJCR/L1212-K11X	★	★	12	12	125	12	12	VC_T22		
SVJCR/L1212-F11X	★	★	12	12	85	12	12	VC_T22		

★ = Worldwide Warehouse item

PCLC-X

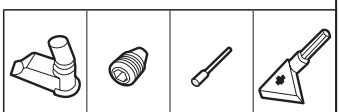
General Turning & Facing





Side lever locking holders

■ Parts



■ Holder

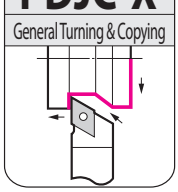
Above figures show right hand tools.

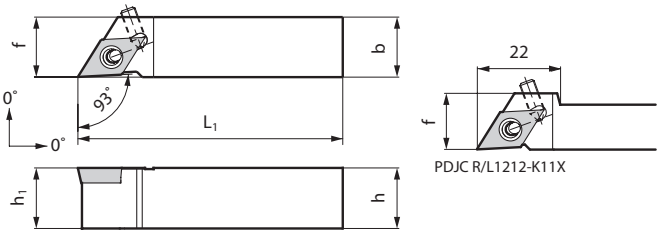
Catalog Number	Stock		Dimensions (mm)						Applicable Insert	Lever Pin	Set Screw	Pin	Wrench
	R	L	h	b	L_1	f	h_1						
PCLC R/L1010-K06X	★		10	10	125	10	10		CC_T21.5	LCL06	BTT0407	LP07	TH020
PCLC R/L1212-K09X	★		12	12	125	15	12		CC_T32.5	LCL09	BTT0411	LP06	
PCLC R/L1616-K09X	★		16	16	125	16	16		CC_T32.5				

★ = Worldwide Warehouse item

PDJC-X

General Turning & Copying





Side lever locking holders

■ Parts

■ Holder

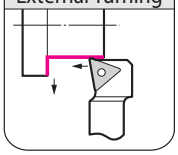
Above figures show right hand tools.

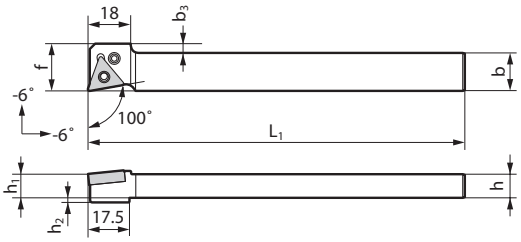
Catalog Number	Stock		Dimensions (mm)						Applicable Insert	Lever Pin	Set Screw	Pin	Wrench
	R	L	h	b	L_1	f	h_1						
PDJC R/L1010-K07X	★		10	10	125	10	10		DC_T21.5	LCL06	BTT0407	LP04	TH020
PDJC R/L1212-K11X	★		12	12	125	15	12		DC_T32.5	LCL09	BTT0411	LP07	
PDJC R/L1616-K11X	★		16	16	125	16	16		DC_T32.5				

★ = Worldwide Warehouse item

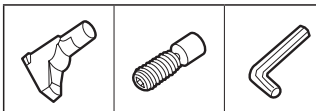
PTXN-X

External Turning





■ Parts

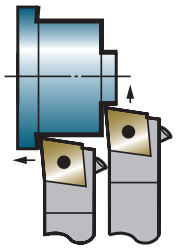


■ Holder

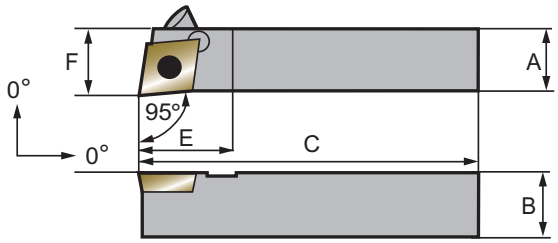
Catalog Number	Stock	Dimensions (mm)							Applicable Insert	Lever Pin	Screw	Wrench
		h	b	L_1	f	h_1	h_2	b_3				
PTXN R1016-X16X	★	10	16	120	20	10	2	4	TN□□33	LCL33NT	LCS33NT	LH020NT
PTXN R1216-X16X	★	12	16	120	20	12	0	4	TN□□33			
PTXN R1616-X16X	★	16	16	120	20	16	0	4	TN□□33			
PTXN R2020-X16X	★	20	20	120	20	20	0	0	TN□□33			

★ = Worldwide Warehouse item

PCLC R/LSeries



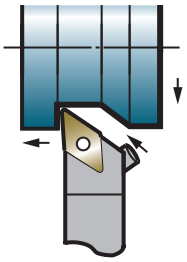
Side lever locking holders



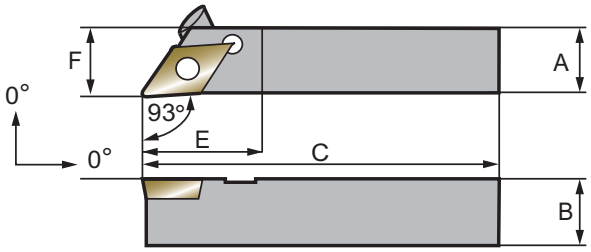
Sumitomo Cat. No.			Dimensions (inch/*mm*)									
Right Hand	Left Hand	7° Positive Gage Insert	Stock	A	B	C	E	F	Lever Pin	Clamp Bolt	Pin	Wrench
PCLCR062D	PCLCL062D	CCMT21.51	●	.375	.375	6.000	.472	.395	LCL06	BTT0407	LP07	TH020
PCLCR083D	PCLCL083D	CCMT32.52	●	.500	.500	6.000	.591	.520	LCL09	BTT0407	LP06	TH020
PCLCR103D	PCLCL103D	CCMT32.52	●	.625	.625	6.000	.630	.645	LCL09	BTT0411	LP06	TH020
PCLCR1010-K06	*PCLCL1010-K06*	CCMT21.51	★	*10.0*	*10.0*	*125.0*	*12.0*	*10.5*	LCL06	BTT0407	LP07	TH020
PCLCR1212-K09	*PCLCL1212-K09*	CCMT32.52	★	*12.0*	*12.0*	*150.0*	*16.0*	*12.5*	LCL09	BTT0407	LP06	TH020
PCLCR1616-M09	*PCLCL1616-M09*	CCMT32.52	★	*16.0*	*16.0*	*150.0*	*16.0*	*16.5*	LCL09	BTT0411	LP06	TH020

● = USA stocked item ★ = Worldwide Warehouse item

PDJC R/LSeries



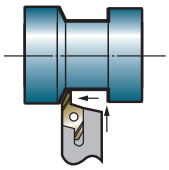
Side lever locking holders



Sumitomo Cat. No.			Dimensions (Inch/*mm*)									
Right Hand	Left Hand	7° Positive Gage Insert	Stock	A	B	C	E	F	Lever Pin	Clamp Bolt	Pin	Wrench
PDJCR062D	PDJCL062D	DCMT21.51	●	.375	.375	6.000	.472	.395	LCL06	BTT0407	LP04	TH020
PDJCR083D	PDJCL083D	DCMT32.52	●	.500	.500	6.000	.787	.520	LCL09	BTT0407	LP07	TH020
PDJCR103D	PDJCL103D	DCMT32.52	●	.625	.625	6.000	.787	.645	LCL09	BTT0411	LP07	TH020
PDJCR1010-K07	*PDJCL1010-K07*	DCMT21.51	★	*10.0*	*10.0*	*125.0*	*15.0*	*10.5*	LCL06	BTT0407	LP04	TH020
PDJCR1212-M11	*PDJCL1212-M11*	DCMT32.52	★	*12.0*	*12.0*	*150.0*	*20.0*	*12.5*	LCL09	BTT0407	LP07	TH020
PDJCR1616-M11	*PDJCL1616-M11*	DCMT32.52	★	*16.0*	*16.0*	*150.0*	*20.0*	*16.5*	LCL09	BTT0411	LP07	TH020

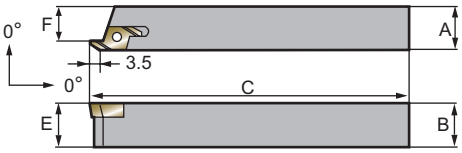
● = USA stocked item ★ = Worldwide Warehouse item

SBT R Series



Back Turning Holders

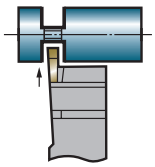
See page for inserts



Sumitomo Cat. No.		Gage Insert	Dimensions (inch/*mm*)						Insert Screw	Torx Wrench
Right Hand	Left Hand		Stock	A	B	C	E	F		
SBTR3506		BTR35	●	0.375	0.375	6.000	0.375	7.5	BFTX0307N	TRX10
SBTR3508		BTR35	●	0.500	0.500	6.000	0.500	9.5	BFTX0307N	TRX10
SBTR3510		BTR35	●	0.625	0.625	6.000	0.625	13.5	BFTX0307N	TRX10
SBT35R1010		BTR35	★	*10.0*	*10.0*	*150.0*	*10.0*	*7.5*	BFTX0307N	TRX10
SBT35R1212		BTR35	★	*12.0*	*12.0*	*150.0*	*12.0*	*9.5*	BFTX0307N	TRX10
SBT35R1616		BTR35	★	*16.0*	*16.0*	*150.0*	*16.0*	*13.5*	BFTX0307N	TRX10

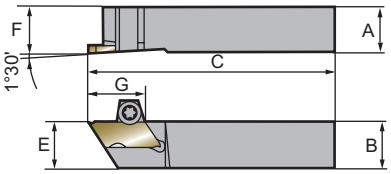
● = USA stocked item ★ = Worldwide Warehouse item

SCT R/LSeries



Cut-Off Holders

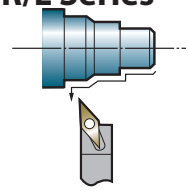
See page for inserts

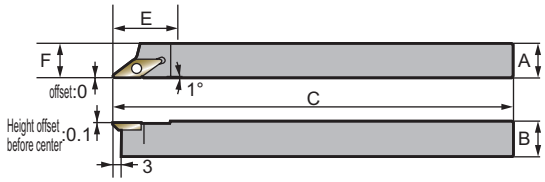


Sumitomo Cat. No.			Dimensions (Inch*mm*)									
Right Hand	Left Hand	Gage Insert	Stock	A	B	C	E	F	G	Insert Screw Right hand	Insert Screw Left hand	Torx Wrench
SCTR08	SCTL08	CTR12	•	.500	.500	6.000	.500	.500	.591	BFTX0410T8R	BFTX0410T8L	TRX08
SCTR10	SCTL10	CTR12	•	.625	.625	6.000	.625	.625	.591	BFTX0410T8R	BFTX0410T8L	TRX08
SCTR12	SCTL12	CTR12	•	.750	.750	6.000	.750	.750	.591	BFTX0410T8R	BFTX0410T8L	TRX08
SCTR1010	*SCTL1010*	CTR12	★	*10.0*	*10.0*	*150.0*	*10.0*	*10.0*	*15.0*	BFTX0410T8R	BFTX0410T8L	TRX08
SCTR1212	*SCTL1212*	CTR12	★	*12.0*	*12.0*	*150.0*	*12.0*	*12.0*	*15.0*	BFTX0410T8R	BFTX0410T8L	TRX08
SCTR1616	*SCTL1616*	CTR12	★	*16.0*	*16.0*	*150.0*	*16.0*	*16.0*	*15.0*	BFTX0410T8R	BFTX0410T8L	TRX08

● = USA stocked item ★ = Worldwide Warehouse item

SPB R/L Series

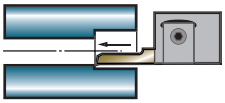


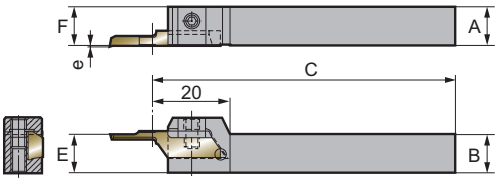


Sumitomo Cat. No.			Dimensions (Inch/*mm*)							
Right Hand	Left Hand	Gage Insert	Stock	A	B	C	E	F	Insert Screw	Torx Wrench
SPBR063D	SPBL063D	PBV1102	•	.375	.375	6.000	.669	.375	BFTX02505N	LT08-06
SPBR083D	SPBL083D	PBV1102	•	.500	.500	6.000	.669	.500	BFTX02505N	LT08-06
SPBR1010-60	*SPBL1010-60*	PBV1102	★	*10.0*	*10.0*	*150.0*	*17.0*	*10.5*	BFTX02505N	LT08-06
SPBR1212-60	*SPBL1212-60*	PBV1102	★	*12.0*	*12.0*	*150.0*	*17.0*	*12.5*	BFTX02505N	LT08-06

• = USA stocked item ★ = Worldwide Warehouse item

CKBR Series

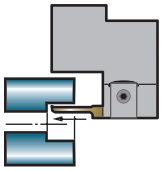


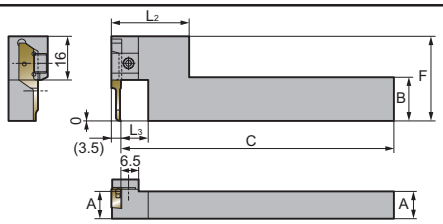


Sumitomo Cat. No.			Dimensions (Inch/*mm*)								
		Gage Insert	Stock	A	B	C	E	F	Clamp	Clamp Screw	Wrench
CKBR062D		KBMXR	•	.375	.375	6.000	.375	.375	CKBW16	WB4-8	LH020
CKBR082D		KBMXR	•	.500	.500	6.000	.500	.500	CKBW16	WB4-8	LH020
CKBR102D		KBMXR	•	.625	.625	6.000	.625	.625	CKBW16	WB4-8	LH020
CKBR1010-16		KBMXR	★	*10.0*	*10.0*	*150.0*	*10.0*	*10.0*	CKBW16	WB4-8	LH020
CKBR1212-16		KBMXR	★	*12.0*	*12.0*	*150.0*	*12.0*	*12.0*	CKBW16	WB4-8	LH020
CKBR1616-16		KBMXR	★	*16.0*	*16.0*	*150.0*	*16.0*	*16.0*	CKBW16	WB4-8	LH020

• = USA stocked item ★ = Worldwide Warehouse item

CKBSR Series



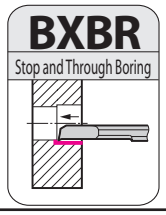


Sumitomo Cat. No.			Dimensions (Inch/*mm*)								
Right Hand		Gage Insert	Stock	A	B	C	F	L_2	L_3	Clamp	Clamp Screw	Wrench
CKBSR102D		KBMXL	•	.625	.625	6.000	1.220	1.125	.393	CKBW16	WB4-8	LH020
CKBSR1010-16-11		KBMXL	★	*10.0*	*16.0*	*150.0*	*31.0*	*28.5*	*10.0*	CKBW16	WB4-8	LH020
CKBSR1212-16-11		KBMXL	★	*12.0*	*16.0*	*150.0*	*31.0*	*28.5*	*10.0*	CKBW16	WB4-8	LH020
CKBSR1616-16-11		KBMXL	★	*16.0*	*16.0*	*150.0*	*31.0*	*28.5*	*16.0*	CKBW16	WB4-8	LH020

■ Characteristics

- Economical, two-cornered insert.
- Maximum boring depth 5D (5 times the shank diameter)
- Usable at any desired overhang.
- Shank size = min. bore diameter for easy selection. (Available from ø2 mm to ø5 mm in 0.5 mm increments.)
- KBMX Type cutting edge used, no breaker versions also available in stock.

Small Hole Finishing



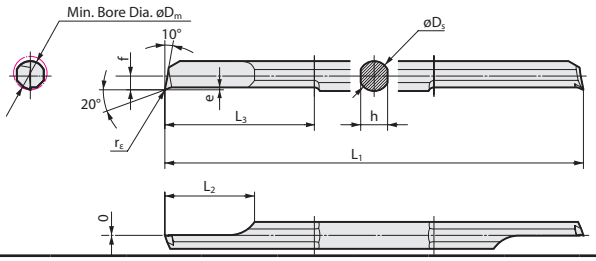
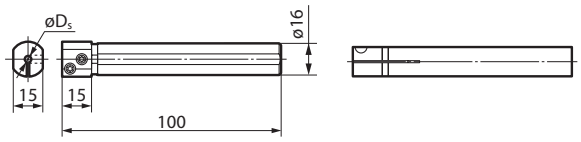


Figure shows tool with breaker.

■ Brazed Boring Bar

	Catalog Number	Stock	*Min. Bore Dia.	Dimensions (mm)								Applicable Sleeve
		ACZ150	$øD_m$	$øD_s$	h	L_1	f	L_2	L_3	e	r_ε	
With Breaker	BXBR 02005R	★	2.0	2.0	1.8	50	0.80	6.0	10.0	0.20	0.05	HBX 2016
	BXBR 02020R	★	2.0	2.0	1.8	50	0.80	6.0	10.0	0.20	0.20	HBX 2016
	BXBR 02505R	★	2.5	2.5	2.2	50	1.05	7.5	12.5	0.20	0.05	HBX 2516
	BXBR 02520R	★	2.5	2.5	2.2	50	1.05	7.5	12.5	0.20	0.20	HBX 2516
	BXBR 03005R	★	3.0	3.0	2.7	50	1.30	9.0	15.0	0.25	0.05	HBX 3016
	BXBR 03020R	★	3.0	3.0	2.7	50	1.30	9.0	15.0	0.25	0.20	HBX 3016
	BXBR 03505R	★	3.5	3.5	3.1	60	1.55	10.5	17.5	0.25	0.05	HBX 3516
	BXBR 03520R	★	3.5	3.5	3.1	60	1.55	10.5	17.5	0.25	0.20	HBX 3516
	BXBR 04005R	★	4.0	4.0	3.6	60	1.80	12.0	20.0	0.35	0.05	HBX 4016
	BXBR 04020R	★	4.0	4.0	3.6	60	1.80	12.0	20.0	0.35	0.20	HBX 4016
	BXBR 04505R	★	4.5	4.5	4.1	70	2.05	13.5	22.5	0.35	0.05	HBX 4516
	BXBR 04520R	★	4.5	4.5	4.1	70	2.05	13.5	22.5	0.35	0.20	HBX 4516
	BXBR 05005R	★	5.0	5.0	4.5	70	2.30	15.0	25.0	0.40	0.05	HBX 5016
	BXBR 05020R	★	5.0	5.0	4.5	70	2.30	15.0	25.0	0.40	0.20	HBX 5016
No Breaker	BXBR 02005R-NB	★	2.0	2.0	1.8	50	0.80	6.0	10.0	0.20	0.05	HBX 2016
	BXBR 02020R-NB	★	2.0	2.0	1.8	50	0.80	6.0	10.0	0.20	0.20	HBX 2016
	BXBR 02505R-NB	★	2.5	2.5	2.2	50	1.05	7.5	12.5	0.20	0.05	HBX 2516
	BXBR 02520R-NB	★	2.5	2.5	2.2	50	1.05	7.5	12.5	0.20	0.20	HBX 2516
	BXBR 03005R-NB	★	3.0	3.0	2.7	50	1.30	9.0	15.0	0.25	0.05	HBX 3016
	BXBR 03020R-NB	★	3.0	3.0	2.7	50	1.30	9.0	15.0	0.25	0.20	HBX 3016
	BXBR 03505R-NB	★	3.5	3.5	3.1	60	1.55	10.5	17.5	0.25	0.05	HBX 3516
	BXBR 03520R-NB	★	3.5	3.5	3.1	60	1.55	10.5	17.5	0.25	0.20	HBX 3516
	BXBR 04005R-NB	★	4.0	4.0	3.6	60	1.80	12.0	20.0	0.35	0.05	HBX 4016
	BXBR 04020R-NB	★	4.0	4.0	3.6	60	1.80	12.0	20.0	0.35	0.20	HBX 4016
	BXBR 04505R-NB	★	4.5	4.5	4.1	70	2.05	13.5	22.5	0.35	0.05	HBX 4516
	BXBR 04520R-NB	★	4.5	4.5	4.1	70	2.05	13.5	22.5	0.35	0.20	HBX 4516
	BXBR 05005R-NB	★	5.0	5.0	4.5	70	2.30	15.0	25.0	0.40	0.05	HBX 5016
	BXBR 05020R-NB	★	5.0	5.0	4.5	70	2.30	15.0	25.0	0.40	0.20	HBX 5016

* Boring depth L_3 or less.



■ Adaptor Sleeve

Cat. No.	Stock	Dimensions (mm) øDs	Applicable Bar
HBX 2016	★	2.0	BXBR 020SSR(-NB)
HBX 2516	★	2.5	BXBR 025SSR(-NB)
HBX 3016	★	3.0	BXBR 030SSR(-NB)
HBX 3516	★	3.5	BXBR 035SSR(-NB)
HBX 4016	★	4.0	BXBR 040SSR(-NB)
HBX 4516	★	4.5	BXBR 045SSR(-NB)
HBX 5016	★	5.0	BXBR 050SSR(-NB)

* BXBR bars can be used with HBB type sleeves. Commercially available sleeves may also be used. Please see page 235 for more information regarding HBX

■ Spare Parts (For sleeve)

			
Screw	Setting Screw	Wrench	Applicable Sleeve
BFTX0409N	BT06035T	TRD15	HBX____

* Adaptor sleeve is optional

Boring Bars

Pages 207-238

BORING BARS **PAGES**

Boring Bar Nomenclature

A

Boring Bar Type

A

Solid Steel Bar with Coolant Hole

B

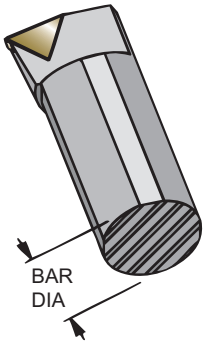
Solid Steel Bar with Anti-Vibration Device

E

Carbide Bar with Fixed Steel Head & Coolant Hole

16-

Boring Bar Diameter



This indicates D dimensions in sixteenths (1/16).

examples:

08 = 8/16 = 1/2" Diameter

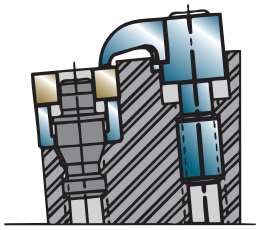
16 = 16/16 = 1.0" Diameter

24 = 24/16 = 1-1/2" Diameter

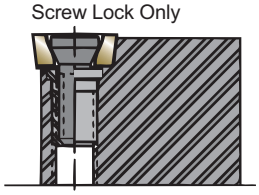
M

Insert Holding

M
Clamp and Lock Pin



S
Screw Lock Only



C

Insert Shape

C
Diamond


D
Diamond


R
Round
360°


S
Square

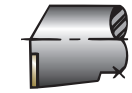

T
Triangle


V
Diamond

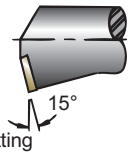

W
Trigon


L

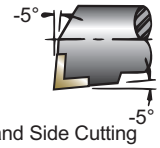
Boring Bar Style



F
0° End Cutting

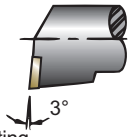


K
15° End Cutting

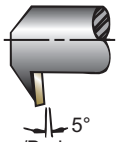


L
-5° End and Side Cutting

Q
-17.5° End Cutting



U
-3° End Cutting



X
-5° Back Facing/Boring

N

Insert Relief Angle

B

C

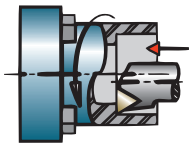
N

P

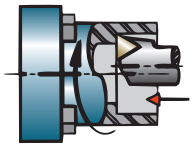
R

Hand

R
Right Hand

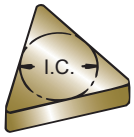


L
Left Hand



4

Insert Size



For equal sided inserts this indicates the inscribed circle (I.C.) in eighths (1/8).

examples,

6 = 6/8 =
3/4" I.C.

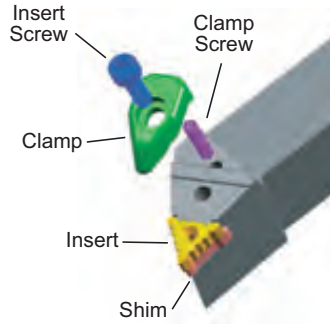
4 = 4/8 =
1/2" I.C.

2.5 = 2.5/8 =
5/16" I.C.

Overview – Insert Holding Methods

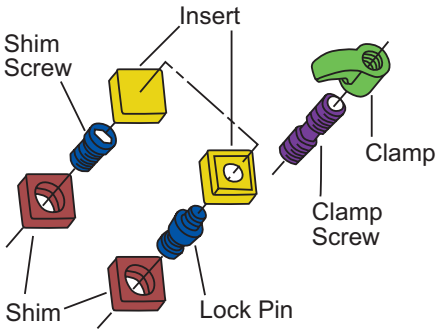
T-Rex Boring Bars

- Available in the -LU, -GU and -SU chipbreakers with grades T2000Z, AC700G, AC2000, AC820P, AC830P, AC610M, and AC630M
- Rigid clamping system ensures accurate insert indexing
- Up to 2.5mm (0.100") depth of cut
- **Six** 55° cutting edges versus the standard **four** edges of a DNMG insert



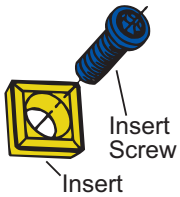
ANSI Standard Combination Boring Bars with through coolant

- Proven lock pin for negative rake geometry inserts
- Ideal for unground, negative rake inserts or utility and precision ground inserts
- Available with integral coolant delivery



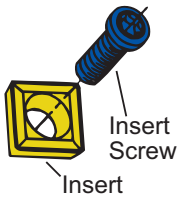
ANSI/ISO "Screw-On" Boring Bars

- Available with steel, carbide, or heavy metal shanks, ranging in size from 3/8″ to 1″ and coolant through the tool
- Designed to ISO-ANSI standards
- Uses TORX* insert holding screws
- Available with Anti-Vibration steel shanks



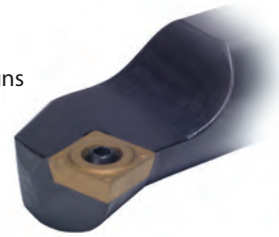
X-BAR Boring Bars

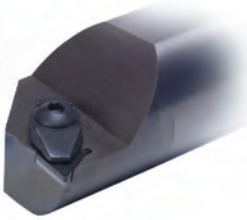
- Special dampener mechanism eliminates chatter
- Up to 6X L/D overhang (depth / bar diameter)
- Cost effective solution to carbide bars when deep hole boring
- Available in both coolant-through and non-coolant-through
- Effectively rough bores deep holes
- Bars available with CCMT, TCMT and TPMT style inserts

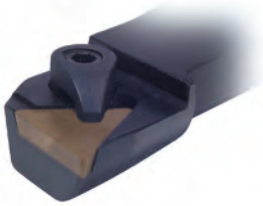


Sumitomo Design Boring Bars

- Styles available using negative inserts and 5°, 7°, 11° and 15° positive inserts
- For bores as small as .228″ using the BSWJO design
- Available in steel or carbide shanks
- Various locking methods / unique Sumitomo designs







Features & Benefits

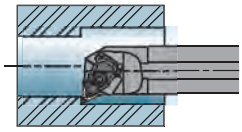
- Available in the -LU, -GU and -SU chipbreakers with grades T2000Z, AC700G, AC820P, AC830P, AC610M, and AC630M

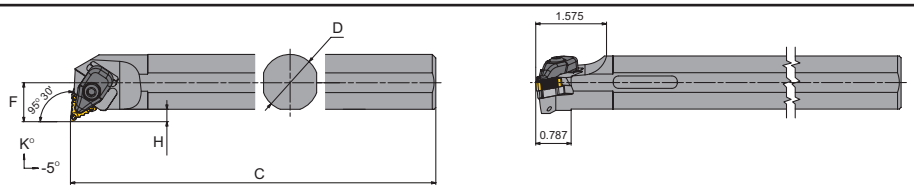
- Rigid clamping system ensures accurate insert indexing
- Up to 2.5mm (0.100") depth of cut

- **Six** 55° cutting edges versus the standard **four** edges of a DNMG insert

T-REX Boring Bar

A-DTR Series

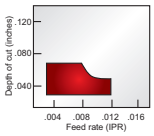




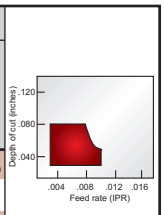
Sumitomo Cat. No.		Dimensions (Inch)					
Right Hand	Left Hand	D	C	F	H	K	Min. Bore
A20DTR55CR3	A20DTR55CL3	1.250"	10.000"	0.875"	0.309"	-12°	1.750"
A24DTR55CR3	A24DTR55CL3	1.500"	12.000"	1.000"	0.309"	-10°	2.000"

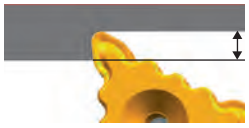
T-REX Inserts

-LU Finishing	Coated				Dimensions (Inch)		
Sumitomo Cat. No.	AC700G	AC820P	AC830P	T2000Z	Inscribed Circle	Thickness	Radius
TRM551704LU	•	•	★	•	0.394	0.197	0.016
TRM551708LU	•	•	★	•	0.394	0.197	0.031
TRM551712LU	•	•	★	•	0.394	0.197	0.047

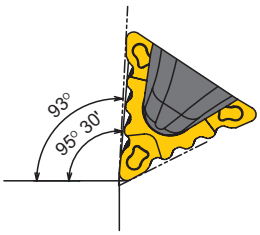


-SU Finishing	Coated			Dimensions (Inch)		
Sumitomo Cat. No.	AC610M	AC630M		Inscribed Circle	Thickness	Radius
TRM551704SU	•	•		0.394	0.197	0.016
TRM551708SU	•	•		0.394	0.197	0.031
TRM551712SU	•	•		0.394	0.197	0.047

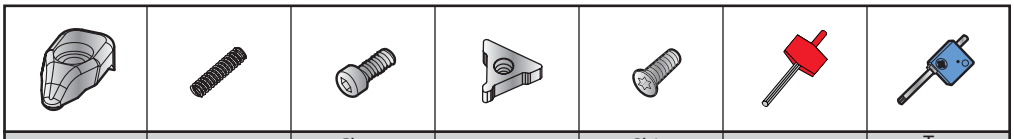




2.5mm (0.100")
Maximum
Depth of cut



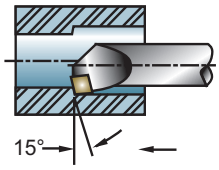
Hardware

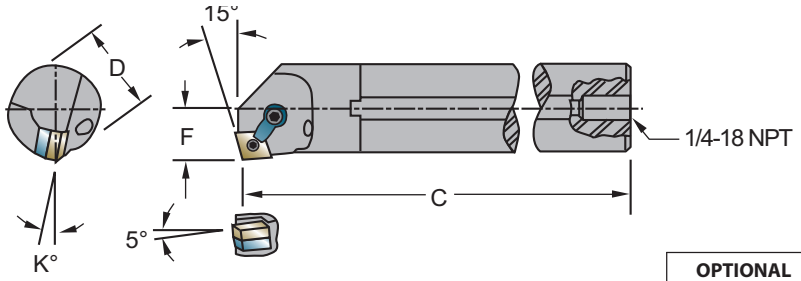
						
Clamp	Spring	Clamp Screw	Shim	Shim Screw	Wrench	Torx Wrench
TRCP3	SSP420	BX0520	TRW5505	BFTX0307N	TSW040	TRX10

Torque specifications for BX0520 clamp screw = 31-39 inch/lbs.

ANSI Standard Combination Boring Bars with through coolant

A-MCK

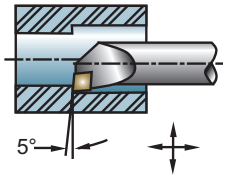


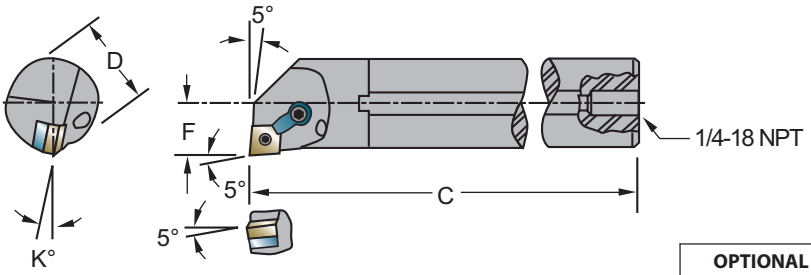


Solid steel bar with coolant hole

Sumitomo Cat. No.			D	C	F	K°	Min. Bore	Shim	Lock Pin	Clamp	Clamp Screw	OPTIONAL HARDWARE Shim	OPTIONAL HARDWARE Shim Screw
Right Hand	Left Hand	Gage Insert											
A20MCKNR4	A20MCKNL4	CNMG432	1.250	14.000	.765	14°	1.470	ICSN-433	NL-46	CL-20	XNS-48	–	S-46
A24MCKNR5	A24MCKNL5	CNMG543	1.500	14.000	.890	12°	1.760	ICSN-533	NL-58	CL-12	XNS-510	–	S-58

A-MCL



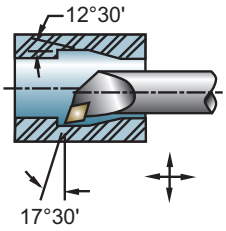


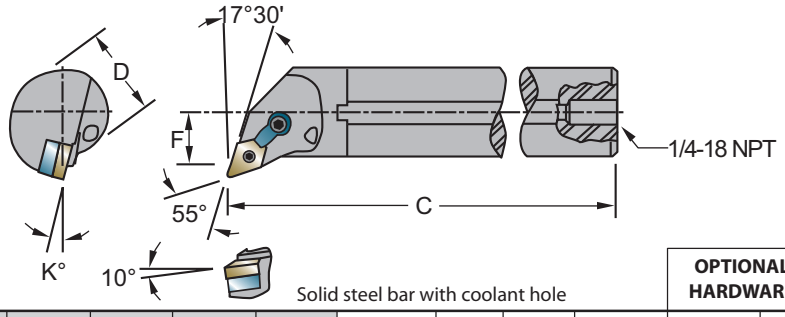
Solid steel bar with coolant hole

Sumitomo Cat. No.			D	C	F	K°	Min. Bore	Shim	Lock Pin	Clamp	Clamp Screw	OPTIONAL HARDWARE Shim	OPTIONAL HARDWARE Shim Screw
Right Hand	Left Hand	Gage Insert											
A16MCLNR3	A16MCLNL3	CNMG322	1.000	12.000	.640	14°	1.200	N/A	NL-33	CL-7	XNS-36	–	–
A16MCLNR4	A16MCLNL4	CNMG432	1.000	12.000	.640	14°	1.200	N/A	NL-44	CL-20	XNS-48	–	–
A20MCLNR4	A20MCLNL4	CNMG432	1.250	12.000	.765	14°	1.470	ICSN-433	NL-46	CL-20	XNS-48	–	S-46
A24MCLNR4	A24MCLNL4	CNMG432	1.500	14.000	.890	14°	1.760	ICSN-433	NL-46	CL-20	XNS-48	–	S-46
A28MCLNR4	A28MCLNL4	CNMG432	1.750	14.000	1.015	12°	2.010	ICSN-433	NL-46	CL-20	XNS-48	–	S-46
A32MCLNR4	A32MCLNL4	CNMG432	2.000	14.000	1.281	12°	2.400	ICSN-433	NL-46	CL-20	XNS-48	–	S-46
A32MCLNR5	A32MCLNL5	CNMG543	2.000	16.000	1.281	12°	2.400	ICSN-533	NL-58	CL-12	XNS-510	–	S-58
A40MCLNR4	A40MCLNL4	CNMG432	2.500	16.000	1.531	10°	3.030	ICSN-433	NL-46	CL-20	XNS-48	–	S-46

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

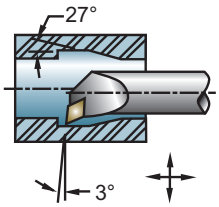
A-MDQ

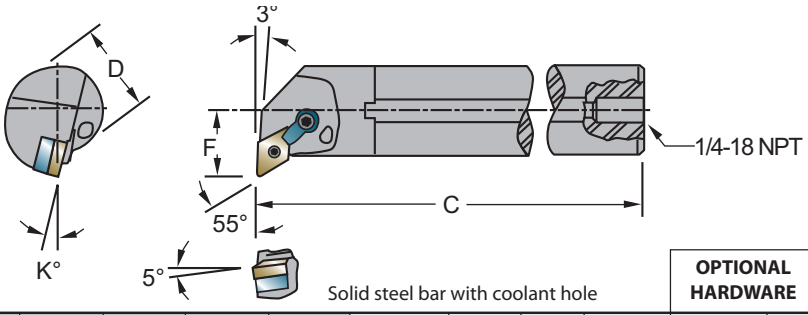




Sumitomo Cat. No.			D	C	F	K°	Min. Bore	OPTIONAL HARDWARE					
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Srew	Shim	Shim Screw
A20MDQNR4	A20MDQNL4	DNMG432	1.250	14.000	1.000	12°	1.705	IDSN-443	NL-46L	CL-12	XNS-59	IDSN-433	S-46
A24MDQNR4	-	DNMG432	1.500	14.000	1.125	8°	2.000	IDSN-443	NL-46L	CL-12	XNS-59	IDSN-433	S-46

A-MDU



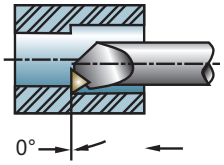


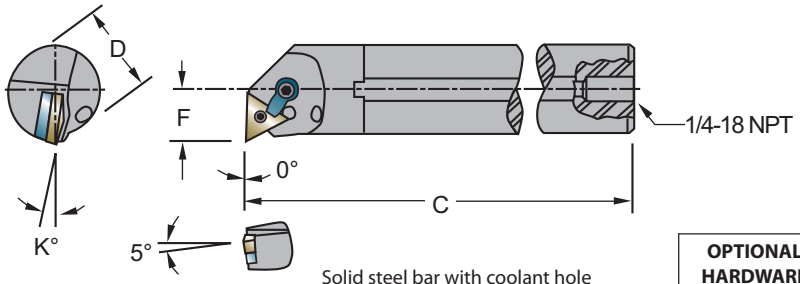
Sumitomo Cat. No.			D	C	F	K°	Min. Bore	OPTIONAL HARDWARE					
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim	Shim Screw
A16MDUNR3	A16MDUNL3	DNMG332	1.000	12.000	.750	12°	1.300	N/A	NL-33	CL-7	XNS-36	–	S-34
A20MDUNR4	A20MDUNL4	DNMG432	1.250	14.000	1.000	10°	1.705	IDSN-443	NL-46L	CL-12	XNS-59	IDSN-433	S-46
A24MDUNR4	A24MDUNL4	DNMG432	1.500	14.000	1.250	10°	2.000	IDSN-443	NL-46L	CL-12	XNS-59	IDSN-433	S-46
A28MDUNR4	A28MDUNL4	DNMG432	1.750	14.000	1.250	10°	2.250	IDSN-443	NL-46L	CL-12	XNS-59	IDSN-433	S-46
A32MDUNR4	A32MDUNL4	DNMG432	2.000	16.000	1.375	10°	2.500	IDSN-443	NL-46L	CL-12	XNS-59	IDSN-433	S-46
A40MDUNR5	A40MDUNL5	DNMG543	2.500	16.000	1.750	10°	3.250	IDSN-533	NL-58	CL-30	XNS-510	–	S-58

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

ANSI Standard Combination Boring Bars with through coolant

A-MTF

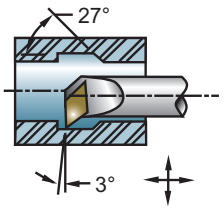


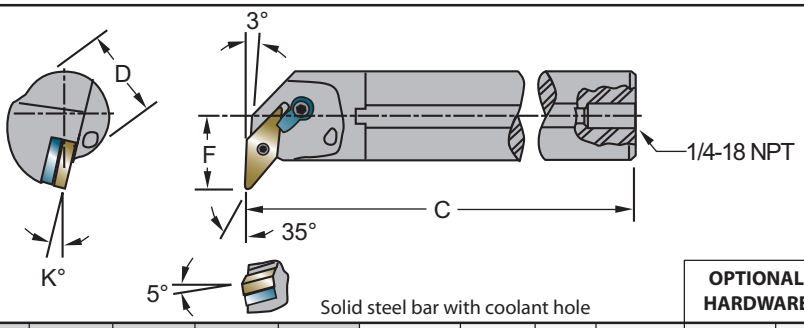


Solid steel bar with coolant hole

Sumitomo Cat. No.			D	C	F	K°	Min. Bore	OPTIONAL HARDWARE					
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim	Shim Screw
A16MTFNR3	A16MTFNL3	TNMG332	1.000	12.000	.640	15°	1.200	ITSN-333	NL-34L	CL-7	XNS-35	ITSN-323	S-34
A20MTFNR3	A20MTFNL3	TNMG332	1.250	12.000	.765	12°	1.470	ITSN-333	NL-34L	CL-7	XNS-35	ITSN-323	S-34
A24MTFNR3	A24MTFNL3	TNMG332	1.500	14.000	.890	10°	1.760	ITSN-333	NL-34L	CL-7	XNS-35	ITSN-323	S-34
A24MTFNR4	A24MTFNL4	TNMG432	1.500	14.000	1.030	10°	1.760	ITSN-432	NL-46	CL-9	XNS-59	ITSN-423	S-46
A32MTFNR4	A32MTFNL4	TNMG432	2.000	14.000	1.281	8°	2.400	ITSN-432	NL-46	CL-9	XNS-59	ITSN-423	S-46

A-MVU



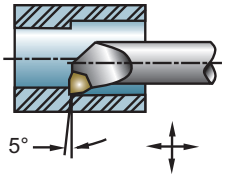


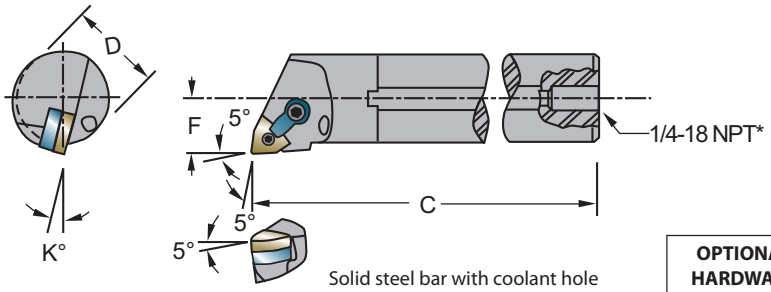
Solid steel bar with coolant hole

Sumitomo Cat. No.			D	C	F	K°	Min. Bore	OPTIONAL HARDWARE					
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim	Shim Screw
A20MVUNR3	A20MVUNL3	VNMG332	1.250	14.000	1.125	12°	1.705	IVSN-322	NL-34L	CL-12	XNS-58	–	S-34
A24MVUNR3	A24MVUNL3	VNMG332	1.500	14.000	1.250	12°	2.000	IVSN-322	NL-34L	CL-12	XNS-58	–	S-34

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

A-MWL





Solid steel bar with coolant hole

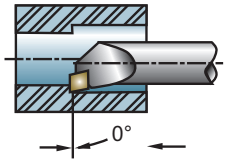
Sumitomo Cat. No.			D	C	F	K°	Min. Bore					OPTIONAL HARDWARE 	
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim	Shim Screw
A12MWLNR3*	A12MWLNL3	WNMG332	.750	10.000	.500	14°	1.000	–	NL-33L	CL-7	XNS-36	–	–
A16MWLNR3	A16MWLNL3	WNMG332	1.000	12.000	.640	14°	1.200	–	NL-33	CL-7	XNS-36	–	–
A16MWLNR4	A16MWLNL4	WNMG432	1.000	12.000	.640	14°	1.200	–	NL-44	CL-20	XNS-47	–	–
A20MWLNR4	A20MWLNL4	WNMG432	1.250	12.000	.765	14°	1.470	IWSN-432	NL-46	CL-20	XNS-48	–	–
A24MWLNR4	A24MWLNL4	WNMG432	1.500	14.000	.890	14°	1.760	IWSN-432	NL-46	CL-20	XNS-48–	–	–

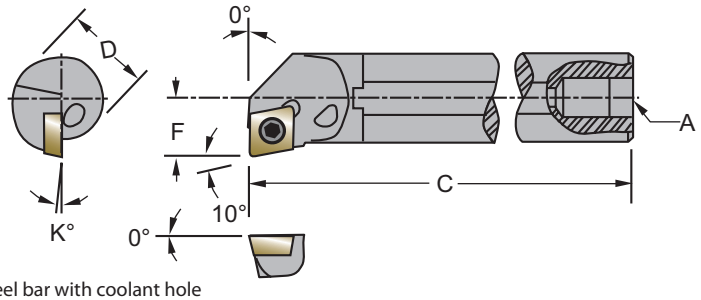
*A=1/27-NPT for A12MWLNR3

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

ANSI-ISO Boring Bars with through coolant

A-SCFP



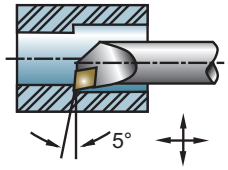


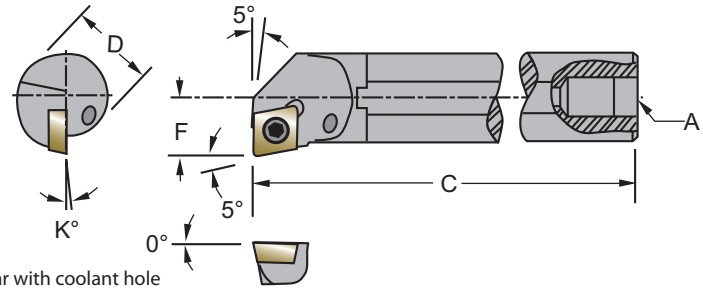
Solid steel bar with coolant hole

Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand	11° Positive Gage Insert							Insert Screw	Torx Wrench
A06SCFPR2	–	CPMT21.51	.375	6.000	.250	4°	.480	1/8*	ST21.5	TRX08
A08SCFPR2	A08SCFPL2	CPMT21.51	.500	8.000	.312	2°	.600	1/16-27 NPT	ST21.5	TRX08
A10SCFPR2	A10SCFPL2	CPMT21.51	.625	10.000	.406	0°	.770	1/8-27 NPT	ST21.5	TRX08
A12SCFPR3	–	CPMT32.52	.750	10.000	.500	0°	.930	1/8-27 NPT	ST32.5	TRX15
A16SCFPR3	–	CPMT32.52	1.000	12.000	.640	0°	1.200	1/4-18 NPT	ST32.5	TRX15

*Through hole only. No threads.

A-SCLC





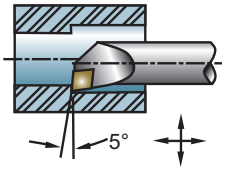
Solid steel bar with coolant hole

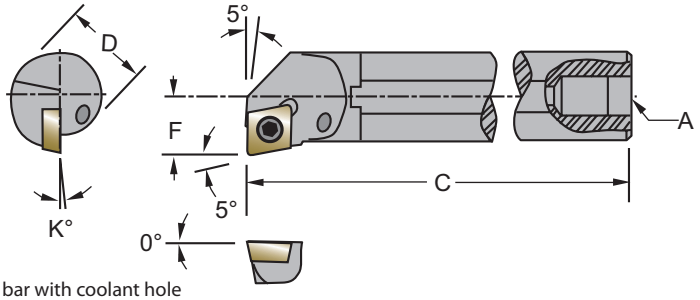
Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand	7° Positive Gage Insert							Insert Screw	Torx Wrench
A06SCLCR2	A06SCLCL2	CCMT21.51	.375	6.000	.250	-15°	.480	1/8*	ST21.5	TRX08
A08SCLCR2	A08SCLCL2	CCMT21.51	.500	6.000	.312	-13°	.600	1/16-27 NPT	ST21.5	TRX08
A10SCLCR2	A10SCLCL2	CCMT21.51	.625	10.000	.406	-10°	.770	1/8-27 NPT	ST21.5	TRX08
A10SCLCR3	A10SCLCL3	CCMT32.52	.625	10.000	.406	-10°	.770	1/8-27 NPT	ST32.5	TRX15
A12SCLCR3	A12SCLCL3	CCMT32.52	.750	10.000	.500	-8°	.930	1/8-27 NPT	ST32.5	TRX15
A16SCLCR3	A16SCLCL3	CCMT32.52	1.000	12.000	.640	-7°	1.200	1/4-18 NPT	ST32.5	TRX15

*Through hole only. No threads.

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

A-SCLP



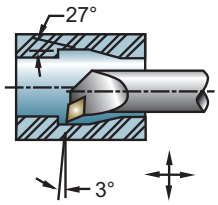


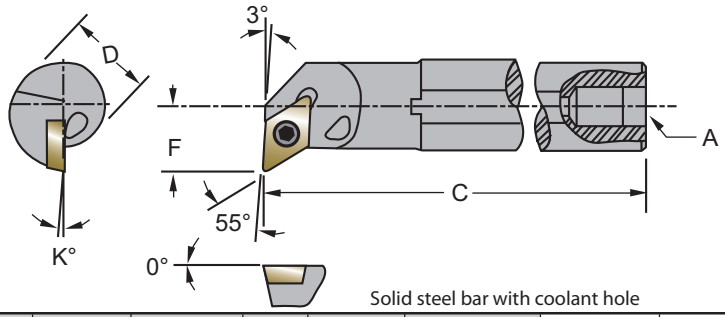
Solid steel bar with coolant hole

Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand	11° Positive Gage Insert							Insert Screw	Torx Wrench
A06SCLPR2	A06SCLPL2	CPMT21.51	.375	6.000	.250	-6°	.480	1/8*	ST21.5	TRX08
A08SCLPR2	A08SCLPL2	CPMT21.51	.500	8.000	.312	-3°	.600	1/16-27 NPT	ST21.5	TRX08
A10SCLPR2	A10SCLPL2	CPMT21.51	.625	10.000	.406	-2°	.770	1/8-27 NPT	ST21.5	TRX08
A10SCLPR3	A10SCLPL3	CPMT32.52	.625	10.000	.406	-2°	.770	1/8-27 NPT	ST32.5	TRX15
A12SCLPR3	A12SCLPL3	CPMT32.52	.750	10.000	.500	-2°	.930	1/8-27 NPT	ST32.5	TRX15
A16SCLPR3	A16SCLPL3	CPMT32.52	1.000	12.000	.640	0°	1.200	1/4-18 NPT	ST32.5	TRX15

*Through hole only. No threads.

A-SDUP





Solid steel bar with coolant hole

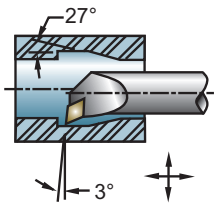
Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right hand	Left Hand	11° Positive Gage Insert							Insert Screw	Torx Wrench
A06SDUPR2	A06SDUPL2	DPMT21.51	.375	6.000	.375	-3°	.600	1/8*	ST21.5	TRX08
A08SDUPR2	A08SDUPL2	DPMT21.51	.500	8.000	.437	-2°	.730	1/16-27NPT	ST21.5	TRX08
A10SDUPR2	A10SDUPL2	DPMT21.51	.625	10.000	.500	0°	.850	1/8-27NPT	ST21.5	TRX08
A12SDUPR3	A12SDUPL3	DPMT32.52	.750	10.000	.562	0°	.980	1/8-27NPT	ST32.5	TRX15
A16SDUPR3	A16SDUPL3	DPMT32.52	1.000	12.000	.750	0°	1.300	1/4-18NPT	ST32.5	TRX15

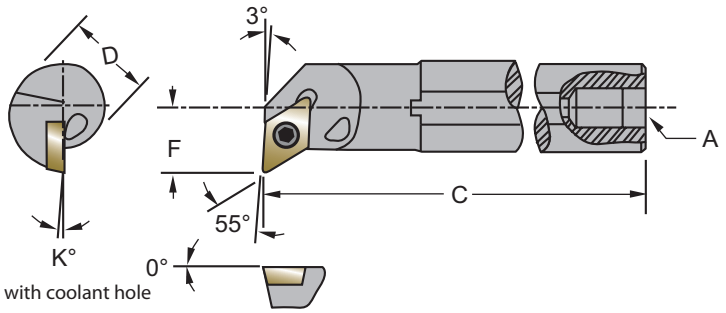
*Through hole only. No threads.

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

ANSI-ISO Boring Bars with through coolant

A-SDUC



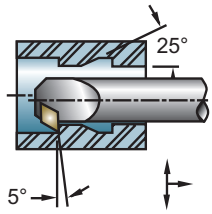


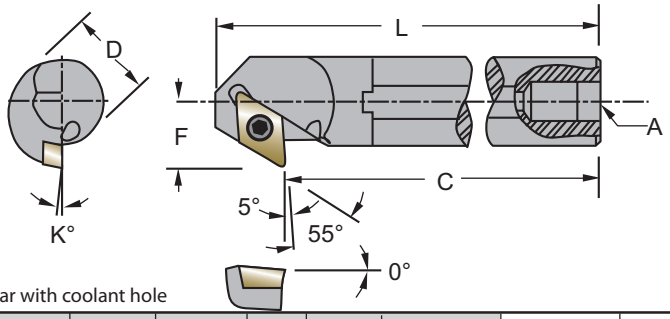
Solid steel bar with coolant hole

Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand	7° Positive Gage Insert							Insert Screw	Torx Wrench
A06SDUCR2	A06SDUCL2	DCMT21.51	.375	6.000	.375	-7°	.600	1/8*	ST21.5	TRX08
A08SDUCR2	A08SDUCL2	DCMT21.51	.500	6.000	.437	-7°	.730	1/16-27 NPT	ST21.5	TRX08
A10SDUCR2	A10SDUCL2	DCMT21.51	.625	8.000	.500	-7°	.850	1/8-27 NPT	ST21.5	TRX08
A12SDUCR3	A12SDUCL3	DCMT32.52	.750	10.000	.562	-7°	.980	1/8-27 NPT	ST32.5	TRX15
A16SDUCR3	A16SDUCL3	DCMT32.52	1.000	12.000	.750	-5°	1.300	1/4-18 NPT	ST32.5	TRX15

*Through hole only. No threads.

A-SDXP



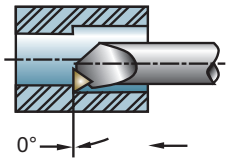


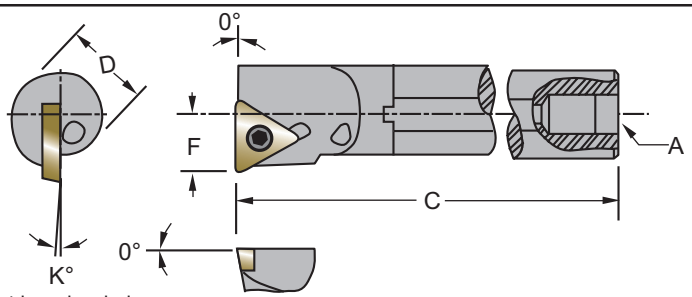
Solid steel bar with coolant hole

Sumitomo Cat. No.			D	C	F	L	K°	Min. Bore	A		
Right Hand	Left Hand	11° Positive Gage Insert								Insert Screw	Torx Wrench
A08SDXPR2	A08SDXPL2	DPMT21.51	.500	8.000	.437	8-1/2	0°	.730	1/16-27 NPT	ST21.5	TRX08
A10SDXPR2	A10SDXPL2	DPMT21.51	.625	10.000	.500	10-1/2	0°	.850	1/8-27 NPT	ST21.5	TRX08
A12SDXPR3	A12SDXPL3	DPMT32.52	.750	10.000	.562	10-3/4	-2°	.980	1/8-27 NPT	ST32.5	TRX15
A16SDXPR3	A16SDXPL3	DPMT32.52	1.000	12.000	.750	12-3/4	0°	1.300	1/4-18 NPT	ST32.5	TRX15

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

A-STFC

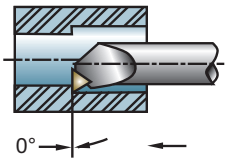


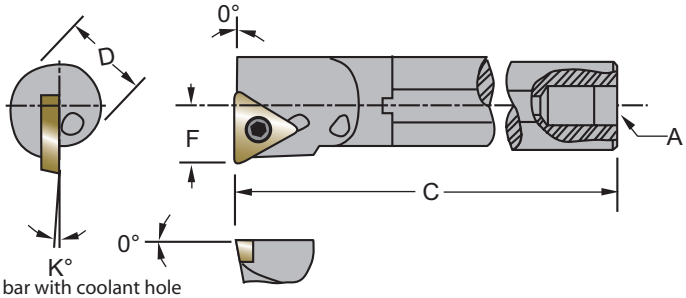


Solid steel bar with coolant hole

Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand	7° Positive Gage Insert							Insert Screw	Torx Wrench
A08STFCR2	A08STFCL2	TCMT21.51	.500	6.000	.312	-13°	.600	1/16-27 NPT	ST21.5	TRX08
A10STFCR2	–	TCMT21.51	.625	8.000	.406	-10°	.770	1/8-27 NPT	ST21.5	TRX08
A12STFCR3	A12STFCL3	TCMT32.52	.750	10.000	.500	-8°	.930	1/8-27 NPT	ST32.5	TRX15
A16STFCR3	A16STFCL3	TCMT32.52	1.000	12.000	.640	-7°	1.200	1/4-18 NPT	ST32.5	TRX15

A-STFP





Solid steel bar with coolant hole

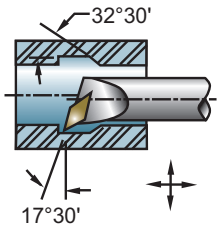
Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand	11° Positive Gage Insert							Insert Screw	Torx Wrench
A05STFPR1.8	A05STFPL1.8	TPMT1.81.51	.3125	5.000	.219	-8°	.415	3/32*	ST21.5	TRX08
A06STFPR2	A06STFPL2	TPMT21.51	.375	6.000	.250	-4°	.480	1/8*	ST21.5	TRX08
A08STFPR2	A08STFPL2	TPMT21.51	.500	8.000	.312	-2°	.600	1/16-27 NPT	ST21.5	TRX08
A10STFPR2	A10STFPL2	TPMT21.51	.625	10.000	.406	0°	.770	1/8-27 NPT	ST21.5	TRX08
A12STFPR3	A12STFPL3	TPMT32.52	.750	10.000	.500	-2°	.930	1/8-27 NPT	ST32.5	TRX15
A16STFPR3	A16STFPL3	TPMT32.52	1.000	12.000	.640	0°	1.200	1/4-18 NPT	ST32.5	TRX15

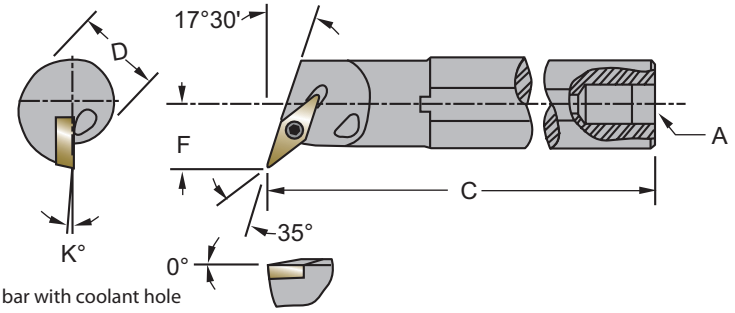
*Through hole only. No threads.

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

ANSI-ISO Boring Bars with through coolant

A-SVQB

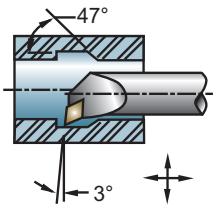


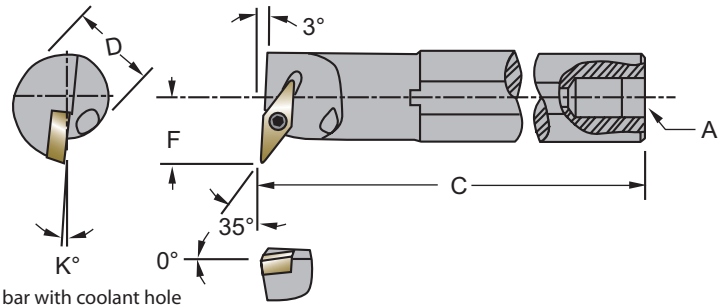


Solid steel bar with coolant hole

Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand	5° Positive Gage Insert							Insert Screw	Torx Wrench
A10SVQBR2	A10SVQBL2	VBMT221	.625	10.000	.500	-6°	.850	1/8-27 NPT	ST21.5	TRX08
A12SVQBR2	A12SVQBL2	VBMT221	.750	10.000	.562	-5°	.980	1/8-27 NPT	ST21.5	TRX08
A16SVQBR3	–	VBMT332	1.000	12.000	.750	-5°	1.300	1/4-18 NPT	ST32.5	TRX15

A-SVUB



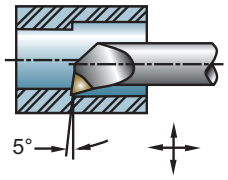


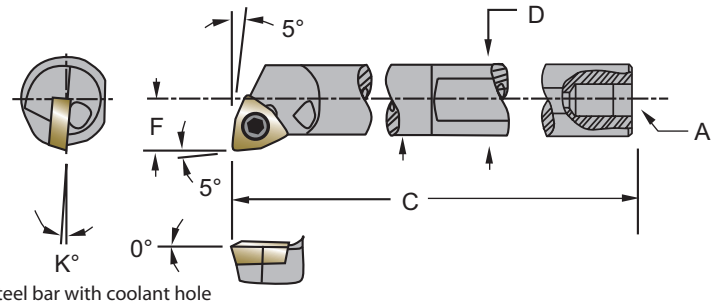
Solid steel bar with coolant hole

Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand	5° Positive Gage Insert							Insert Screw	Torx Wrench
A12SVUBR2	A12SVUBL2	VBMT221	.750	10.000	.562	-6°	.980	1/8-27 NPT	ST21.5	TRX08
A16SVUBR3	A16SVUBL3	VBMT332	1.000	12.000	.750	-6°	1.300	1/4-18 NPT	ST32.5	TRX15
A20SVUBR3	A20SVUBL3	VBMT332	1.250	14.000	1.000	-6°	2.000	1/4-18 NPT	ST32.5	TRX15
A24SVUBR3	A24SVUBL3	VBMT332	1.500	14.000	1.250	-6°	2.250	1/4-18 NPT	ST32.5	TRX15

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

A-SWLP





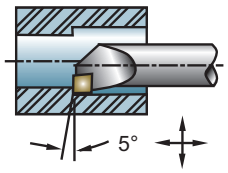
Solid steel bar with coolant hole

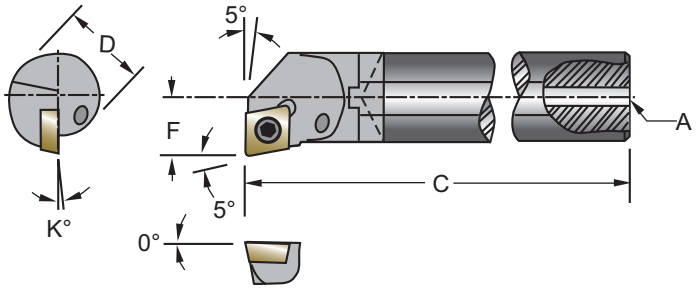
Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand	11° Positive Gage Insert							Insert Screw	Torx Wrench
A06SWLPR2	A06SWLPL2	WPMT21.51	.375	6.000	.250	-5°	.480	1/8*	ST21.5	TRX08
A08SWLPR2	A08SWLPL2	WPMT21.51	.500	8.000	.312	-2°	.600	1/16-27 NPT	ST21.5	TRX08
A10SWLPR2	–	WPMT21.51	.625	10.000	.406	-3°	.770	1/8-27 NPT	ST21.5	TRX08

*Through hole only. No threads.

ISO-ANSI CARBIDE SHANK BORING BARS

E-SCLC





Solid carbide bar with fixed steel head and coolant hole

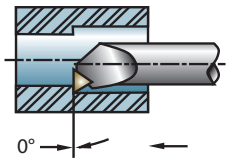
Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand	7° Positive Gage Insert							Insert Screw	Torx Wrench
E06MSCLCR2	E06MSCLCL2	CCMT21.51	.375	6.000	.250	-15°	.480	.093*	ST21.5	TRX08
E08RSCLCR2	E08RSCLCL2	CCMT21.51	.500	6.000	.312	-13°	.600	.093*	ST21.5	TRX08
E10SCLCR3	E10SCLCL3	CCMT32.52	.625	10.000	.406	-10°	.770	.125*	ST32.5	TRX15
E12SCLCR3	E12SCLCL3	CCMT32.52	.750	10.000	.500	-8°	.930	.142*	ST32.5	TRX15
E16SCLCR3	E16SCLCL3	CCMT32.52	1.000	12.000	.640	-7°	1.200	.193*	ST32.5	TRX15

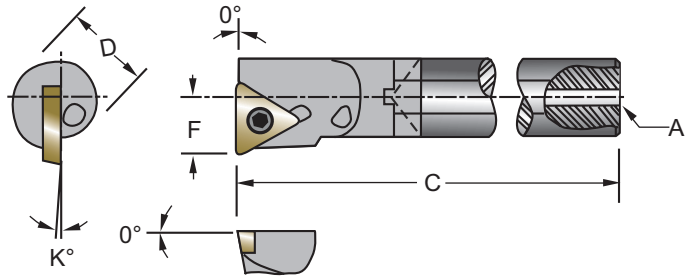
*Through hole only. No threads.

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

ANSI-ISO Carbide Shank Boring Bars with through coolant

E-STFP



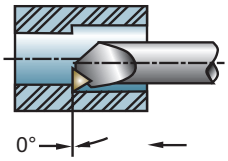


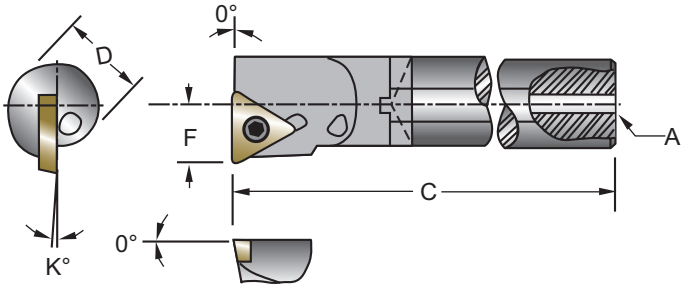
Solid carbide bar with fixed steel head and coolant hole

Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand	11° Positive Gage Insert							Insert Screw	Torx Wrench
E05STFPR1.8	E05STFPL1.8	TPMT1.81.51	.3125	5.000	.219	-8°	.415	.062	ST21.5	TRX08

*Through hole only. No threads.

E-STFC





Solid carbide bar with fixed steel head and coolant hole

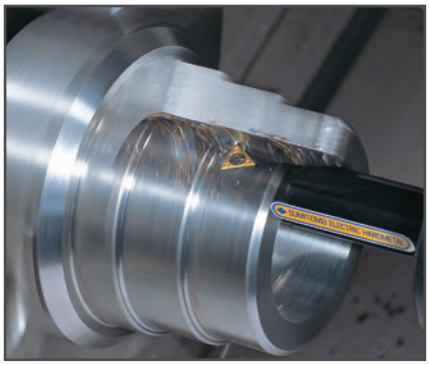
Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand	7° Positive Gage Insert							Insert Screw	Torx Wrench
E06STFCR2	E06STFCL2	TCMT21.51	.375	6.000	.250	-15°	.480	.093*	ST21.5	TRX08
E08STFCR2	E08STFCL2	TCMT21.51	.500	6.000	.312	-13°	.600	.093*	ST21.5	TRX08
E10STFCR2	E10STFCL2	TCMT21.51	.625	8.000	.406	-10°	.770	.125*	ST21.5	TRX08
E12STFCR3	–	TCMT32.52	.750	10.000	.500	-8°	.930	.142*	ST32.5	TRX15
E16STFCR3	–	TCMT32.52	1.000	12.000	.640	-7°	1.200	.193*	ST32.5	TRX15

*Through hole only. No threads.

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

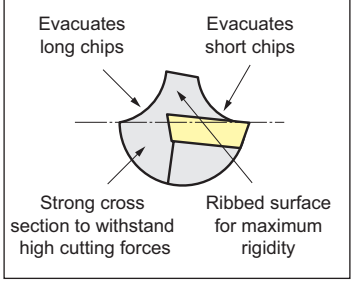
■ Features & Benefits

- Special dampener mechanism eliminates chatter.
- Up to 6X L/D overhang (depth / bar diameter).
- Cost effective solution to carbide bars when deep hole boring.
- Available in both coolant-through and non-coolant-through
- Effectively rough bores deep holes.
- ***NEW*** negative X-Bars now available.
- Positive X-Bar expansion now includes bars for CC--, CP--, DC--, TC--, TP--, and VB-- style inserts.



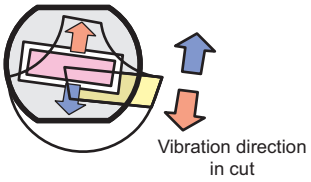
■ X-BAR Technical Information

Good Chip Evacuation from new head design



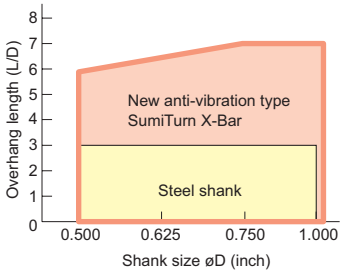
Anti-Chatter System - Eliminates Vibration

Unique structure of the X-Bar



The dampener resists vibration (Patent pending)

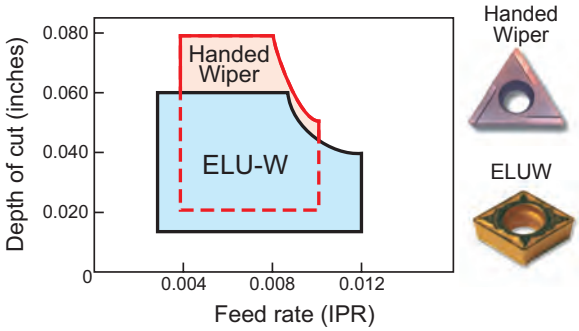
Application Range



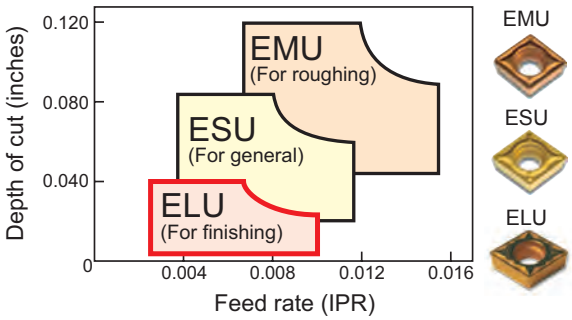
■ Recommended Overhang Length / Shank Diameter (L/D)

Chipbreakers	Type of Boring Bar	Overhang Length (L/D) 1 2 3 4 5 6 7
ELU, ESU, EMU (M class inserts) 	Steel shank	
	SumiTurn X-Bar	
ELUW, Handed Wiper ("Wiper" style inserts) 	Steel shank	
	SumiTurn X-Bar	

●"Wiper" Style Positive Inserts



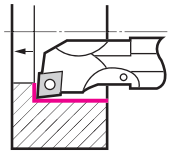
● M Class Positive Inserts

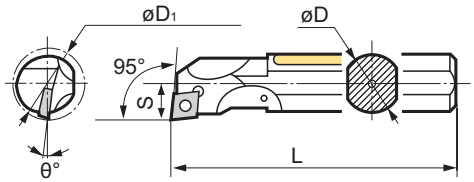


SumiTurn X-Bar

■ SumiTurn X-Bar Availability-POSITIVE

D-SCLC

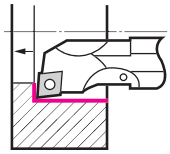


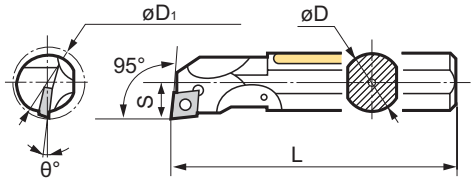


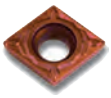
GAGE INSERT
CC□□

Sumitomo Cat. No.		Dimensions					Gage Insert	Hardware	
Right Hand	Left Hand	Min. Bore	D	L	S	θ°		Screw	Wrench
D08RSCLCR2	D08RSCLCL2	0.600”	0.500”	8”	0.300”	-10°	CC-21.5	BFTX02506N	TRX08
D10SSCLCR3	D10SSCLCL3	0.770”	0.625”	10”	0.385”	-8°	CC-32.5	BFTX0407N	TRX15
D12SSCLCR3	D12SSCLCL3	0.930”	0.750”	10”	0.465”	-7°	CC-32.5	BFTX0409N	TRX15
D16TSCLCR3	D16TSCLCL3	1.200”	1.000”	12”	0.600”	-6°	CC-32.5	BFTX0409N	TRX15

D-SCLP



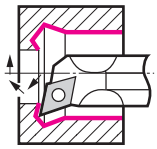


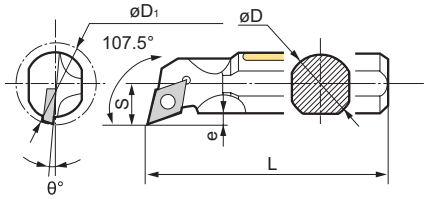


GAGE INSERT
CP□□

Sumitomo Cat. No.		Dimensions					Gage Insert	Hardware	
Right Hand	Left Hand	Min. Bore	D	L	S	θ°		Screw	Wrench
D10SSCLPR2	D10SSCLPL2	0.770"	0.625”	10”	0.355"	-5°	CP-21.5	BFTX0256N	TRX08
D12SSCLPR3	D12SSCLPL3	0.930"	0.750”	10”	0.450"	-4°	CP-32.5	BFTX0409N	TRX15
D16TSCLPR3	D16TSCLPL3	1.200"	1.000”	12”	0.550"	-2°	CP-32.5	BFTX0409N	TRX15

D/B-SDQC



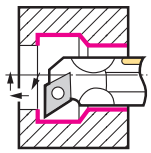


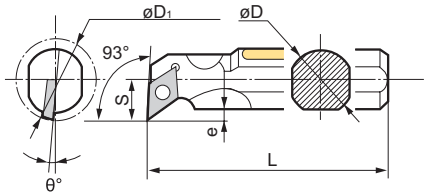
GAGE INSERT
DC□□

Sumitomo Cat. No.		Dimensions					Gage Insert	Hardware	
Right Hand	Left Hand	Min. Bore	D	L	S	θ°		Screw	Wrench
*B06RSDQCR2	*B06RSDQCL2	0.480"	0.375"	8"	0.276"	-8°	DC-21.5	BFTX02506N	TRX08
D08RSDQCR2	D08RSDQCL2	0.600"	0.500”	8”	0.310"	-8°	DC-21.5	BFTX02506N	TRX08
D10SSDQCR2	D10SSDQCL2	0.770"	0.625”	10”	0.430"	-6°	DC-21.5	BFTX02506N	TRX08
D12SSDQCR3	D12SSDQCL3	0.980"	0.750”	10”	0.510"	-6°	DC-32.5	BFTX0409N	TRX15
D16TSDQCR3	D16TSDQCL3	1.250"	1.000”	12”	0.670"	-6°	DC-32.5	BFTX0409N	TRX15

*Non-coolant through

D/B-SDUC





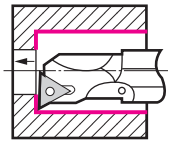
GAGE INSERT
DC□□

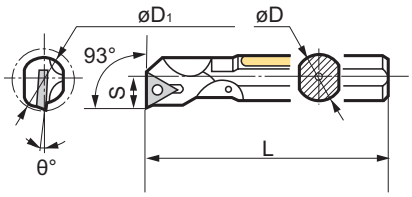
Sumitomo Cat. No.		Dimensions					Gage Insert	Hardware	
Right Hand	Left Hand	Min. Bore	D	L	S	θ°		Screw	Wrench
*B06RSDUCR2	*B06RSDUCL2	0.600"	0.375"	8"	0.276"	-8°	DC-21.5	BFTX02506N	TRX08
D08RSDUCR2	D08RSDUCL2	0.730"	0.500”	8”	0.360"	-8°	DC-21.5	BFTX02506N	TRX08
D10SSDUCR2	D10SSDUCL2	0.850"	0.625”	10”	0.430"	-6°	DC-21.5	BFTX02506N	TRX08
D12SSDUCR3	D12SSDUCL3	0.980"	0.750”	10”	0.510"	-6°	DC-32.5	BFTX0409N	TRX15
D16TSDUCR3	D16TSDUCL3	1.300"	1.000”	12”	0.670"	-6°	DC-32.5	BFTX0409N	TRX15

*Non-coolant through

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

D-STUC

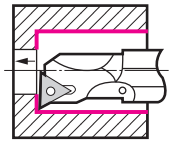


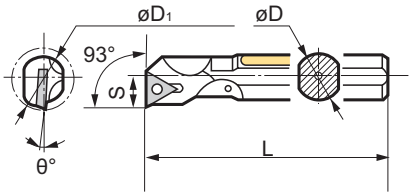


GAGE INSERT
TC□□

Sumitomo Cat. No.		Dimensions					Gage Insert	Hardware	
Right Hand	Left Hand	Min. Bore	D	L	S	θ°		Screw	Wrench
D08RSTUCR2	D08RSTUCL2	0.600"	0.500"	8"	0.300"	-10°	TC-21.5	BFTX02506N	TRX08
D10SSTUCR2	D10SSTUCL2	0.770"	0.625"	10"	0.385"	-8°	TC-21.5	BFTX02506N	TRX08
D12SSTUCR3	D12SSTUCL3	0.930"	0.750"	10"	0.465"	-7°	TC-32.5	BFTX0409N	TRX15
D16TSTUCR3	D16TSTUCL3	1.200"	1.000"	12"	0.600"	-6°	TC-32.5	BFTX0409N	TRX15

D-STUP

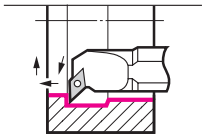


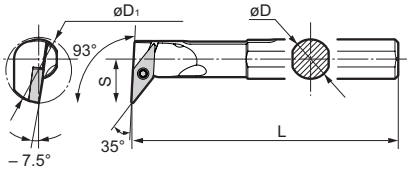


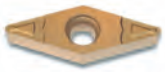
GAGE INSERT
TP□□

Sumitomo Cat. No.		Dimensions					Gage Insert	Hardware	
Right Hand	Left Hand	Min. Bore	D	L	S	θ°		Screw	Wrench
D08RSTUPR2	D08RSTUPL2	0.600"	0.500"	8"	0.300"	-7°	TP-22	BFTX0306A	TRX10
D10SSTUPR2	D10SSTUPL2	0.770"	0.625"	10"	0.385"	-4°	TP-22	BFTX0306A	TRX10
D12SSTUPR2	D12SSTUPL2	0.930"	0.750"	10"	0.465"	-2°	TP-22	BFTX0307A	TRX10
D16TSTUPR3	D16TSTUPL3	1.200"	1.000"	12"	0.600"	-2°	TP-33	BFTX0410A	TRX15

D-SVUB



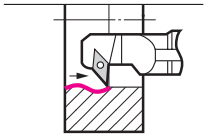


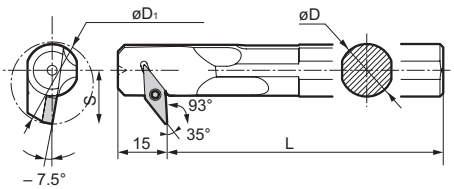


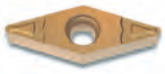
GAGE INSERT
VB□□

Sumitomo Cat. No.		Dimensions					Gage Insert	Hardware	
Right Hand	Left Hand	Min. Bore	D	L	S	θ°		Screw	Wrench
D10SSVUBR2	D10SSVUBL2	0.850"	0.625"	10"	0.500"	-7.5°	VB-22	BFTX02506N	TRX08
D12SSVUBR2	D12SSVUBL2	0.980"	0.750"	10"	0.562"	-7.5°	VB-22	BFTX02506N	TRX08

D-SVZB







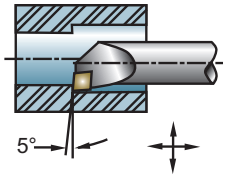
GAGE INSERT
VB□□

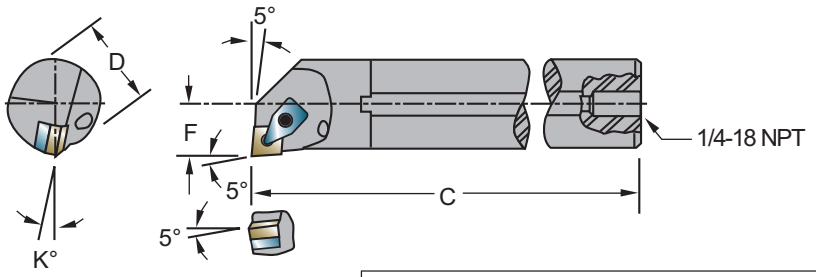
Sumitomo Cat. No.		Dimensions					Gage Insert	Hardware	
Right Hand	Left Hand	Min. Bore	D	L	S	θ°		Screw	Wrench
D08RSVZBR2	-	0.800"	0.500"	8"	0.532"	-7.5°	VB-22	BFTX02506N	TRX08
D10SSVZBR2	-	1.000"	0.625"	10"	0.650"	-7.5°	VB-22	BFTX02506N	TRX08

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

■ SumiTurn X-Bar Availability-NEGATIVE

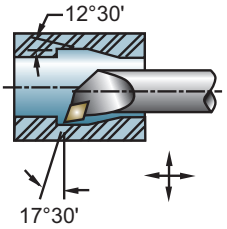
D-DCLN

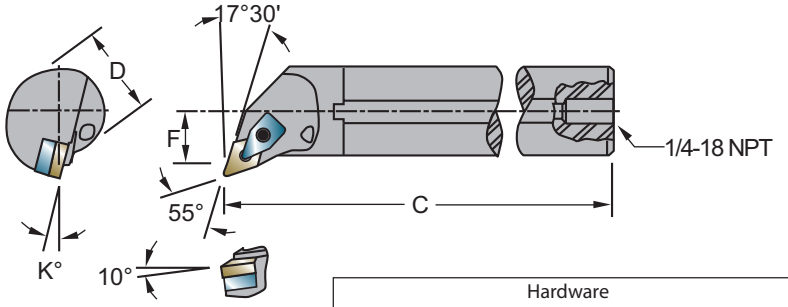




Sumitomo Cat. No.			D	C	F	K°	Min. Bore	Hardware			
Right Hand	Left Hand	Gage Insert						Clamp Set	Wrench	Shim	Screw
D16TDCLNR4	D16TDCLNL4	CNMG432	1.000	12"	0.640	14°	1.250"	SCP-1	LH040 LH025	CNS1204B	BFTX0409N
D20TDCLNR4	D20TDCLNL4	CNMG432	1.250	12"	0.765	14°	1.470"				
D24UDCLNR4	D24UDCLNL4	CNMG432	1.500	12"	0.890	14°	1.760"				

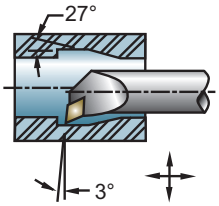
D-DDQN

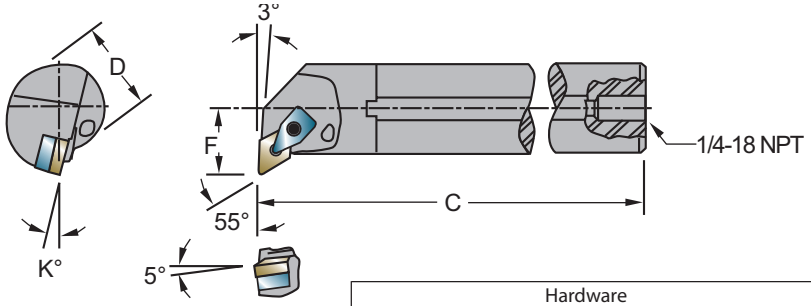




Sumitomo Cat. No.			D	C	F	K°	Min. Bore	Hardware			
Right Hand	Left Hand	Gage Insert						Clamp Set	Wrench	Shim	Screw
D20TDDQNR4	–	DNMG432	1.250	12"	1.000	12°	1.705"	SCP-2	LH040 LH025	DNS1506B	BFTX0409N
D24UDDQNR4	–	DNMG432	1.500	12"	1.125	8°	2.000"				

D-DDUN

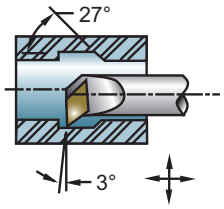


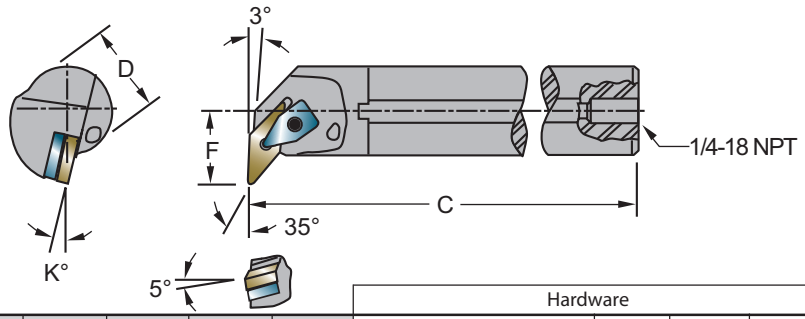


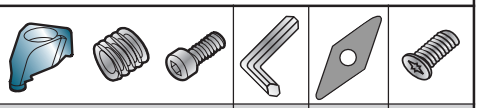
Sumitomo Cat. No.			D	C	F	K°	Min. Bore	Hardware			
Right Hand	Left Hand	Gage Insert						Clamp Set	Wrench	Shim	Screw
D20TDDUNR4	–	DNMG432	1.250	12"	1.000	10°	1.705"	SCP-2	LH040 LH025	DNS1506B	BFTX0409N
D24UDDUNR4	–	DNMG432	1.500	12"	1.250	10°	2.000"				

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

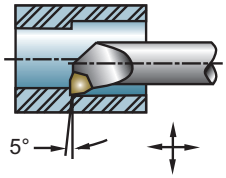
D-DVUN

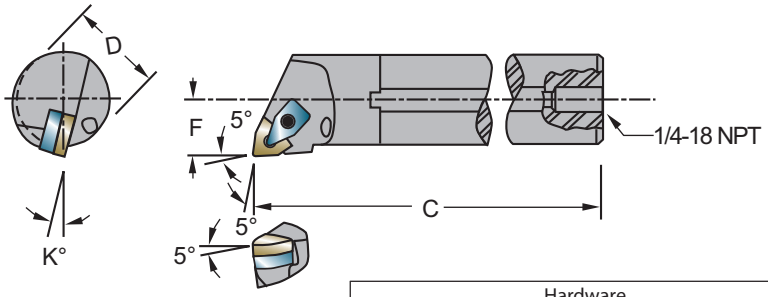


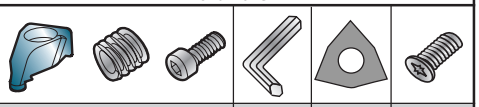


Sumitomo Cat. No.			D	C	F	K°	Min. Bore	Hardware 			
Right Hand	Left Hand	Gage Insert						Clamp Set	Wrench	Shim	Screw
D20TDVUNR3	–	VNMG332	1.250	12"	1.125	12°	2.000"	SCP-2	LH040 LH025	VNS1604	BFTX0307N
D24UDVUNR3	–	VNMG332	1.500	12"	1.250	12°	2.350"				

D-DWLN





Sumitomo Cat. No.			D	C	F	K°	Min. Bore	Hardware 			
Right Hand	Left Hand	Gage Insert						Clamp Set	Wrench	Shim	Screw
D16TDWLNR4	–	WNMG432	1.000	12"	0.640	14°	1.325"	SCP-1	LH040 LH025	WNS0804B	BFTX0409N
D20TDWLNR4	–	WNMG432	1.250	12"	0.765	14°	1.470"				
D24UDWLNR4	–	WNMG432	1.500	12"	0.890	14°	1.760"				

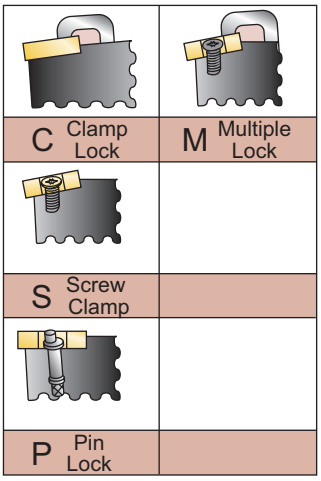
Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

SUMITOMO BORING BAR NOMENCLATURE

1 Type of Bar

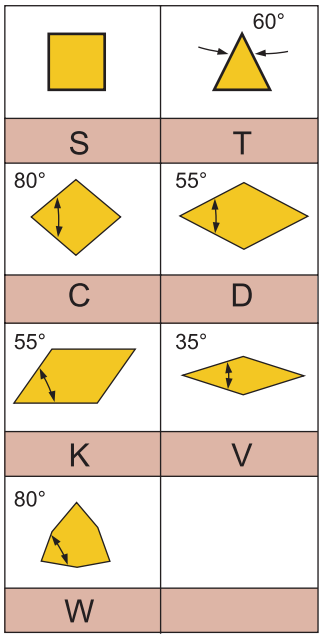
Solid Steel	Solid Carbide
B	C

2 Clamping System



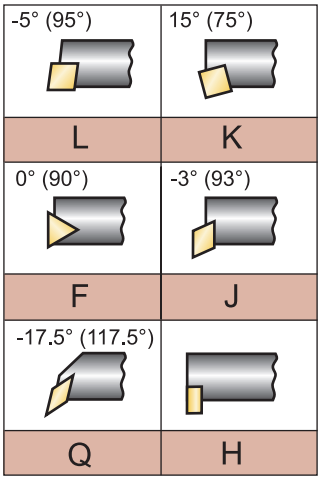
C Clamp Lock	M Multiple Lock
S Screw Clamp	
P Pin Lock	

3 Insert Shape



S	T
C	D
K	V
W	

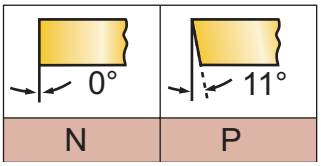
4 Bar Style



L	K
F	J
Q	H

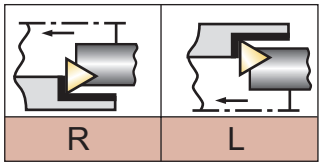
B	M	T	F	N	R	-	16	4
1	2	3	4	5	6		7	8

5 Rake Angle



N	P

6 Hand of Tool



R	L

7 Bar Diameter

The two-digit number represents the Bar Diameter in 1/16 of an inch increments.

06 = 3/8	24 = 1 1/2	42 = 2 5/8
08 = 1/2	26 = 1 5/8	44 = 1 3/4
10 = 5/8	28 = 1 3/4	46 = 1 7/8
12 = 3/4	30 = 1 7/8	48 = 3
14 = 7/8	32 = 2	
16 = 1	34 = 2 1/8	
18 = 1 1/8	36 = 2 1/4	
20 = 1 1/4	38 = 2 3/8	
22 = 1 3/8	40 = 2 1/2	

8 Insert I.C. Size

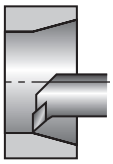
I.C. Size in 1/8 inch increments.

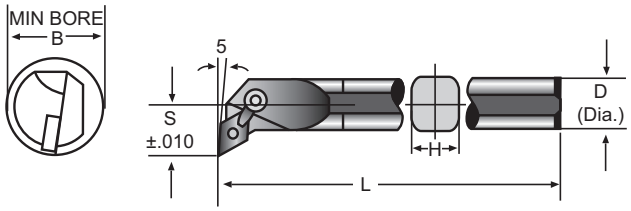
Under 1/4 I.C.	Over 1/4 I.C.
2 = 5/16	2 = 1/4
5 = 5/32	3 = 3/8
6 = 3/16	4 = 1/2
	5 = 5/8
	6 = 3/4
	7 = 7/8
	8 = 1

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

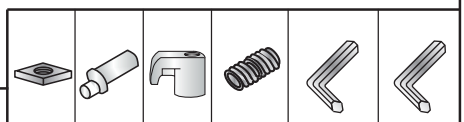
BMDLN Series

For Internal Boring





GAGE INSERT
DNMG432

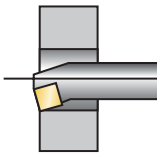


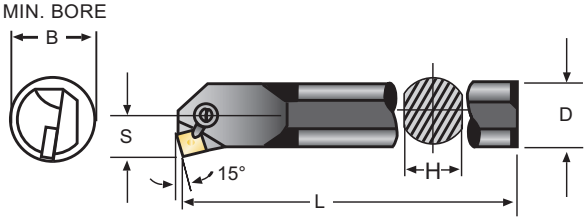
These figures show right hand tools.

Sumitomo Cat. No.	STKD. R	STKD. L	Dimensions D	Min. Bore B	L	S	H	Insert Shape	Insert Size	Shim	Cam	Clamp	Clamp Screw	Wrench	Wrench
BMDLNR/L 204	•	•	1.250	2.000	14.000	1.000	1.280	DN□□	43□	SDW423	CPB43	CCM8F-L	WB8F-20	LH030	LH040

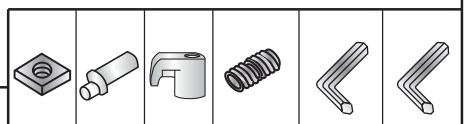
BMSKN Series

For Internal Boring





GAGE INSERTS
SNMG432



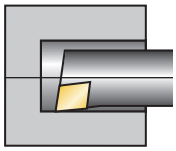
These figures show right hand tools.

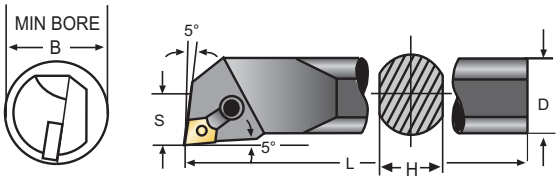
Sumitomo Cat. No.	STKD. R	STKD. L	Dimensions D	Min. Bore B	L	S	H	Insert Shape	Insert Size	Shim	Cam	Clamp	Clamp Screw	Wrench	Wrench
BMSKNR/L 244	•	•	1.500	1.781	14.000	.890	1.480	SN□□	43□	SSW423	CPB43S	CCM8F	WB8F-30	LH030	LH040
BMSKNR/L 324	•		2.000	2.563	16.000	1.281	1.815				CPB43				

Maximum overhang=3 x D

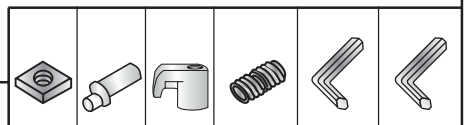
BMCLN Series

For Internal Boring





GAGE INSERT
CNMA432



These figures show right hand tools.

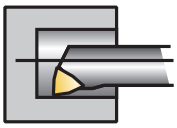
Sumitomo Cat. No.	STKD. R	STKD. L	Dimensions D	Min. Bore B	L	S	H	Insert Shape	Insert Size	Shim	Cam	Clamp	Clamp Screw	Wrench	Wrench
BMCLNR/L 244	•		1.500	1.781	14.000	.890	1.350	CN□□	43□	SCW423	CPB43S	CCM8F	WB8F-30	LH030	LH040
BMCLNR/L 284	•		1.750	2.031	14.000	1.015	1.615				CPB43				
BMCLNR/L 324	•	•	2.000	2.563	16.000	1.281	1.850								

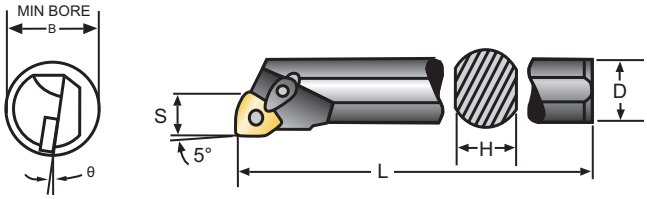
Maximum overhang=3 x D

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

BMWLN Series

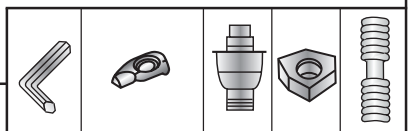
For Internal Boring





GAGE INSERT
WNMG432

These figures show right hand tools.

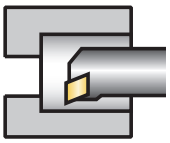


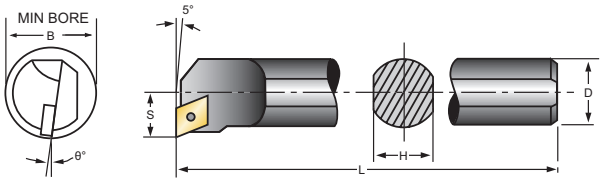
Sumitomo Cat. No.	STKD. R	STKD. L	Dimensions Min. Bore B	D	L	S	H	θ°	Insert Shape	Insert Shape	Wrench	Clamp	Pin	Shim	Screw
BMWLNR/L 164	•	•	1.25	1.000	12.000	.625	.875	–15°	WN□□	43□	LH030 LH025	BCH05RM6L	BWP46	SWB422	WB6-16
BMWLNR/L 204	•	•	1.53	1.250	14.000	.765	1.132	–14°							
BMWLNR/L 244	•	•	1.78	1.500	14.000	.890	1.382	–12°							

Maximum overhang=3 x D

BSCLO Series

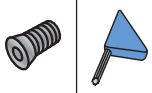
For Internal Boring





GAGE INSERT
CPGM□□□

These figures show right hand tools.



Sumitomo Cat. No.	STKD. R	STKD. L	Dimensions Min. Bore B	D	L	S	H	θ°	Insert Shape	Insert Size	Screw	Wrench
BSCLOR/L 062	•	•	.500	.375	6.000	.250	.336	–5°	CP□□	2.51.5□	BFTX0305A	TRX10
BSCLOR/L 082	•	•	.625	.500	6.000	.313	.462	–2°				
BSCLOR/L 103	•	•	.750	.625	6.500	.375	.586	–2°	CP□□	32□	BFTX0407A	TRX15
BSCLOR/L 123	•	•	1.000	.750	10.000	.500	.672	0°				
BSCLOR/L 164	•	•	1.125	1.000	12.000	.563	.882	–1°	CP□□	43□	BFTX0509A	TRX20

Maximum overhang = 3 x D

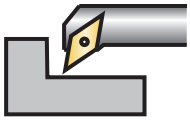
Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

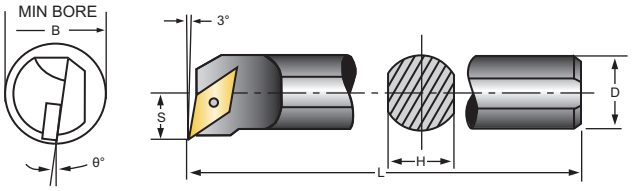
Sumitomo Steel Shank Boring Bars

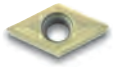
Series: BSDJO • BSTJO • BSSKO

BSDJO Series

For Internal Boring







GAGE INSERT

DCGT□□□

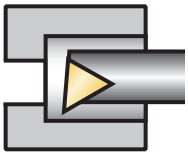
These figures show right hand tools.

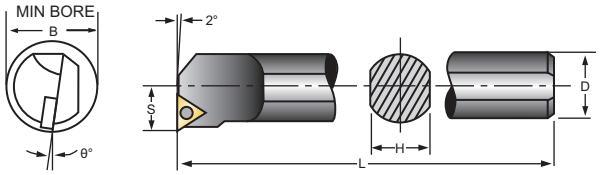
Sumitomo Cat. No.	STKD. R	STKD. L	Dimensions Min. Bore B	D	L	S	H	θ°	Insert Shape	Insert Size	Screw	Wrench
BSDJOR/L 062	•	•	.516	.375	5.000	.306	.336	−6°	DC□□	21.5□	BFTX02506	TRX08
BSDJOR/L 082	•		.687	.500	6.000	.368	.461	−6°				
BSDJOR/L 102	•	•	.813	.625	8.000	.431	.586	−6°				
BSDJOR/L 123	•	•	1.000	.750	10.000	.493	.671	−6°	DC□□	32.5□	BFS0410T	TRX10

Maximum overhang = 3 x D

BSTJO Series

For Internal Boring





GAGE INSERT

T□GT□□□

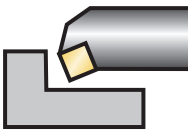
These figures show right hand tools.

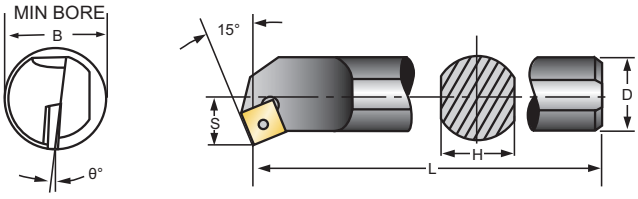
Sumitomo Cat. No.	STKD. R	STKD. L	Dimensions Min. Bore B	D	L	S	H	θ°	Insert Shape	Insert Size	Screw	Wrench
BSTJOR/L 065	•	•	.313	.375	5.000	.156	.336	−12°	TBG□	52□	BFTX0204A	TRX06
BSTJOR/L 066	•	•	.375	.375	5.000	.188	.336	−8°	TPG□	63□		
BSTJOR/L 062	•	•	.500	.375	6.000	.250	.336	−5°		22□	BFTX0306A	TRX10
BSTJOR/L 082	•	•	.625	.500	6.000	.312	.462	−4°			BFTX0307A	
BSTJOR/L 102	•	•	.750	.625	6.500	.375	.586	−2°				
BSTJOR/L 123	•	•	1.000	.750	10.000	.500	.672	−2°		33□	BFTX0410A	TRX15
BSTJOR/L 163	•	•	1.125	1.000	12.000	.563	.882	0°				

Maximum overhang = 3 x D

BSSKO Series

For Internal Boring





GAGE INSERT

SPGG322L

These figures show right hand tools.

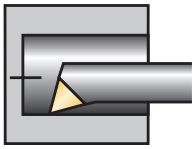
Sumitomo Cat. No.	STKD. R	STKD. L	Dimensions Min. Bore B	D	L	S	H	θ°	Insert Shape	Insert Size	Screw	Wrench
BSSKOR/L 083	•		.625	.500	6.000	.312	.462	−4°	SP□□	32□	BFTX0307A	TRX10
BSSKOR/L 103	•	•	.750	.625	6.500	.375	.586	−2°				
BSSKOR/L 123	•	•	1.000	.750	10.000	.500	.672	0°				
BSSKOR/L 163	•		1.125	1.000	12.000	.563	.882	0°				

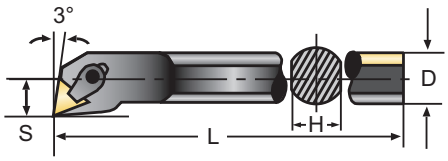
Maximum overhang = 3 x D

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

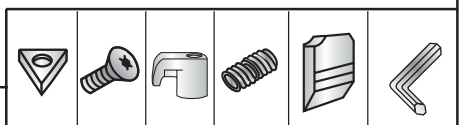
BCTJP Series

For Internal Boring





GAGE INSERT
TPG□□□



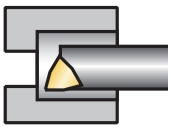
These figures show right hand tools.

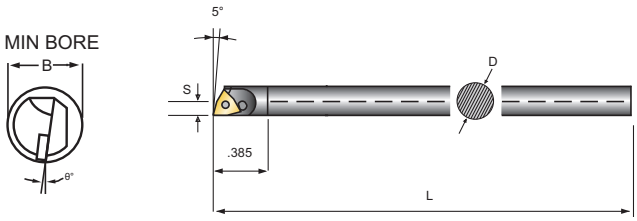
Sumitomo Cat. No.	STKD. R	STKD. L	Min. Bore B	D	L	S	H	Insert Shape	Insert Size	Seat	Seat Screw	Clamp	Clamp Bolt	Chip Breaker Piece	Wrench
BCTJPR 123	•		1.000	.750	12.000	.500	.770	TPG	32□	—	—	CCM6BR/L	WB6-13	CBT23	LH030
BCTJPR/L 163	•		1.156	1.000	12.000	.578	.980						WB6-16		
BCTJPR/L 203	•	•	1.531	1.250	14.000	.765	1.100							CBT43	
BCTJPR/L 243	•		1.781	1.500	14.000	.890	1.315			STPD322	BF0308				
BCTJPR 283	•		2.031	1.750	14.000	1.015	1.570					CCM8F	WB8F-30		LH040
BCTJPR 324	•		2.563	2.000	16.000	1.281	1.810	TPG	43□	STPD422				CBT44	
BCTJPR 404	•		3.063	3.063	16.000	1.531	2.315								

Maximum overhang = 3 x D

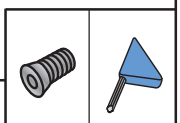
BSWJO Series

For Internal Boring





GAGE INSERT
WBGT521L



These figures show right hand tools.

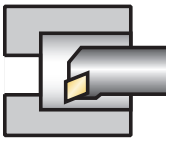
Sumitomo Cat. No.	STKD.	Min. Bore B	D	H	L	S	θ°	ℓ	Insert	Screw	Wrench
BSWJOR 035	•	.228	.187	–	2.500	.062	–12°	–	WBGT 52□L	BHF0203T	TH015

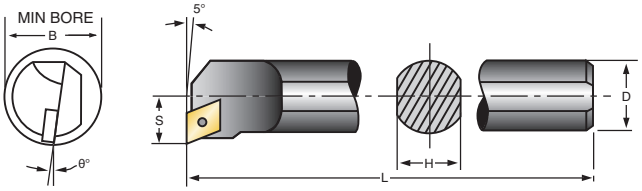
Maximum overhang = 5 x D

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

CSCLO Series

For Internal Boring





Solid carbide bar with fixed steel head

GAGE INSERT
CPGT□□□

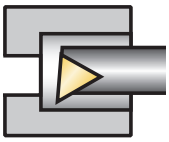
These figures show right hand tools.

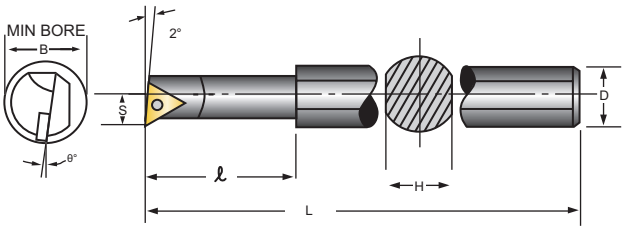
Sumitomo Cat. No.	STKD. R	STKD. L	Dimensions Min. Bore B	D	L	S	H	θ°	Insert Shape	Insert Size	Screw	Wrench
CSCLOR/L 062	•	•	.500	.375	6.000	.250	.336	−5°	CP□□	2.51.5□	BFTX0305A	TRX10
CSCLOR/L 082	•	•	.625	.500	6.000	.313	.462	−2°				
CSCLOR/L 103	•	•	.750	.625	6.500	.375	.586	−2°	CP□□	32□	BFTX0407A	TRX15

Maximum overhang = 5 x D

CSTJO Series

For Internal Boring





Solid carbide bar with fixed steel head

GAGE INSERT
T□GT□□□

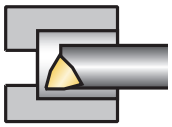
These figures show right hand tools.

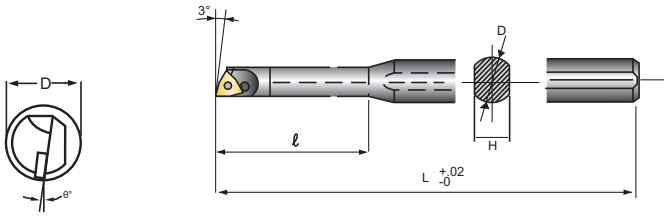
Sumitomo Cat. No.	STKD. R	STKD. L	Dimensions Min. Bore B	D	L	S	H	ℓ	θ°	Insert Shape	Insert Size	Screw	Wrench
CSTJOR/L 065	•	•	.313	.375	5.000	.1560	.336	1.781	−12°	TBG□	52□	BFTX0204A	TRX06
CSTJOR/L 066	•	•	.375	.375	5.000	.1880	.336	1.781	−8°	TPG□	63□		
CSTJOR/L 062	•	•	.500	.375	7.000	.2500	.336	–	−5°		22□	BFTX0306A	
CSTJOR/L 082	•	•	.625	.500	8.000	.3125	.462	–	−2°		22□	BFTX0307A	TRX10
CSTJOR/L 102	•	▲	.750	.625	10.000	.3750	.586	–	−2°				
CSTJOR/L 123	•	•	1.000	.750	10.000	.5000	.672	–	−2°		33□	BFTX0410A	TRX15

Maximum overhang = 5 x D

CSWJO Series

For Internal Boring





Solid carbide bar with fixed steel head

GAGE INSERT
WBG□52□

These figures show right hand tools.

Sumitomo Cat. No.	STKD.	Dimensions Min. Bore B	D	H	L	S	θ°	ℓ	Insert	Screw	Wrench
CSWJOR 055	•	.234	.375	.276	5.000	.117	−12°	1.18	WBG□ 52□L	BFTX0203A	TRX06
CSWJOL 055	•	.234							WBG□ 52□R		

Maximum overhang = 5 x D

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

SUMI-UFO Boring Bars Nomenclature

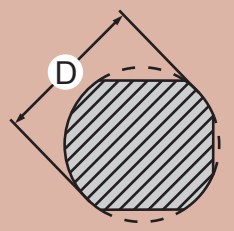
The SUMI-UFO bars feature a wider more rigid cross section for deeper cutting (up to 5 times with steel bars, up to 7 times with carbide bars) without chatter, an ultra high positive cutting edge for freer cutting and a larger chip groove for better chip flow. With these features, SUMI-UFO bars give you the ability to bore deeper holes with better surface finishes and improved chip control.

Boring Bar Identification System

1 Type of Bar

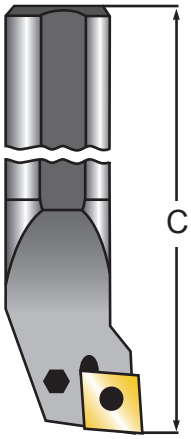
Solid Steel	Solid Carbide
S	C

2 Shank Diameter



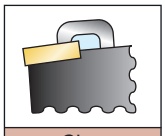
06 = 3/8
07 = 7/16
08 = 1/2
09 = 9/16
10 = 5/8
11 = 11/16
12 = 3/4
13 = 13/16
14 = 7/8
15 = 15/16
16 = 1

3 Bar Length

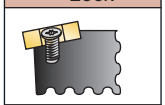


C mm (inch) mm	Symbol
(3) 80	F
(4) 100	H
(5) 125	K
(6) 150	M
(7) 180	Q
(8) 200	R
(10) 250	S
(12) 300	T
(14) 350	U
(15.75) 400	V
(17.75) 450	W
(19.7) 500	Y
Special	X

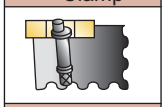
4 Clamping System



C Clamp Lock



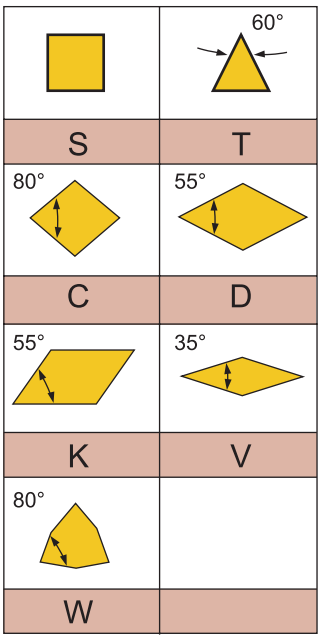
S Screw Clamp



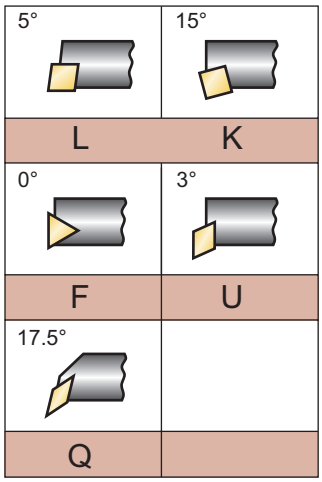
P Pin Lock

S	06	K	-	S	T	U	B	R	5
1	2	3		4	5	6	7	8	9

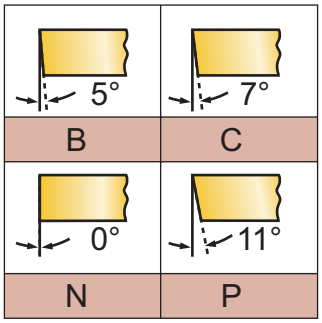
5 Insert Shape



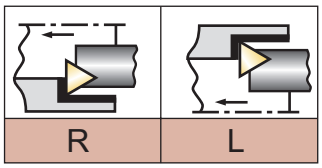
6 Bar Style



7 Insert Clearance Angle



8 Hand of Tool

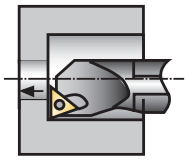


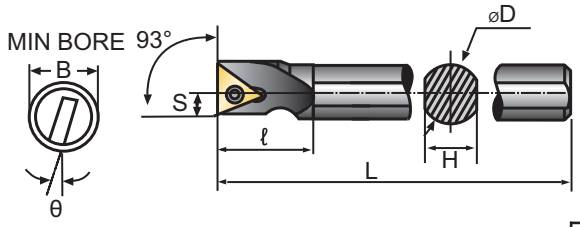
9 Insert I.C.

5 = 5/32
6 = 3/16
7 = 7/32
8 = 1/4
0 = 5/16

S-STUP Series

For Internal Boring





Steel shank bar

GAGE INSERT

TPGT□□□

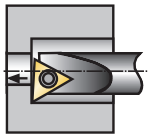
These figures show right hand tools.

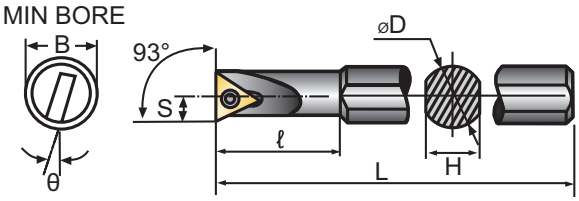
Sumitomo Cat. No.	STKD. R	STKD. L	Dimensions Min. Bore B	D	L	H	S	ℓ	θ°	Insert Shape	Insert Size	Screw	Wrench
S06K-STUPR/L6	•	•	.375	.375	5.000	.336	.1875	1.250	-10°	TPG□	63□	BFTY02205	TRX06
S06M-STUPR/L8	•	•	.500	.375	6.000	.336	.250	—	-8°	TPG□	21.5□	BFTX02507	TRX08
S08M-STUPR/L8	•		.625	.500	6.000	.461	.3125	—	-6°	TPG□	21.5□	BFTX02507	
S10Q-STUPR/L8	•	•	.750	.625	7.000	.591	.625	—	-2°	TPG□	21.5□	BFTX02507	
S12S-STUPR/L8	•	•	1.000	.750	10.000	.669	.500	—	-4°	TPG□	21.5□	BFTX02507	
S16T-STUPR/L8	•	•	11.125	1.000	12.000	.832	.5625	—	-2°	TPG□	21.5□	BFTX02507	

Maximum overhang = 5 x D

S-STUB Series

For Internal Boring





Steel shank bar

GAGE INSERT

TBGT52□

These figures show right hand tools.

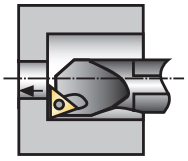
Sumitomo Cat. No.	STKD. R	STKD. L	Dimensions Min. Bore B	D	L	H	S	ℓ	θ°	Insert Shape	Insert Size	Screw	Wrench
S06K-STUBR/L5	•	•	.313	.375	5.000	.336	.156	1.0	-12°	TBG□	52□	BFTX0204A	TRX06

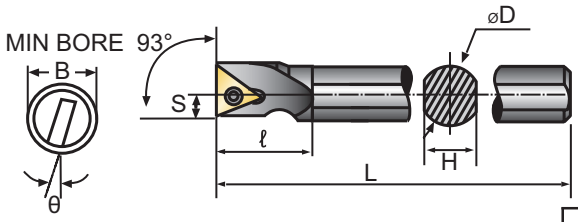
Maximum overhang = 5 x D

Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

C-STUP Series

For Internal Boring





Solid carbide bar with fixed steel head

GAGE INSERT

TPGT□□□

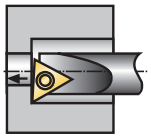
These figures show right hand tools.

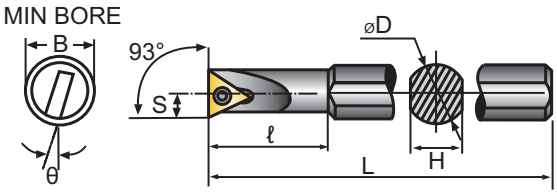
Sumitomo Cat. No.	STKD. R	STKD. L	Dimensions Min. Bore B	D	L	H	S	ℓ	θ°	Insert Shape	Insert Size	Screw	Wrench	Replacement Head
C06K-STUPR/L6	•	•	.375	.375	5.000	.336	.188	1.800	-10°	TPG□	63□	BFTX0204A	TRX06	RH06STUPR/L6
C06Q-STUPR/L8	•	•	.500	.375	7.000	.336	.250	—	-8°	TPG□	21.5□	BFTX02507	TRX08	RH06STUPR/L8
C08R-STUPR/L8	•	•	.625	.500	8.000	.461	.313	—	-6°	TPG□	21.5□	BFTX02507		RH08STUPR/L8
C10S-STUPR/L8	•	•	.750	.625	10.000	.591	.375	—	-2°	TPG□	21.5□	BFTX02507		RH10STUPR/L8
C12S-STUPR/L8	•		1.000	.750	10.000	.669	.500	—	-4°	TPG□	21.5□	BFTX02507		RH12STUPR/L8

Maximum overhang = 7 x D

C-STUB Series

For Internal Boring





Solid carbide bar with fixed steel head

GAGE INSERT

TBGT52□

These figures show right hand tools.

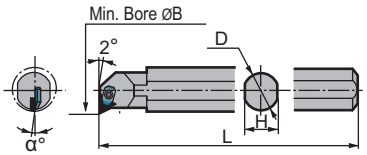
Sumitomo Cat. No.	STKD. R	STKD. L	Dimensions Min. Bore B	D	L	H	S	ℓ	θ°	Insert Shape	Insert Size	Screw	Wrench	Replacement Head
C06K-STUBR/L5	•		.313	.375	5.00	.336	.156	1.800	-12°	TBG□	52□	BFTX0204A	TRX06	RH06STUR/L5

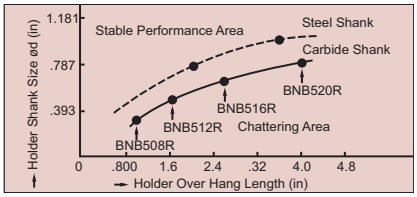
Maximum overhang = 7 x D

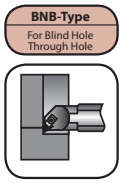
Note: For right-handed boring bars, please use left-handed or neutral inserts. For left-handed boring bars, please use right-handed or neutral inserts

CBN Boring Series

- Solid carbide shank and head adds rigidity.
- Max. overhang, L = 5 x D
- Minimal bar deformation produces excellent boring accuracy.
- Minimal vibration produces a superior surface finish.

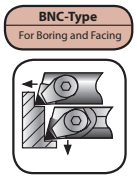






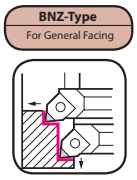
Sumitomo Cat. No.	Dimensions					Hardware				Insert		
Right Hand	Min. Bore øB	D	L	H	αº	Clamp	Clamp Screw	Wrench	Nut	I.C.	Thick	Cat. No.
BNB508R	.394" (10mm)	.315" (8mm)	5.5" (140mm)	.275" (7mm)	–9°	BNBC	BH0306	TH020	BNB W2	.156	.125	TBGE52-
BNB512R	.591" (15)	.472" (12)	6.3" (160)	.433" (11)	–6°				BNB W4			
BNB516R	.787" (20)	.630" (16)	7" (180)	.551" (14)	–5°		BH0308		BNB W7			
BNB520R	.984" (25)	.787" (20)	7" (180)	.709" (18)	–4°							

* BNB boring bars are 100% solid carbide (head and shank).

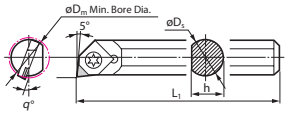


Sumitomo Cat. No.	Dimensions					Hardware				Insert		
Right Hand	Min. Bore øB	D	L	H	αº	Clamp	Clamp Screw	Wrench	Nut	I.C.	Thick	Cat. No.
BNC508R	.394" (10mm)	.315" (8mm)	5.5" (140mm)	.275" (7mm)	–9°	BNBC	BH0306	TH020	BNB W2	.1875	.125	NU-CCGE62-
BNC510R	.472" (12)	.394" (10)	5.5" (140)	.35" (9)	–8°				BNB W4			
BNC512R	.591" (15)	.472" (12)	6.3" (160)	.43" (11)	–6°		BH0308		BNB W7			
BNC516R	.787" (20)	.630" (16)	7" (180)	.551" (14)	–5°							
BNC520R	.984" (25)	.787" (20)	7" (180)	.709" (18)	–4°							

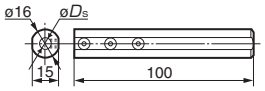
* BNC boring bars are 100% solid carbide (head and shank).



Sumitomo Cat. No.	Dimensions (mm)					
Cat. Number	Stock	Min. Bore øDm	øDs	h	L1	θº
BNZ606R	★	7.0	6.0	3.0	24	0.2
BNZ608R	★	9.0	8.0	3.5	2.9	0.2
BNZ610R	★	11.0	10.0	4.0	3.4	0.2
BNZ612R	★	13.0	12.0	4.5	3.9	0.2
BNZ616R	★	17.0	16.0	5.0	4.4	0.2
BNZ620R	★	21.0	20.0	5.5	4.9	0.2



Adapter Sleeve *for BNZ type*

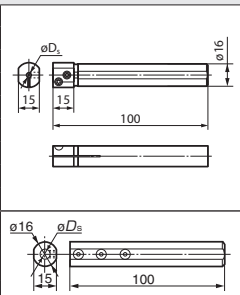


Sleeve	Stock	øDs	Applicable Holder
HBB 616	○	6	BNZ 606R
HBB 816	○	8	BNZ 608R

★ = Worldwide Warehouse item • = USA stocked item ○= New Product Arriving January 2015

BNBX Small Hole Brazed Boring Bar

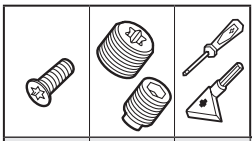
Catalog No.	BN250	BN700	BN2000	BN7000	Min. Boring Dia.	Dimensions (mm) øD	H	L	R	Applicable Adapter Sleeve	ød (mm)
BNBX020R	★	★	★	★	2.5	2.0	1.7	40	0.2	HBX2016	2.0
BNBX025R	★	★	★	★	3.0	2.5	2.2	40	0.2	HBX2516	2.5
BNBX030R	★	★	★	★	3.5	3.0	2.7	40	0.2	HBX3016	3.0
BNBX035R	★	★	★	★	4.0	3.5	3.2	40	0.2	HBX3516	3.5
BNBX040R	★	★	★	★	4.5	4.0	3.7	40	0.2	HBX4016	4.0
BNBX045R	★	★	★	★	5.0	4.5	4.2	40	0.2	HBX4516	4.5
BNBX050R	★	★	★	★	5.5	5.0	4.7	60	0.2	HBX5016	5.0
BNBX055R	★	★	★	★	6.0	5.5	5.2	60	0.2	HBX5516	5.5
BNBX060R	★	★	★	★	6.5	6.0	5.7	60	0.2	HBX6016	6.0
BNBX065R	★		★		7.0	6.5	6.2	60	0.2	HBB6516	6.5
BNBX070R	★		★		7.5	7.0	6.7	80	0.2	HBB716	7.0
BNBX075R	★		★		8.0	7.5	7.2	80	0.2	HBB7516	7.5
BNBX080R	★		★		8.5	8.0	7.7	80	0.2	HBB816	8.0



NOTE: BNBX bars can be used with HBB type sleeves, however, HBX type sleeves are recommended for bars below ø6mm

★ = Worldwide Warehouse Item

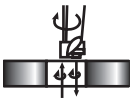
Adapter Sleeve Hardware

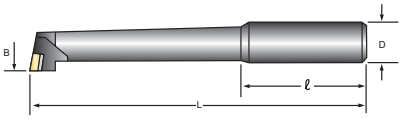


Screw	Setting Screw	Wrench	Applicable Sleeve
BFTX0409N	BT06035T	TRD15	HBXOOOO
-	BT0404	TH020	HBBOOOO

SUMIBORON Mini Boring Bars SJB Series

Jig Boring Tools





These figures show right hand tools.

Sumitomo Cat. No.	Dimensions (Inches) Min. Bore B	D	L	ℓ	Grade BN250
SJB2416	.250	.375	2.000	1.1875	•
SJB2420	.3125	.375	2.375	1.1875	•
SJB2424	.375	.375	2.750	1.1875	•
SJB2432	.500	.375	2.750	1.1875	•
SJB2440	.625	.375	3.750	1.1875	•

• = USA stocked item

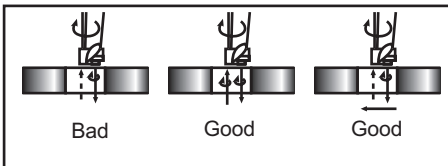
Sumitomo Cat. No.	Dimensions (mm) øD	ød	L	ℓ	Grade BN250
SJB0804	8	4	45	32	★
SJB0805	8	5	45	32	★
SJB0806	8	6	50	30	★
SJB0808	8	8	60	30	★
SJB1006	10	6	50	30	★
SJB1008	10	8	60	30	★
SJB1010	10	10	70	30	★
SJB1012	10	12	70	30	★
SJB1015	10	15	70	30	★

★ = Worldwide Warehouse item

Recommended Cutting Conditions

Rotating speed	800 rpm, or more	Low speed may cause chattering and chipping on the cutting edge
Depth of cut	001~.012 in./ per side	Excessive depth of cut may cause larger tool deflection resulting in deterioration of bore size
Feed rate (f)	.001~.004 in. IPR	—

NOTE



Either rotate the tool when removing or pull the tool away from work piece.

Threading, Grooving, & Cut-Off Holders

Pages 239-264

THREADING, GROOVING, & CUT-OFF **PAGES**

GND NEW

Grooving Tool Holders GND Type

High Rigidity Body

The GND series is designed for grooving and features a single-piece construction made of special steel. This design reduces chatter and also delivers steady performance for turning, profiling, and facing.

Wide Range of Chipbreakers

The GND lineup features 5 types of chipbreakers for various machining applications. Offers consistent chip control under various conditions.

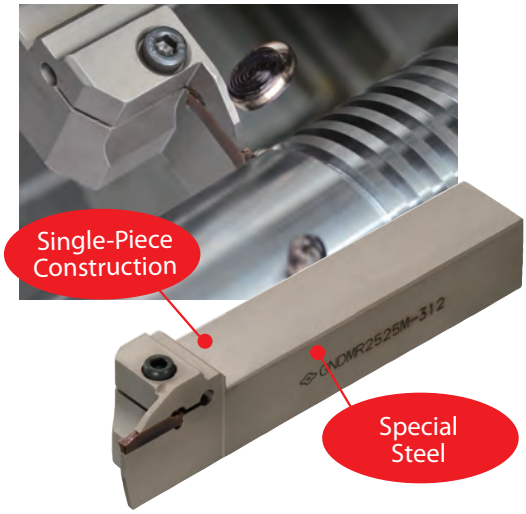
Multi-Purpose / General Feed MG Chipbreaker | Multi-Purpose / Low Feed ML Chipbreaker | Grooving / General Feed GG Chipbreaker | Grooving / Low Feed GL Chipbreaker | Profiling / General Feed RG Chipbreaker

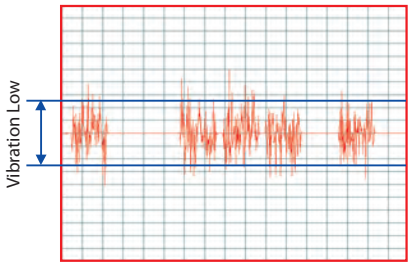
Product Range

Application		Series	Shape	Seat Size (mm) 2	3	4	5	6	Max. Grooving Depth (INCH)	Work Dia. (METRIC)	Page
External Grooving	Grooving, Turning, Profiling	GNDM Straight			3				.500		245, 249
						4	5	6	.700		
		GNDMS L-Style			3				.400 (Shank: .750")		245, 249
									.500 (Shank: 1.000")		
						4	5		.500 (Shank: .750")		
									.550 (Shank: 1.000")		
								6	.550		
	Grooving, Cut-Off	GNDL Straight		2	3				.750		246, 249
						4	5	6	1.000		
		GNDLS L-Style		2	3				.600 (Shank: .750")		246, 249
									.700 (Shank: 1.000")		
						4	5	6	.900		
Face Grooving	Grooving, Turning, Profiling	GNDF Straight			3				.500	ø35 – ø55	247, 250
					3				.700	ø50 – ø300	
						4			.900	ø40 – 55	
						4	5	6	.900	ø50 – ø1,000	

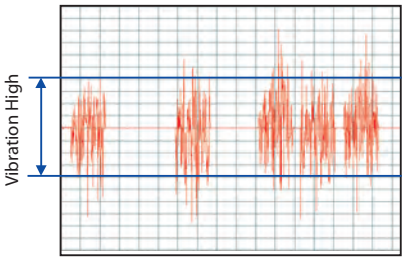
Eliminates Vibration

High rigid design reduces vibration by as much as 30% over conventional types





GND
GND Type



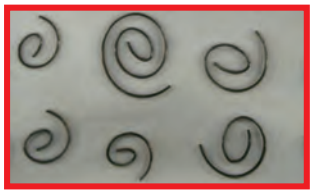
Conventional Tool (Unit Type)

SCM415 GNDL R2525M-220 GCM N2002-GG
Part Material Holder Insert
v_c=100m/min, f=0.10mm/rev, a_p=20.0mm, Wet
Cutting Conditions

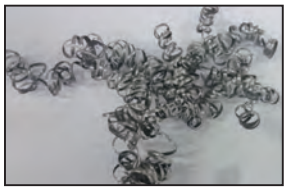
Excellent Chip Control

Special chipbreakers for various machining applications (grooving, turning, profiling)

Grooving



GND Type (GG Type Chipbreaker)



Conventional Tool

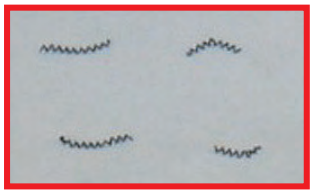
SCM415
Part Material
GNDL R2525M-320 GCM N3002-GG
Holder Insert
v_c=50 SFM, f=0.006 IPR, a_p=0.472", Wet
Cutting Conditions

GND Type (RG Type Chipbreaker)

Conventional Tool

SCM415
Part Material
GNDM R2525M-312 GCM N3015-RG
Holder Insert
v_c=328 SFM, f=0.005 IPR, a_p= 0.039", Wet
Cutting Conditions

Turning



GND Type (ML Type Chipbreaker)

Conventional Tool

SCM415
Part Material
GNDM R2525M-312 GCM N3002-ML
Holder Insert
v_c=328 SFM, f=0.004 IPR, a_p=0.020" Wet
Cutting Conditions

GND Type (RG Type Chipbreaker)

Conventional Tool

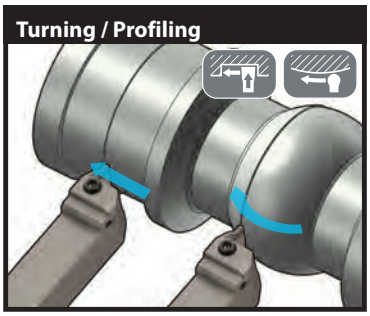
SCM415
Part Material
GNDM R2525M-312 GCM N3015-RG
Holder Insert
v_c=100m/min, f=0.15mm/rev, a_p=0.1mm, Wet
Cutting Conditions

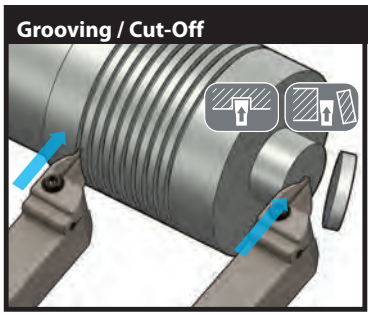
Improved Precision

Our precision sintering technology delivers **±0.03mm** accuracy for all grooving widths (from 2.0 to 6.0 mm).

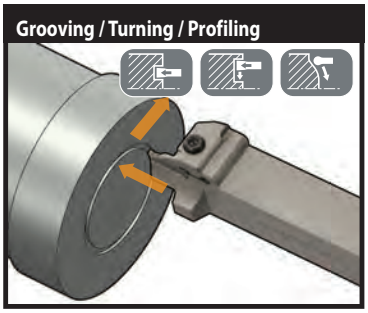
GND Type Holder Selection Guide

External Grooving

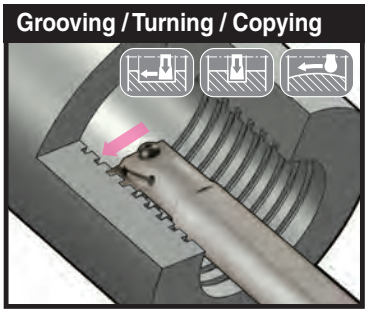




Face Grooving

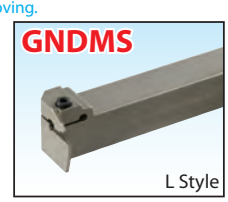


Internal Grooving



GNDM Type / GNDMS Type

Perfect for turning and profiling. Can also be used for grooving.

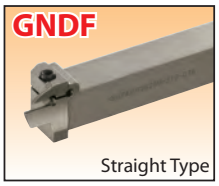


GNDL Type / GNDLS Type

Perfect for grooving and cut-off applications. Handles deep grooving with ease.

GNDF Type

For facing work.



GNDI Type

for internal grooving.

SEC-GND Type Chipbreaker Selection

Turning

General Feed Type
Standard chipbreaker for turning

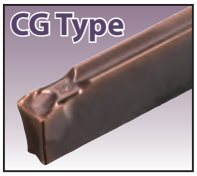
Low Feed Type
For low-feed chip control

Grooving

General Feed Type
First choice for grooving

Low Feed Type
For low-feed chip control

Cut-Off Type
Ideal for cut-off applications



Profiling

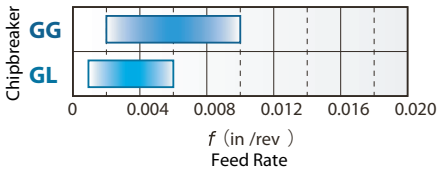
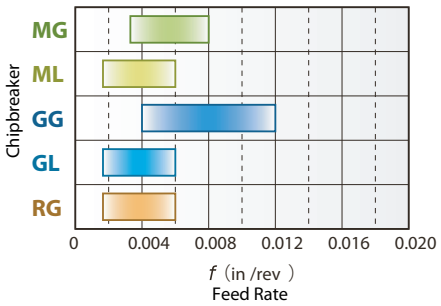
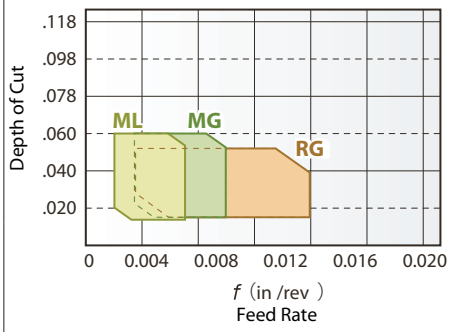
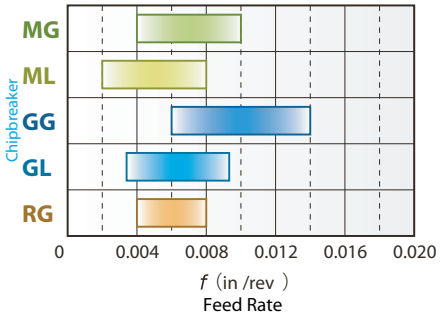
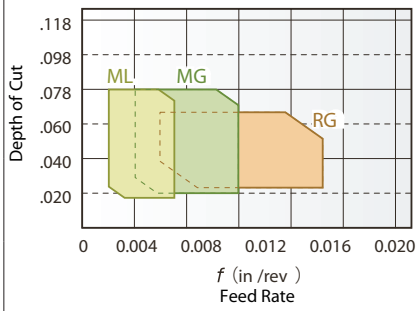
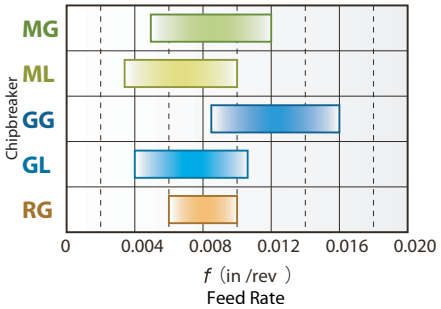
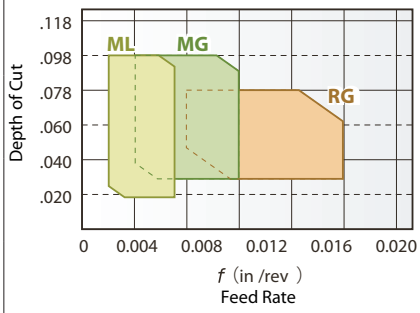
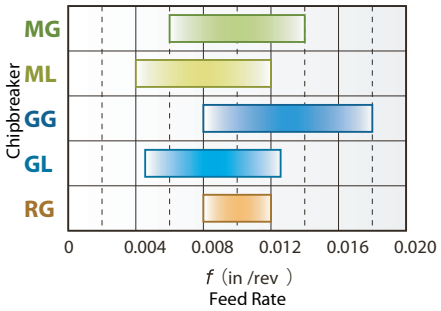
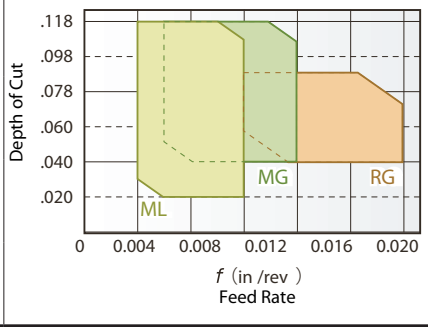
General Feed Type
Perfect for profiling

If chips are long when using GG and GL type chipbreakers for grooving, chip control can be improved by using MG or ML type chipbreakers.

Recommended Cutting Speed

Grades	AC530U			
Material	P Free-Cutting Steel	P Carbon Steel / Alloy Steel	M Stainless Steel	N Brass
Cutting Speed *SFM*	165 ~ 650	165 ~ 650	165 ~ 500	230 ~ 985

Chipbreaker Selection Guide

Seat Size	Recommended Cutting Conditions: Grooving	Recommended Cutting Conditions: Turning	Nose Radius	Catalog Number
2			.008	GCM N2002-GG GCM N2002-GL
3			.008	GCM N3002-ML GCM N3002-GG GCM N3002-GL
			.016	GCM N3004-MG GCM N3004-GG
			.060 Full R	GCM N3015-RG
4			.008	GCM N4002-GG GCM N4002-GL
			.016	GCM N4004-ML GCM N4004-GG
			.032	GCM N4008-MG
			.078 Full R	GCM N4020-RG
5			.008	GCM N5002-GG GCM N5002-GL
			.016	GCM N5004-ML GCM N5004-GG
			.032	GCM N5008-MG
			.048 Full R	GCM N5025-RG
6			.008	GCM N6002-GG GCM N6002-GL
			.016	GCM N6004-ML GCM N6004-GG
			.032	GCM N6008-MG
			.118 Full R	GCM N6030-RG

When face grooving, use cutting conditions closer to the lower limit of the recommended cutting conditions to ensure that chips are long.

Nomenclature for OD Groover GND Series

GND M R/L 16 3 M -075

#1-3 #4 #5 #6 #7 #8 #9

#1-3 Series Name
#1 **G**roove #2 **N**ew #3 **D**epth

#4 Application
M: Multi-function
L: Deep Groove
MS: 90° Multi
LS: 90° Deep

#5 Handedness
R: Right Handed
L: Left Handed

#6 Shank Size*16
12: 0.750 x 0.750"
16: 1.000 x 1.000"

#7 Seat Size
2
3
4
5
6

#8 Overall Length
K: 5.0"
M: 6.0"

#9 Max Groove Depth*100
050: 0.50"
070: 0.70"
075: 0.75"
090: 0.90"

Nomenclature for Face Grooving Holders

GND F R/L 16 3 M -075 -035

#1-3 #4 #5 #6 #7 #8 #9 #10

#1-3 Series Name
#1 **G**roove #2 **N**ew #3 **D**epth

#4 Application
F: Face Groover

#5 Handedness
R: Right Handed
L: Left Handed

#6 Shank Size*16
12: 0.750 x 0.750"
16: 1.000 x 1.000"

#7 Seat Size
2
3
4
5
6

#8 Overall Length
K: 5.0"
M: 6.0"

#9 Max Groove Depth*100
050: 0.50"
070: 0.70"
075: 0.75"
090: 0.90"

#10 Min.Part Diam. mm (Inch)
035: 35mm (1.378")
040: 40mm (1.575")
045: 45mm (1.772")
050: 50mm (1.969")
065: 65mm (2.559")
085: 85mm (3.346")

#10 Min.Part Diam. mm (Inch) *(cont.)*
090: 90mm (3.543")
100: 100mm (3.937")
125: 125mm (4.921")
140: 140mm (5.512")
180: 180mm (7.087")
280: 280mm (11.024")

Insert Nomenclature

GCM N 3 125 R0.5 -GG -AC530U

#1-3 #4 #5 #6 #7 #8 #9

#1-3 Series Name
#1 **G:** Grooving Insert
#2 **C:** 7° Relief Angle
#3 **M:** Molded Tolerance

#4 Handedness
R: Right Handed
L: Left Handed
N: Neutral

#5 Seat Size
2
3
4
5
6

#6 Groove Width*100
094: 0.094"
125: 0.125"
187: 0.187"
250: 0.250"

#7 Corner Radius in 64ths
R0.5: 0.5/64 = 0.0078"
R1.0: 1/64 = 0.0156"
R2.0: 2/64 = 0.0312"

#8 Chipbreaker
GG: Std. Feed Deep Groove
GL: Low Feed Deep Groove
MG: Std. Feed Traverse
ML: Low Feed Traverse
RG: Full Radius Profiling

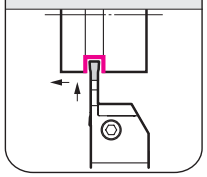
*Note: Items with the RG chipbreaker have a radius equal to 1/2 the width (Ex: GCMN3125-RG = 0.0625"

#9: Grade
AC520U: Universal Grade
For most materials
AC530U: Universal Grade
For most materials
AC830P: Tough CVD Grade
For steels
AC425K: CVD Grade
For Cast and Ductile Irons

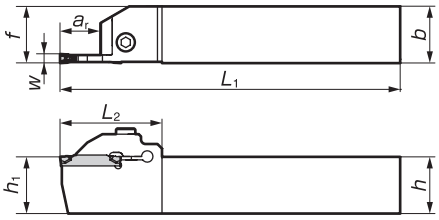
External Multi-Purpose (Grooving / Turning / Profiling)

GNDM

External Grooving



Use for multi-purpose or profiling insert for turning (widening).



Above figures show right hand tools

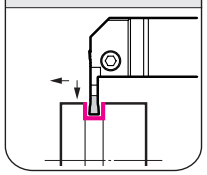
Catalog Number	Dimensions (in)						Groove Width	Max. Groove depth	Seat Size		
	h	b	L1	f	h1	L2	W (inch)	ar (inch)		Cap Screw	Wrench
GNDM L/R 123K-050	.750	.750	5.000	.750	.750	1.441	.125	.500	3	BX0520	LH040
GNDM L/R 124K-070	.750	.750	5.000	.750	.750	1.772	.157	.700	4		
GNDM L/R 125K-070	.750	.750	5.000	.750	.750	1.772	.1875	.700	5		
GNDM L/R 126K-070	.750	.750	5.000	.750	.750	1.772	.250	.700	6		
GNDM L/R 163M-050	1.000	1.000	6.000	1.000	1.000	1.441	.125	.500	3		
GNDM L/R 164M-070	1.000	1.000	6.000	1.000	1.000	1.772	.157	.700	4		
GNDM L/R 165M-070	1.000	1.000	6.000	1.000	1.000	1.772	.1875	.700	5		
GNDM L/R 166M-070	1.000	1.000	6.000	1.000	1.000	1.772	.250	.700	6		

Please see page 252 for applicable inserts

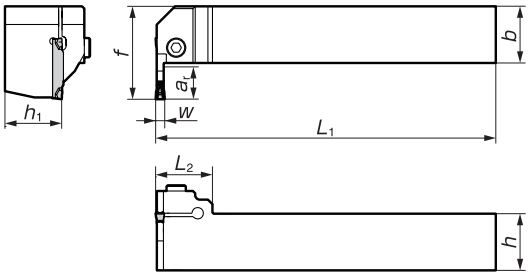
External L-Styled (Side Cut) Multi-Purpose (Grooving / Turning / Profiling)

GNDMS

External Grooving



Use for multi-purpose or profiling insert for turning (widening).

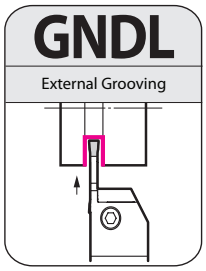


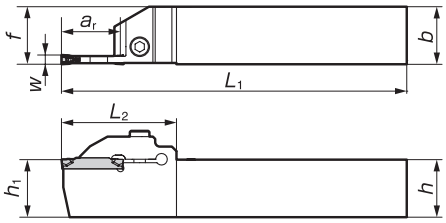
Above figures show right hand tools

Catalog Number	Dimensions (in)						Groove Width	Max. Groove depth	Seat Size		
	h	b	L1	f	h1	L2	W (inch)	ar (inch)		Cap Screw	Wrench
GNDMS L/R 123K-040	.750	.750	5.000	1.222	.750	1.000	.125	.4000	3	BX0520	LH040
GNDMS L/R 124K-050	.750	.750	5.000	1.300	.750	1.000	.157	.5000	4		
GNDMS L/R 125K-050	.750	.750	5.000	1.300	.750	1.000	.1875	.5000	5		
GNDMS L/R 163M-050	1.000	1.000	6.000	1.551	1.000	1.000	.125	.5000	3		
GNDMS L/R 164M-055	1.000	1.000	6.000	1.630	1.000	1.000	.157	.5500	4		
GNDMS L/R 165M-055	1.000	1.000	6.000	1.630	1.000	1.000	.1875	.5500	5		
GNDMS L/R 166M-055	1.000	1.000	6.000	1.630	1.000	1.000	.250	.5500	6		

Please see page 252 for applicable inserts

External Deep Grooving / Cut-Off



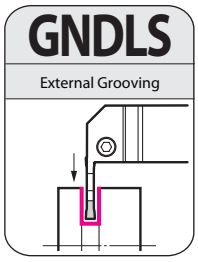


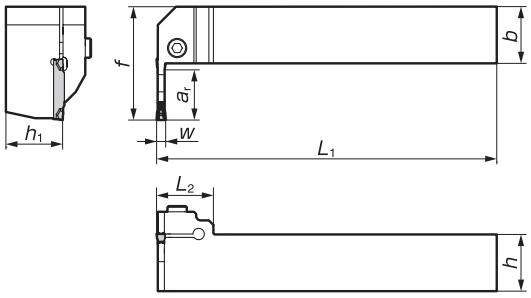
Above figures show right hand tools

Catalog Number	Dimensions (in)						Groove Width	Max. Groove depth	Seat Size		
	h	b	L1	f	h1	L2	W (inch)	ar (inch)		Cap Screw	Wrench
GNDL L/R 122K-075	.750	.750	5.000	.750	.750	1.752	.094	.750	2	BX0520	LH040
GNDL L/R 123K-075	.750	.750	5.000	.750	.750	1.752	.125	.750	3		
GNDL L/R 124K-100	.750	.750	5.000	.750	.750	1.969	.157	1.000	4		
GNDL L/R 125K-100	.750	.750	5.000	.750	.750	1.969	.1875	1.000	5		
GNDL L/R 126K-100	.750	.750	5.001	.750	.750	1.969	.250	1.000	6		
GNDL L/R 162M-075	1.000	1.000	6.000	1.000	1.000	1.752	.094	.750	2		
GNDL L/R 163M-075	1.000	1.000	6.000	1.000	1.000	1.752	.125	.750	3		
GNDL L/R 164M-100	1.000	1.000	6.000	1.000	1.000	1.969	.157	1.000	4		
GNDL L/R 165M-100	1.000	1.000	6.000	1.000	1.000	1.969	.187	1.000	5		
GNDL L/R 166M-100	1.000	1.000	6.000	1.000	1.000	1.969	.250	1.000	6		

Please see page 252 for applicable inserts

External L-Style (Side Cut) Grooving



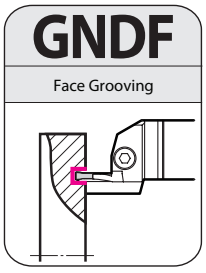


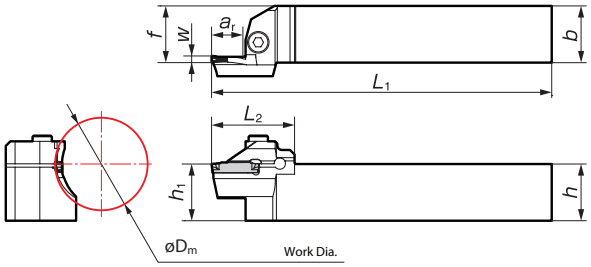
Above figures show right hand tools

Catalog Number	Dimensions (in)						Groove Width	Max. Groove depth	Seat Size		
	h	b	L1	f	h1	L2	W (inch)	ar (inch)		Cap Screw	Wrench
GNDLS L/R 122K-060	.750	.750	5.000	1.459	.750	1.000	.094	.600	2	BX0520	LH040
GNDLS L/R 123K-060	.750	.750	5.000	1.459	.750	1.000	.125	.600	3		
GNDLS L/R 124K-070	.750	.750	6.000	1.787	.750	1.000	.157	.700	4		
GNDLS L/R 162M-070	1.000	1.000	6.000	1.787	1.000	1.000	.094	.700	2		
GNDLS L/R 163M-070	1.000	1.000	6.000	1.787	1.000	1.000	.125	.700	3		
GNDLS L/R 164M-090	1.000	1.000	6.000	1.984	1.000	1.000	.157	.900	4		
GNDLS L/R 165M-090	1.000	1.000	6.000	1.984	1.000	1.000	.1875	.900	5		
GNDLS L/R 166M-090	1.000	1.000	6.000	1.984	1.000	1.000	.250	.900	6		

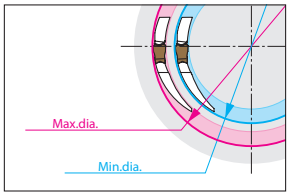
Please see page 252 for applicable inserts

Face Grooving





Above figures show right hand tools



Work diameters in stock table indicate external diameter of face groove.

Catalog Number	Dimensions (in)						Work Dia. ΦDm		Grooving width	Max. Grooving Depth ar (inch)	Seat Size		
	h	b	L1	f	h1	L2	Min.	Max.				Cap Screw	Wrench
GNDF L/R 123K-050-035	.750	.750	5.000	.750	.750	1.402	1.378	1.772	.125	.500	3	BX0520	LH040
GNDF L/R 123K-050-040	.750	.750	5.000	.750	.750	1.402	1.575	2.165	.125	.500	3		
GNDF L/R 123K-070-050	.750	.750	5.000	.750	.750	1.638	1.969	2.756	.125	.700	3		
GNDF L/R 123K-070-065	.750	.750	5.000	.750	.750	1.638	2.559	3.397	.125	.700	3		
GNDF L/R 123K-070-090	.750	.750	5.000	.750	.750	1.638	3.543	5.906	.125	.700	3		
GNDF L/R 123K-070-140	.750	.750	5.000	.750	.750	1.638	5.512	7.874	.125	.700	3		
GNDF L/R 123K-070-180	.750	.750	5.000	.750	.750	1.638	7.087	11.811	.125	.700	3		
GNDF L/R 124K-070-040	.750	.750	5.000	.750	.750	1.638	1.575	2.165	.157	.700	4	BX0520	LH040
GNDF L/R 124K-090-050	.750	.750	5.000	.750	.750	1.835	1.969	2.756	.157	.900	4		
GNDF L/R 124K-090-065	.750	.750	5.000	.750	.750	1.835	2.559	3.543	.157	.900	4		
GNDF L/R 124K-090-085	.750	.750	5.000	.750	.750	1.835	3.346	5.118	.157	.900	4		
GNDF L/R 124K-090-125	.750	.750	5.000	.750	.750	1.835	4.921	7.874	.157	.900	4		
GNDF L/R 124K-090-180	.750	.750	5.000	.750	.750	1.835	7.087	11.811	.157	.900	4		
GNDF L/R 124K-090-280	.750	.750	5.000	.750	.750	1.835	11.024	39.370	.157	.900	4		
GNDF L/R 125K-090-050	.750	.750	5.000	.750	.750	1.835	1.969	2.756	.1875	.900	5	BX0520	LH040
GNDF L/R 125K-090-065	.750	.750	5.000	.750	.750	1.835	2.559	3.543	.1875	.900	5		
GNDF L/R 125K-090-085	.750	.750	5.000	.750	.750	1.835	3.346	5.118	.1875	.900	5		
GNDF L/R 125K-090-125	.750	.750	5.000	.750	.750	1.835	4.921	7.874	.1875	.900	5		
GNDF L/R 125K-090-180	.750	.750	5.000	.750	.750	1.835	7.087	11.811	.1875	.900	5		
GNDF L/R 125K-090-280	.750	.750	5.000	.750	.750	1.835	11.024	39.370	.1875	.900	5		
GNDF L/R 126K-090-050	.750	.750	5.000	.750	.750	1.835	1.969	2.953	.250	.900	6	BX0520	LH040
GNDF L/R 126K-090-070	.750	.750	5.000	.750	.750	1.835	2.756	4.331	.250	.900	6		
GNDF L/R 126K-090-100	.750	.750	5.000	.750	.750	1.835	3.397	7.874	.250	.900	6		
GNDF L/R 126K-090-180	.750	.750	5.000	.750	.750	1.835	7.087	11.811	.250	.900	6		
GNDF L/R 126K-090-280	.750	.750	5.000	.750	.750	1.835	11.024	39.370	.250	.900	6		
GNDF L/R 163M-050-035	1.000	1.000	6.000	1.000	1.000	1.402	1.378	1.772	.125	.500	3	BX0520	LH040
GNDF L/R 163M-050-040	1.000	1.000	6.000	1.000	1.000	1.402	1.575	2.165	.125	.500	3		
GNDF L/R 163M-070-050	1.000	1.000	6.000	1.000	1.000	1.638	1.969	2.756	.125	.700	3		
GNDF L/R 163M-070-065	1.000	1.000	6.000	1.000	1.000	1.638	2.559	3.397	.125	.700	3		
GNDF L/R 163M-070-090	1.000	1.000	6.000	1.000	1.000	1.638	3.543	5.906	.125	.700	3		
GNDF L/R 163M-070-140	1.000	1.000	6.000	1.000	1.000	1.638	5.512	7.874	.125	.700	3		
GNDF L/R 163M-070-180	1.000	1.000	6.000	1.000	1.000	1.638	7.087	11.811	.125	.700	3		
GNDF L/R 164M-070-040	1.000	1.000	5.000	.750	.750	1.638	1.575	2.165	.157	.700	4	BX0520	LH040
GNDF L/R 164M-090-050	1.000	1.000	5.000	.750	.750	1.835	1.969	2.756	.157	.900	4		
GNDF L/R 164M-090-065	1.000	1.000	5.000	.750	.750	1.835	2.559	3.543	.157	.900	4		
GNDF L/R 164M-090-085	1.000	1.000	5.000	.750	.750	1.835	3.346	5.118	.157	.900	4		
GNDF L/R 164M-090-125	1.000	1.000	5.000	.750	.750	1.835	4.921	7.874	.157	.900	4		
GNDF L/R 164M-090-180	1.000	1.000	5.000	.750	.750	1.835	7.087	11.811	.157	.900	4		
GNDF L/R 164M-090-280	1.000	1.000	5.000	.750	.750	1.835	11.024	39.370	.157	.900	4		
GNDF L/R 165M-090-050	1.000	1.000	6.000	1.000	1.000	1.835	1.969	2.756	.1875	.900	5	BX0520	LH040
GNDF L/R 165M-090-065	1.000	1.000	6.000	1.000	1.000	1.835	2.559	3.543	.1875	.900	5		
GNDF L/R 165M-090-085	1.000	1.000	6.000	1.000	1.000	1.835	3.346	5.118	.1875	.900	5		
GNDF L/R 165M-090-125	1.000	1.000	6.000	1.000	1.000	1.835	4.921	7.874	.1875	.900	5		
GNDF L/R 165M-090-180	1.000	1.000	6.000	1.000	1.000	1.835	7.087	11.811	.1875	.900	5		
GNDF L/R 165M-090-280	1.000	1.000	6.000	1.000	1.000	1.835	11.024	39.370	.1875	.900	5		
GNDF L/R 166M-090-050	1.000	1.000	6.000	1.000	1.000	1.835	1.969	2.953	.250	.900	6	BX0520	LH040
GNDF L/R 166M-090-070	1.000	1.000	6.000	1.000	1.000	1.835	2.756	4.331	.250	.900	6		
GNDF L/R 166M-090-100	1.000	1.000	6.000	1.000	1.000	1.835	3.397	7.874	.250	.900	6		
GNDF L/R 166M-090-180	1.000	1.000	6.000	1.000	1.000	1.835	7.087	11.811	.250	.900	6		
GNDF L/R 166M-090-280	1.000	1.000	6.000	1.000	1.000	1.835	11.024	39.370	.250	.900	6		

Please see page 252 for applicable inserts

Nomenclature for OD Groover GND Series (METRIC)

GND M R/L 2525 M - 3 12

#1-3 #4 #5 #6 #7 #8 #9

#1-3 Series Name
#1 **G**roove #2 **N**ew #3 **D**epth

#4 Application
M: Multi-function
L: Deep Groove
MS: 90° Multi
LS: 90° Deep

#5 Handedness
R: Right Handed
L: Left Handed

#6 Shank Size (mm)
1010: 10 x 10 mm
1212: 12 x 12 mm
1616: 16 x 16 mm
2020: 20 x 20 mm
2525: 25 x 25 mm

#7 Overall Length
JX: 120 mm
K: 125 mm
M: 150 mm

#8 Seat Size
2
3
4
5
6

#9 Max Groove Depth (mm)
10
12
12.5
14
16
18
20
23
25

Nomenclature for Face Grooving Holders

GND F R/L 2525 M - 3 18 - 090

#1-3 #4 #5 #6 #7 #8 #9 #10

#1-3 Series Name
#1 **G**roove #2 **N**ew #3 **D**epth

#4 Application
F: Face Groover

#5 Handedness
R: Right Handed
L: Left Handed

#6 Shank Size (mm)
2020: 20 x 20 mm
2525: 25 x 25 mm

#7 Overall Length
K: 125 mm
M: 150 mm

#8 Seat Size
2
3
4
5
6

#9 Max Groove Depth (mm)
12
18
23

#10 Min.Part Diam. mm (Inch)
035: 35mm (1.378")
040: 40mm (1.575")
045: 45mm (1.772")
050: 50mm (1.969")
065: 65mm (2.559")
085: 85mm (3.346")

#10 Min.Part Diam. mm (Inch) *(cont.)*
090: 90mm (3.543")
100: 100mm (3.937")
125: 125mm (4.921")
140: 140mm (5.512")
180: 180mm (7.087")
280: 280mm (11.024")

Insert Nomenclature (METRIC)

GCM N 30 02 -GG -AC530U

#1-3 #4 #5 #6 #7 #8

#1-3 Series Name
#1 **G:** Grooving Insert
#2 **C:** 7° Relief Angle
#3 **M:** Molded Tolerance

#4 Handedness
R: Right Handed
L: Left Handed
N: Neutral

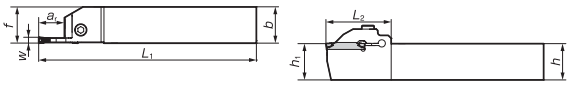
#5 Seat Size & Groove Width		
#	Seat	Groove Width
20	2	2.0 mm
30	3	3.0 mm
40	4	4.0 mm
50	5	5.0 mm
60	6	6.0 mm

#6 Corner Radius *10
02 =0.2mm
04 =0.4mm
08 =0.8mm

#7 Chipbreaker
GG: Std. Feed Deep Groove
GL: Low Feed Deep Groove
MG: Std. Feed Traverse
ML: Low Feed Traverse
RG: Full Radius Profiling

#8: Grade
AC520U: Universal Grade
For most materials
AC530U: Universal Grade
For most materials
AC830P: Tough CVD Grade
For steels
AC425K: CVD Grade
For Cast and Ductile Irons

External Multi-purpose Type (Grooving, Turning, and Copying)



Above figures show right hand tools

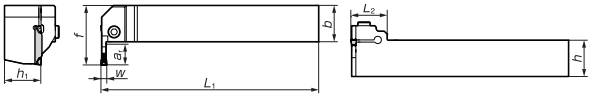
■ Holders * Use the multi-purpose copying insert for turning (wide grooves).

■ Spare Parts

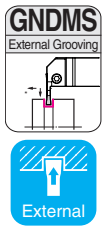
Catalog Number	Dimensions (mm)						Groove Width	Max. Groove Depth	Seat Size	Cap Screw	Recommended Tightening Torque (N-m)	Wrench
	h	b	L_1	f	h_1	L_2	W(mm)	a_r (mm)				
GNDM R/L1616JX-212	16	16	120	16	16	30.0	2.0	12	2	BX0515	5.0	LH040
GNDM R/L1616JX-312	16	16	120	16	16	30.0	3.0	12	3			
GNDM R/L2020K-312	20	20	125	20	20	36.6	3.0	12	3	BX0520		
GNDM R/L2020K-418	20	20	125	20	20	45.0	4.0	18	4			
GNDM R/L2020K-518	20	20	125	20	20	45.0	5.0	18	5			
GNDM R/L2020K-618	20	20	125	20	20	45.0	6.0	18	6			
GNDM R/L2525M-312	25	25	150	25	25	36.6	3.0	12	3			
GNDM R/L2525M-418	25	25	150	25	25	45.0	4.0	18	4			
GNDM R/L2525M-518	25	25	150	25	25	45.0	5.0	18	5			
GNDM R/L2525M-618	25	25	150	25	25	45.0	6.0	18	6			

Select holders and inserts with the same grooving widths (*w*). Refer to page 252 for applicable inserts.

External L-Styled (Side Cut) Multi-purpose Type (Grooving, Turning, and Copying)



Above figures show right hand tools



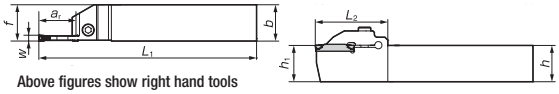
■ Holders * Use the multi-purpose copying insert for turning (wide grooves).

■ Spare Parts

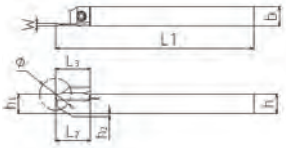
Catalog Number	Dimensions (mm)						Groove Width	Max. Groove Depth	Seat Size	Cap Screw	Recommended Tightening Torque (N-m)	Wrench
	h	b	L_1	f	h_1	L_2	W(mm)	a_r (mm)				
GNDMS R/L2020K-310	20	20	125	32	20	25	3.0	10	3	BX0520	5.0	LH040
GNDMS R/L2020K-412	20	20	125	34	20	25	4.0	12	4			
GNDMS R/L2020K-512	20	20	125	34	20	25	5.0	12	5			
GNDMS R/L2525M-312	25	25	150	39	25	25	3.0	12	3			
GNDMS R/L2525M-414	25	25	150	41	25	25	4.0	14	4			
GNDMS R/L2525M-514	25	25	150	41	25	25	5.0	14	5			
GNDMS R/L2525M-614	25	25	150	41	25	25	6.0	14	6			

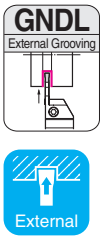
Select holders and inserts with the same grooving widths (*w*). Refer to page 252 for applicable inserts.

External Deep Grooving & Cut-Off



Above figures show right hand tools



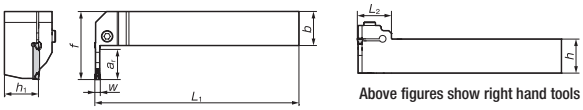


■ Holders

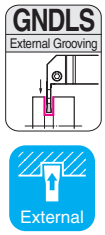
Catalog Number	Dimensions (mm)							Groove Width	Max. Groove Depth	Seat Size	Cap Screw	Recommended Tightening Torque (N-m)	Wrench
	h	b	L_1	f	h_1	L_2	h_2	W(mm)	a_r (mm)				
GNDL R/L1010JX-210	10	10	120	10	10	22.0	2.0	2.0	10	2	BFTX0412N	5.0	LT15-10
GNDL R/L1010JX-310	10	10	120	10	10	22.0	2.0	3.0	10	3			
GNDL R/L1212JX-212.5	12	12	120	12	12	22.0	2.0	2.0	12.5	2			
GNDL R/L1212JX-312.5	12	12	120	12	12	22.0	2.0	3.0	12.5	3			
GNDL R/L1616JX-216	16	16	120	16	16	32.0	-	2.0	16	2	BX0515		LH040
GNDL R/L1616JX-316	16	16	120	16	16	32.0	-	3.0	16	3			
GNDL R/L2020K-220	20	20	125	20	20	44.5	-	2.0	20	2	BX0520		
GNDL R/L2020K-320	20	20	125	20	20	44.5	-	3.0	20(18)	3			
GNDL R/L2020K-425	20	20	125	20	20	50.0	-	4.0	25(23)	4			
GNDL R/L2020K-525	20	20	125	20	20	50.0	-	5.0	25(23)	5			
GNDL R/L2020K-625	20	20	125	20	20	50.0	-	6.0	25(23)	6			
GNDL R/L2525M-220	25	25	150	25	25	44.5	-	2.0	20	2			
GNDL R/L2525M-320	25	25	150	25	25	44.5	-	3.0	20(18)	3			
GNDL R/L2525M-425	25	25	150	25	25	50.0	-	4.0	25(23)	4			
GNDL R/L2525M-525	25	25	150	25	25	50.0	-	5.0	25(23)	5			
GNDL R/L2525M-625	25	25	150	25	25	50.0	-	6.0	25(23)	6			

Select holders and inserts with the same grooving widths (*w*). Dimensions in parentheses under maximum grooving depth are for applications that use copying inserts (RG Type Breakers). Refer to page 252 for applicable inserts.

External L-Styled (Side Cut) Grooving



Above figures show right hand tools



■ Holders

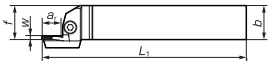
■ Spare Parts

Catalog Number	Dimensions (mm)						Groove Width	Max. Groove Depth	Seat Size	Cap Screw	Recommended Tightening Torque (N-m)	Wrench
	h	b	L_1	f	h_1	L_2	W(mm)	a_r (mm)				
GNDLS R/L2020K-216	20	20	125	38	20	25	2.0	16	2	BX0520	5.0	LH040
GNDLS R/L2020K-316	20	20	125	38	20	25	3.0	16	3			
GNDLS R/L2525M-218	25	25	150	45	25	25	2.0	18	2			
GNDLS R/L2525M-318	25	25	150	45	25	25	3.0	18	3			
GNDLS R/L2525M-423	25	25	150	50	25	25	4.0	23	4			
GNDLS R/L2525M-523	25	25	150	50	25	25	5.0	23	5			
GNDLS R/L2525M-623	25	25	150	50	25	25	6.0	23	6			

Select holders and inserts with the same grooving widths (*w*). Refer to page 252 for applicable inserts.

Grooving Toolholders
GND Series - **Metric**

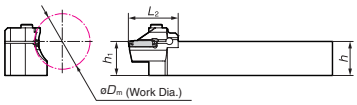
Face Grooving

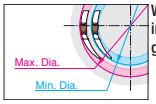


Above figures show right hand tools

■ Holders

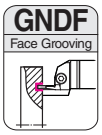
* Use the multi-purpose copying insert for turning (wide grooves).





Work diameters in the stock table indicate external diameters of face grooves.

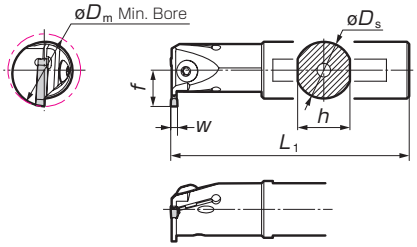
■ Spare Parts



Catalog Number	Dimensions (mm)						Work Dia. (mm)	Groove Width	Max. Groove Depth	Seat Size	Cap Screw	Recommended Tightening Torque (N-m)	Wrench
	h	b	L_1	f	h_1	L_2	ΦD_m	W(mm)	a_r (mm)				
GNDF R/L2020K-312-035	20	20	125	20	20	35.6	35 to 45	3.0	12	3	BX0520	5.0	LH040
GNDF R/L2020K-312-040	20	20	125	20	20	35.6	40 to 55	3.0	12				
GNDF R/L2020K-318-050	20	20	125	20	20	41.6	50 to 70	3.0	18				
GNDF R/L2020K-318-065	20	20	125	20	20	41.6	65 to 100	3.0	18				
GNDF R/L2020K-318-090	20	20	125	20	20	41.6	90 to 150	3.0	18				
GNDF R/L2020K-318-140	20	20	125	20	20	41.6	140 to 200	3.0	18				
GNDF R/L2020K-318-180	20	20	125	20	20	41.6	180 to 300	3.0	18				
GNDF R/L2020K-418-040	20	20	125	20	20	41.6	40 to 55	4.0	18	4	BX0520	5.0	LH040
GNDF R/L2020K-423-050	20	20	125	20	20	46.6	50 to 70	4.0	23				
GNDF R/L2020K-423-065	20	20	125	20	20	46.6	65 to 90	4.0	23				
GNDF R/L2020K-423-085	20	20	125	20	20	46.6	85 to 130	4.0	23				
GNDF R/L2020K-423-125	20	20	125	20	20	46.6	125 to 200	4.0	23				
GNDF R/L2020K-423-180	20	20	125	20	20	46.6	180 to 300	4.0	23				
GNDF R/L2020K-423-280	20	20	125	20	20	46.6	280 to 1000	4.0	23				
GNDF R/L2020K-523-050	20	20	125	20	20	46.6	50 to 70	5.0	23	5	BX0520	5.0	LH040
GNDF R/L2020K-523-065	20	20	125	20	20	46.6	65 to 90	5.0	23				
GNDF R/L2020K-523-085	20	20	125	20	20	46.6	85 to 130	5.0	23				
GNDF R/L2020K-523-125	20	20	125	20	20	46.6	125 to 200	5.0	23				
GNDF R/L2020K-523-180	20	20	125	20	20	46.6	180 to 300	5.0	23				
GNDF R/L2020K-523-280	20	20	125	20	20	46.6	280 to 1000	5.0	23				
GNDF R/L2020K-623-050	20	20	125	20	20	46.6	50 to 75	6.0	23	6	BX0520	5.0	LH040
GNDF R/L2020K-623-070	20	20	125	20	20	46.6	70 to 110	6.0	23				
GNDF R/L2020K-623-100	20	20	125	20	20	46.6	100 to 200	6.0	23				
GNDF R/L2020K-623-180	20	20	125	20	20	46.6	180 to 300	6.0	23				
GNDF R/L2020K-623-280	20	20	125	20	20	46.6	280 to 1000	6.0	23				
GNDF R/L2525M-312-035	25	25	150	25	25	35.6	35 to 45	3.0	12	3	BX0520	5.0	LH040
GNDF R/L2525M-312-040	25	25	150	25	25	35.6	40 to 55	3.0	12				
GNDF R/L2525M-318-050	25	25	150	25	25	41.6	50 to 70	3.0	18				
GNDF R/L2525M-318-065	25	25	150	25	25	41.6	65 to 100	3.0	18				
GNDF R/L2525M-318-090	25	25	150	25	25	41.6	90 to 150	3.0	18				
GNDF R/L2525M-318-140	25	25	150	25	25	41.6	140 to 200	3.0	18				
GNDF R/L2525M-318-180	25	25	150	25	25	41.6	180 to 300	3.0	18				
GNDF R/L2525M-418-040	25	25	150	25	25	41.6	40 to 55	4.0	18	4	BX0520	5.0	LH040
GNDF R/L2525M-423-050	25	25	150	25	25	46.6	50 to 70	4.0	23				
GNDF R/L2525M-423-065	25	25	150	25	25	46.6	65 to 90	4.0	23				
GNDF R/L2525M-423-085	25	25	150	25	25	46.6	85 to 130	4.0	23				
GNDF R/L2525M-423-125	25	25	150	25	25	46.6	125 to 200	4.0	23				
GNDF R/L2525M-423-180	25	25	150	25	25	46.6	180 to 300	4.0	23				
GNDF R/L2525M-423-280	25	25	150	25	25	46.6	280 to 1000	4.0	23				
GNDF R/L2525M-523-050	25	25	150	25	25	46.6	50 to 70	5.0	23	5	BX0520	5.0	LH040
GNDF R/L2525M-523-065	25	25	150	25	25	46.6	65 to 90	5.0	23				
GNDF R/L2525M-523-085	25	25	150	25	25	46.6	85 to 130	5.0	23				
GNDF R/L2525M-523-125	25	25	150	25	25	46.6	125 to 200	5.0	23				
GNDF R/L2525M-523-180	25	25	150	25	25	46.6	180 to 300	5.0	23				
GNDF R/L2525M-523-280	25	25	150	25	25	46.6	280 to 1000	5.0	23				
GNDF R/L2525M-623-050	25	25	150	25	25	46.6	50 to 75	6.0	23	6	BX0520	5.0	LH040
GNDF R/L2525M-623-070	25	25	150	25	25	46.6	70 to 110	6.0	23				
GNDF R/L2525M-623-100	25	25	150	25	25	46.6	100 to 200	6.0	23				
GNDF R/L2525M-623-180	25	25	150	25	25	46.6	180 to 300	6.0	23				
GNDF R/L2525M-623-280	25	25	150	25	25	46.6	280 to 1000	6.0	23				

Select holders and inserts with the same grooving widths (*w*). Refer to page 252 for applicable inserts.

Internal Grooving



Catalog Number	Dimensions (mm)					Max. Groove Depth	Seat Size
	Shank Diameter	h	Overall L1	f	Min. Bore Dm	ar (mm)	
GNDIR/L2532-T206	25	23	200	16	32	6	2
GNDIR/L2532-T306	25	23	200	16	32	6	3
GNDIR/L2532-T406	25	23	200	16	32	6	4
GNDIR/L2532-T506	25	23	200	16	32	6	5
GNDIR/L3240-T210	32	30	250	26	40	10	2
GNDIR/L3240-T310	32	30	250	26	40	10	3
GNDIR/L3240-T410	32	30	250	26	40	10	4
GNDIR/L3240-T510	32	30	250	26	40	10	5
GNDIR/L4050-T311	40	38	300	31	50	11	3
GNDIR/L4050-T411	40	38	300	31	50	11	4
GNDIR/L4050-T511	40	38	300	31	50	11	5
GNDIR/L4050-T611	40	38	300	31	50	11	6

Catalog Number	Dimensions (in)					Max Groove Depth	Seat Size
	Shank Diameter	h	Overall L1	f	Min. Bore Dm	W (inch)	
GNDIR/L162T-25	1.000	0.906	8.000"	0.630	1.250	0.250"	2
GNDIR/L163T-25	1.000	0.906	8.000"	0.630	1.250	0.250"	3
GNDIR/L164T-25	1.000	0.906	8.000"	0.630	1.250	0.250"	4
GNDIR/L165T-25	1.000	0.906	8.000"	0.630	1.250	0.250"	5
GNDIR/L166T-25	1.000	0.906	8.000"	0.630	1.250	0.250"	6
GNDIR/L202T-40	1.250	1.181	10.000"	1.024	1.575	0.400"	2
GNDIR/L203T-40	1.250	1.181	10.000"	1.024	1.575	0.400"	3
GNDIR/L204T-40	1.250	1.181	10.000"	1.024	1.575	0.400"	4
GNDIR/L205T-40	1.250	1.181	10.000"	1.024	1.575	0.400"	5
GNDIR/L206T-40	1.250	1.181	10.000"	1.024	1.575	0.400"	6
GNDIR/L243T-43	1.500	1.421	12.000"	1.145	2.000"	0.430"	3
GNDIR/L244T-43	1.500	1.421	12.000"	1.145	2.000"	0.430"	4
GNDIR/L245T-43	1.500	1.421	12.000"	1.145	2.000"	0.430"	5
GNDIR/L246T-43	1.500	1.421	12.000"	1.145	2.000"	0.430"	6

Grooving Toolholders
GND Series - Inserts

Fig. 1

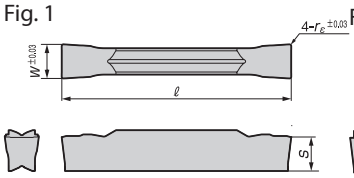
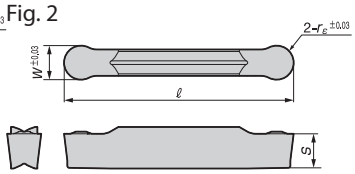


Fig. 2



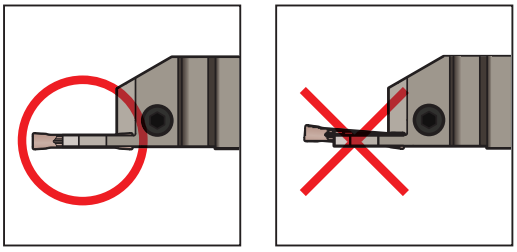
Type		Cat. No.	Coated Carbide				Dimensions (inch)					Figure
			S		P	K						
			AC520U	AC530U	AC830P	AC425K	W	rε	ℓ	Seat	S	
Deep Grooving Cut Off	General Feed GG Type	GCMN2002-GG	●	●	●	●	.078	.0078	.831	2	.142	1
		GCMN2094R0.5-GG	●	●	●	●	.094	.0078	.831	2	.142	
		GCMN3002-GG	●	●	●	●	.118	.0078	.831	3	.150	
		GCMN3004-GG	●	●	●	●	.118	.0156	.831	3	.150	
		GCMN3125R0.5-GG	●	●	●	●	.125	.0078	.831	3	.150	
		GCMN4002-GG	●	●	●	●	.157	.0078	1.039	4	.157	
		GCMN4004-GG	●	●	●	●	.157	.0156	1.039	4	.157	
		GCMN5187R0.5-GG	●	●	●	●	.187	.0078	1.039	5	.161	
		GCMN5002-GG	●	●	●	●	.197	.0078	1.039	5	.161	
		GCMN5004-GG	●	●	●	●	.197	.0156	1.039	5	.161	
		GCMN6002-GG	●	●	●	●	.236	.0078	1.039	6	.177	
		GCMN6004-GG	●	●	●	●	.236	.0156	1.039	6	.177	
		GCMN6250R0.5-GG	●	●	●	●	.250	.0078	1.039	6	.177	
		GCMN6250R1.0-GG	●	●	●	●	.250	.0156	1.039	6	.177	
	Low Feed GL Type	GCMN2002-GL	●	●	●	●	.078	.0078	.831	2	.142	
		GCMN2094R0.5-GL	●	●	●	●	.094	.0078	.831	2	.142	
		GCMN3002-GL	●	●	●	●	.118	.0078	.831	3	.150	
		GCMN3125R0.5-GL	●	●	●	●	.125	.0078	.831	3	.150	
		GCMN4002-GL	●	●	●	●	.157	.0078	1.039	4	.157	
		GCMN5187R0.5-GL	●	●	●	●	.187	.0078	1.039	5	.161	
		GCMN5002-GL	●	●	●	●	.197	.0078	1.039	5	.161	
		GCMN6002-GL	●	●	●	●	.236	.0078	1.039	6	.177	
		GCMN6250R0.5-GL	●	●	●	●	.250	.0078	1.039	6	.177	
Multi function (traversing)	General Feed MG Type	GCMN3004-MG	●	●	●	●	.118	.0156	.831	3	.150	
		GCMN3125R1.0-MG	●	●	●	●	.125	.0156	.831	3	.150	
		GCMN4008-MG	●	●	●	●	.157	.0312	1.039	4	.157	
		GCMN5187R2.0-MG	●	●	●	●	.187	.0312	1.039	5	.161	
		GCMN5008-MG	●	●	●	●	.197	.0312	1.039	5	.161	
		GCMN6008-MG	●	●	●	●	.236	.0312	1.039	6	.177	
		GCMN6250R2.0-MG	●	●	●	●	.250	.0312	1.039	6	.177	
	Low Feed ML Type	GCMN3002-ML	●	●	●	●	.118	.0078	.831	3	.150	
		GCMN3125R0.5-ML	●	●	●	●	.125	.0078	.831	3	.150	
		GCMN4004-ML	●	●	●	●	.157	.0156	1.039	4	.157	
		GCMN5187R1.0-ML	●	●	●	●	.187	.0156	1.039	5	.161	
		GCMN5004-ML	●	●	●	●	.197	.0156	1.039	5	.161	
		GCMN6004-ML	●	●	●	●	.236	.0156	1.039	6	.177	
		GCMN6250R1.0-ML	●	●	●	●	.250	.0156	1.039	6	.177	
Profiling	General Feed RG Type	GCMN3015-RG	●	●	●	●	.118	.059	.831	3	.150	2
		GCMN3125-RG	●	●	●	●	.125	.0625	.831	3	.150	
		GCMN4020-RG	●	●	●	●	.157	.078	1.039	4	.157	
		GCMN5187-RG	●	●	●	●	.187	.0938	1.039	5	.161	
		GCMN5025-RG	●	●	●	●	.197	.098	1.039	5	.161	
		GCMN6030-RG	●	●	●	●	.236	.118	1.039	6	.177	
		GCMN6250-RG	●	●	●	●	.250	.125	1.039	6	.177	

Type		Cat. No.	Coated Carbide								Dimensions (inch)					Figure
			S				P		K							
			AC520U		AC530U		AC830P		AC425K		W	rε	ℓ	Seat	S	
			R	L	R	L	R	L	R	L						
Cut-off (Handed)	CG-05 Type	GCM_2002-CG-05	●	●	●	●	●	●	●	●	.078	.0078	.831	2	.142	1
		GCM_3002-CG-05	●	●	●	●	●	●	●	●	.118	.0078	.831	3	.150	
		GCM_4002-CG-05	●	●	●	●	●	●	●	●	.157	.0078	1.039	4	.157	

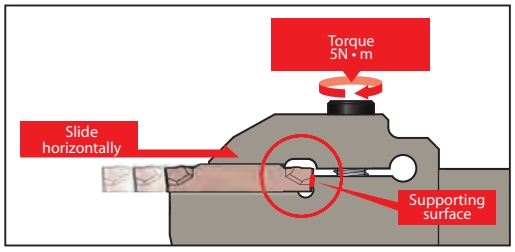
Notes on Attaching Inserts

- Remove any debris or oil from the insert seat before attaching the insert.
- Grind off any burr or flaws on the insert seat.
- Slide the insert flat over its seat.
- Clamp the insert with its opposite end (the holder side) firmly against the supporting surface.
- The recommended tightening torque is **5 N•m**. Tightening above the recommended torque may damage the insert which could cause injury and other accidents.

1. Attach insert on the seat flat



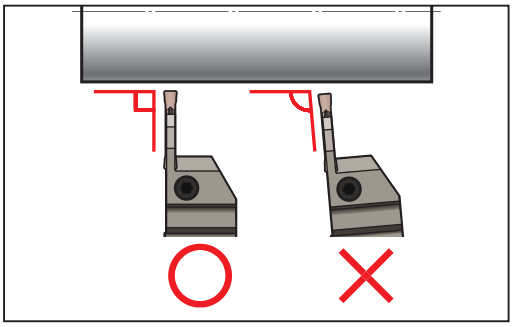
2. Push insert fully into place



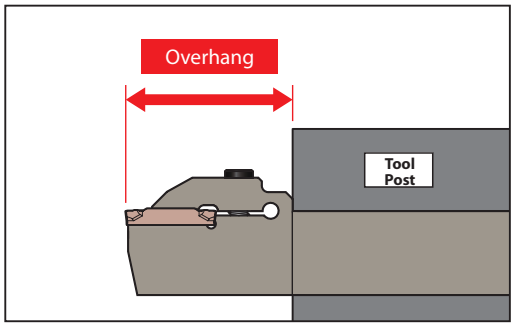
Notes on Attaching Holders

- Remove any debris or oil from the tool post before attaching the holder.
- Grind off any burr or flaws on the tool post.
- Attach the insert so that it is perpendicular to the workpiece.
- Set holder with shortest possible overhang.

3. Attach at right angle to workpiece



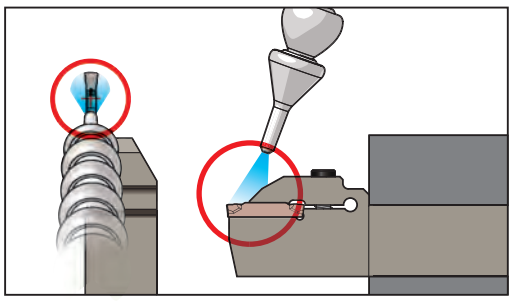
4. Set with short overhang



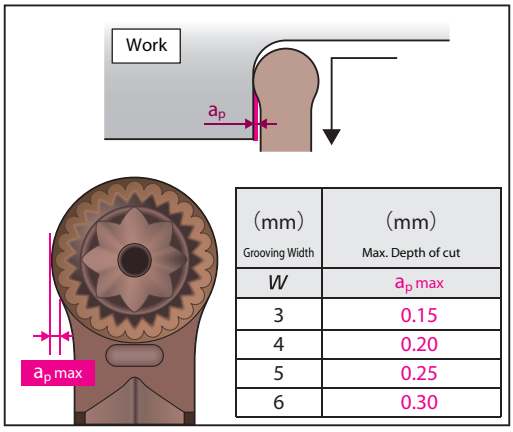
Notes on Setting Coolant Supply Nozzle

- Set the coolant supply nozzle so that coolant can be supplied from the top of the upper clamp unit.

Supply coolant to top of upper clamp unit



Maximum depth of cut when pulling up with RG chipbreaker



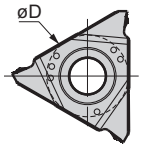
(mm) Grooving Width	(mm) Max. Depth of cut
W	a_p max
3	0.15
4	0.20
5	0.25
6	0.30

■ Features & Benefits

TGA Inserts with B-Groove Chipbreaker

- Exceptional chip control for a wide variety of grooving applications
- New Super ZX coated grade AC530U for machining steel, stainless steel, and non-ferrous materials

■ INSERTS



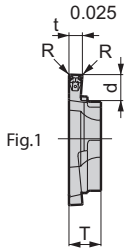


Fig.1

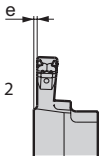
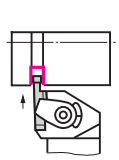
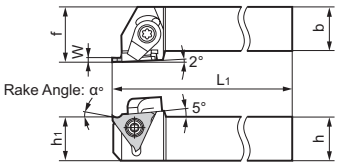


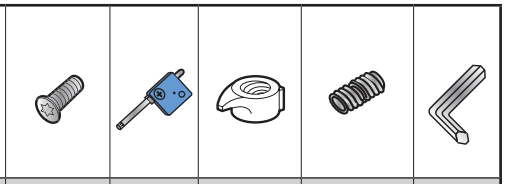
Fig. 2

Sumitomo Cat. No.	AC530U R	AC530U L	Tooth t	Dimensions *mm* (in) e	R	D	T	d	Max. Groove Depth OD	ID	Fig.	Holder(s)
TGA R/L4150BF	★	★	*1.50*	*0.250*							2	GWC R/L2020-25 GWC R/L2525-25 GWCI R/L432
TGA R/L4165BF	★	★	*1.65*	*0.175*								
TGA R/L4175BF	★	★	*1.75*	*0.125*								
TGA R/L4185BF	★	★	*1.85*	*0.075*	*0.2*	*12.70*	*4.76*	*3.9*	*3.5*	*2.5*		
TGA R/L4200BF	★	★	*2.00*									
TGA R/L4220BF	★	★	*2.20*	*0.000*							1	
TGA R/L4230BF	★	★	*2.30*									
TGA R/L4250BF	★	★	*2.50*								1	GWC R/L2525-35 GWCI R/L432
TGA R/L4265BF	★	★	*2.65*									
TGA R/L4270BF	★	★	*2.70*									
TGA R/L4280BF	★	★	*2.80*									
TGA R/L4300BF	★	★	*3.00*		*0.3*							
TGA R/L4320BF	★	★	*3.20*									
TGA R/L4330BF	★	★	*3.30*									
TGA R/L4350BF	★	★	*3.50*	*0.000*		*12.70*	*4.76*	*5.4*	*5.0*	*2.5*		
TGA R/L4370BF	★	★	*3.70*									
TGA R/L4390BF	★	★	*3.90*									
TGA R/L4400BF	★	★	*4.00*									
TGA R/L4410BF	★	★	*4.10*									
TGA R/L4420BF	★	★	*4.20*		*0.4*							
TGA R/L4430BF	★	★	*4.30*									
TGA R/L4440BF	★	★	*4.40*									
TGA R/L4450BF	★	★	*4.50*									
TGA R/L40062BF	●	●	(0.062)	(0.016)							2	GWC R/L2020-25 GWC R/L2525-25 GWCI R/L432
TGA R/L40072BF	●	●	(0.072)	(0.010)								
TGA R/L40088BF	●	●	(0.088)	(0.003)	(0.008)			(0.154)	(0.138)			
TGA R/L40094BF	●	●	(0.094)								1	GWC R/L2525-35 GWCI R/L432
TGA R/L40097BF	●	●	(0.097)									
TGA R/L40105BF	●	●	(0.105)			(0.500)	(0.187)			(0.098)		
TGA R/L40110BF	●	●	(0.110)	(0.000)								
TGA R/L40122BF	●	●	(0.122)		(0.012)			(0.213)	(0.197)			
TGA R/L40125BF	●	●	(0.125)									
TGA R/L40142BF	●	●	(0.142)									
TGA R/L40156BF	●	●	(0.156)		(0.016)							

■ EXTERNAL GROOVING

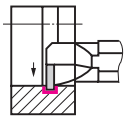


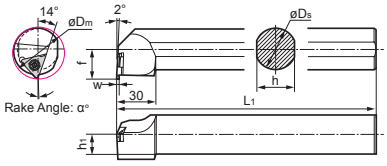


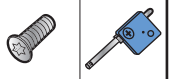


Sumitomo Cat. No.	Stock R	Stock L	h	b	L_1	f	h_1	Grooving Width W	Max. Grooving Depth (mm)	Screw	Wrench	Clamp	Double Screw	Wrench
			Dimensions *mm* (in)											
GWC R/L2020-25	●	●	*20*	*20*	*125*	*25*	*20*	*1.50 - 2.30*	*3.5*	BFTX0511N	TRX20	CCM8U L/R	WB8-22T/TL	LT27
GWC R/L2020-35	●	●	*20*	*20*	*125*	*25*	*20*	*2.50 - 4.80*	*5.0*					
GWC R/L2525-25	●	●	*25*	*25*	*150*	*30*	*25*	*1.50 - 2.30*	*3.5*					
GWC R/L2525-35	●	●	*25*	*25*	*150*	*30*	*25*	*2.50 - 4.80*	*5.0*					
GWC R/L124C-25	●	●	(0.75)	(0.75)	(5.00)	(0.938)	(0.75)	(0.060 - 0.090)	(0.1378)					
GWC R/L124C-35	●	●	(0.75)	(0.75)	(5.00)	(0.938)	(0.75)	(0.060 - 0.090)	(0.1969)					
GWC R/L164D-25	●	●	(1.00)	(1.00)	(6.00)	(1.18)	(1.00)	(0.100 - 0.189)	(0.1378)					
GWC R/L164D-35	●	●	(1.00)	(1.00)	(6.00)	(1.18)	(1.00)	(0.100 - 0.189)	(0.1969)					

■ INTERNAL GROOVING





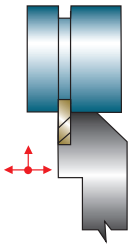


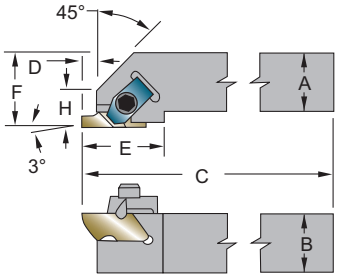
Sumitomo Cat. No.	Stock R	Stock L	øDs	h	L_1	f	h_1	Min. Bore øDm	Grooving Width (mm) W	Max. Grooving Depth (mm)	Screw	Wrench
			Dimensions *mm* (in)									
GWCI R/L325	●	●	25	23	200	17.5	11.5	35	0.33 - 2.80	0.5 - 2.0	BFTX0409N	TRX15
GWCI R/L432	●	●	32	30	250	22.5	15.0	40	1.25 - 4.80	1.7 - 2.5	BFTX0511N	TRX20
GWCI R/L 164	●	●	(1.000)	(0.905)	(7.850)	(0.690)	(0.543)	(1.380)	(0.013 - 0.110)	(0.020 - 0.080)	BFTX0511N	TRX20
GWCI R/L 204	●	●	(1.250)	(1.181)	(10.00)	(0.890)	(0.590)	(1.580)	(0.050 - 0.189)	(0.070 - 0.100)	BFTX0511N	TRX20

Rake Angle with Insert fitted on holder (α°)	AC530U
EXTERNAL: GWC R/L	10°
INTERNAL: GWCI R/L	1°

■ SUMINOTCH GROOVING TOOLHOLDERS

SS Series

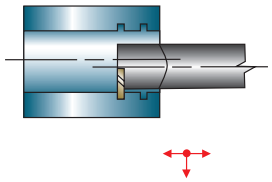


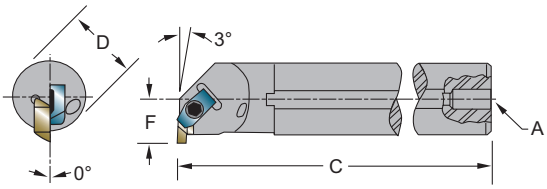


Sumitomo Cat. No. Right Hand	Sumitomo Cat. No. Left Hand	Gage Insert R.H.	Gage Insert L.H.	A	B	C	D	E	F	H	Right Hand Clamp	Left Hand Clamp	Clamp Screw
SSR-82V	SSL-82V	SG-2R	SG-2L	.500	.500	3.500	.140	1.25	.750	.50	TF-74	TF-75	S-310
SSR-102B	SSL-102B	SG-2R	SG-2L	.625	.625	4.500	.140	1.25	1.000	.50	TF-74	TF-75	S-310
SSR-122B	SSL-122B	SG-2R	SG-2L	.750	.750	4.500	.140	1.25	1.000	.50	TF-74	TF-75	S-310
SSR-162C	SSL-162C	SG-2R	SG-2L	1.000	1.000	5.000	.140	1.25	1.250	.50	TF-74	TF-75	S-310
SSR-123A	SSL-123A	SG-3R	SG-3L	.750	.750	4.000	.210	1.25	1.000	.50	TF72	TF-73	S-412
SSR-123B	SSL-123B	SG-3R	SG-3L	.750	.750	4.500	.210	1.25	1.000	.50	TF72	TF-73	S-412
SSR-163C	SSL-163C	SG-3R	SG-3L	1.000	1.000	5.000	.210	1.25	1.250	.50	TF72	TF-73	S-412
SSR-163D	SSL-163D	SG-3R	SG-3L	1.000	1.000	6.000	.210	1.25	1.250	.50	TF72	TF-73	S-412
SSR-853D	SSL-853D	SG-3R	SG-3L	1.000	1.250	6.000	.210	1.25	1.500	.50	TF72	TF-73	S-412
SSR-203D	SSL-203D	SG-3R	SG-3L	1.250	1.250	6.000	.210	1.25	1.500	.50	TF72	TF-73	S-412

■ SUMINOTCH GROOVING BORING BARS

A-SE Series

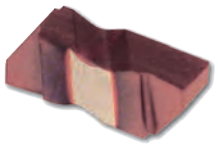


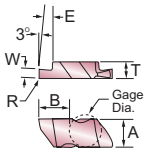


Sumitomo Cat. No. Right Hand	Sumitomo Cat. No. Left Hand	Gage Insert R.H.	Gage Insert L.H.	D	C	F	Min. Bore	A	Right Hand Clamp	Left Hand Clamp	Clamp Screw
A08-SER2	A08-SEL2	SG-2R	SG-2L	.500	8.000	.437	0.730	1/4-18 NPT	TF-74	TF-75	S-310
A10-SER2	A10-SEL2	SG-2R	SG-2L	.625	10.000	.500	1.000	1/4-18 NPT	TF-74	TF-75	S-310
A12-SER2	A12-SEL2	SG-2R	SG-2L	.750	10.000	.562	1.125	1/4-18 NPT	TF-74	TF-75	S-310
A16-SER2	A16-SEL2	SG-2R	SG-2L	1.000	12.000	.688	1.375	1/4-18 NPT	TF-74	TF-75	S-310
A16-SER3	A16-SEL3	SG-3R	SG-3L	1.000	12.000	.688	1.375	1/4-18 NPT	TF72	TF-73	S-412
A20-SER3	A20-SEL3	SG-3R	SG-3L	1.250	14.000	.875	1.750	1/4-18 NPT	TF72	TF-73	S-412
A24-SER3	A24-SEL3	SG-3R	SG-3L	1.500	14.000	1.000	2.000	1/4-18 NPT	TF72	TF-73	S-412

Note: Right-hand boring bars use left-hand inserts. Left-hand boring bars use right-hand inserts.

SumiNotch Grooving Toolholders & Boring Bars





● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item

SUMINOTCH GROOVING INSERTS

Left SG	Coated EH520V	CBN BN250	CBN BN350	W ±.001	R	E ±.001	T	A	B	Gage Dia.	Right SG	Coated EH520V	CBN BN250	CBN BN350
SG-2031L	●			.031	.002/.005	.050	.150	.219	.2700	.1875	SG-2031R	●		
SG-2041L	●			.041	.002/.005	.050					SG-2041R	●		
SG-2047L	●			.047	.002/.005	.050					SG-2047R	●		
SG-2058L	●			.058	.005/.010	.050					SG-2058R	●		
SG-2062L	●			.062	.005/.010	.110					SG-2062R	●		
SG-2094L	●			.094	.005/.010	.110					SG-2094R	●		
SG-2125L	●			.125	.005/.010	.110					SG-2125R	●		
SG-3047L	●			.047	.005/.010	.120	.195	.344	.4050	.3750	SG-3047R	●	●	●
SG-3062L	●	●	●	.062	.005/.010	.120					SG-3062R	●	●	●
SG-3072L	●			.072	.005/.010	.120					SG-3072R	●		
SG-3088L	●			.088	.005/.010	.180					SG-3088R	●		
SG-3094L	●	●	●	.094	.005/.010	.180					SG-3094R	●	●	●
SG-3097L	●			.097	.005/.010	.180					SG-3097R	●		
SG-3105L	●			.105	.005/.010	.180					SG-3105R	●		
SG-3110L	●			.110	.005/.010	.180					SG-3110R	●		
SG-3122L	●			.122	.005/.010	.180					SG-3122R	●		
SG-3125L	●	●	●	.125	.005/.010	.180					SG-3125R	●	●	●
SG-3142L	●			.142	.005/.010	.180					SG-3142R	●		
SG-3156L	●			.156	.005/.010	.180					SG-3156R	●		
SG-3178L	●			.178	.005/.010	.180					SG-3178R	●		
SG-3185L	●			.185	.020/.025	.180					SG-3185R	●		
SG-3189L	●			.189	.020/.025	.180					SG-3189R	●		●

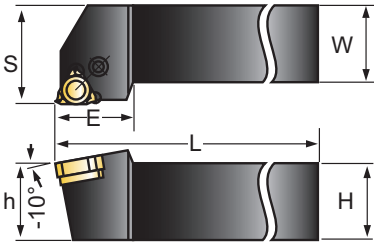
Left SG-CB	Coated EH520V	W ±.001	R	E ±.001	T	A	B	Gage Dia.	Right SG-CB	Coated EH520V
SG-2047L-CB	●	.047	.002/.005	.050	.150	.219	.2700	.1875	SG-2047R-CB	●
SG-2062L-CB	●	.062	.005/.010	.110					SG-2062R-CB	●
SG-2078L-CB	●	.078	.005/.010	.110					SG-2078R-CB	●
SG-2094L-CB	●	.094	.005/.010	.110					SG-2094R-CB	●
SG-2125L-CB	●	.125	.005/.010	.110					SG-2125R-CB	●
SG-3047L-CB	●	.047	.005/.010	.075	.195	.344	.4050	.3750	SG-3047R-CB	●
SG-3062L-CB	●	.062	.005/.010	.094					SG-3062R-CB	●
SG-3072L-CB	●	.072	.005/.010	.094					SG-3072R-CB	●
SG-3078L-CB	●	.088	.005/.010	.094					SG-3078R-CB	●
SG-3088L-CB	●	.094	.005/.010	.150					SG-3088R-CB	●
SG-3094L-CB	●	.097	.005/.010	.150					SG-3094R-CB	●
SG-3125L-CB	●	.185	.020/.025	.150					SG-3125R-CB	●
SG-3189L-CB	●	.189	.020/.025	.150					SG-3189R-CB	●

■ RECOMMENDED RUNNING CONDITIONS

Material		Speed (SFM)	Feed Rate (in/rev)
Steels	free-machining carbon alloys plain carbon steels alloy steels 190-330HB alloy steels 330-450HB	450-750 400-700 400-700 350-600	.004 - .012
Stainless Steels	martensitic/ferritic stainless steel austenitic stainless steel	250-650 175-700	.004 - .009
Cast Iron	gray cast iron 190-330HB gray cast iron 330-450HB alloy/ductile irons	400-700 350-600 250-650	.004 - .015
High Temperature Alloys	high temp alloys 200-260HB high temp alloys 260-450HB titanium alloys Ti 6Al-4V	60-250 30-175 90-250	.003 - .008
Non-Ferrous Materials	free-machining aluminum alloys copper/zinc/brass non-metallics	600-2500 300-900 350-1200	.004 - .012

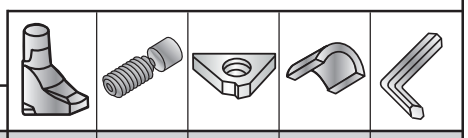
LTER Series

For External Threading



LAYDOWN EXTERNAL THREADING INSERTS:

TME_____R
TUE_____R
TWE_____R

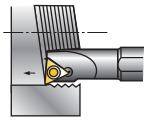


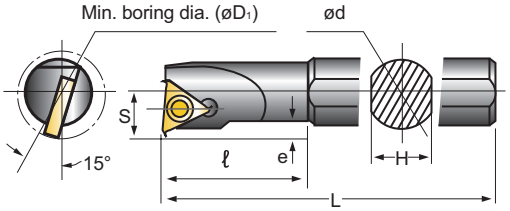
These figures show right hand tools.

Sumitomo Cat. No.	STKD.	Dimensions						Lever Pin	Clamp Bolt	Shim	Shim Pin	Wrench
		H	W	h	S	L	E					
LTER 123C	•	.750	.750	.750	1.000	5.000	1.000	LCL3S	LCS3TE	LSTE31-0	LSP3	LH025
LTER 163D	•	1.000	1.000	1.000	1.250	6.000	1.000					

STIR Series

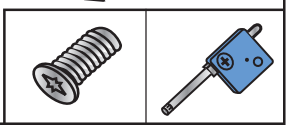
For Internal Threading





LAYDOWN INTERNAL THREADING INSERTS:

TMI_____R
TNPTI_____R



Sumitomo Cat. No.	STKD.	Dimensions							Screw	Wrench
		ø d	H	L	Min.Bore øD1	S	e	ℓ		
STIR 103	•	.625	.590	6.000	.750	.406	.006	1.378	BFTX03508	TRX10
STIR 123	•	.750	.670	7.000	1.000	.492	.006	1.575	BFTX03508	TRX10
STIR 163	•	1.000	.905	8.000	1.150	.600	.006	1.500	BFTX03508	TRX10
STIR 203	•	1.250	1.142	10.000	1.400	.724	.006	1.500	BFTX03508	TRX10
STIR 243	•	1.500	1.378	12.000	1.700	.897	.006	1.500	BFTX03508	TRX10

Solid Carbide • Solid Quality • Solid Performance

Because of the solid tungsten carbide support blade, Sumitomo cut-off tools are able to perform at depths 40% greater than any tools now available. Tungsten carbide is more rigid than steel so even in long overhang applications, bending, vibration and movement at the cutting edge are drastically reduced.

The solid carbide support blades fit in many existing cut-off tool blocks.

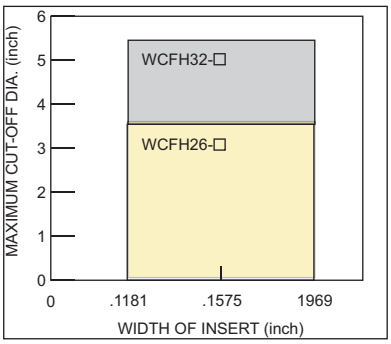
The unique positive rake inserts are available in neutral, right hand, and left hand styles. The insert design collapses the width of the chip, breaks it and facilitates chip flow away from the cut, thus welding and wear on the insert corners are greatly reduced, and coolant is easier to direct.

Operating at high speeds and feeds is possible because of longer tool life, and down-time for chip removal is drastically reduced.

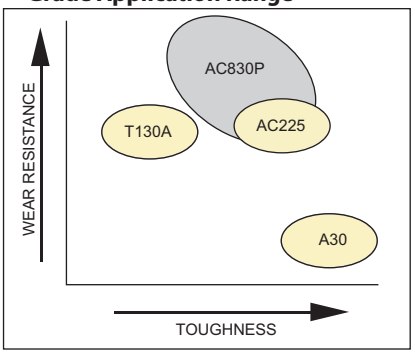
Safety is enhanced because long, stringy chips are avoided.

Note: Sumitomo Inserts fit only Sumitomo Blades.

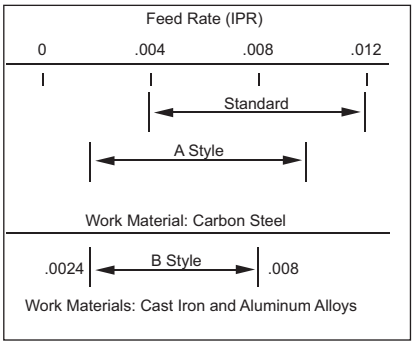
■ Maximum Cut-Off Diameter



■ Grade Application Range



■ Chipbreaker Range



■ Inserts Application

GRADE	C.B. STYLE	APPLICATION	FEATURE
AC830P	STANDARD	Heavy feed in steel (.0032–.012 ipr)	Coated insert with excellent wear resistance. Standard chipbreaker for low cutting force applications.
AC225	A	Light feed in steel (.0016–.010 ipr) Carbon steel, stainless steel	Coated insert with excellent toughness. A style chipbreaker with good chip control.
T130A	A	Light feed in steel (.0012–.0061 ipr)	Cermet inserts produce excellent surface finish.
A30N	A	Slow speed and feed in steel	Equivalent to C5, C6 carbide.
G10E	A	For exotic materials	C2 carbide for exotic materials.
G10E	B	For cast iron and aluminum alloy	C2 carbide with a sharp cutting edge.

CAUTION
1. Do not use AC25 for light feed rate applications (Feed rate should be at least .004 ipr)
2. Use AC225 for stainless steel.
3. Use A style chipbreaker for low carbon steel.
4. Use coolant.

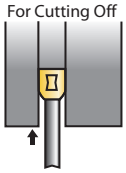
■ Recommended Cutting Conditions

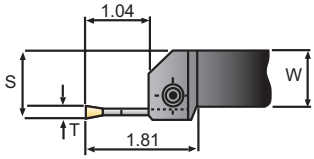
GRADE	V (SFM) f (ipr)	STEEL	CARBON STEEL	STAINLESS STEEL	DIE STEEL	CAST IRON	EXOTICS
AC830P	V f	320–720 .004–.012	400–820 .004–.006	260–650 .004–.006	200–500 .004–.006	---	---
AC225	V f	260–650 .0016–.010	320–750 .0016–.008	200–600 .0016–.008	200–500 .0016–.008	---	---
T130A	V f	260–650 .0012–.006	320–750 .0012–.004	200–600 .0012–.004	200–500 .0012–.0032	---	---
A30N	V f	160–400 .002–.008	230–500 .0016–.006	230–500 .0016–.006	160–400 .0016–.006	---	---
G10E	V f	---	---	---	---	160–320 .0024–.008	100–160 .002–.003

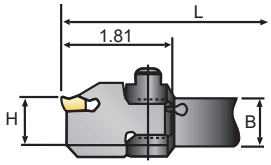
WCFS Series

HOLDERS

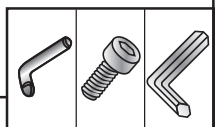
For Cutting Off







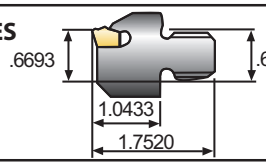
HARDENED STEEL HOLDER



These figures show right hand tools.

Sumitomo Cat. No.	STKD. R	STKD. L	Dimensions W	B	L	S	H	T	Support Blade	Insert	Extractor	Clamp Screw	Wrench
WCFSR/L-063-3	•	•	.625	.625	4.000	.740	.625	.1181	WCFH17-3	WCF□3□	SL-1	BX0622	LH050
WCFSR/L-075-3	•	•	.750	.750	4.500	.870	.750	.1181	WCFH17-3	WCF□3□			
WCFSR/L-075-4	•	•	.750	.750	4.500	.910	.750	.1575	WCFH17-4	WCF□4□			
WCFSR/L-075-5	•	•	.750	.750	4.500	.950	.750	.1969	WCFH17-5	WCF□5□			
WCFSR/L-100-3	•	•	1.000	1.000	6.000	1.120	1.000	.1181	WCFH17-3	WCF□3□			
WCFSR/L-100-4	•	•	1.000	1.000	6.000	1.160	1.000	.1575	WCFH17-4	WCF□4□			
WCFSR/L-100-5	•	•	1.000	1.000	6.000	1.200	1.000	.1969	WCFH17-5	WCF□5□			

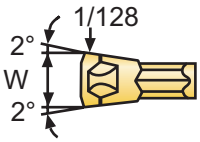
BLADES



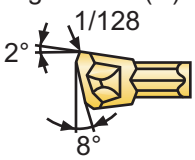
SOLID CARBIDE BLADE

Sumitomo Cat. No.	STOCK	Dimensions W	B
WCFH17-3	•	.1181	.094
WCFH17-4	•	.1575	.134
WCFH17-5	•	.1969	.169

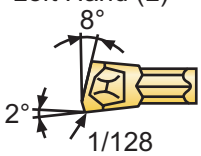
Neutral (N)



Right Hand (R)



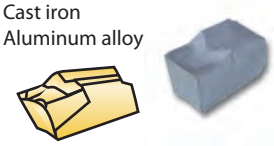
Left Hand (L)



WCF□○□
General Steel

WCF□○A
Hard-to-cut metals
Slow feed

WCF□○B
Cast iron
Aluminum alloy



Catalog Number	Coated AC830P	W	Catalog Number	Coated AC225	Cermet T130A	Uncoated A30	Uncoated G10E	W	Catalog Number	Uncoated G10E	W
WCFN2T	●	.0787									
WCFR2T	●										
WCFN3	●	.1181	WCFN3A	●	●	●	●	.1181	WCFN3B	●	.1181
WCFR3	●		WCFR3A	●	●		▲		WCFR3B	●	
WCFL3	●		WCFL3A	●	●	●	●		WCFL3B	●	
WCFN4	●	.1575	WCFN4A	●	●		●	.1575	WCFN4B	●	.1575
WCFR4	●		WCFR4A	●					WCFR4B		
WCFL4	●		WCFL4A						WCFL4B	●	
WCFN5	●	.1969	WCFN5A	●	●		●	.1969	WCFN5B	●	.1969
WCFR5	●		WCFR5A	●					WCFR5B		
WCFL5	●		WCFL5A						WCFL5B		

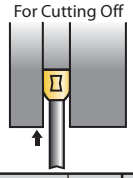
● = USA stocked item

▲ = USA limited availability item

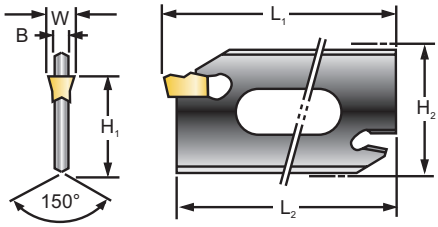
WCFH Series

SUPPORT BLADES

For Cutting Off



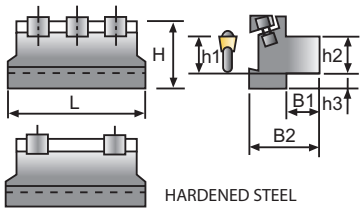
SOLID CARBIDE BLADE



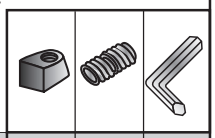
Sumitomo Cat. No.	STKD. R	Dimensions W	B	H_1	H_2	L_1	L_2	Max. Cut-Off Dia.	Tool Block		Insert	Extractor
WCFH26-3	•	.1181	.0945	.844	1.031	4.344	4.281	3.150	SBN063-26 SBN075-26	SBU075-26	WCF□3(A, B)	SL-1
WCFH26-4	•	.1575	.1339								WCF□4(A, B)	
WCFH26-5	•	.1969	.1693								WCF□5(A, B)	
WCFH32-3	•	.1181	.0945	.984	1.250	5.906	5.844	5.500	SBN100-32 SBN125-32	SBU075-32 SBU100-32	WCF□3(A, B)	
WCFH32-4	•	.1575	.1339								WCF□4(A, B)	
WCFH32-5	•	.1969	.1693								WCF□5(A, B)	

SBN Series

Tool Blocks



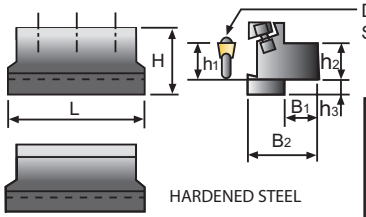
HARDENED STEEL



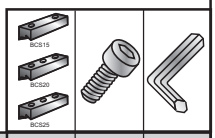
Sumitomo Cat. No.	Dimensions L	h_1	h_2	h_3	H	B_1	B_2	Clamp	Clamp Screw	Wrench
SBN063-26	3.000	.625	.625	.500	1.719	.625	1.328	BWS-30	WB8-20	LH040
SBN075-26	3.156	.750	.750	.375	1.719	.750	1.469			
SBN100-32	4.500	1.000	1.000	.3125	2.000	.8125	1.531			

SBU Series

Tool Blocks



HARDENED STEEL

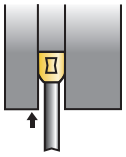


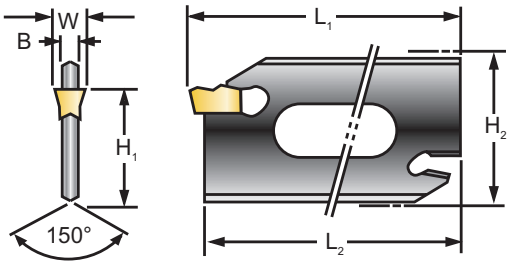
Sumitomo Cat. No.	Dimensions L	H	h_1	h_2	h_3	B_1	B_2	Wedge Clamp	Clamp Screw	Wrench
SBU075-26	3.156	1.781	.750	.750	.4375	.750	1.719	BCS15	BX0622	LH050
SBU075-32	4.000	2.000	.750	.750	.531	.781	1.719	BCS20		
SBU100-32	4.344	2.000	1.000	1.000	.344	.781	1.719	BCS25		

STFH Series Sumi-Grip Jr.

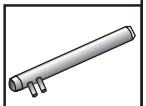
SUPPORT BLADES

For Cutting Off





HARDENED STEEL BLADE

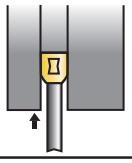


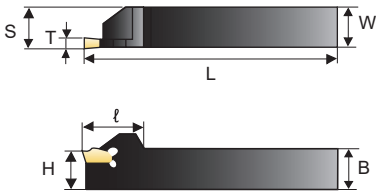
Sumitomo Cat. No.	STKD. R	Dimensions W	B	H_1	H_2	L_1	L_2	Max. Cut-Off Dia.	Tool Block		Insert	Wrench
STFH26-2	•	.0800	.0630	.8425	1.024	4.291	4.252	1.580	SBN063-26	SBU075-26	WCF□2T	SL-4
STFH26-3	•	.1200	.0945	.8425	1.024	4.291	4.252	2.760	SBN075-26		WCF□3□	
STFH32-2	•	.0800	.0630	.9843	1.260	5.866	5.827	1.580	SBN100-32	SBU075-32	WCF□2T	
STFH32-3	•	.1200	.0945	.9843	1.260	5.866	5.827	3.940	SBN125-32	SBU100-32	WCF□3□	

STFS Series Sumi-Grip Jr.

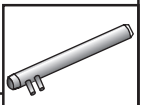
TOOL HOLDERS

For Cutting Off





HARDENED STEEL HOLDER



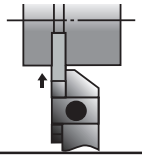
These figures show right hand tools.

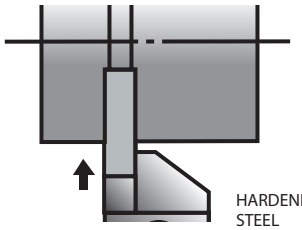
Sumitomo Cat. No.	STKD. R	L	Dimensions W	B	L	S	H	T	Max. Cut-Off Dia.	Insert	Wrench
STFSR/L-063-2	•	•	.625	.625	4.000	.625	.625	.0800	.650	WCF□2T	SL-4
STFSR/L-075-2	•	•	.750	.750	5.000	.750	.750	.0800	.840	WCF□2T	
STFSR/L-063-3	•	•	.625	.625	4.000	.625	.625	.1200	.750	WCF□3□	
STFSR/L-075-3	•	•	.750	.750	5.000	.750	.750	.1200	1.000	WCF□3□	
STFSR/L-100-3	•	•	1.000	1.000	6.000	1.000	1.000	.1200	1.000	WCF□3□	

Sumi-Grip Jr. is only available in steel blades and holders.

CF Series
HOLDERS

For External Grooving





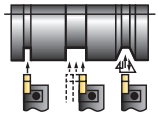
These figures show right hand tools.

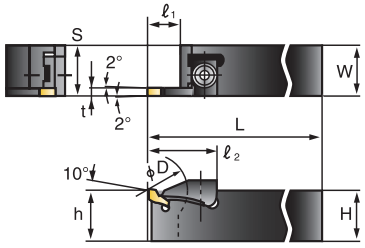
Sumitomo Cat. No.	STK.	Dimensions B	W	H	L	S	h	F	θ°	Max. Cut-Off Dia.
CF3-3	•	.118	.500	.750	4.750	.640	1.000	0.6	5°	1.30
CF4-5	•	.198	.750	1.000	6.500	.950	1.375	1.0	10°	1.97

*Not available as left hand holder.

PFE Series
HOLDERS

For External Grooving





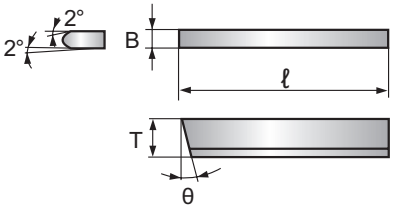
HARDENED STEEL HOLDER

These figures show right hand tools.

Sumitomo Cat. No.	STK.	Dimensions W	H	L	S	h	ℓ1	ℓ2	øD
PFER 160-3	•	1	1	5	1.01	1	.39	1.18	1.25
PFER 160-4	•	1	1	5	1.01	1	.59	1.38	1.50
PFER 160-5	•	1	1	5	1.01	1	.79	1.57	1.97

*Not available as left hand holder.

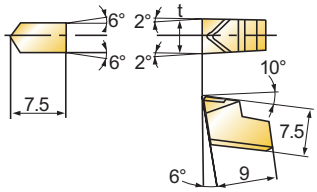
INSERTS



SOLID CARBIDE

Insert	Uncoated G10E		Dimensions B	T	ℓ	Holder No.
CFB3	•		.118	.2760	1.961	CF3-3
CFB3T	•					
CFB5			.197	.3125	2.329	CF4-5
CFB5T	•					

INSERTS



SOLID CARBIDE

Insert	Coated AC2000	T (inch)	Holder No.
PFT03	•	.118	PFER 160-3
PFT04	•	.157	PFER 160-4
PFT05	•	.197	PFER 160-5

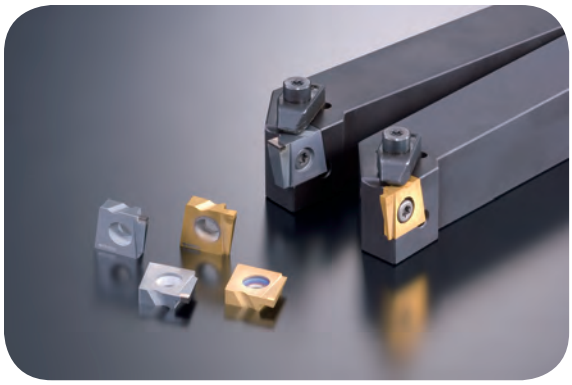
"CF" SERIES HARDWARE

Holder Cat. No.	Clamp	Clamp Bolt	Wrench	Stopper	Screw	Wrench
CF3-3	CFC-3	BX0512	LH040	—	—	—
CF4-5	CFC-5	BXF0618	LH040	CFD5	BTD0510	LH025

NOTE: CF3-3 has no stopper.

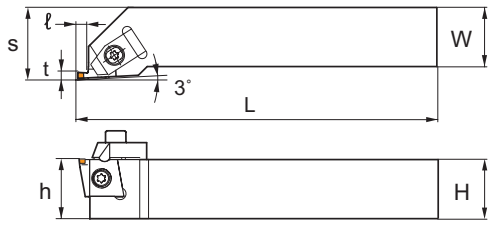
"PFE" SERIES HARDWARE

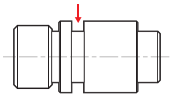
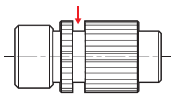
Holder Cat. No.	Clamp	Wrench
PFER 160-3	PCM3 R	LH040
PFER 160-4	PCM4 R	
PFER 160-5	PCM5 R	



■ Features & Benefits

- New double clamping system provides reliable grooving of hardened steel
- 80° tangentially mounted CGA style insert for improved rigidity
- Wide range of widths and grades for continuous and interrupted grooving operations
- New special coated CBN grade BNC30G extends tool life of insert



Grade	Application	Features	Hv (GPa)	TRS (GPa)
BN2000 	Continuous grooving 	General purpose grade with good wear resistance	31-34	1.0-1.1
BNC30G 	Interrupted grooving 	Tough CBN substrate and special coating with high wear and peeling resistance	33-35	1.1-1.2

■ GWB SERIES HOLDERS

Sumitomo Cat. No.	Stk.	H in (mm)	W in (mm)	h in (mm)	s in (mm)	t in (mm)	ℓ in (mm)	L in (mm)	Insert *(See p. 134 for CGA availability & technical information)*
GWBR 165D4	•	1.0 (25.4)	1.0 (25.4)	1.0 (25.4)	1.181 (30.0)	.059 < t ≤ .079 (1.5 < t ≤ 2.0)	.138 (3.5)	6.0 (152.4)	CGA R/L 1504□□
GWBL 165D4						.079 < t ≤ .118 (2.0 < t ≤ 3.0)	.177 (4.5)	6.039 (153.4)	CGA R/L 4□□□
						.118 < t ≤ .177 (3.0 < t ≤ 4.5)	.197 (5.0)		
GWBR 165D6	•	1.0 (25.4)	1.0 (25.4)	1.0 (25.4)	1.181 (30.0)	.177 < t ≤ .236 (4.5 < t ≤ 6.0)	.197 (5.0)	6.039 (153.4)	CGA R/L 1506□□
GWBL 165D6									CGA R/L 6□□□
GWBR 2525-45	★	.984 (25.0)	.984 (25.0)	.984 (25.0)	1.181 (30.0)	.059 < t ≤ .079 (1.5 < t ≤ 2.0)	.138 (3.5)	6.0 (152.4)	CGA R/L 1504□□
GWBL 2525-45						.079 < t ≤ .118 (2.0 < t ≤ 3.0)	.177 (4.5)	6.039 (153.4)	CGA R/L 4□□□
						.118 < t ≤ .177 (3.0 < t ≤ 4.5)	.197 (5.0)		
GWBR 2525-60	★	.984 (25.0)	.984 (25.0)	.984 (25.0)	1.181 (30.0)	.177 < t ≤ .236 (4.5 < t ≤ 6.0)	.197 (5.0)	6.039 (153.4)	CGA R/L 1506□□
GWBL 2525-60									CGA R/L 6□□□

• = USA Stocked Item
★ = Worldwide Warehouse Item

Please see page 128 for applicable inserts

■ RECOMMENDED CUTTING CONDITIONS

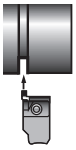
For hardened steel:	
Cutting Speed	260 - 400 sfm (80 - 120 m/min)
Feed Rate	.0016 -.0032 ipr (.04 - .08 mm/rev)
Coolant	Continuous cut: dry or wet Interrupted cut: dry
NOTE: To avoid thermal cracking of cutting edge during interrupted cutting applications, please ensure workpiece remains dry.	

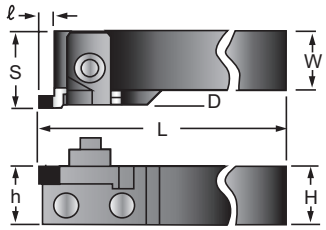
■ HARDWARE

				
Clamp	Clamp Screw	Insert Screw	Spring	Wrench
TF-72 (Right hand) TF-73 (Left hand)	BX0520T	BFTX 0511N	GSP06	TRX20

BNGG Series Grooving

For External Grooving



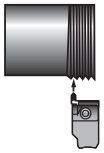


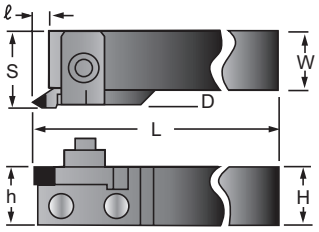
Sumitomo Cat. No.	STK. R	STK. L	Dimensions W	H	L	S	D	h	ℓ
BNGGR/L160	•		1	1	6	1.25	.281	1	.2

- For use in hard grooving with BNGNT type inserts.
- Extremely rigid design.
- Solves the chipping problems associated with vibration.
- **ANVIL SOLD SEPARATELY**.

BNGG Series Threading

For External Threading





Sumitomo Cat. No.	STK. R	STK. L	Dimensions W	H	L	S	D	h	ℓ
BNGGR/L160	•		1	1	6	1.25	.281	1	.2

- For use in hard threading with BNTT inserts.
- May apply various threading widths.
- **ANVIL SOLD SEPARATELY**.

Grooving Inserts

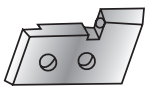
Insert	Grade BN250 R	BN250 L	BN350 R	BN350 L	BN500 R	BN500 L
BNGNT0200R/L	•	•	•		•	
BNGNT0250R/L	•	•			•	
BNGNT0300R/L	•	•	•		•	
BNGNT0400R/L	•	•	•		•	
BNGNT0500R/L	•	•			•	
BNGNT0600R/L	•	•			•	

Note: BNGNT inserts can be made in special widths per individual requirements. When using a special width BNGNT insert, the anvil must be altered as well. Please contact the Engineering Department for more information.

Threading Inserts

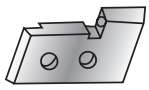
Insert	Grade BN250 R	BN250 L
BNTT1020R/L	•	
BNTT1530R/L	•	

*** Threading Anvil**



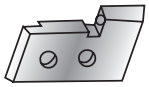
BNGSR/LTT

*** Grooving Anvil**



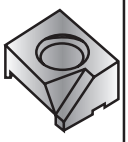
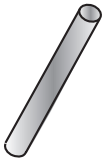
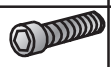
BNGSR/L200
BNGSR/L250
BNGSR/L300
BNGSR/L400
BNGSR/L500
BNGSR/L600

*** Grooving Anvil Additional Widths**



BNGSR/L150
BNGSR/L350
BNGSR/L450
BNGSR/L550

Hardware for Holders

Holder Cat. No.	Clamp	Adjust. Screw	Spring	Screws	Wrenches	
				 (Clamp Screw) BX0615	 (Clamp Wrench) LH050	
BNGGR/L160	BNGCR/L	FMJ	GSP06	 (Anvil Screw) BX0414	 (Anvil Wrench) LH030	1.8 X 45

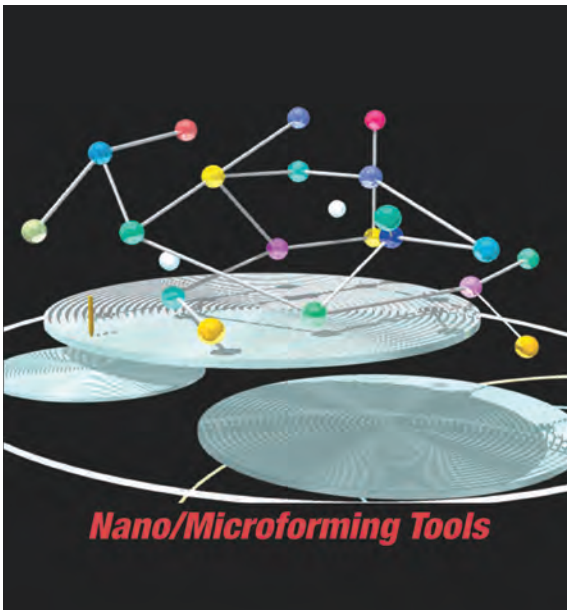
Note: Holders for threading or grooving are identical, even though they have different part numbers. You may substitute one holder for the other and all hardware items are interchangeable.

* Holder and anvil assembly required

* Anvil sold separately.

Ultra Precision Cutting Tools

Pages 265-269

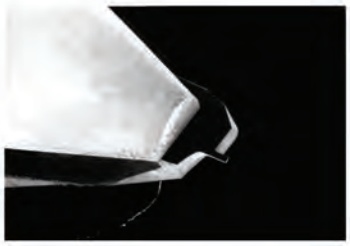


A.L.M.T. **PAGES**

Ultra Precision Cutting Tools

Nano/Microforming Tools UPC

A.L.M.T. Corp., as a leading manufacturer of ultra-precision diamond cutting tools offers a broad range of nano- and micro-forming cutting tools to satisfy market needs.
Our many years of experience and know-how has provided us with a comprehensive understanding of the optimal physical properties of monocrystal diamond. Our state-of-the-art development process yields the highest precision in tool edge measurement. As a result, our diamond cutting tools achieve high-precision microscopic cutting in workpieces with nanometer requirements.

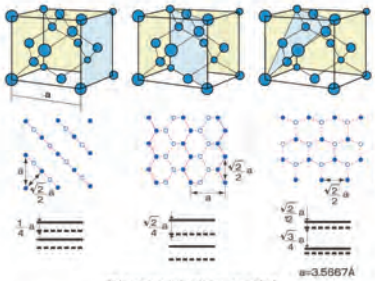


Extremely sharp cutting edge with the advanced UPC

Measuring technologies used for diamond selection

Checking the variation in the distance between carbon atoms in monocrystal diamond assists in determining the optimal crystal orientation

The pursuit of producing nanometer accurate diamond cutting tools begins with the selection of optimal monocrystal diamond. Although it is known that the lattice constant of diamond is 3.5667Å the distance between the crystal planes in monocrystal diamond varies, causing contamination or divisibility. Therefore, it is very important to select the best diamond ore and determine the optimal crystal orientation based on the application.



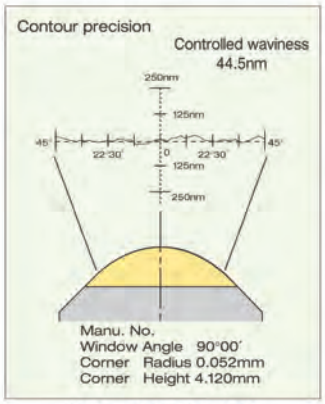
Diamond lattice model

X-Ray photography of monocrystal diamond

Polishing and measuring technologies

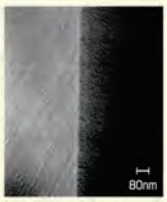
Tool edge polishing technologies used for profiling under nanometer tolerances

In order to accurately produce nanometer-controlled movement on a workpiece, a cutting tool requires a sharp tool edge capable of producing nanometer-size chips, in addition to high contour precision.
We have achieved this using our unique polishing and measurement technologies.

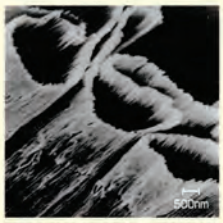


Contour inspection sheet

Cutting edge shape



Sharply polished monocrystal diamond ore



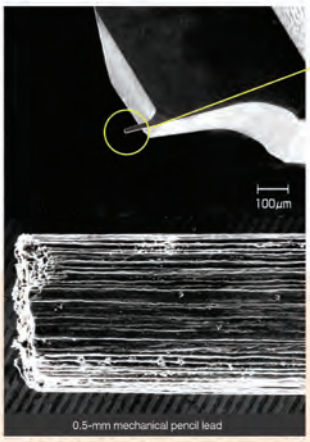
Extremely fine chips measured down to nanometer dimensions

Nano-cutting and micro-cutting technologies

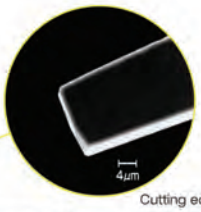
Straightness and surface roughness unobtainable with photolithography or ion-beam method

With their extremely sharp cutting edge, the UPC-Nano series developed by A.L.M.T. Corp. achieves excellent surface roughness and straightness, which cannot be obtained using photolithography or ion-beam methods.
They are also effective tools in high aspect-ratio applications where micrometer precision is required.

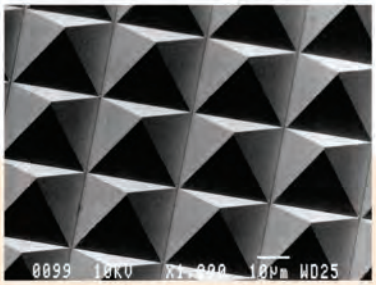
cutting tools



Polished surface shown in the same magnification

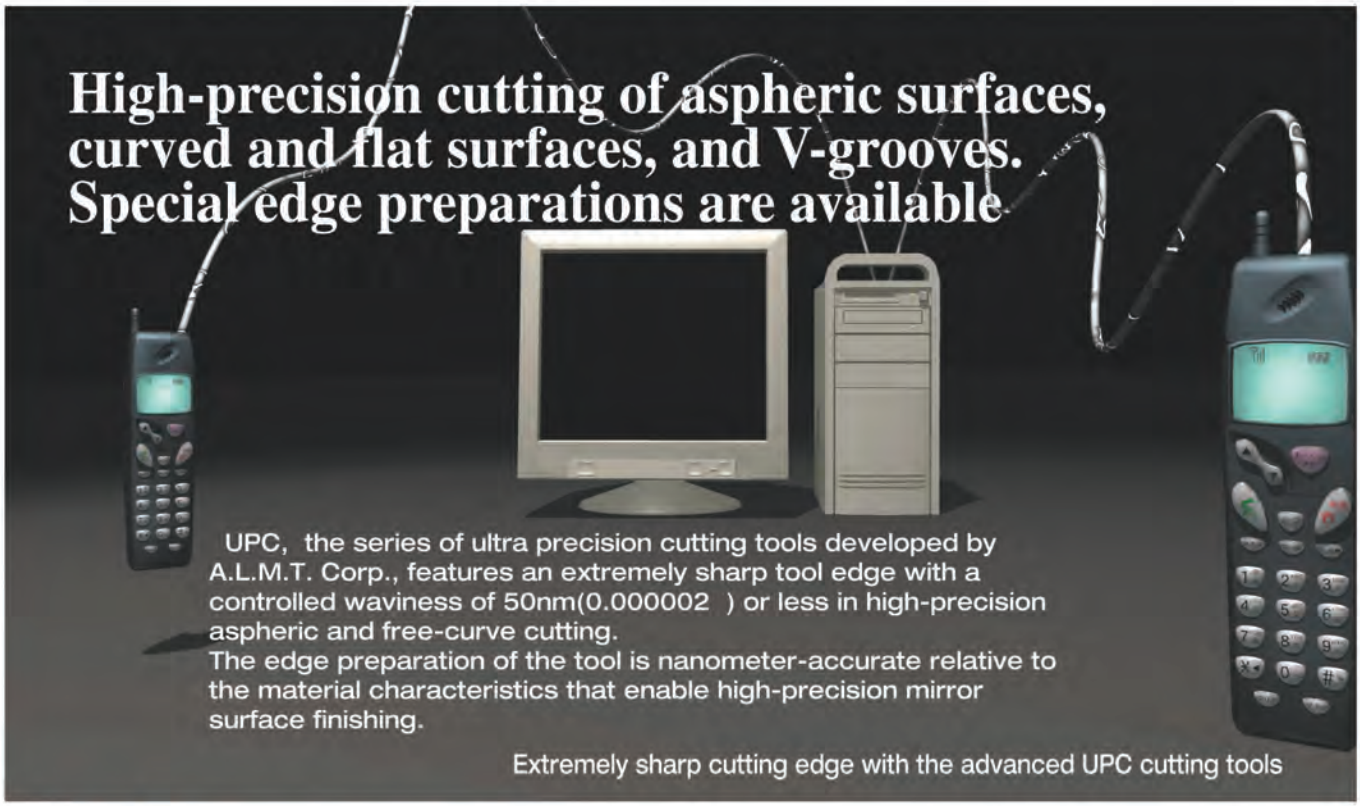


Cutting edge



Molds Surface by microforming

High-precision cutting of aspheric surfaces, curved and flat surfaces, and V-grooves. Special edge preparations are available



UPC, the series of ultra precision cutting tools developed by A.L.M.T. Corp., features an extremely sharp tool edge with a controlled waviness of 50nm(0.000002) or less in high-precision aspheric and free-curve cutting.
The edge preparation of the tool is nanometer-accurate relative to the material characteristics that enable high-precision mirror surface finishing.

Extremely sharp cutting edge with the advanced UPC cutting tools

1 Feature UPC-R

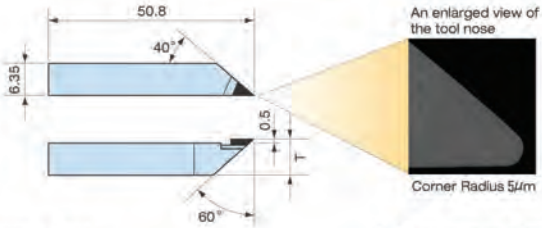
The UPC-R shows extraordinary success in ultra-precision spherical and aspherical cutting applications

Application

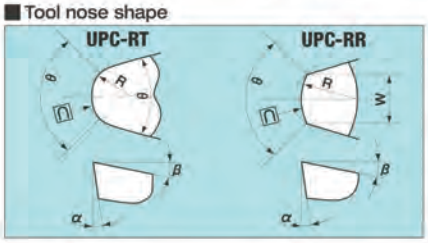
1. CD・DVD pickup lenses molding
2. Molding for optical lenses for cameras
3. Spherical and aspherical reflecting mirrors for laser and X-ray equipment
4. Spherical and aspherical lenses
5. Other precision parts machied with CNC 2-axis lathe

Features

1. A tool edge contour of 0.05μm (50nm / 0.000002") is achieved over a wide working angle of 90°.
2. The cutting edge is precisely finished with minimal waviness. The use of SEM at 2000x magnification for inspection eliminates chipping on the finished tool edge surface.
3. A record of the tool edge contour obtained by our newly developed measuring system (resolution of 5nm) is attached to each tool to guarantee the quality.



■ Tool nose shape



■ Dimensions & Limit Precision

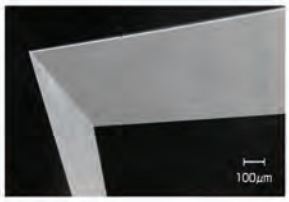
Type		Contour n θ≦90°	θ≦120°	θ≦150°	Corner Radius R	Tool Edge Angle θ	Tool Width W	Clearance Angle α	Face Angle β
UPC-RT	Ultraprecision	0.05μm	0.15μm	0.20μm	0.01~3 mm	min15°	—	0°~20°	−30°~10°
	Precision	0.5μm	1.0μm	2.0μm					
UPC-RR	Ultraprecision	0.05μm	0.15μm	0.20μm	0.10~ 200mm	—	0.5~5.0	0°~20°	−30°~10°
	Precision	0.5μm	1.0μm	2.0μm					

2 Feature UPC-F

The UPC-F shows its supremacy in high-efficiency and ultra-precision surface and cylindrical cutting applications.

Application

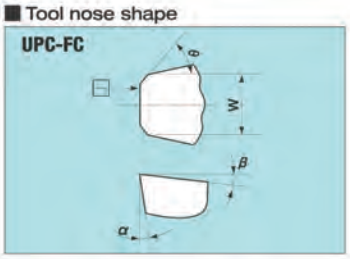
1. laser reflecting mirrors
2. Polygon mirrors
3. Copier sensitive drums
4. Ultra-fine flat or cylindrical surfaces



Features

1. The time required for break-in operation for the initial usage is eliminated or greatly reduced.
2. The edge preparation of the cutting tool is based on the material and the cutting conditions to provide a uniform and high-quality surface finish.

■ Tool nose shape



■ Shape Dimensions

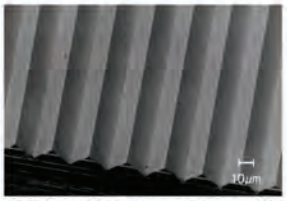
Type	Tool Edge Angle θ	Tool Width W	Clearance Angle α	Face Angle β	Horizontal Face Angle γ	Corner Radius R
UPC-FC	45°~80°	1.0~4.0mm	0°~5°	−5°~0°	0°~15°	—

3 Feature UPC-T

The UPC-T is the optimal tool for fine grooving applications such as Frensnel lens.

Application

1. Molds of LCD display optical waveguide.
2. Frensel lens molding.
3. Other fine grooving applications.

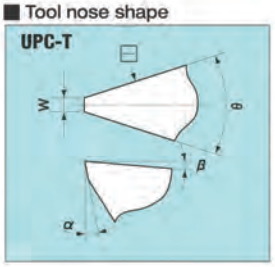


Molds of LCD display optical waveguide

Features

1. The cutting edge is uniform and extremely sharp, without chipping or undulation.
2. The shape of the cutting edge is guaranteed to sub micron tolerances.
3. Tool life is long to optimize crystal orientation.

■ Tool nose shape



■ Shape Dimensions

Type		Tool Edge Angle θ	Leading Edge Width W	Straightness ⊟	Clearance Angle α	Face Angle β
UPC-T	Ultraprecision	min20°	min0.2μm	0.05μm	0°~15°	−5°~10°
	Precision		min2μm	0.1μm		

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Milling Information

Pages 271-394

Indexable Milling Selection Guide

P Steel **K** Cast Iron **S** Exotic Materials
M Stainless Steel **N** Non-ferrous **H** Hardened Steel

✓: Best ❍: Good **X**: Unsuitable **Blank**: Not recommended

Milling Type	Cutter Type	Series	Insert	Approach Angle	Rake Angle Axial	Rake Angle Radial	Diameter	Application: Face Milling: General Purpose	Face Milling: Finishing	Face Milling: High Feed	Shoulder Milling	Slot Milling	Ramping	Copying	Chamfering	Borning	Finishing	Applicable Work Material P: General & Carbon Steel Alloy Steel	P: Die Steel - Tempered Steel	M: Stainless Steel	K: Cast Iron - Ductile Iron	N: Non-ferrous Metal	N: Aluminum Alloy	S: Ti Alloy -Heat Resistant Alloy	H: Hardened Steel 45-55 HRc	Page #
Shoulder Milling	**WEX-E** 	WEX2000 WEX3000	AXMT12 AXMT17	0°	14°~25° 16°~24°	10°~18° 8°~15°	0.500"~2.000"	❍			✓	✓	✓					✓	✓	✓	✓	✓	✓	✓		278, 280
Shoulder Milling	**WEX-R** 	WEX2000 WEX3000	AXMT12 AXMT17	0°	23°~25° 19°~24°	16°~18° 12°~15°	1.500"~8.000"	❍			✓	✓	✓					✓	✓	✓	✓	✓	✓	✓		279, 281
Shoulder Milling	**WRX-E** 	WRX2000 WRX3000	AXMT12 AXMT17	0°	16°~24° 20°~22°	13°~16° 12°~13°	1.000"~2.000"	❍			✓	✓	✓					✓	✓	✓	✓	✓	✓	✓		282-285
Shoulder Milling	**WRX-R** 	WRX2000 WRX3000	AXMT12 AXMT17	0°	24° 22°~24°	16°~17° 13°~15°	2.500"~3.000"	❍			✓	✓	✓					✓	✓	✓	✓	✓	✓	✓		
Shoulder Milling	**WAX** 	WAX3000 WAX4000	AECT16 AECT22	0°	19°~25°	6°	0.750"~1.500"	❍			✓	✓	✓	✓				X	X	X	X	❍	✓		X	286-289
Shoulder Milling	**WAX-E** 	WAX3000 WAX4000	AECT16 AECT22	0°			2.500"~5.000"	❍			✓	✓	✓	✓				X	X	X	X	❍	✓		X	
Shoulder Milling	**WFX** 	WFX4000	SOMT	0°	8°	-8°	2.000"~8.000"	❍			✓	❍						✓	❍	❍	❍					290-292
Shoulder Milling	**WFX-E** 	WFXF12000	SOMT	0°			40mm~80mm	❍			✓	❍						✓	❍	❍	❍					
Shoulder Milling	**PWS** 	PWS40000	LNMX	0°	-5°	-15°	2.000"~6.000"	❍		✓	❍	❍			✓			✓	✓	✓	✓					293-295
Face Milling	**WGX** 	WGX4000	SEMT13T	45°	20°~22°	20°~24°	2.000"~8.000"	✓				❍			❍			✓	✓	✓	✓	✓	✓	✓		298-301
Face Milling	**DGC** 	DGC4000	SNMT13 ONMT	45°	-5°	-10°	2.000"~10.000"	✓				❍			❍			✓	✓	✓	✓	✓	✓	✓		302-305
Face Milling	**GOALMILL** 	GFV5000	LNGX	2°	-5°	-8°	4.000"~8.000"		✓	✓								X	X	X	✓	X	X	X	X	310-311
Face Milling	**DNX** 	DNX4000	SNMT12	25°	-5°	-6°	3.000"~8.000"	❍										❍			✓					312-313
Face Milling	**Spider Mill** 	SDP40000 SDP50000	SNMX SNEX	2°	-5°	-15°	2.000"~6.000"	❍			❍										✓					314

Indexable Milling Selection Guide

P Steel **K** Cast Iron **S** Exotic Materials
M Stainless Steel **N** Non-ferrous **H** Hardened Steel

✓: Best ❍: Good **X**: Unsuitable **Blank**: Not recommended

Milling Type	Cutter Type	Series	Insert	Approach Angle	Rake Angle Axial	Rake Angle Radial	Diameter	Application: Face Milling: General Purpose	Face Milling: Finishing	Face Milling: High Feed	Shoulder Milling	Slot Milling	Ramping	Copying	Chamfering	Boring	Finishing	Applicable Work Material P: General & Carbon Steel Alloy Steel	P: Die Steel - Tempered Steel	M: Stainless Steel	K: Cast Iron - Ductile Iron	N: Non-ferous Metal	N: Aluminum Alloy	S: Ti Alloy - Heat Resistant Alloy	H: Hardened Steel 45-55 HRc	Page #
High Feed Milling	MSX 	MSX2000 MSX3000 MSX4000	WDMT06 WDMT08 WDMT12 WDMT14	70°	8°	-3° ~ 8°	0.750" ~ 6.000"			❍		❍	❍					✓	✓	✓	✓				❍	316-317
High Feed Milling	Metal Slash Mill 	MS14000	SDEW04 SDMW04	65°	10°	-5°	2.000" ~ 4.000"			✓								✓	✓	✓	✓		X		❍	318
Face Milling	RSX 	RSX3000 RSX4000 RSX5000	RDET	–	10°	-5.5°	1.000" ~ 6.000"	✓				❍	✓	✓				✓	✓	✓	✓		❍		❍	320-323
Face Milling	WBMR 	WBMRX	ZNMT	–	-10°	-	0.750" ~ 2.000"					✓		✓				✓	✓	✓	✓			❍	❍	324-326
Face Milling	WBMF 	WBMF1000	ZPGU	–	0°	-	0.500" ~ 1.250"					✓		✓			✓	✓	✓	✓	✓				❍	327-328
Face Milling	WMM 	WMM10000 WMM16000	APET APMT	0°	7° ~ 11°	15° ~ 16°	1.000" ~ 1.500"	✓			✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓		329-330

■ Grade Applications

Grade	Coating	Description
ACP100	Al_2O_3	Excellent wear and thermal crack resistance in steels, with the new ***"Super FF"*** CVD coating containing a fine grain Ti-based layer.
ACP200	TiAlN/AlCrN	ACP200 is a general grade for steels that provides excellent wear and chipping resistance due to the new ***"Super ZX"*** coating and tough carbide substrate.
ACP300	TiAlN/AlCrN	ACP300 features the new ***"Super ZX"*** coating improving the toughness and chipping resistance in difficult to machine materials.
ACM200	CVD	Al_2O_3 based ***"Super FF"*** coating with an ultra fine TiCN layer provides excellent anti-adhesion and wear resistance in general purpose milling of superalloys and stainless steels.
ACM300	PVD	Multi-layered ***"Super ZX"*** coating consisting of nanometer thick TiAlN and AlCrN layers, coupled with fine-grained super tough substrate for excellent fracture resistance; for general to interruped machining of superalloys and stainless steels.
ACK100	Al_2O_3	Wear-resistant machining in cast iron milling applications.
ACK200	Al_2O_3	General purpose grade that features the new ***"Super FF"*** CVD coating for machining gray and ductile cast irons.
ACK300	TiAlN/AlCrN	ACK300 with ***"Super ZX"*** PVD coating for milling heavily interrupted gray and ductile irons.

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Shoulder Milling

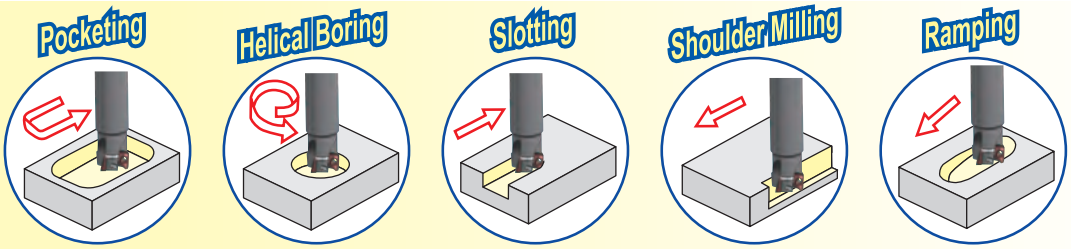
Pages 275-295

Table of Contents

Shoulder Milling Cutters: Pages

High efficiency machining due to its optimized cutting edge geometry and highly rigid body

For a wide range of applications

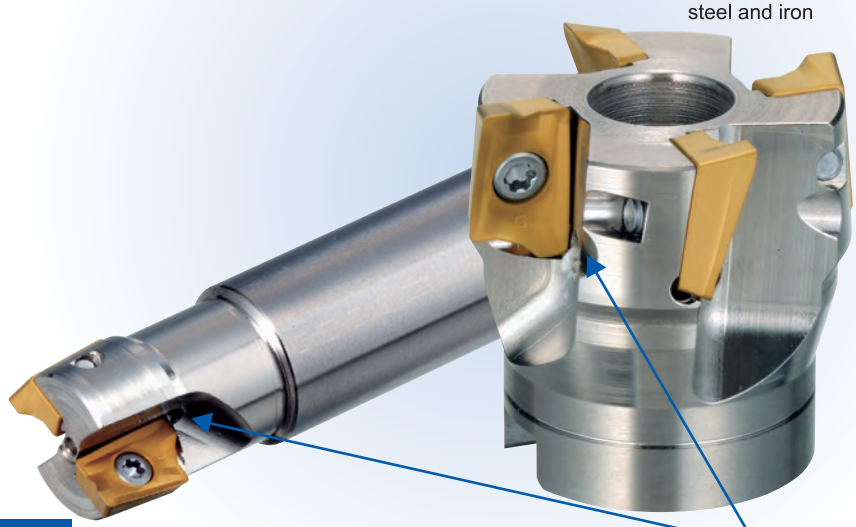


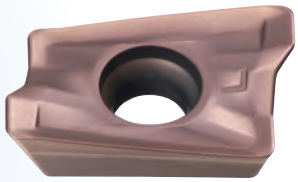
Tough, sharp and highly accurate cutting edge geometry

- The unique shape and strength of the cutting edge has been improved resulting in reduced cutting forces
- Insert facet generates high quality surface finishes

Wide selection of insert geometries and grades

- Available in 3 different geometries (L, G, and H)
- A wide range of machining applications due to the new "Super ZX" coating and CVD "Super FF" coating for steel and iron





Utilizes the new multi-layered PVD "Super ZX" coating and CVD "Super FF" coating

Highly durable

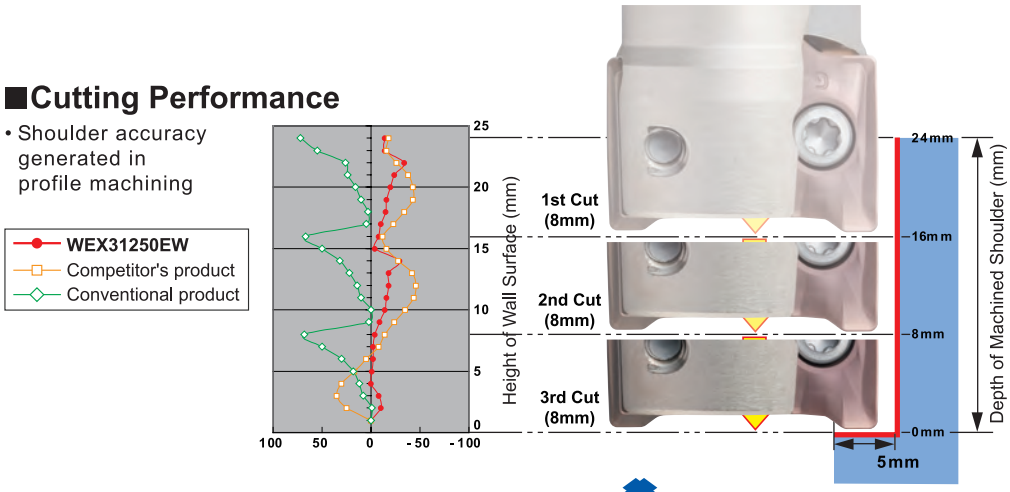
- Cutter body and insert strength provide for high feed rate capabilities

Coolant holes

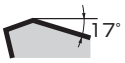
- Efficient chip removal due to new air/coolant hole design

■Cutting Performance

- Shoulder accuracy generated in profile machining



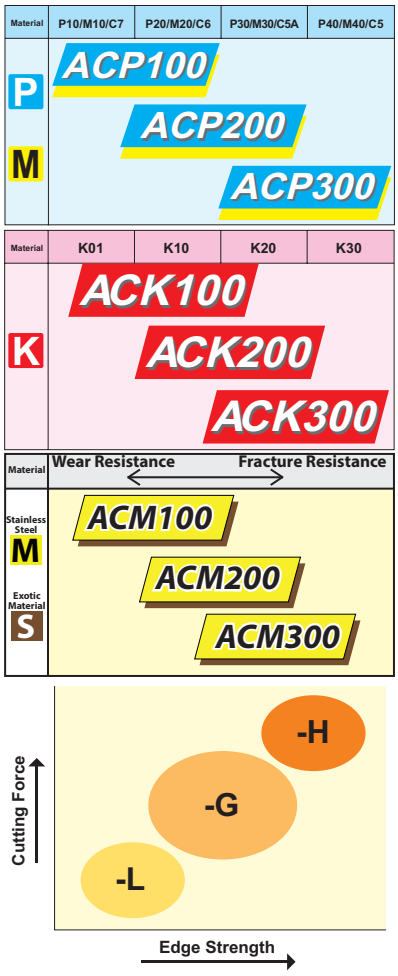
Minimal depth of cut variation due to assembly precision!

Work Material	P Steel K Cast Iron			M Stainless Steel S Heat-Resistant Alloy		N Aluminium Alloy
	L Type	G Type	H Type	E Type	EH Type	S Type
Breaker						
Feature	Low Cutting Force	General Purpose	Strong Edge	General-Purpose Type For Exotic Alloys	Strong Edge Type For Exotic Alloys	High Rake Type
2000 Type Insert Figure	Not Available					
3000 Type Insert Figure						
Application	Light cut, low rigidity milling and reduce burrs	**Main breaker** General purpose to interrupted milling	Roughing, heavy interrupted and hardened steel milling	Light Cutting to General-Purpose	Heavy Interrupted Machining	Aluminium, Non-Ferrous Metal

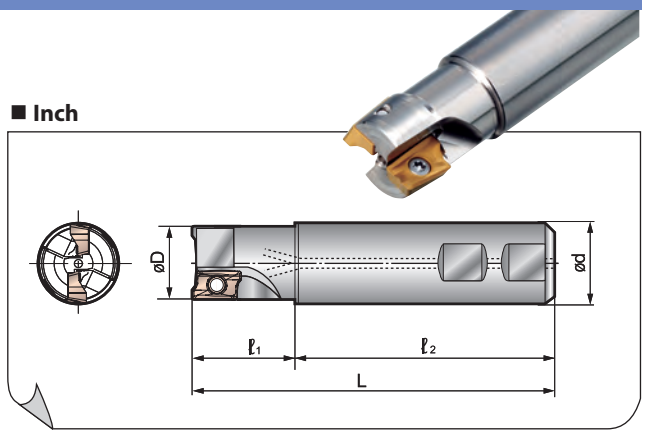
■ Recommended Cutting Conditions

ISO	Material		Hardness	Grade	Depth of Cut .002 -.050	Depth of Cut .050 - .125	Depth of Cut .125 & over	Feed per Tooth
P	Low and Medium Carbon Steels		<250 Bhn	ACP100	775-1310	725-1275	675-1225	.006-.0125
				ACP200	721-1213	675-1180	600-1125	.006-.0135
				ACP300	675-1075	650-1025	525-925	.006-.014
	Medium Carbon Alloy Steels		<250 Bhn	ACP100	600-975	575-950	550-900	.006-.0095
				ACP200	550-900	525-900	500-875	.006-.0115
				ACP300	525-875	500-825	475-800	.006-.0115
	Medium-High Carbon Steels		<250 Bhn	ACP100	600-975	575-950	550-900	.006-.011
				ACP200	575-950	550-925	500-875	.006-.012
				ACP300	575-950	550-925	500-875	.006-.012
	Free Machining Steels and Alloys		<250 Bhn	ACP100	725-1300	700-1250	675-1200	.006-.0135
				ACP200	750-1325	725-1275	675-1225	.006-.0135
				ACP300	675-1075	650-1050	650-1025	.006-.014
	Tool Steels		<250 Bhn	ACP100	475-820	450-790	425-750	.0047-.010
				ACP200	450-820	435-790	425-750	.0047-.011
				ACP300	450-820	425-790	400-725	.0047-.012
			bhn 220 - 350	ACP100	400-775	400-735	400-700	.004-.009
				ACP200	425-750	400-725	375-690	.0045-.010
				ACP300	420-700	420-695	375-685	.0047-.012
			>33 Hrc	ACP100	325-650	300-625	300-590	.003-.007
				ACP200	325-650	300-625	300-590	.0045-.0095
M	Stainless Steel	Martensitic and Ferritic	<250 Bhn	ACM300	535-850	520-830	275-820	.004-.011
			>250 Bhn	ACM200	425-740	415-720	375-675	.004-.012
		Austenitic	<250 Bhn	ACM300	325-875	300-850	275-825	.004-.012
		Precipitation Hardening	<250 Bhn	ACM200	525-850	500-825	175-675	.004-.012
K	Grey Cast Iron		>250 Bhn	ACK200	700-1050	625-925	590-900	.004-.014
				ACK300	600-950	575-875	550-850	.004-.014
			<250 Bhn	ACK200	600-950	525-825	490-800	.004-.014
				ACK300	500-850	475-775	450-750	.004-.014
	Ductile Iron		>250 Bhn	ACK200	600-925	550-875	490-800	.004-.012
				ACK300	550-825	550-825	450-750	.004-.012
S	Exotic Alloys: Inconel, Hastalloy, Waspalloy, etc.			ACK200	100-160	70-150	60-135	.003-.0075
				ACK300	100-160	70-150	60-135	.004-.0075
N	Non-Ferrous Material			H1	1500-3800	1300-3700	1200-3600	.004-.014
				DL1000	1500-4500	1475-4200	1275-4100	.004-.014

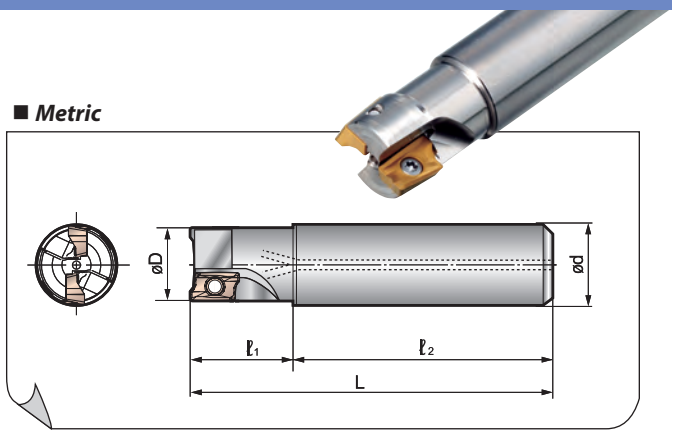
■ Application Range



■ Inch



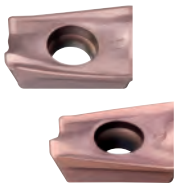
■ Metric

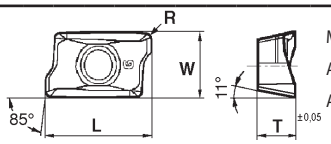


WEX 2000 Weldon Shank Series

Catalog Number	Stock	Dimensions (inch) D	d	L	ℓ1	ℓ2	Ramp Angle	Insert Qty.
WEX20500EW	•	0.500	0.750	3.325	1.309	2.031	5°	1
WEX20625EW	•	0.625	0.625	3.218	1.312	1.906	4°	2
WEX20625EMW	•	0.625	0.625	3.591	1.685	1.906	4°	2
WEX20750EW	•	0.750	0.750	3.561	1.530	2.031	4°	3
WEX20750EMW	•	0.750	0.750	4.091	2.060	2.031	4°	3
WEX20750ELW	•	0.750	0.750	5.091	3.060	2.031	4°	3
WEXC20750EW	•	0.750	0.750	3.561	1.530	2.031	4°	2
WEXC20750ELC	•	0.750	0.750	8.000	2.000	6.000	4°	2
WEX21000EW	•	1.000	1.000	3.811	1.530	2.281	2°	4
WEX21250EW	•	1.250	1.250	4.531	2.250	2.281	1°30′	5

WEX2000 Inserts





Max. Depth of Cut
AXMT12: 10mm (.394")
AXMT17: 14mm (.551")

Sumitomo Cat. No.	P ACP100	P ACP200	P ACP300	K ACK200	K ACK300	M ACM200	M ACM300	N DL1000	N H1	Dimensions (Inches) L	W	T	R	Facet Width
AXMT123504PEERG	●	●	●	●	●					.472	.260	.138	.016	.061
AXMT123504PEERH	●	●	●	●	●					.472	.260	.138	.016	.061
AXMT123508PEERG	●	●	●	●	●					.472	.260	.138	.031	.061
AXMT123508PEERH	●	●	●	●	●					.472	.260	.138	.031	.061
AXMT123512PEERG	●	●	●	●	●					.472	.260	.138	.047	.061
AXMT123512PEERH	●	●	●	●	●					.472	.260	.138	.047	.061
AXMT123504PEERE						●	●			.472	.260	.138	.016	.061
AXMT123508PEERE						●	●			.472	.260	.138	.031	.061
AXMT123508PEEREH						●	●			.472	.260	.138	.031	.061
AXMT123512PEERE						●	●			.472	.260	.138	.047	.061
AXMT123516PEERE						●	●			.472	.260	.138	.063	.061
* AXMT123524PEERE						●	●			.472	.260	.138	.094	.061
* AXMT123532PEERE						●	●			.472	.260	.138	.126	.061
AXET123502PEFRS								●	●	.472	.260	.138	.047	.061
AXET123504PEFRS								●	●	.472	.260	.138	.016	.061
AXET123508PEFRS								●	●	.472	.260	.138	.031	.061

* : insert radii expansion • USA stocked item

Coolant Through Bolts

Catalog Number	Cutter Size
BFXH 3/8 x 1	2.00"
BFXH 1/2 x 1 1/4	2.50"
BFXH 1/2 x 1 1/4	3.00"
BFXH 5/8 x 1 1/4	4.00"
BFXH 3/4 x 1 1/2	5.00"

See page 277 for recommended running parameters

WEX 2000 Shank Series Standard type

Catalog Number	Stock	Dimensions (mm) D	d	L	ℓ1	ℓ2	Ramp Angle	Insert Qty.
WEX2014E	★	14	16	80	25	55	5°	1
WEX2016E	★	16	16	100	25	75	4°	2
WEX2018E	★	18	16	100	25	75	4°	2
WEX2020E	★	20	20	110	30	80	4°	3
WEX2022E	★	22	20	110	30	80	4°	3
WEX2025E	★	25	25	120	35	85	2°	4
WEX2028E	★	28	25	120	35	85	1°30′	4
WEX2030E	★	30	25	120	35	85	1°30′	4
WEX2032E	★	32	32	130	40	90	1°30′	5
WEX2040E	★	40	32	150	30	120	1°	6
WEX2050E	★	50	32	150	30	120	0°30′	7
WEX2063E	★	63	32	150	30	120	0°30′	8

★ Worldwide Warehouse item

WEX 2000 Shank Series Long type

Catalog Number	Stock	Dimensions (mm) D	d	L	ℓ1	ℓ2	Ramp Angle	Insert Qty.
WEX2014EL	★	14	16	120	25	95	5°	1
WEX2016EL	•	16	16	145	25	120	4°	2
WEX2018EL	★	18	16	145	25	120	4°	2
WEX2020EL	★	20	20	150	40	110	4°	2
WEX2022EL	★	22	20	150	30	120	4°	2
WEX2025EL	★	25	25	170	50	120	2°	2
WEX2028EL	★	28	25	170	30	140	1°30′	2
WEX2030EL	★	30	25	170	30	140	1°30′	2
WEX2032EL	★	32	32	180	60	120	1°30′	2
WEX2040EL	★	40	32	180	30	150	1°	2

★ Worldwide Warehouse item

Hardware (Metric)


Catalog Number	Insert Screw*	Insert Wrench
WEX2014-WEX2018	BFTX0305IP	TRDR08IP
WEX2020-WEX2063	BFTX0306IP	TRDR08IP

* Torque specifications for insert screw=18-22 in/lbs.

Hardware (Inch)

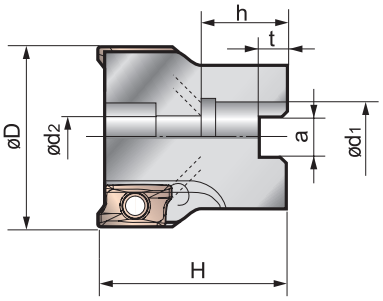

Catalog Number	Insert Screw*	Insert Wrench
WEX20500-WEX20625	BFTX0305IP	TRDR08IP
WEX20750-WEX21250	BFTX0306IP	TRDR08IP

* Torque specifications for insert screw=18-22 in/lbs.

INCH & *METRIC*

WEX 2000

APPLICABLE INSERT: AXMT AXET



WEX 2000 Shell Mill Series (INCH)

Catalog Number	Stock	Dimensions (Inches)							Ramp Angle	Insert Qty.
		D	d_1	d_2	a	t	H	h		
WEX21500R	•	1.500	0.750	0.406	0.312	0.187	1.562	0.750	2°	6
WEX22000R	•	2.000	0.750	0.406	0.312	0.187	1.562	0.750	1°	7
WEX22500R	•	2.500	1.000	0.531	0.375	0.218	1.562	0.750	0°30′	8

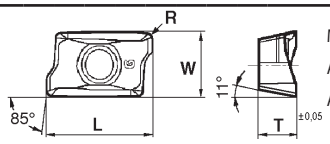
• USA stocked item

WEX 2000 Shell Mill Series (METRIC)

Catalog Number	Stock	Dimensions (mm)							Ramp Angle	Insert Qty.
		D	d_1	d_2	a	t	H	h		
WEX2040F	★	40	16	9	8.4	5.6	40	18	2°	6
WEX2050F	★	50	22	11	10.4	6.3	40	20	1°	7
WEX2063F	★	63	22	11	10.4	6.3	40	20	0°30′	8

★ Worldwide Warehouse item

WEX2000 Inserts



Max. Depth of Cut
AXMT12: 10mm (.394")
AXMT17: 14mm (.551")

Sumitomo Cat. No.	P			K		M/S		N		Dimensions (Inches)				
	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	DL1000	H1	L	W	T	R	Facet Width
AXMT123504PEERG	●	●	●	●	●					.472	.260	.138	.016	.061
AXMT123504PEERH	●	●	●	●	●					.472	.260	.138	.016	.061
AXMT123508PEERG	●	●	●	●	●					.472	.260	.138	.031	.061
AXMT123508PEERH	●	●	●	●	●					.472	.260	.138	.031	.061
AXMT123512PEERG	●	●	●	●	●					.472	.260	.138	.047	.061
AXMT123512PEERH	●	●	●	●	●					.472	.260	.138	.047	.061
AXMT123504PEERE						●	●			.472	.260	.138	.016	.061
AXMT123508PEERE						●	●			.472	.260	.138	.031	.061
AXMT123508PEEREH						●	●			.472	.260	.138	.031	.061
AXMT123512PEERE						●	●			.472	.260	.138	.047	.061
AXMT123516PEERE						●	●			.472	.260	.138	.063	.061
* **AXMT123524PEERE**						●	●			.472	.260	.138	.094	.061
* **AXMT123532PEERE**						●	●			.472	.260	.138	.126	.061
AXET123502PEFRS								●	●	.472	.260	.138	.047	.061
AXET123504PEFRS								●	●	.472	.260	.138	.016	.061
AXET123508PEFRS								●	●	.472	.260	.138	.031	.061

* : insert radii expansion • USA stocked item

Hardware (Inch)

Catalog Number	Insert Screw*	Insert Wrench
WEX21500-WEX22500	BFTX0306IP	TRDR08IP

* Torque specifications for insert screw=18-22 in/lbs.

Hardware (Metric)

Catalog Number	Insert Screw*	Insert Wrench
WEX2040-WEX2063	BFTX0306IP	TRDR08IP

* Torque specifications for insert screw=18-22 in/lbs.

Coolant Through Bolts

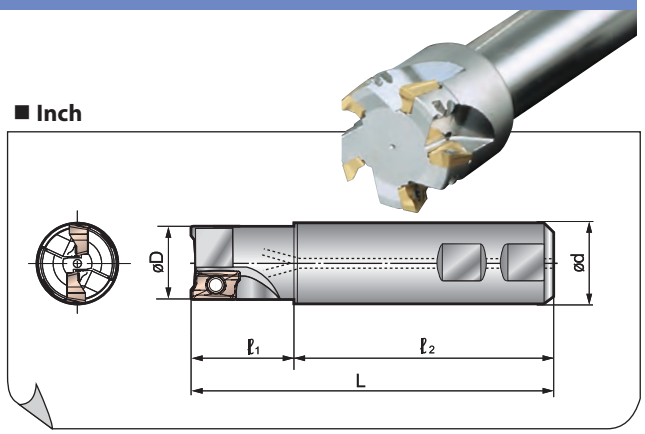
Catalog Number	Cutter Size
BFXH 3/8 x 1	**2.00"**
BFXH 1/2 x 1 1/4	**2.50"**
BFXH 1/2 x 1 1/4	**3.00"**
BFXH 5/8 x 1 1/4	**4.00"**
BFXH 3/4 x 1 1/2	**5.00"**

See page 277 for recommended running parameters

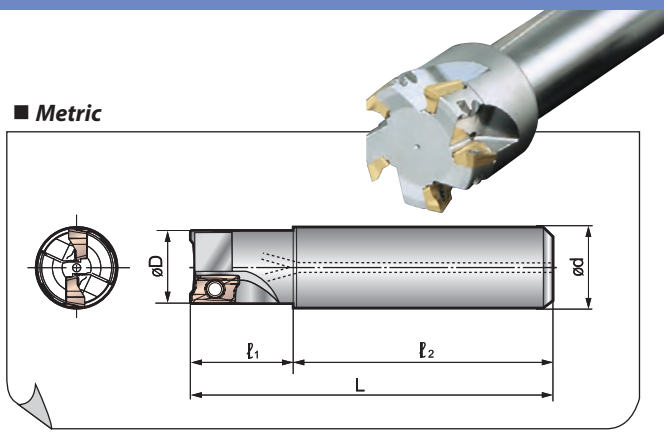
WEX 3000

WEX 3000

■ Inch



■ Metric

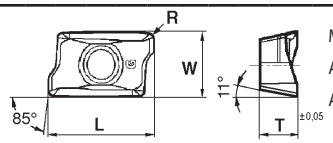


WEX 3000 Weldon Shank Series

Catalog Number	Stock	Dimensions (inch) D	d	L	ℓ1	ℓ2	Ramp Angle	Insert Qty.
WEX31000EW	•	1.000	1.000	3.811	1.530	2.281	5°	2
WEX31000EMW	•	1.000	1.000	4.841	2.560	2.281	5°	2
WEX31000ELW	•	1.000	1.000	6.341	4.060	2.281	5°	2
WEX31250EW	•	1.250	1.250	4.531	2.250	2.281	3°	3
WEX31250EMW	•	1.250	1.250	6.381	4.100	2.281	3°	3
WEX31500EW	•	1.500	1.250	4.531	2.250	2.281	2°	4
WEX32000EW	•	2.000	1.250	4.531	2.250	2.281	2°	5

• USA stocked item

WEX3000 Inserts



Max. Depth of Cut
AXMT12: 10mm (.394")
AXMT17: 14mm (.551")

Sumitomo Cat. No.	P ACP100	P ACP200	P ACP300	K ACK200	K ACK300	M/S ACM200	M/S ACM300	N DL1000	N H1	Dimensions (Inches) L	W	T	R	Facet Width
AXMT170504PEERG	●	●	●	●	●					.689	.402	.219	.016	.118
AXMT170508PEERG	●	●	●	●	●					.689	.402	.219	.031	.118
AXMT170508PEERH	●	●	●	●	●					.689	.402	.219	.031	.118
AXMT170508PEERL	●	●	●	●	●					.689	.402	.219	.031	.118
AXMT170512PEERG	●	●	●	●	●					.689	.402	.219	.047	.118
AXMT170512PEERH		●		●						.689	.402	.219	.047	.118
AXMT170516PEERG	●	●	●	●	●					.689	.402	.219	.063	.118
AXMT170520PEERG	●	●	●	●	●					.689	.402	.219	.079	.118
AXMT170530PEERG	●	●	●	●	●					.689	.402	.219	.118	.118
AXMT170532PEERG		●								.689	.402	.219	.126	.118
AXMT170504PEERE						●	●			.689	.402	.219	.016	.118
AXMT170508PEERE						●	●			.689	.402	.219	.031	.118
AXMT170508PEEREH						●	●			.689	.402	.219	.031	.118
AXET170512PEERE						●	●			.689	.402	.219	.047	.118
AXET170516PEERE						●	●			.689	.402	.219	.063	.118
AXET170520PEERE						●	●			.689	.402	.219	.079	.118
✱ AXET170524PEERE						●	●			.689	.402	.219	.094	.118
AXET170530PEERE						●	●			.689	.402	.219	.118	.118
✱ AXET170531PEERE						●	●			.689	.402	.219	.122	.118
✱ AXET170548PEERE						●	●			.689	.402	.219	.189	.118
✱ AXET170563PEERE						●	●			.689	.402	.219	.248	.118
AXET170502PEFRS								●	●	.689	.402	.219	.008	.118
AXET170504PEFRS								●	●	.689	.402	.219	.016	.118
AXET170508PEFRS								●	●	.689	.402	.219	.031	.118

✱ : insert radii expansion • USA stocked item

WEX 3000 Shank Series Standard Type

Catalog Number	Stock	Dimensions (mm) D	d	L	ℓ1	ℓ2	Ramp Angle	Insert Qty.
WEX3025E	★	25	25	120	35	85	5°	2
WEX3032E	★	32	32	130	40	90	3°	3
WEX3040E	★	40	32	170	50	120	2°	4
WEX3050E	★	50	32	170	50	120	1°	5
WEX3063E	★	63	32	170	50	120	0°30′	6

★ Worldwide Warehouse item

WEX 3000 Shank Series Short Type

Catalog Number	Stock	Dimensions (mm) D	d	L	ℓ1	ℓ2	Ramp Angle	Insert Qty.
WEX3050ES	★	50	32	135	25	110	1°	5
WEX3063ES	★	63	32	135	25	110	0°30′	6

★ Worldwide Warehouse item

WEX 3000 Shank Series Long Type

Catalog Number	Stock	Dimensions (mm) D	d	L	ℓ1	ℓ2	Ramp Angle	Insert Qty.
WEX3025EL	★	25	25	170	50	120	5°	2
WEX3028EL	★	28	25	170	50	120	5°	2
WEX3030EL	★	30	25	180	60	120	5°	2
WEX3032EL	★	32	32	180	60	120	3°	2
WEX3035EL	★	35	32	180	60	120	2°	2
WEX3040EL	★	40	32	220	80	140	2°	2

★ Worldwide Warehouse item

WEX 3000 Shank Series Coarse Pitch Type

Catalog Number	Stock	Dimensions (mm) D	d	L	ℓ1	ℓ2	Ramp Angle	Insert Qty.
WEX3040E-C	★	40	32	170	50	120	2°	3
WEX3050E-C	★	50	32	170	50	120	1°	3
WEX3063E-C	★	63	32	170	50	120	0°30′	4

★ Worldwide Warehouse item

WEX 3000 Shank Series Short & Coarse Pitch Type

Catalog Number	Stock	Dimensions (mm) D	d	L	ℓ1	ℓ2	Ramp Angle	Insert Qty.
WEX3050ES-C	★	50	32	135	25	110	1°	3
WEX3063ES-C	★	63	32	135	25	110	0°30′	4

★ Worldwide Warehouse item

Hardware (Inch)

Catalog Number	Insert Screw*	Insert Wrench
WEX31000	BFTX0407IP	TRDR15IP
WEX31250-WEX32000	BFTX0409IP	TRDR15IP

* Torque specifications for insert screw=27-31 in/lbs.

Hardware (Metric)

Catalog Number	Insert Screw*	Insert Wrench
WEX3025	BFTX0407IP	TRDR15IP
WEX3032-WEX3063	BFTX0409IP	TRDR15IP

* Torque specifications for insert screw=27-31 in/lbs.

Fig 1

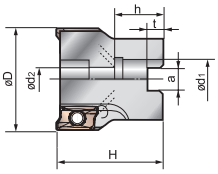
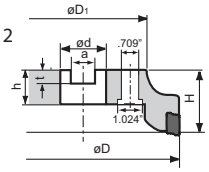


Fig 2



WEX 3000 Shell Mill Series (Inch)

Catalog Number	Stock	Dimensions (Inches) D	d_1	d_2	a	t	H	h	Ramp Angle	Insert Qty.	Fig.
WEX32000R	•	2.000	0.750	0.406	0.312	0.187	1.562	0.750	1°	5	1
WEX32500R	•	2.500	1.000	0.531	0.375	0.218	1.562	0.750	0°30′	6	1
WEXC33000R	•	3.000	1.000	0.531	0.375	0.218	1.750	0.750	0°30′	5	1
WEX33000R	•	3.000	1.000	0.531	0.375	0.218	1.750	0.750	0°30′	7	1
WEXC34000R	•	4.000	1.250	0.656	0.500	0.281	2.000	0.750	N/A	6	1
WEXC34000R-1.50	•	4.000	1.500	0.781	0.626	0.380	2.461	1.535	N/A	6	1
WEX34000R	•	4.000	1.250	0.656	0.500	0.281	2.000	0.750	N/A	8	1
WEX34000R-150	•	4.000	1.500	0.781	0.626	0.380	2.461	1.535	N/A	8	1
WEXC36000R	•	6.000	1.500	1.500	0.625	0.380	2.500	1.060	N/A	8	1
WEX38000R	•	8.000	2.500	2.500	1.000	0.560	2.500	1.250	N/A	12	2

• USA stocked item

WEX 3000 Shell Mill Series Standard Type (Metric)

Catalog Number	Stock	Dimensions (mm) D	d_1	d_2	a	t	H	h	Ramp Angle	Insert Qty.
WEX3040F	★	40	16	9	8.4	5.6	40	18	2°	4
WEX3050F	★	50	22	11	10.4	6.3	40	20	1°	5
WEX3063F	★	63	22	11	10.4	6.3	40	20	0°30′	6
WEX3080R	★	80	25.40	13	9.5	6	50	25	0°30′	4
WEX3100R	★	100	31.75	–	12.7	8	63	–	N/A	5
WEX3125R	★	125	38.10	–	15.9	10	63	–	N/A	6

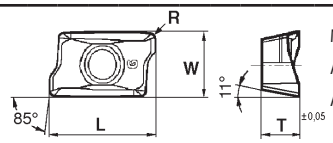
★ Worldwide Warehouse item

WEX 3000 Shell Mill Series Fine Pitch Type (Metric)

Catalog Number	Stock	Dimensions (mm) D	d_1	d_2	a	t	H	h	Ramp Angle	Insert Qty.
WEXF3080R	★	80	25.40	13	9.5	6	50	25	0°30′	7
WEXF3100R	★	100	31.75	–	12.7	8	63	–	N/A	8
WEXF3125R	★	125	38.10	–	15.9	10	63	–	N/A	9

★ Worldwide Warehouse item

WEX3000 Inserts



Max. Depth of Cut
AXMT12: 10mm (.394")
AXMT17: 14mm (.551")

Sumitomo Cat. No.	P ACP100	P ACP200	P ACP300	K ACK200	K ACK300	M/S ACM200	M/S ACM300	N DL1000	N H1	Dimensions (Inches) L	W	T	R	Facet Width
AXMT170504PEERG	●	●	●	●	●					.689	.402	.219	.016	.118
AXMT170508PEERG	●	●	●	●	●					.689	.402	.219	.031	.118
AXMT170508PEERH	●	●	●	●	●					.689	.402	.219	.031	.118
AXMT170508PEERL	●	●	●	●	●					.689	.402	.219	.031	.118
AXMT170512PEERG	●	●	●	●	●					.689	.402	.219	.047	.118
AXMT170512PEERH		●		●						.689	.402	.219	.047	.118
AXMT170516PEERG	●	●	●	●	●					.689	.402	.219	.063	.118
AXMT170520PEERG	●	●	●	●	●					.689	.402	.219	.079	.118
AXMT170530PEERG	●	●	●	●	●					.689	.402	.219	.118	.118
AXMT170532PEERG		●								.689	.402	.219	.126	.118
AXMT170504PEERE						●	●			.689	.402	.219	.016	.118
AXMT170508PEERE						●	●			.689	.402	.219	.031	.118
AXMT170508PEEREH						●	●			.689	.402	.219	.031	.118
AXET170512PEERE						●	●			.689	.402	.219	.047	.118
AXET170516PEERE						●	●			.689	.402	.219	.063	.118
AXET170520PEERE						●	●			.689	.402	.219	.079	.118
✻ AXET170524PEERE						●	●			.689	.402	.219	.094	.118
AXET170530PEERE						●	●			.689	.402	.219	.118	.118
✻ AXET170531PEERE						●	●			.689	.402	.219	.122	.118
✻ AXET170548PEERE						●	●			.689	.402	.219	.189	.118
✻ AXET170563PEERE						●	●			.689	.402	.219	.248	.118
AXET170502PEFRS								●	●	.689	.402	.219	.008	.118
AXET170504PEFRS								●	●	.689	.402	.219	.016	.118
AXET170508PEFRS								●	●	.689	.402	.219	.031	.118

✻ : insert radii expansion • USA stocked item

Hardware (Inch)

Catalog Number	Insert Screw*	Insert Wrench
WEX32000-WEX34000	BFTX0409IP	TRDR15IP

* Torque specifications for insert screw=27-31 in/lbs.

Hardware (Metric)

Catalog Number	Insert Screw*	Insert Wrench
WEX3040-WEX3125	BFTX0409IP	TRDR15IP

* Torque specifications for insert screw=27-31 in/lbs.

Coolant Through Bolts

Catalog Number	Cutter Size
BFXH 3/8 x 1	2.00"
BFXH 1/2 x 1 1/4	2.50"
BFXH 1/2 x 1 1/4	3.00"
BFXH 5/8 x 1 1/4	4.00"
BFXH 3/4 x 1 1/2	5.00"

WRX Series

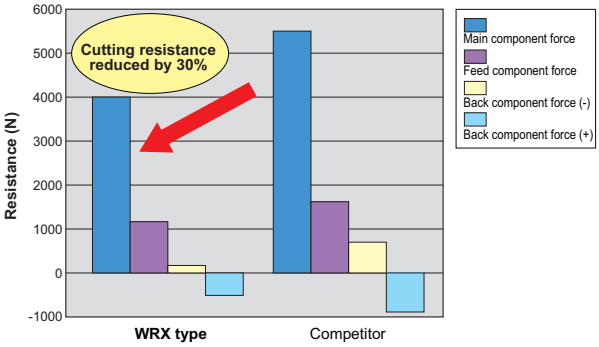
Shoulder Milling Cutters

High Efficiency Deep Shoulder WaveMill

Features & Benefits

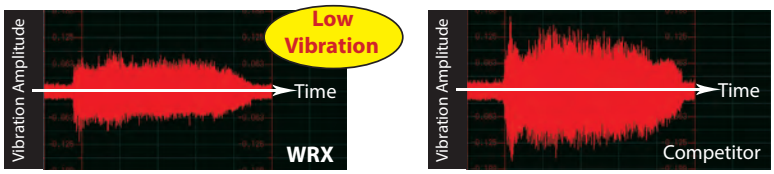
- Long cutting edges are arranged in multiple stages to enable high efficiency milling
- Optimized cutting positions provide low cutting resistance and low vibration
- Dual level cutting edge design reduces number of passes
- Lead groove and special pocket shape offer smooth chip evacuation and high body rigidity
- Low edge supporting face reduces bottom edge breakage and provides high reliability

Cutting Resistance



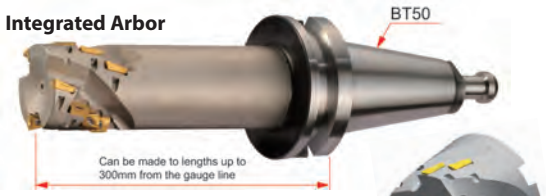
Material: Medium carbon steel
Tool: WRX2025E2725
SFM=330 IPT=0.006 Cutting Width=0.394
D.O.C.=1.000 Dry

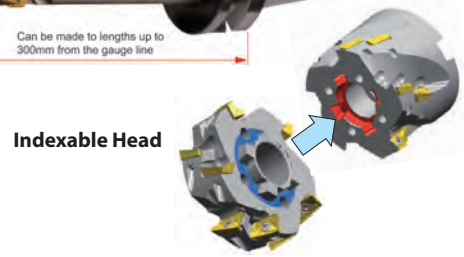
Vibration Comparison



Material: Medium carbon steel
Tool: WRX3080RS5332
SFM=490 IPT=0.008 Cutting Width=0.197
D.O.C.=1.575 Dry

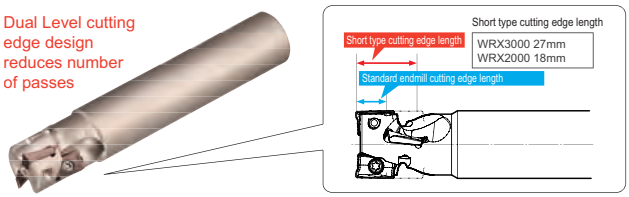
Special Tooling



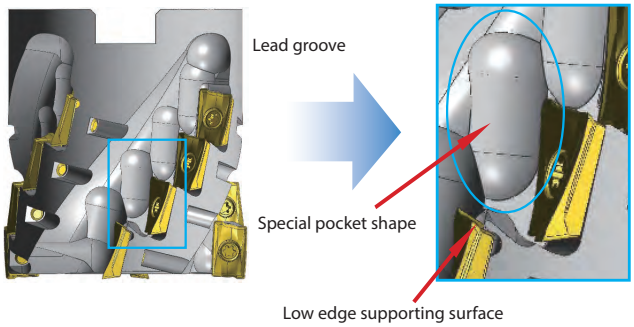


Unique Clamping Design

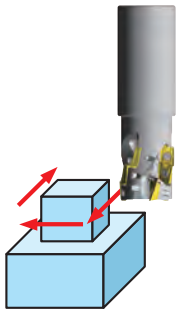
1) Unique claming combines spigot and drive
2) Easy position adjustment minimizes deterioration of run-out precision
3) Available as an integrated unit with an arbor



Characteristics



Application Example



Part/ Work Material	Stainless Steel Part		
Tool	Manufacturer	Sumitomo	Competitor
	Body	WRX3040E4042	ø40
	Insert	AXMT170508PEERG	0.59 in *(15mm)*
	Grade	ACP300	PVD
	Tool Dia. in *(mm)*	1.57 *(40)*	40
	Total Teeth	9	6
	Effective Teeth	3	2
Conditions	Cutting Speed	4.92 sfm *(125mm/min)*	4.92 sfm *(125mm/min)*
	Feed	0.008 ipt *(0.2 mm/t)*	0.008 ipt *(0.2 mm/t)*
	Axial Cutting Depth	1.575 in *(40mm)*	1.575 in *(40mm)*
	Radial Cuting Depth	0.1969 in *(5mm)*	0.1969 in *(5mm)*
	Dry/Wet	Wet	Wet
Results	Tool Life/ Corner	20	5 to 10
Evaluation	Stable machining with double the competitor's tool life and no breakage		

Recommended Cutting Conditions

Tool: WRX3050E5342 Insert: AXMT170508PEER-G
D.O.C. = 1.969 in. (50 mm)
Cutting Width = 0.3937 in. (10 mm)
Dry

Clsifcation	Work Material		Hardness (HB)	Chipbreaker	Grades																							
					ACP100			ACP200			ACP300			ACK200			ACK300			DL1000			ACM 200			ACM300		
					Feed Rate - IPT (mm/tooth)																							
					.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008
					Cutting Speed - SFM (m/min)																							
P	Carbon steel		125	G	1049 (320)	984 (300)	918 (280)	984 (300)	918 (280)	853 (260)	918 (280)	853 (260)	787 (240)																
			190	G	787 (240)	721 (220)	656 (200)	721 (220)	656 (200)	590 (180)	656 (200)	590 (180)	524 (160)															
	Hardened carbon steel		250	G	656 (200)	590 (180)	524 (160)	590 (180)	524 (160)	459 (140)	524 (160)	459 (140)	393 (120)															
			270	G	524 (160)	459 (140)	393 (120)	492 (150)	426 (130)	360 (110)	426 (130)	360 (110)	328 (100)															
			300	G	393 (120)	328 (100)	262 (80)	328 (100)	262 (80)	196 (60)	262 (80)	196 (60)	164 (50)															
	Low alloy steel		180	G	721 (220)	656 (200)	590 (180)	656 (200)	590 (180)	557 (170)	590 (180)	557 (170)	492 (150)															
	Hardened alloy steel		275	G	459 (140)	393 (120)	328 (100)	426 (130)	360 (110)	328 (100)	360 (110)	328 (100)	262 (80)															
			300	G	426 (130)	360 (110)	295 (90)	360 (110)	295 (90)	262 (80)	328 (100)	262 (80)	196 (60)															
			350	G	341 (104)	262 (80)	209 (64)	288 (88)	236 (72)	183 (56)	236 (72)	183 (56)	131 (40)															
	High alloy steel		200	G	656 (200)	590 (180)	524 (160)	590 (180)	524 (160)	459 (140)	524 (160)	459 (140)	393 (120)															
	Hardened high alloy steel		325	G	328 (100)	262 (80)	196 (60)	262 (80)	196 (60)	164 (50)	196 (60)	164 (50)	98 (30)															
M	Stainless Steel	300 Series	200	G	582 SFM	517 SFM	451 SFM	484 SFM	451 SFM	385 SFM	451 SFM	385 SFM	353 SFM													625 SFM	575 SFM	525 SFM
			240	G	484 SFM	418 SFM	353 SFM	418 SFM	353 SFM	320 SFM	353 SFM	320 SFM	254 SFM													580 SFM	525 SFM	480 SFM
			180	G	615 SFM	549 SFM	484 SFM	549 SFM	484 SFM	451 SFM	484 SFM	451 SFM	385 SFM													650 SFM	600 SFM	550 SFM
		Precipitation Hardening	>240																				300 ~ 800 SFM	275 ~ 775 SFM	250 ~ 750 SFM			
K	Cast iron		200	G										787 (240)	721 (220)	656 (200)	721 (220)	656 (200)	590 (180)									
	Nodular cast iron		280	G										524 (160)	459 (140)	393 (120)	459 (140)	393 (120)	328 (100)									
S	Super alloys			G										164 (50)	98 (30)		164 (50)	98 (30)										
N	Aluminum alloys																			3280 (1000)	2624 (800)	1968 (600)						

WRX Series

Rake Angle	Radial	13° to 16°
	Axial	16° to 24°

18 to 36mm 0°

P Steel	M Stainless Steel	K Cast Iron	N Non-Ferrous Metal	N Aluminum	S Exotic Alloy	H Hardened Steel
●	●	●	●	●	●	

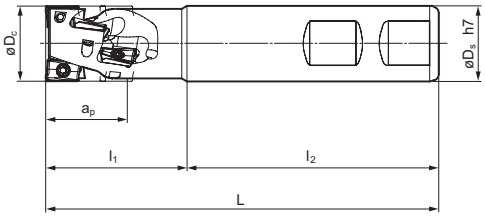
Weldon

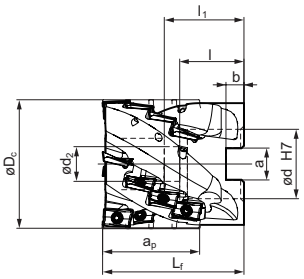
Rake Angle	Radial	16° to 17°
	Axial	24°

18 to 36mm 0°

P Steel	M Stainless Steel	K Cast Iron	N Non-Ferrous Metal	N Aluminum	S Exotic Alloy	H Hardened Steel
●	●	●	●	●	●	

Shell





WRX20000 Endmill Cutter Bodies - Weldon Shank - INCH

Catalog Number	Stock	Dimensions (inch) øDc	øDs	L	l1	l2	ap	Steps	Effective Teeth	Total Teeth	Weight lbs (kg)
WRX21000E100-150	●	1.000	1.000	4.250	1.950	2.300	1.500	4	2	8	1.10 (0.5)
WRX21250E125-175	●	1.250	1.250	4.500	2.200	2.300	1.750	5	3	15	1.48 (0.7)
WRX21500E125-200	●	1.500	1.250	4.800	2.500	2.300	2.126	6	4	24	1.82 (0.8)

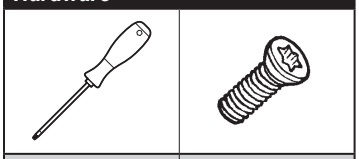
WRX2000 Shell Mill Cutter Bodies - METRIC

Catalog Number	Stock	Dimensions (mm) øDc	ød	ød2	Lf	l1	l2	a	b	ap	Steps	Effective Teeth	Total Teeth	Weight lbs (kg)
WRX2040RS1816*	★	40	16	9	50	28	18	8.4	5.6	18	2	5	10	0.66 (0.3)
WRX2040RS3616	★	40	16	9	55	28	18	8.4	5.6	36	4	4	16	1.10 (0.5)
WRX2050RS1822*	★	50	22	11	50	26	20	10.4	6.3	18	2	5	10	0.88 (0.4)
WRX2050RS3622	★	50	22	11	55	26	20	10.4	6.3	36	4	4	16	1.10 (0.5)

WRX2000 Endmill Cutter Bodies - METRIC

Catalog Number	Stock	Dimensions (mm) øDc	øDs	L	l1	l2	ap	Steps	Effective Teeth	Total Teeth	Weight lbs (kg)
WRX2020E1820*	★	20	20	120	40	80	18	2	2	4	0.66 (.03)
WRX2020E3620	★	20	20	130	45	85	36	4	1	4	0.66 (.03)
WRX2025E1825*	★	25	25	130	45	85	18	2	3	6	0.88 (.04)
WRX2025E2725	★	25	25	130	45	85	27	3	2	6	0.88 (.04)
WRX2032E1832*	★	32	32	140	50	90	18	2	4	8	1.76 (.08)
WRX2032E2732	★	32	32	130	45	85	27	3	3	9	1.54 (.07)
WRX2040E1832*	★	40	32	160	40	120	18	2	5	10	2.43 (1.1)
WRX2040E3642	★	40	42	130	45	85	36	4	4	16	2.65 (1.2)

Hardware

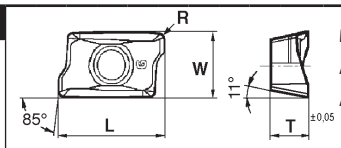


Wrench	Screw
TRDR08IP	BFTX0306IP

● = USA Stocked Item ★ = Worldwide Warehouse Item

*Short Cutting Edge Type

WEX2000 Inserts



Max. Depth of Cut
AXMT12: 10mm (.394")
AXMT17: 14mm (.551")

	Sumitomo Cat. No.	P ACP100	P ACP200	P ACP300	K ACK200	K ACK300	M/S ACM200	M/S ACM300	N DL1000	N H1	Dimensions (Inches) L	W	T	R	Facet Width
	AXMT123504PEERG	●	●	●	●	●					.472	.260	.138	.016	.061
	AXMT123504PEERH	●	●	●	●	●					.472	.260	.138	.016	.061
	AXMT123508PEERG	●	●	●	●	●					.472	.260	.138	.031	.061
	AXMT123508PEERH	●	●	●	●	●					.472	.260	.138	.031	.061
	AXMT123512PEERG	●	●	●	●	●					.472	.260	.138	.047	.061
	AXMT123512PEERH	●	●	●	●	●					.472	.260	.138	.047	.061
	AXMT123504PEERE						●	●			.472	.260	.138	.016	.061
	AXMT123508PEERE						●	●			.472	.260	.138	.031	.061
	AXMT123508PEEREH						●	●			.472	.260	.138	.031	.061
	AXMT123512PEERE						●	●			.472	.260	.138	.047	.061
	AXMT123516PEERE						●	●			.472	.260	.138	.063	.061
*	AXMT123524PEERE						●	●			.472	.260	.138	.094	.061
*	AXMT123532PEERE						●	●			.472	.260	.138	.126	.061
	AXET123502PEFRS								●	●	.472	.260	.138	.047	.061
	AXET123504PEFRS								●	●	.472	.260	.138	.016	.061
	AXET123508PEFRS								●	●	.472	.260	.138	.031	.061

* : insert radii expansion • USA stocked item

See page 283
for recommended
running parameters

Weldon

Rake Angle		
	Radial	12° to 13°
	Axial	20° to 22°

27 to 53mm 0°

P	M	K	N	N	S	H
Steel	Stainless Steel	Cast Iron	Non-Ferrous Metal	Aluminium	Exotic Alloy	Hardened Steel
●	●	●	●	●	●	

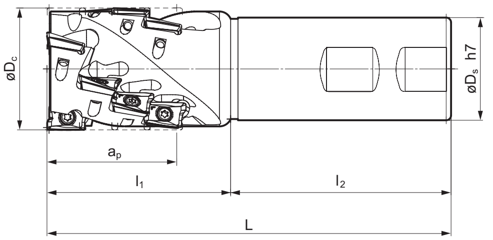
Shell

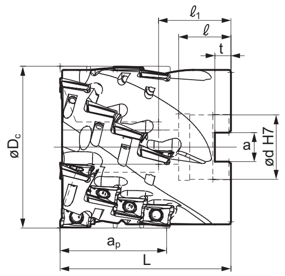
Rake Angle		
	Radial	13° to 15°
	Axial	22° to 24°

27 to 53mm 0°

P	M	K	N	N	S	H
Steel	Stainless Steel	Cast Iron	Non-Ferrous Metal	Aluminium	Exotic Alloy	Hardened Steel
●	●	●	●	●	●	

WRX SERIES





WRX3000 Endmill Cutter Bodies - Weldon Shank - INCH

Catalog Number	Stock	Dimensions (inch)						Steps	Effective Teeth	Total Teeth	Weight lbs (kg)
		$øD_c$	$øD_s$	L	l_1	l_2	a_p				
WRX32000E125-250	●	2.000	1.250	5.000	2.700	2.300	2.500	5	3	15	2.56 *(1.2)*

WRX30000 Shell Mill Cutter Bodies - INCH

Catalog Number	Stock	Dimensions (inch)							Steps	Effective Teeth	Total Teeth	Weight lbs (kg)
		$øD_c$	$øD_s$	L	l	b	a_p	a				
WRX32500R100-250	●	2.500	1.000	2.750	1.023	0.236	2.500	0.375	5	4	20	3.42 *(1.6)*
WRX33000R125-300	●	3.000	1.250	3.375	1.260	0.315	3.000	0.500	6	5	30	6.24 *(2.8)*

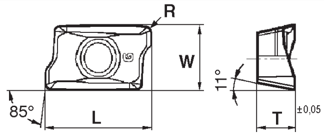
WRX3000 Endmill Cutter Bodies - METRIC

Catalog Number	Stock	Dimensions *(mm)*						Steps	Effective Teeth	Total Teeth	Weight lbs *(kg)*
		$øD_c$	$øD_s$	L	l_1	l_2	a_p				
WRX3040E2732*	★	*40*	*32*	*180*	*60*	*120*	*27*	2	3	6	2.65 *(1.2)*
WRX3040E4042	★	*40*	*42*	*150*	*65*	*85*	*40*	3	3	9	2.87 *(1.3)*
WRX3050E2732*	★	*50*	*32*	*180*	*60*	*120*	*32*	2	4	8	3.09 *(1.4)*
WRX3050E5342	★	*50*	*42*	*165*	*75*	*90*	*53*	4	3	12	3.97 *(1.8)*

WRX3000 Shell Mill Cutter Bodies - METRIC

Catalog Number	Stock	Dimensions *(mm)*									Steps	Effective Teeth	Total Teeth	Weight lbs *(kg)*
		$øD_c$	ød	$ød_2$	L_f	l_1	l	a	b	a_p				
WRX3050RS2722*	★	*50*	*22*	*11*	*50*	*26*	*20*	*10.4*	*6.3*	*27*	2	4	8	0.88 *(.04)*
WRX3050RS5322	★	*50*	*22*	*11*	*70*	*26*	*20*	*10.4*	*6.3*	*53*	4	3	12	1.32 *(.06)*
WRX3063RS2722*	★	*63*	*22*	*11*	*50*	*26*	*20*	*10.4*	*6.3*	*27*	2	5	10	1.54 *(.07)*
WRX3063RS5327	★	*63*	*27*	*13.5*	*70*	*30*	*23*	*12.4*	*7*	*53*	4	4	16	2.20 *(1.0)*
WRX3080R27254*	★	*80*	*25.4*	*13*	*50*	*31*	*25*	*9.5*	*6*	*27*	2	6	12	2.43 *(1.1)*
WRX3080RS5332	★	*80*	*32*	*17*	*85*	*36*	*26*	*14.4*	*8*	*53*	4	5	20	4.85 *(2.2)*
WRX3100R27317*	★	*100*	*31.75*	*17*	*63*	*39.5*	*32.5*	*12.7*	*8*	*27*	2	7	14	4.41 *(2.0)*
WRX3100RS5340	★	*100*	*40*	*21*	*85*	*36*	*30*	*16.4*	*9.5*	*53*	4	6	24	7.72 *(3.5)*

WEX3000 Inserts

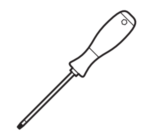
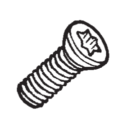


Max. Depth of Cut
AXMT12: 10mm (.394″)
AXMT17: 14mm (.551″)

Sumitomo Cat. No.	P			K		M / S		N		Dimensions (Inches)				
	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	DL1000	H1	L	W	T	R	Facet Width
AXMT170504PEERG	●	●	●	●	●					.689	.402	.219	.016	.118
AXMT170508PEERG	●	●	●	●	●					.689	.402	.219	.031	.118
AXMT170508PEERH	●	●	●	●	●					.689	.402	.219	.031	.118
AXMT170508PEERL	●	●	●	●	●					.689	.402	.219	.031	.118
AXMT170512PEERG	●	●	●	●	●					.689	.402	.219	.047	.118
AXMT170512PEERH		●		●						.689	.402	.219	.047	.118
AXMT170516PEERG	●	●	●	●	●					.689	.402	.219	.063	.118
AXMT170520PEERG	●	●	●	●	●					.689	.402	.219	.079	.118
AXMT170530PEERG	●	●	●	●	●					.689	.402	.219	.118	.118
AXMT170532PEERG		●								.689	.402	.219	.126	.118
AXMT170504PEERE						●	●			.689	.402	.219	.016	.118
AXMT170508PEERE						●	●			.689	.402	.219	.031	.118
AXMT170508PEEREH						●	●			.689	.402	.219	.031	.118
AXET170512PEERE						●	●			.689	.402	.219	.047	.118
AXET170516PEERE						●	●			.689	.402	.219	.063	.118
AXET170520PEERE						●	●			.689	.402	.219	.079	.118
✻ **AXET170524PEERE**						●	●			.689	.402	.219	.094	.118
AXET170530PEERE						●	●			.689	.402	.219	.118	.118
✻ **AXET170531PEERE**						●	●			.689	.402	.219	.122	.118
✻ **AXET170548PEERE**						●	●			.689	.402	.219	.189	.118
✻ **AXET170563PEERE**						●	●			.689	.402	.219	.248	.118
AXET170502PEFRS								●	●	.689	.402	.219	.008	.118
AXET170504PEFRS								●	●	.689	.402	.219	.016	.118
AXET170508PEFRS								●	●	.689	.402	.219	.031	.118

✻ : insert radii expansion • USA stocked item

Hardware

	
Wrench	Screw
TRDR15IP	BFTX0409IP

● = USA Stocked Item ★ = Worldwide Warehouse Item

*Short Cutting Edge Type

See page 283 for recommended running parameters

Features & Benefits

WAX WaveMill cutters are high speed and high efficiency endmills capable of rough milling to finishing of non-ferrous metals such as Aluminium alloys.

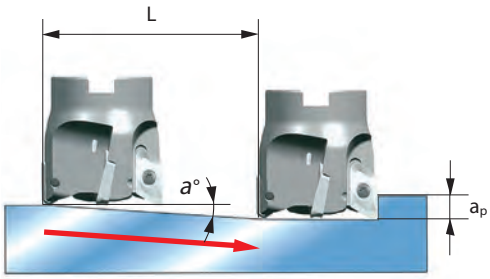
■ Characteristics

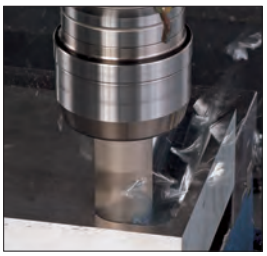
- Ideal for ramping (slant milling) and helical milling
- Safety-oriented design prevents dislodging of inserts caused by centrifugal forces
- Coolant holes are a standard feature for the WAX series
- Excellent adhesion resistance
- Top rake face of the insert has a polished finish
- DLC Coat inserts are available for improved adhesion resistance

■ Ramping (Slant Milling)

Maximum ramping angle (α° max.) depends on cutter diameter. Minimum milling length (L min) is the ramping distance required to reach the maximum cutting depth (a_p max) at the maximum ramping angle of that cutter.
Minimum milling length (L) for any depth can be calculated by the equation below:

$$L = \frac{a_p}{\tan a} \text{ (mm)}$$

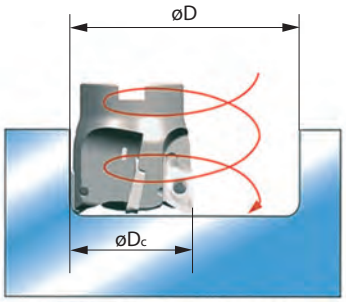




■ Ramping (Slant Milling) Angles

Cutter Diameter øDc(mm)	Max. Ramping Angle α° max	
	WAX3000 Type	WAX4000 Type
20	8°	
25	17°	6°
32	12°	18°30′
40	9°	13°
50	7°	9°30′
63	5°	7°
80	3°	5°
100	3°	4°
125	2°	3°

■ Helical Milling



■ Helical Milling Diameter

Cutter Diameter øDc(mm)	WAX3000 Type		WAX4000 Type	
	Minimum Diameter	Maximum Diameter	Minimum Diameter	Maximum Diameter
20	19	33		
25	29	43	24	43
32	43	57	38	57
40	59	73	54	73
50	79	93	74	93
63	105	119	100	119
80	139	153	134	153
100	179	193	174	193
125	229	243	224	243

Max. Allowable Spindle Speed

Cutter Diameter øDc(mm)	WAX3000 Type		WAX4000 Type	
	n max(min⁻¹)	vc(m/min)	n max(min⁻¹)	vc (m/min)
20	14,000	880		
25	29,000	2,200	11,000	860
32	25,000	2,500	9,000	900
40	23,000	2,900	20,000	2,500
50	20,000	3,100	18,000	2,800
63	18,000	3,500	16,000	3,100
80	16,000	4,000	14,000	3,500
100	14,000	4,400	12,000	3,700
125	13,000	5,100	11,000	4,300

The n max speeds are set to prevent the inserts from dislodging by centrifugal forces.

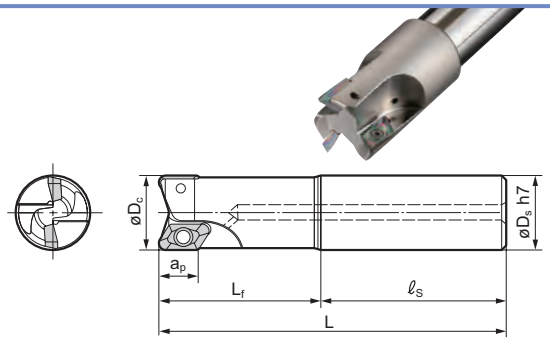
Recommended Cutting Conditions

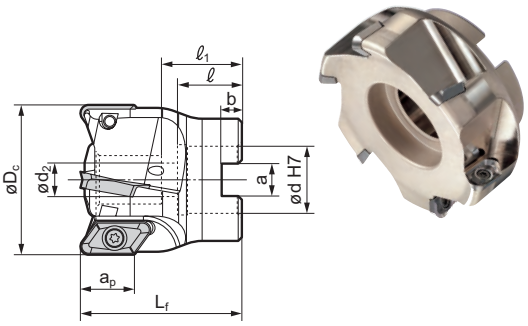
ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min.- **Optimum** -Max.	Feed Rate f_z (mm/t) Min.- **Optimum** -Max.	Grade
N	Aluminium Alloy	-	600-**900**-1200	0.05-**0.15**-0.25	DL1000

WAX 3000 Series	Rake Angle	Radial	6°	16 to 18mm	0°	P Steel	M Stainless Steel	K Cast Iron	N Non-Ferrous Mtls	N Aluminum	S Exotic Alloy	H Hardened Steel
		Axial	19° to 25°			X	X	X	○	●		X
WAX 4000 Series	Rake Angle	Radial	6°	22 to 24mm	0°	P Steel	M Stainless Steel	K Cast Iron	N Non-Ferrous Mtls	N Aluminum	S Exotic Alloy	H Hardened Steel
		Axial	19° to 25°			X	X	X	○	●		X

WAX 3000/4000/INCH

Applicable Insert: AECT

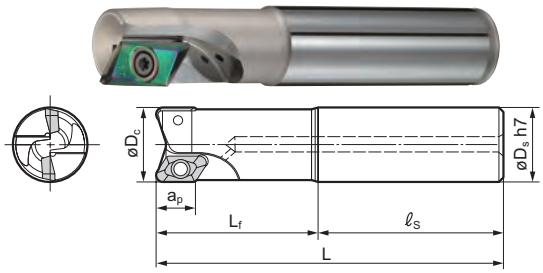


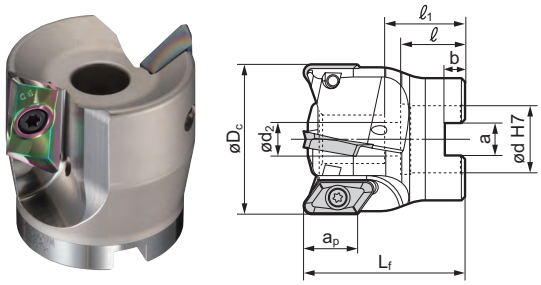


WAX 3000 Endmill Cutter Bodies - INCH						
Catalog Number	Dc	Ds	OAL	Lf	ls	No. of teeth
WAX30750EW-3.2	0.750	0.750	4.281	2.000	2.281	1
WAX30750ELC-3.2	0.750	0.750	8.000	2.000	6.000	1
WAX31000EW-3.2	1.000	1.000	4.781	2.500	2.281	2
WAX31000ELC-3.2	1.000	1.000	10.000	2.500	7.500	2
WAX31250EW-3.2	1.250	1.250	4.781	2.500	2.281	2
WAX31250ELC-3.2	1.250	1.250	10.000	2.500	7.500	2
WAX31500EW-3.2	1.500	1.500	4.781	2.500	2.281	3
WAX31500ELC-3.2	1.500	1.500	10.000	2.500	7.500	3
WAX30750EW-4.0	0.750	0.750	4.281	2.000	2.281	1
WAX30750EW-4.0	0.750	0.750	8.000	2.000	6.000	1
WAX31000EW-4.0	1.000	1.000	4.281	2.000	2.281	2
WAX31000ELC-4.0	1.000	1.000	10.000	2.500	7.500	2
WAX31250EW-4.0	1.250	1.250	4.781	2.500	2.281	2
WAX31250ELC-4.0	1.250	1.250	10.000	2.500	7.500	2
WAX31500EW-4.0	1.500	1.500	4.781	2.500	2.281	3
WAX31500ELC-4.0	1.500	1.500	10.000	2.500	7.500	4

WAX 3000 Shell Mill Cutter Bodies - INCH									
Catalog Number	φDc	Φd	φd2	φd1	L1	a	b	l	No. of teeth
WAX32000-3.2	2.000	0.750	0.406	0.630	1.750	0.312	0.220	0.787	4
WAX32500-3.2	2.500	1.000	0.531	0.630	1.750	0.375	0.220	0.787	5
WAX33000-3.2	3.000	1.000	0.531	1.260	2.000	0.375	0.248	0.866	5
WAX34000-3.2	4.000	1.250	0.656	1.220	2.500	0.500	0.394	1.181	6
WAX35000-3.2	5.000	1.500	0.656	1.220	2.500	0.625	0.394	1.181	7
WAX32000-4.0	2.000	0.750	0.406	0.630	1.750	0.312	0.220	0.787	4
WAX32500-4.0	2.500	1.000	0.531	0.630	1.750	0.375	0.220	0.787	4
WAX33000-4.0	3.000	1.000	0.531	1.260	2.000	0.375	0.248	0.866	5
WAX34000-4.0	4.000	1.250	0.656	1.220	2.500	0.500	0.394	1.181	6
WAX35000-4.0	5.000	1.500	0.656	1.220	2.500	0.625	0.394	1.181	7

All WAX inch size cutters and applicable inserts are USA stocked items (please see pages 288 and 289 for inserts).
Holders with -3.2 suffix are for inserts with a radius of 3.2mm and below.
Holders with -4.0 suffix are for inserts with a radius of 4.0mm and above.





WAX 4000 Endmill Cutter Bodies - INCH						
Catalog Number	Dc	Ds	OAL	Lf	ls	No. of teeth
WAX41000EW-3.2	1.000	1.000	4.781	2.500	2.281	1
WAX41000ELC-3.2	1.000	1.000	10.000	2.500	7.500	1
WAX41250EW-3.2	1.250	1.250	4.781	2.500	2.281	1
WAX41250ELC-3.2	1.250	1.250	10.000	2.500	7.500	1
WAX41500EW-3.2	1.500	1.500	4.781	2.500	2.281	2
WAX41500ELC-3.2	1.500	1.500	10.000	2.500	7.500	2
WAX41000EW-4.0	1.000	1.000	4.781	2.500	2.281	1
WAX41000ELC-4.0	1.000	1.000	10.000	2.500	7.500	1
WAX41250EW-4.0	1.250	1.250	4.781	2.500	2.281	1
WAX41250ELC-4.0	1.250	1.250	10.000	2.500	7.500	1
WAX41500EW-4.0	1.500	1.500	4.781	2.500	2.281	2
WAX41500ELC-4.0	1.500	1.500	10.000	2.500	7.500	2

WAX4000 Shell Mill Cutter Bodies - INCH									
Catalog Number	φDc	Φd	φd2	φd1	L1	a	b	l	No. of teeth
WAX42000-3.2	2.000	0.750	0.406	0.630	2.000	0.312	0.220	0.787	2
WAX42500-3.2	2.500	1.000	0.531	0.630	2.000	0.375	0.220	0.787	3
WAX43000-3.2	3.000	1.000	0.531	1.260	2.000	0.375	0.248	0.866	4
WAX44000-3.2	4.000	1.250	0.656	1.220	2.500	0.500	0.394	1.181	5
WAX45000-3.2	5.000	1.500	0.656	1.220	2.500	0.625	0.394	1.181	6
WAX42000-4.0	2.000	0.750	0.406	0.630	2.000	0.312	0.220	0.787	2
WAX42500-4.0	2.500	1.000	0.531	0.630	2.000	0.375	0.220	0.787	3
WAX43000-4.0	3.000	1.000	0.531	1.260	2.000	0.375	0.248	0.866	4
WAX44000-4.0	4.000	1.250	0.656	1.220	2.500	0.500	0.394	1.181	5
WAX45000-4.0	5.000	1.500	0.656	1.220	2.500	0.625	0.394	1.181	6

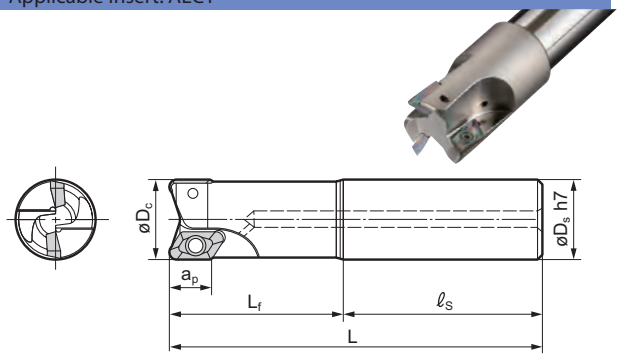
All WAX inch size cutters and applicable inserts are USA stocked items (please see pages 288 and 289 for inserts).

WAX 3000/METRIC

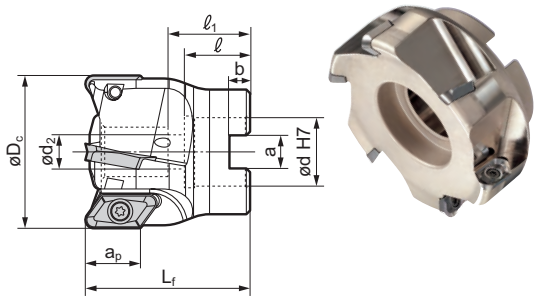
Applicable Insert: AECT

Shoulder Milling Cutters

High Speed & Efficiency Non-ferrous WaveMill



See insert table for "a_p".



See insert table for "a_p".

WAX 3000E/3000EL (For inserts with nose radius 3.2mm and below)								
Catalog Number	Stock	Dimensions (mm)					No. of Teeth	Weight (kg)
		øDc	øDs	L	Lf	ℓs		
WAX 3020E-3.2	★	20	20	130	60	70	1	0.25
WAX 3025E-3.2	★	25	25	140	60	80	2	0.42
WAX 3025EL-3.2	★	25	25	200	60	140	2	0.63
WAX 3032E-3.2	★	32	32	150	70	80	2	0.75
WAX 3032EL-3.2	★	32	32	220	70	150	2	1.2
WAX 3040E-3.2	★	40	32	160	70	90	3	1.0
WAX 3040EL-3.2	★	40	32	220	70	150	3	1.4

★ = Worldwide Warehouse Item

WAX 3000 (For inserts with nose radius 3.2mm and below)										
Catalog Number	Stock	Dimensions (mm)							No. of Teeth	Weight (kg)
		øDc	ød	Lf	ød2	a	b	ℓ	ℓ1	
WAX 3050-3.2	★	50	22	50	11	10.4	6.3	21	26	4	0.34
WAX 3063-3.2	★	63	22	50	11	10.4	6.3	21	26	5	0.6
WAX 3080-3.2	★	80	25.4	50	14	9.5	6	25	31	5	1.0
WAX 3100-3.2	★	100	31.75	63	17	12.7	8	32	39	6	2.2
WAX 3125-3.2	★	125	38.1	63	21	15.9	10	35	40	7	3.5

★ = Worldwide Warehouse Item

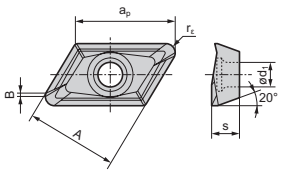
WAX 3000E/3000EL (For inserts with nose radius 4.0mm and above)								
Catalog Number	Stock	Dimensions (mm)					No. of Teeth	Weight (kg)
		øDc	øDs	L	Lf	ℓs		
WAX 3020E-4.0	★	20	20	130	60	70	1	0.25
WAX 3025E-4.0	★	25	25	140	60	80	2	0.42
WAX 3025EL-4.0	★	25	25	200	60	140	2	0.63
WAX 3032E-4.0	★	32	32	150	70	80	2	0.75
WAX 3032EL-4.0	★	32	32	220	70	150	2	1.2
WAX 3040E-4.0	★	40	32	160	70	90	3	1.0
WAX 3040EL-4.0	★	40	32	220	70	150	3	1.4

★ = Worldwide Warehouse Item

WAX 3000 (For inserts with nose radius 4.0mm and above)										
Catalog Number	Stock	Dimensions (mm)							No. of Teeth	Weight (kg)
		øDc	ød	Lf	ød2	a	b	ℓ	ℓ1	
WAX 3050-4.0	★	50	22	50	11	10.4	6.3	21	26	4	0.34
WAX 3063-4.0	★	63	22	50	11	10.4	6.3	21	26	4	0.6
WAX 3080-4.0	★	80	25.4	50	14	9.5	6	25	31	5	1.0
WAX 3100-4.0	★	100	31.75	63	17	12.7	8	32	39	6	2.2
WAX 3125-4.0	★	125	38.1	63	21	15.9	10	35	40	7	3.5

★ = Worldwide Warehouse Item

Inserts (for all WAX 3000 Endmills)



● = USA Stocked Item

Catalog Number	Carbide H1	DLC DL1000	Dimensions - In. (mm)					
			a_p	A	B	r_ε	s	ød1
AECT 160404PEFRA	●	●	0.708 (18)	0.6456 (16.4)	0.055 (1.4)	0.016 (0.4)	0.1968 (5)	0.1732 (4.4)
AECT 160408PEFRA	●	●	0.708 (18)	0.6456 (16.4)	0.039 (1.0)	0.031 (0.8)	0.1968 (5)	0.1732 (4.4)
AECT 160412PEFRA	●	●	0.708 (18)	0.6456 (16.4)	0.023 (0.6)	0.047 (1.2)	0.1968 (5)	0.1732 (4.4)
AECT 160416PEFRA	●	●	0.689 (17.5)	0.6456 (16.4)	0.020 (0.5)	0.063 (1.6)	0.1968 (5)	0.1732 (4.4)
AECT 160420PEFRA	●	●	0.689 (17.5)	0.6456 (16.4)	0.020 (0.5)	0.079 (2.0)	0.1968 (5)	0.1732 (4.4)
AECT 160430PEFRA	●	●	0.669 (17)	0.6456 (16.4)	0.028 (0.7)	0.118 (3.0)	0.1968 (5)	0.1732 (4.4)
AECT 160432PEFRA	●	●	0.669 (17)	0.6456 (16.4)	0.020 (0.5)	0.126 (3.2)	0.1968 (5)	0.1732 (4.4)
AECT 160440PEFRA	●	●	*16.5*	0.6456 (16.4)	0.020 (0.5)	**0.157 (4.0)**	0.1968 (5)	0.1732 (4.4)
AECT 160450PEFRA	●	●	0.630 (16)	0.6456 (16.4)	0.016 (0.4)	**0.197 (5.0)**	0.1968 (5)	0.1732 (4.4)

r_ε=4.0 or greater are for use with bodies that have a -4.0 cat. no. suffix.

Hardware (for all WAX 3000 Endmills)

Screw	Spanner	Anti-seize Paste	Recommended Tightening Torque (N·m)	Applicable Endmill
			3.0	
BFTX0408	TRD15	SUMI-P		WAX3000 WAX3000E/EL

See page 282 for recommended running parameters

NOTE: 3.2 bodies / .125 Radius or less
4.0 bodies / over .125 Radius
on inserts

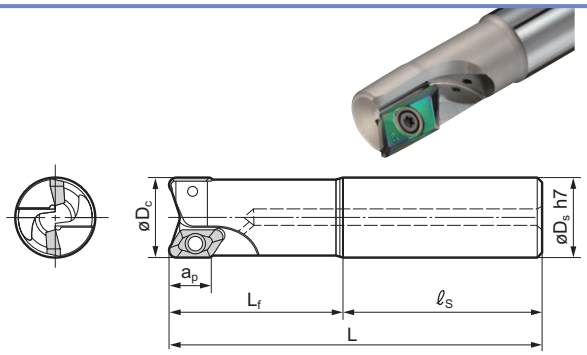
Rake Angle		
	Radial	6°
	Axial	19° to 25°

22 to 24mm | 0°

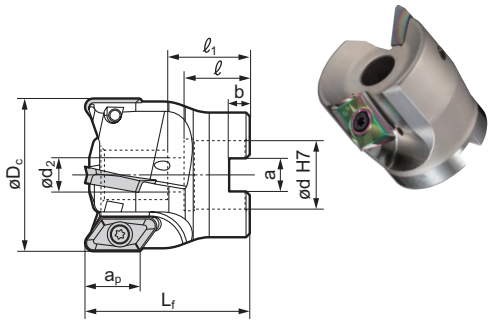
P	M	K	N	N	S	H
Steel	Stainless Steel	Cast Iron	Non-Ferrous Met	Aluminum	Exotic Alloy	Hardened Steel
X	X	X	○	●		X

WAX 4000/METRIC

Applicable Insert: AECT



See insert table for "a_p".



See insert table for "a_p".

WAX 4000E/4000EL (For inserts with nose radius 3.2mm and below)								
Cat. No.	Stock	Dimensions (mm)					No. of Teeth	Weight (kg)
		$øD_c$	$øD_s$	L	L_f	$ℓ_s$		
WAX 4025E-3.2	★	25	25	140	60	80	1	0.41
WAX 4025EL-3.2	★	25	25	200	60	140	1	0.63
WAX 4032E-3.2	★	32	32	150	70	80	1	0.72
WAX 4032EL-3.2	★	32	32	220	70	150	1	1.2
WAX 4040E-3.2	★	40	32	160	70	90	2	0.88
WAX 4040EL-3.2	★	40	32	220	70	150	2	1.2

★ = Worldwide Warehouse Item

WAX 4000 (For inserts with nose radius 3.2mm and below)										
Cat. No.	Stock	Dimensions (mm)								No. of Teeth	Weight (kg)
		$øD_c$	ød	L_f	$ød_2$	a	b	$ℓ$	$ℓ_1$		
WAX 4050-3.2	★	50	16	50	9	8.4	5.6	18	23	2	0.37
WAX 4063-3.2	★	63	22	50	11	10.4	6.3	21	26	3	0.54
WAX 4080-3.2	★	80	25.4	50	14	9.5	6	25	31	4	0.81
WAX 4100-3.2	★	100	31.75	63	17	12.7	8	32	39	5	1.7
WAX 4125-3.2	★	125	38.1	63	21	15.9	10	35	40	6	2.6

★ = Worldwide Warehouse Item

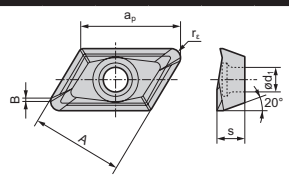
WAX 4000E/4000EL (For inserts with nose radius 4.0mm and above)								
Cat. No.	Stock	Dimensions (mm)					No. of Teeth	Weight (kg)
		$øD_c$	$øD_s$	L	L_f	$ℓ_s$		
WAX 4025E-4.0	★	25	25	140	60	80	1	0.41
WAX 4025EL-4.0	★	25	25	200	60	140	1	0.63
WAX 4032E-4.0	★	32	32	150	70	80	1	0.72
WAX 4032EL-4.0	★	32	32	220	70	150	1	1.2
WAX 4040E-4.0	★	40	32	160	70	90	2	0.88
WAX 4040EL-4.0	★	40	32	220	70	150	2	1.2

★ = Worldwide Warehouse Item

WAX 4000 (For inserts with nose radius 4.0mm and above)										
Cat. No.	Stock	Dimensions (mm)								No. of Teeth	Weight (kg)
		$øD_c$	ød	L_f	$ød_2$	a	b	$ℓ$	$ℓ_1$		
WAX 4050-4.0	★	50	16	50	9	8.4	5.6	18	23	2	0.37
WAX 4063-4.0	★	63	22	50	11	10.4	6.3	21	26	3	0.54
WAX 4080-4.0	★	80	25.4	50	14	9.5	6	25	31	4	0.81
WAX 4100-4.0	★	100	31.75	63	17	12.7	8	32	39	5	1.7
WAX 4125-4.0	★	125	38.1	63	21	15.9	10	35	40	6	2.6

★ = Worldwide Warehouse Item

Inserts (for all WAX 4000 Endmills)



● = USA Stocked Item

Catalog Number	Carbide H1	DLC DL1000	Dimensions - In. (mm)					
			a_p	A	B	$r_ε$	s	$ød_1$
AECT 220604PEFRA	●	●	0.945 (24)	0.8563 (21.8)	0.059 (1.5)	0.016 (0.4)	0.250 (6.35)	0.236 (6.0)
AECT 220608PEFRA	●	●	0.945 (24)	0.8563 (21.8)	0.047 (1.2)	0.031 (0.8)	0.250 (6.35)	0.236 (6.0)
AECT 220612PEFRA	●	●	0.945 (24)	0.8563 (21.8)	0.031 (0.8)	0.047 (1.2)	0.250 (6.35)	0.236 (6.0)
AECT 220616PEFRA	●	●	0.945 (24)	0.8563 (21.8)	0.016 (0.4)	0.063 (1.6)	0.250 (6.35)	0.236 (6.0)
AECT 220620PEFRA	●	●	0.945 (24)	0.8563 (21.8)	0.020 (0.5)	0.079 (2.0)	0.250 (6.35)	0.236 (6.0)
AECT 220630PEFRA	●	●	0.905 (23)	0.8563 (21.8)	0.023 (0.6)	0.118 (3.0)	0.250 (6.35)	0.236 (6.0)
AECT 220632PEFRA	●	●	0.905 (23)	0.8563 (21.8)	0.016 (0.4)	0.126 (3.2)	0.250 (6.35)	0.236 (6.0)
AECT 220640PEFRA	●	●	0.866 (22)	0.8563 (21.8)	0.047 (1.2)	0.157 (4.0)	0.250 (6.35)	0.236 (6.0)
AECT 220650PEFRA	●	●	0.866 (22)	0.8563 (21.8)	0.016 (0.4)	**0.197 (5.0)**	0.250 (6.35)	0.236 (6.0)

$r_ε$=4.0 or greater are for use with bodies that have a -4.0 cat. no. suffix.

Hardware (for all WAX 4000 Endmills)

Screw	Spanner	Anti-seize Paste	Recommended Tightening Torque (N·m)	Applicable Endmill
			5.0	
BFTX0509N	TRD20	SUMI-P		ø25 to ø32
BFTX0511N	TRD20	SUMI-P		ø40 to ø125

See page 282 for recommended running parameters

WFX Series

Applicable Insert: SOMT

Features & Benefits

WFX WaveMill is a screw-down type cutter capable of using 4-cornered inserts. Ideal cutting edge design offers exceptional squareness.

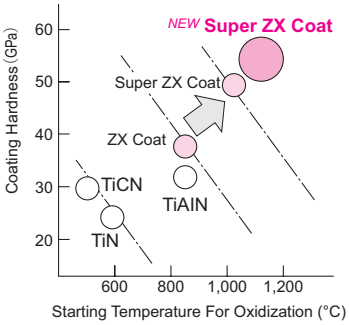
■ Characteristics

The insert shape is optimized for shoulder milling; when combined with a high-precision body it leaves a superior machined surface finish.

- Maximum depth of cut (a_p) = 0.394" *(10.0mm)*
- With oil hole = ø5" or less *(125 mm)*
- 3 types of chipbreakers

■ Grades ACM 300 Tool

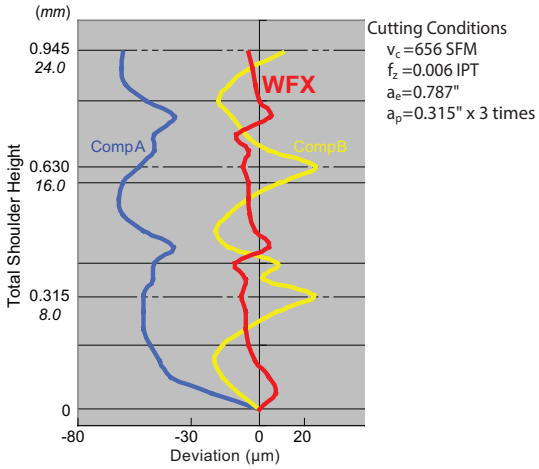
The WFX type is the first series to offer the newly developed multi-layer PVD coating structure on these grades: **ACP200**, **ACP300**, and **ACK300**. With excellent resistance against wear, fracture, and adhesion, the grades achieve 1.5 times longer tool life than conventional coating.



■ Performance

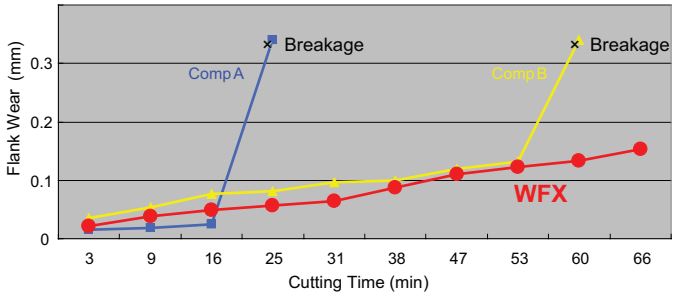
(1) Squareness

Work material:1049 Tool: WFX12100R (ø3.94" x 5 flutes)



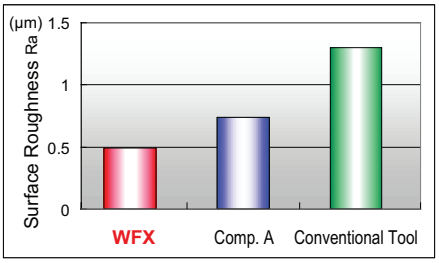
(2) Wear Resistance

Work material: 4140 Tool: WFX12100R (ø3.94" x 1 flute test)
Cutting Conditions v_c=656 SFM f_z=0.006 IPT a_e=1.181" a_p=0.1969"



(3) Surface Finish

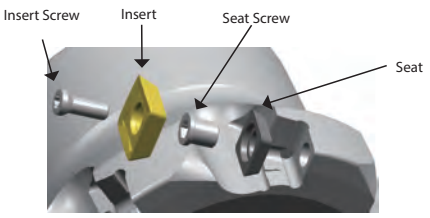
Work material: 4140
Tool: WFX12100R
(ø3.94" x 5 flutes)
Cutting Conditions
v_c=656 SFM
f_z=0.004 IPT
a_e=3.543"
a_p=0.118"



Spare Parts

Applicable Cutters	Seat	Seat Screw	Insert Screw	Torque	Wrench (insert)	Wrench (seat)
WFX12040E	-	-	BFTX03512IP	3.0N*m	TRDR15IP	-
Other WFX types	WFXS4R	BW0507F	BFTX03512IP	3.0N*m	TRDR15IP	LH035

Coolant Through Bolts	
Catalog Number	Cutter Size
BFXH 3/8 x 1	**2.00"**
BFXH 1/2 x 1 1/4	**2.50"**
BFXH 1/2 x 1 1/4	**3.00"**
BFXH 5/8 x 1 1/4	**4.00"**
BFXH 3/4 x 1 1/2	**5.00"**



Recommended Cutting Conditions

ISO	Work Material	Rating	Cutting Speed v_c (SFM/*m/min*) Min.-**Optimum**-Max	Feed Rate f_z (IPT/*mm/t*) Min.-**Optimum**-Max	D.O.C. (In/*mm*)	Grades
P	General Steel	G	492-**656**-820	0.004-**0.006**-0.008	< 0.394	ACP200
			*150-**200**-250*	*0.10-**0.15**-0.20*	*< 10.0*	ACP300
	Soft Steel	G	591-**869**-1148	0.004-**0.006**-0.008	< 0.394	ACP200
			*180-**265**-350*	*0.10-**0.15**-0.20*	*< 10.0*	ACP300
	Die Steel	S	328-**492**-656	0.004-**0.006**-0.008	< 0.236	ACP200
			*100-**150**-200*	*0.10-**0.15**-0.20*	*< 6.0*	ACP300
M	Stainless Steel	S	175-**425**-675	.004-**.006**-.008	< 0.394	ACM200
			55-**130**-300	0.10-**0.15**-0.20	*< 10.0*	ACM200
			525-**650**-820	.004-**.006**-.008	< 0.394	ACM300
			160-**200**-250	0.10-**0.15**-0.20	*< 10.0*	ACM300
			525-**672**-820	0.004-**0.006**-0.008	< 0.394	ACP300
			*160-**205**-250*	*0.10-**0.15**-0.20*	*< 10.0*	
K	Cast Iron	S	328-**574**-820	0.004-**0.006**-0.008	< 0.394	ACK200
			*100-**175**-250*	*0.10-**0.15**-0.20*	*< 10.0*	ACK300

Rake Angle	Radial	−8°
	Axial	8°

10mm 0°

P	M	K	N	N	S	H
Steel	Stainless Steel	Cast Iron	Non-Ferrous Metal	Aluminum	Exotic Alloy	Hardened Steel
●	●	●	●	●		

WFX Series

Applicable Insert: SOMT

Fig 1

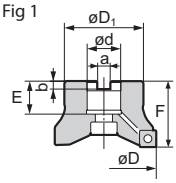


Fig 2

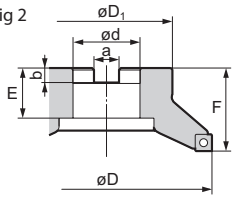
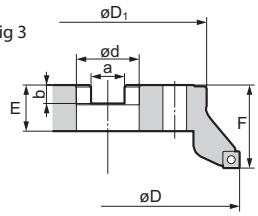


Fig 3



WFX Cutter Bodies - INCH

Cat. No.	Stock	Dimensions (inch)							No. of Teeth	Pitch	Fig
		øD	øD1	F	ød	a	b	E			
WFX42000R	●	2.000	1.500	1.750	0.750	0.312	0.187	0.750	3	Coarse	1
WFX42500R	●	2.500	1.750	1.750	1.000	0.375	0.218	0.750	4		1
WFX43000R	●	3.000	2.250	1.750	1.000	0.375	0.218	0.750	4		1
WFX44000R	●	4.000	2.870	2.000	1.250	0.500	0.280	0.750	5		1
WFX45000R	●	5.000	3.750	2.500	1.500	0.625	0.380	1.000	6		1
WFX46000R	●	6.000	4.380	2.500	1.500	0.625	0.380	1.060	8		2
WFX48000R	●	8.000	5.120	2.500	2.500	1.000	0.560	1.595	10		3
WFXF42000R	●	2.000	1.500	1.750	0.750	0.312	0.187	1.020	4	Fine	1
WFXF42500R	●	2.500	1.750	1.750	1.000	0.375	0.218	1.020	5		1
WFXF43000R	●	3.000	2.250	1.750	1.000	0.375	0.218	1.020	6		1
WFXF44000R	●	4.000	2.870	2.000	1.250	0.500	0.280	1.060	7		1
WFXF44000R-1.50	●	4.000	4.000	2.500	1.500	0.625	0.380	1.000	5		3
WFXF45000R	●	5.000	3.750	2.500	1.500	0.625	0.380	1.060	8		1
WFXF46000R	●	6.000	4.380	2.500	1.500	0.625	0.380	1.060	12		2
WFXF48000R	●	8.000	5.120	2.500	2.500	1.000	0.560	1.595	16		3
WFXX42000R	●	2.000	1.500	1.750	0.750	0.312	0.187	1.020	5	Super Fine	1
WFXX42500R	●	2.500	1.750	1.750	1.000	0.375	0.218	1.020	6		1
WFXX43000R	●	3.000	2.250	1.750	1.000	0.375	0.218	1.020	8		1
WFXX44000R	●	4.000	2.870	2.000	1.250	0.500	0.280	1.060	10		1
WFXX44000R-1.50	●	4.000	4.000	2.500	1.500	0.625	0.380	1.000	10		3
WFXX45000R	●	5.000	3.750	2.500	1.500	0.625	0.380	1.060	12		1

-1.50 is Arbor Ø

Fig 4

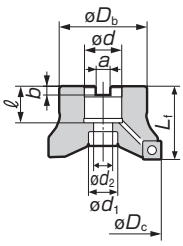


Fig 5

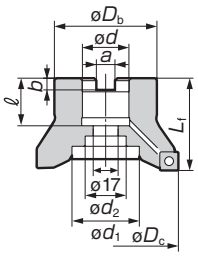


Fig 6

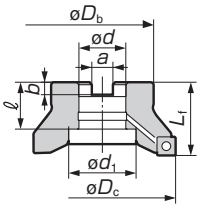


Fig 7

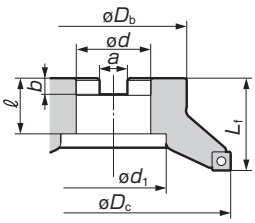
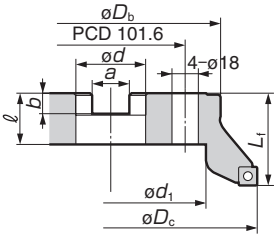


Fig 8



WFX Cutter Bodies - METRIC (Coarse Pitch)

Cat. No.	Stock	Dimensions (mm)									No. of Teeth	Weight (kg)	Fig
		øDc	øDb	Lf	ød	a	b	ℓ	ød1	ød2			
WFX12050RS	★	50	40	40	22	10.4	6.3	20	18	11	3	0.2	4
WFX12063RS	★	63	50	40	22	10.4	6.3	20	18	11	4	0.4	4
WFX12080RS	★	80	60	50	27	12.4	7	25	20	13.5	4	0.9	4
WFX12100RS	★	100	70	50	32	14.4	8.5	32	46	-	5	1.3	6
WFX12080R	★	80	60	50	25.4	9.5	6	25	20	13	4	0.9	4
WFX12100R	★	100	70	63	31.75	12.7	8	32.5	46	28	5	1.7	5
WFX12125R	★	125	80	63	38.1	15.9	10	35.5	55	30	6	2.4	4
WFX12160R	★	160	100	63	50.8	19	11	38	72	-	8	3.7	7
WFX12200R	★	200	150	63	47.625	25.4	14	35	130	-	10	6.3	8
WFX12250R	★	250	190	63	47.625	25.4	14	35	150	-	12	11.0	8

★: Worldwide Warehouse Item

WFX Series

Applicable Insert: SOMT

Rake Radial Angle	Radial	−8°
	Axial	8°

10mm 0°

P Steel	M Stainless Steel	K Cast Iron	N Non-Ferrous Metal	N Aluminum	S Exotic Alloy	H Hardened Steel
●	●	●	●	●		

Fig 4

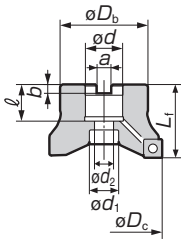


Fig 5

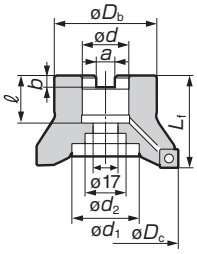


Fig 6

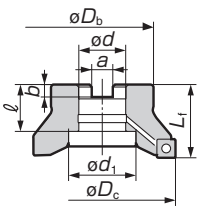


Fig 7

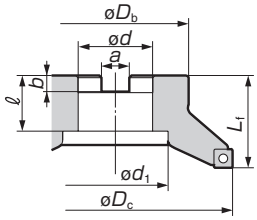
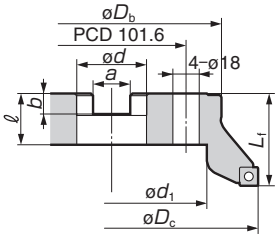


Fig 8



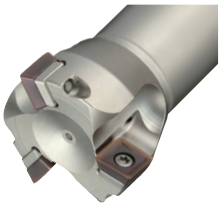
WFX Cutter Bodies - METRIC (Fine Pitch)

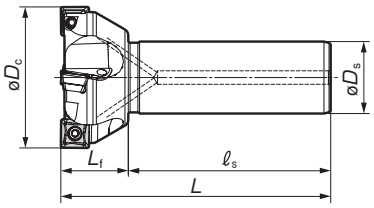
Cat. No.	Stock	Dimensions (mm)									No. of Teeth	Weight (kg)	Fig
		øDc	øDb	Lf	ød	a	b	ℓ	ød1	ød2			
WFXF12050RS	★	50	40	40	22	10.4	6.3	20	18	11	4	0.2	1
WFXF12063RS	★	63	50	40	22	10.4	6.3	20	18	11	5	0.4	1
WFXF12080RS	★	80	60	50	27	12.4	7	25	20	13.5	6	0.9	1
WFXF12100RS	★	100	70	50	32	14.4	8.5	32	46	-	7	1.2	3
WFXF12080R	★	80	60	50	25.4	9.5	6	25	20	13	6	0.9	1
WFXF12100R	★	100	70	63	31.75	12.7	8	32.5	46	28	7	1.6	2
WFXF12125R	★	125	80	63	38.1	15.9	10	35.5	55	30	8	2.4	1
WFXF12160R	★	160	100	63	50.8	19	11	38	72	-	12	3.5	4
WFXF12200R	★	200	150	63	47.625	25.4	14	35	130	-	16	6.2	5
WFXF12250R		250	190	63	47.625	25.4	14	35	150	-	18	10.9	5

★: Worldwide Warehouse Item

Inserts are not included. * Cutters ø160 mm or above do not have coolant holes.

Please use JISB1176 "hexagonal bolt" (ø80: M12 × 30-35mm, ø100: M16 × 40-45mm) for securing the ø80 or ø100 cutter to the arbor.





Body (Shank Type)

Cat. No.	Stock	Dimensions (mm)					No. of Teeth
		øDc	øDs	Lf	ℓs	L	
WFX12040E	★	40	32	30	90	120	3
WFX12050E	★	50	32	30	90	120	3
WFX12063E	★	63	32	30	90	120	4
WFX12080E	★	80	32	30	90	120	4

ø40 mm cutters do not have a seat.

Body (Shank, Fine Pitched Type)

Cat. No.	Stock	Dimensions (mm)					No. of Teeth
		øDc	øDs	Lf	ℓs	L	
WFXF12050E	★	50	32	30	90	120	4
WFXF12063E	★	63	32	30	90	120	5
WFXF12080E	★	80	32	30	90	120	6

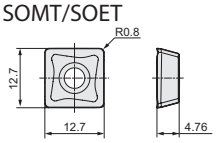
★: Worldwide Warehouse Item

See page 290 for recommended running parameters

Inserts

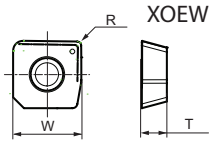
Cat. No.	P				K		M		N		Dim. (mm)		
	ACP100	ACP200	ACP300	T4500A	ACK200	ACK300	ACM200	ACM300	DL1000	H1	W.	T	R
SOMT120408PDER-L	●	●	●		●	●	●	●			12.7	4.76	0.8
SOMT120404PDER-G	●	●	●		●	●							0.4
SOMT120408PDER-G	●	●	●		●	●	●	●					0.8
SOMT120412PDER-G	●	●	●		●	●							1.2
SOMT120416PDER-G	●	●	●		●	●							1.6
SOMT120408PDER-H	●	●	●		●	●	●	●					0.8
SOET120408PDFR-S									●	●			
XOEW120408PDTR-W				●		●					12.95	4.71	

SOMT/SOET



Note: Dimple corner should be on cutting edge.

XOEW



Rake Angle	Radial	−15°
	Axial	−6°

16mm 0°

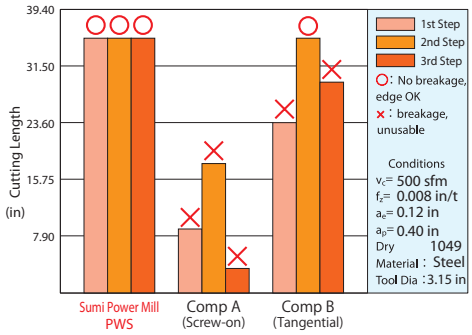
P	M	K	N	N	S	H
Steel	Stainless Steel	Cast Iron	Non-Ferrous Metal	Aluminum	Exotic Alloy	Hardened Steel
●	○	○				

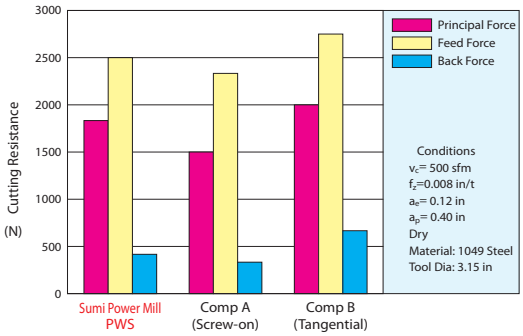
PWS Series

Features & Benefits

- Highly reliable shoulder mill tangentially mounted for never-before-possible cutting edge strength and sharp cutting edges.
- A two-step insert array structure creates a new **PWSR Type** to meet deep cutting needs
- Tangentially mounted inserts for outstanding cutting edge strength combined with optimized breaker for excellent edge sharpness and cutting ability.
- Serrated insert design created with high-precision molding technology provides stable millng, even in applications with large tool overhang
- New ACP and ACK milling grades are used to meet the needs of various types of work material

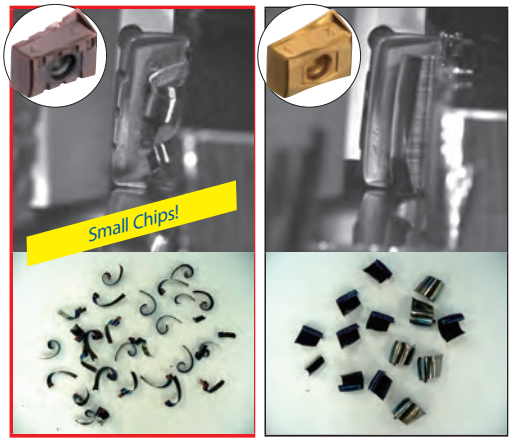
Performance





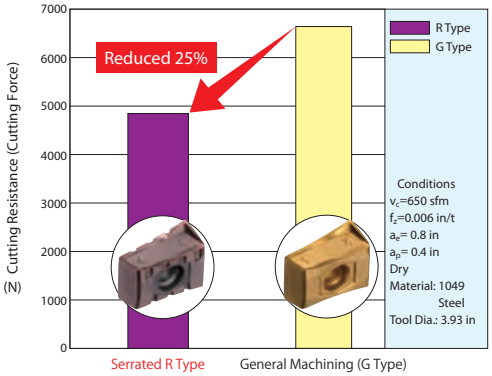
Performance Comparison

Serrated R Type Inserts General Purpose G Type Inserts

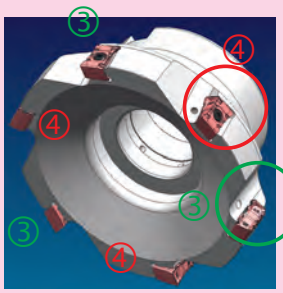


Comparison of Cutting Forces

Reduced cutting force and excellent vibration resistance!



⚠ Caution when using Serrated R Type Inserts



1) Installation Precautions
When using R type serrated indexable inserts, attach them so the serrated grooves alternate as shown in the image to the left.

2) Cutting Condition Precautions
When set up as shown in the image to the left, the feed rate per tooth is doubled compared to that when attaching the same-shaped inserts on all teeth. This means that feed adjustments should be made so the upper feed limit is as shown below.

f_z = 0.010 IPT

Example: Use at f_z = 0.008 IPT
Feed when all teeth are normal
Feed when serrated 0.016 IPT

Any incorrect use of insert may damage tools.

PWS Series

Rake Angle	Radial	−15°
	Axial	−6°

16mm 0°

P Steel	M Stainless Steel	K Cast Iron	N Non-ferrous Metal	N Aluminum	S Exotic Alloy	H Hardened Steel
●	○	○				

Fig1

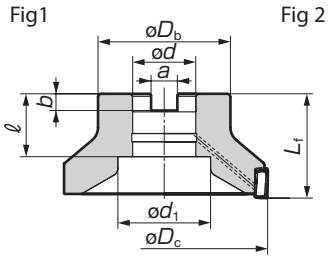
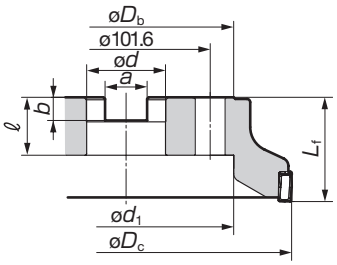
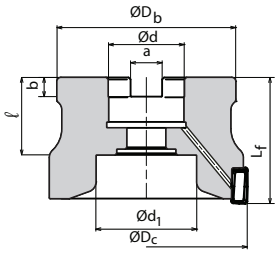


Fig 2





PWS Cutter Bodies - Standard Pitch - Inch

Catalog Number	Stock	Dimensions								# of Teeth	Weight (lbs)	Fig.
		φDc	φDb	Lf	φd	φD1	a	b	ℓ			
PWS42000R	●	2.000	1.750	1.750	0.750	0.609	0.313	0.190	1.020	3	0.90	1
PWS43000R	●	3.000	2.250	1.750	1.000	0.797	0.375	0.220	1.020	5	2.10	1
PWS44000R-1.25	●	4.000	2.870	2.000	1.250	1.000	0.500	0.280	1.020	6	5.29	1
PWS44000R-1.50	●	4.000	3.540	2.500	1.500	2.000	0.625	0.380	2.400	6	5.40	3
PWS45000R	●	5.000	3.750	2.500	1.500	2.000	0.625	0.380	1.535	7	5.29	1
PWS46000R	●	6.000	4.380	2.500	1.500	2.000	0.625	0.380	1.535	8	8.81	1
PWS48000R	●	8.000	5.118	2.500	2.500	-	1.000	0.560	1.594	10	14.33	2
PWS410000R	●	10.000	7.087	2.756	2.500	-	1.000	0.560	1.594	12	27.11	2

PWS Cutter Bodies - Fine Pitch - Inch

Catalog Number	Stock	Dimensions								# of Teeth	Weight (lbs)	Fig.
		φDc	φDb	Lf	φd	φD1	a	b	ℓ			
PWSF42000R	●	2.000	1.750	1.750	0.750	0.609	0.313	0.190	1.020	5	0.90	1
PWSF43000R	●	3.000	2.250	1.750	1.000	0.797	0.375	0.220	1.020	7	1.95	1
PWSF44000R-1.25	●	4.000	2.870	2.000	1.250	1.000	0.500	0.280	1.020	9	5.07	1
PWSF44000R-1.50	●	4.000	3.540	2.500	1.500	2.000	0.625	0.380	2.400	9	5.10	3
PWSF45000R	●	5.000	3.750	2.500	1.500	2.000	0.625	0.380	1.535	10	5.07	1
PWSF46000R	●	6.000	4.380	2.500	1.500	2.000	0.625	0.380	1.535	13	8.59	1
PWSF48000R	●	8.000	5.118	2.500	2.500	-	1.000	0.560	1.594	16	14.10	2
PWSF410000R	●	10.000	7.087	2.756	2.500	-	1.000	0.560	1.594	20	26.90	2

*Cutters with sizes of φ4.000 inches or above come with seats (no coolant holes). Inserts are not included.

Inserts

P Steel M Stainless Steel K Cast Iron N Non-ferrous S Super Alloy H Hardened Material

Grade		Coated Carbide				
Application	High speed/Light	P			K	
	General Purpose		P M	M	K	
	Roughing		P M	P M		K

Catalog Number	ACP100	ACP200	ACP300	ACK200	ACK300	Application	Fig.
LNMX170808PNSR-L	●	●	●	●	●	Light Cut	10
LNMX170808PNSR-G	●	●	●	●	●	General Purpose	10
LNMX170808PNSR-R		●	●	●	●	Heavy Cut	11

Fig 10

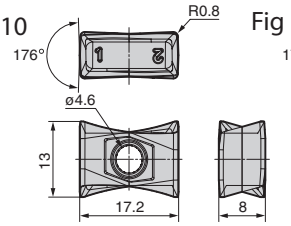
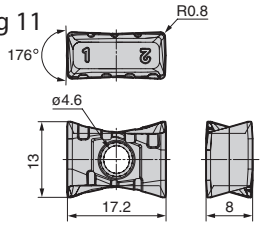


Fig 11



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c(sfm) Min-Max	Feed Rate f_z(ipt) Min-Max	Recommended Grade
P	Carbon Steel	180-280HB	500–1,500	0.004–0.014	ACP200
	Alloy Steel	180-280HB	330–815	0.004–0.001	ACP200
M	Stainless Steel	-	330–650	0.006–0.001	ACP300
K	Cast Iron/Ductile Cast Iron	250HB	330–815	0.004–0.014	ACK200

NOTE: The cutting conditions above are a guide. Actual Conditions will need to be adjusted according to machine rigidity, work clamp rigidity, cutting depth and other factors.

Rake Angle	Radial	−15°
	Axial	−6°

16mm 0°

P	M	K	N	N	S	H
Steel	Stainless Steel	Cast Iron	Non-Ferrous Metal	Aluminum	Exotic Alloy	Hardened Steel
●	○	○				

PWS Series

Fig1

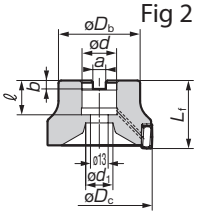


Fig 2

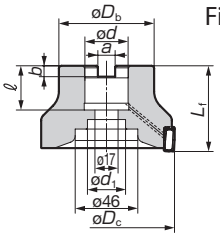


Fig 3

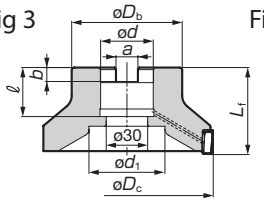


Fig 4

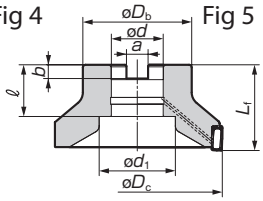
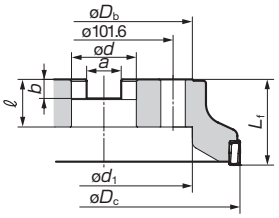


Fig 5

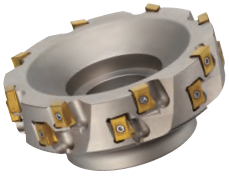


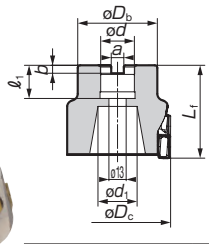
PWS Cutter Bodies - Standard Pitch - Metric

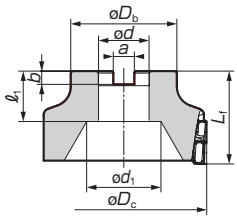
Catalog Number	Stock	Dimensions								# of Teeth	Weight (kg)	Fig.
		φDc	φDb	Lf	φd	φd1	a	b	ℓ			
PWS 4080R	●	80	60	50	25.4	20	9.5	6	25	4	1.0	1
PWS 4100R	●	100	70	63	31.75	28	12.7	8	32.5	6	1.8	2
PWS 4125R	●	125	80	63	38.1	55	15.9	10	35.5	6	2.4	3
PWS 4160R	●	160	100	63	50.8	72	19.0	11	38	8	4.0	4
PWS 4200R	●	200	130	63	50.8	130	25.4	14	35	10	6.5	5
PWS 4250R	●	250	130	63	50.8	160	25.4	14	35	12	12.3	5

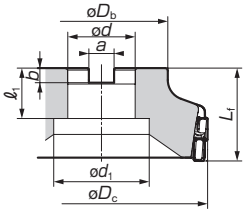
PWS Cutter Bodies - Fine Pitch - Metric

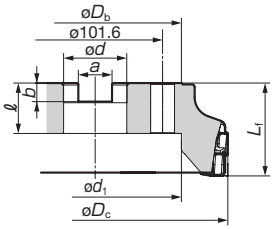
Catalog Number	Stock	Dimensions								# of Teeth	Weight (kg)	Fig.
		φDc	φDb	Lf	φd	φd1	a	b	ℓ			
PWSF4080R	●	80	60	50	25.4	20	9.5	6	25	6	0.9	1
PWSF4100R	●	100	70	63	31.75	28	12.7	8	32.5	8	1.7	2
PWSF4125R	●	125	80	63	38.1	55	15.9	10	35.5	8	2.3	3
PWSF4160R	●	160	100	63	50.8	72	19.0	11	38	10	3.9	4
PWSF4200R	●	200	130	63	50.8	130	25.4	14	35	12	6.4	5
PWSF4250R	●	250	130	63	50.8	160	25.4	14	35	14	12.2	5









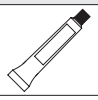


PWS Cutter Bodies - 2-step Type - Metric

Catalog Number	Stock	Dimensions								# of Teeth	Effective Teeth	Weight	Fig.
		φDc	φDb	Lf	φd	φd1	a	b	ℓ				
PWSR4080R		80	60	70	25.4	29.5	9.5	6	25	8	4	0.9	1
PWSR4100R		100	70	70	31.75	46	12.7	8	32	12	6	1.7	2
PWSR4125R		125	80	70	38.1	56	15.9	10	38	12	6	2.3	3
PWSR4160R		160	100	70	50.8	72	19.0	11	38	16	8	3.9	4
PWSR4200R		200	130	70	50.8	160	25.4	14	38	20	10	6.4	5

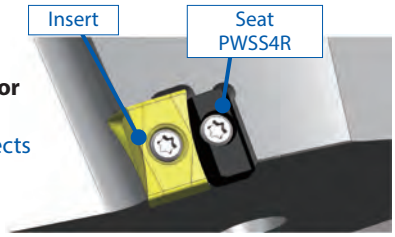
*Cutters with sizes of φ200 or above come with seats (no coolant holes). Inserts are not included.
Please use JIS B1176 hexagonal bolt (ø80: M12x30 to 35mm, ø100: M16x40 to 45mm) for securing ø80/ø100 cuttor to the arbor.

Spare Parts

Seat Screw	Wrench	Anti-seize Paste	Seat*	Recommeded Tightening Torque
				
BFTX0412IP	TRDR15IP	SUMI-P	PWSS4R	**26 lbs./in.**

*Included with ø200mm or larger

Large diameter (ø200 or above) body structure
Safety seat design protects body



SUMITOMO

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Face Milling

Pages 297-314

WGX Series

Rake Angle		
	Radial	−20° to −24°
	Axial	20° to 22°

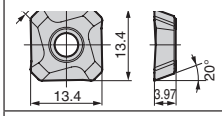
6 mm 45°

P Steel ● | M Stainless Steel ○ | K Cast Iron ○ | N Non-Ferrous Metal | N Aluminum | S Exotic Alloy | H Hardened Steel

Features & Benefits

Stable Machining
Special chipbreaker designed for WGX Type ensures low cutting resistance
High Quality
Improved run-out precision and unique wiper edge shape ensure excellent surface finish quality
Optimized chamfer shape reduces burrs and edge chipping
Long Tool Life
Features high-precision technology that reduces insert run-out variation and a new coating to provide stable and long tool life
- New Super ZX, Super FF and DLC coated grades available
- Available in Standard, Fine Pitch and Extra-Fine Pitch cutters

Insert Information

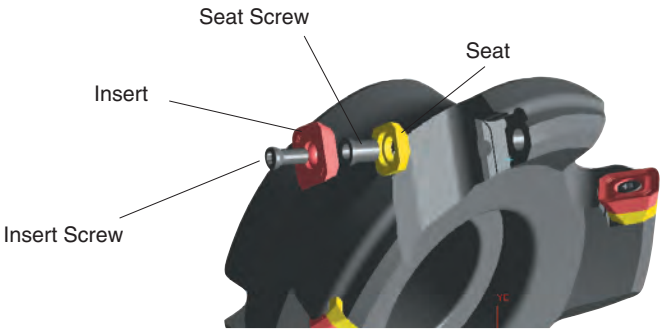


Inserts	P				K		M / S		N		Dimensions		
	ACP100	ACP200	ACP300	T4500A	ACK200	ACK300	ACM200	ACM300	DL1000	H1	IC	Thickness	Facet Width
SEMT13T3AGSR-L	●	●	●		●	●	●	●			0.528	0.156	0.0787
SEMT13T3AGSR-G	●	●	●		●	●	●	●					
SEMT13T3AGSR-H	●	●	●		●	●	●	●					
SEMT13T3AGSR-FG	●	●	●		●	●	●	●					
SEET13T3AGSR-L	●	●	●		●	●	●	●					
SEET13T3AGSR-G	●	●	●		●	●	●	●					
SEET13T3AGFR-L									●	●			
XEEW13T3AGER-WR		●		●		●							0.320

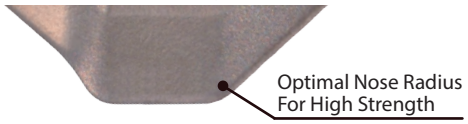
Parts

Applicable Cutters	Seat	Seat Screw	Insert Screw	Spanner (For Insert)	Recommended Tightening Torque Inch / LBs	Spanner (For Seat)
WGX cutters except for model below	WGCS13R	BW0507F	BFTX03512IP	TRDR15IP	25	LH035
WGX13032EW	—	—	BFTX03512IP	TRDR15IP	25	—

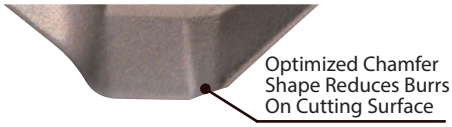
Parts Diagram



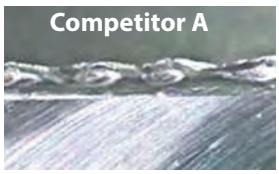
General Purpose G Type Chipbreaker



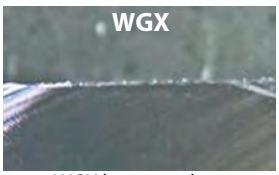
Low-Burr Design FG Type Chipbreaker



Part Exit Comparison

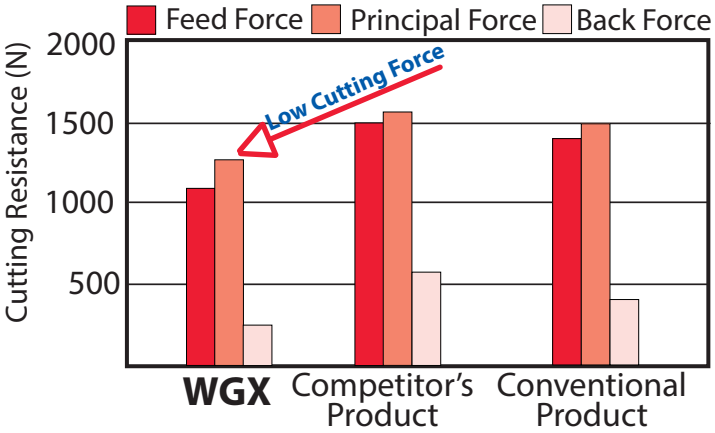


Competitor A leaves burrs



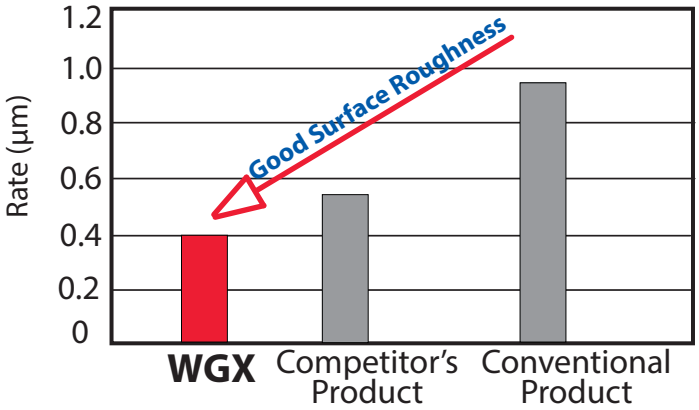
WGX leaves no burr

Cutting Resistance Comparison



Workpiece Material: 1049 Steel Cutter Diameter: 4.000"
Cutting Conditions: V_c : 650 SFM f_z: 0.0079 ipt a_p = .118 in

Finishing Surface Roughness Comparison



Workpiece Material: 1049 Steel Cutter Diameter: 4.000"
Cutting Conditions: V_c : 650 SFM f_z: .00079ipt a_p = .118 in

Rake Angle	Radial	−20° to −24°
	Axial	20° to 22°

6 mm 45°

P	M	K	N	N	S	H
Steel	Stainless Steel	Cast Iron	Non-Ferrous Metal	Aluminum	Exotic Alloy	Hardened Steel
●	○	○				

WGX Series

Fig 1

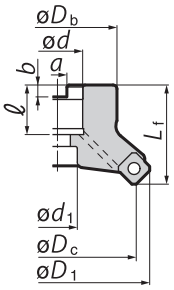


Fig 2

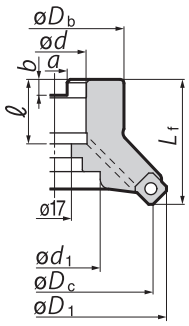


Fig 3

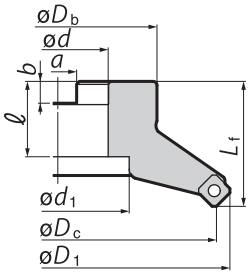


Fig 4

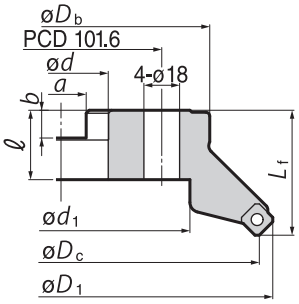
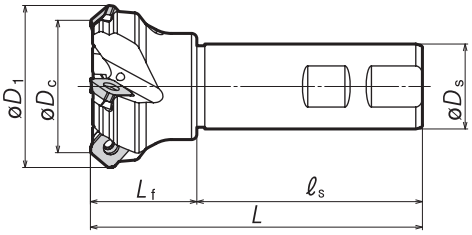


Fig 5



WGX Cutter Bodies- Standard Pitch-INCH

Catalog No.	φDc	φD1	φDb	Lf	φd	φd1	a	b	ℓ	Teeth	Weight (lbs)	Fig.
WGX42000R	2.000	2.461	1.500	1.750	0.750	0.609	0.312	0.190	0.750	3	0.9	1
WGX42500R	2.500	3.008	1.750	1.750	1.000	0.797	0.375	0.220	0.750	4	1.3	1
WGX43000R	3.000	3.504	2.250	1.750	1.000	0.787	0.375	0.220	0.750	4	2.2	1
WGX44000R	4.000	4.500	2.870	2.000	1.250	1.000	0.500	0.280	0.750	5	3.5	2
WGX44000R-1.50	4.000	3.750	2.500	2.500	1.500	2.000	0.625	0.380	1.000	5	4.5	3
WGX45000R	5.000	5.496	3.750	2.500	1.500	2.000	0.625	0.380	1.000	6	7.2	1
WGX46000R	6.000	6.496	4.380	2.500	1.500	2.000	0.625	0.380	1.060	7	9.5	3
WGX48000R	8.000	8.496	5.906	2.500	2.500	5.118	1.000	0.560	1.594	8	15.6	4
WGX410000R	10.000	10.492	7.480	2.756	2.500	6.299	1.000	0.531	1.575	10	23.5	4

WGX Cutter Bodies-Fine Pitch-INCH

Catalog No.	φDc	φD1	φDb	Lf	φd	φd1	a	b	ℓ	Teeth	Weight (lbs)	Fig.
WGXM42000R	2.000	2.461	1.500	1.750	0.750	0.609	0.312	0.190	0.750	4	0.9	1
WGXM42500R	2.500	3.008	1.750	1.750	1.000	0.797	0.375	0.220	0.750	5	1.9	1
WGXM43000R	3.000	3.504	2.250	1.750	1.000	0.787	0.375	0.220	0.750	6	3.1	1
WGXM44000R	4.000	4.500	2.870	2.000	1.250	1.000	0.500	0.280	0.750	7	4.8	2
WGXM44000R-1.50	4.000	3.750	2.500	2.500	1.500	2.000	0.625	0.380	1.000	7	5.5	3
WGXM45000R	5.000	5.496	3.750	2.500	1.500	2.000	0.625	0.380	1.000	8	7.2	1
WGXM46000R	6.000	6.496	4.380	2.500	1.500	2.000	0.625	0.380	1.060	10	9.5	3
WGXM48000R	8.000	8.496	5.906	2.500	2.500	5.118	1.000	0.560	1.594	12	15.6	4

WGX Cutter Bodies-Extra Fine Pitch-INCH

Catalog No.	φDc	φD1	φDb	Lf	φd	φd1	a	b	ℓ	Teeth	Weight (lbs)	Fig.
WGXF42000R	2.000	2.461	1.500	1.750	0.750	0.609	0.312	0.190	0.750	5	0.9	1
WGXF42500R	2.500	3.008	1.750	1.750	1.000	0.797	0.375	0.220	0.750	6	1.5	1
WGXF43000R	3.000	3.504	2.250	1.750	1.000	0.787	0.375	0.220	0.750	8	3.1	1
WGXF44000R	4.000	4.500	2.870	2.000	1.250	1.000	0.500	0.280	0.750	10	4.7	2
WGXF44000R-1.50	4.000	3.750	2.500	2.500	1.500	2.000	0.625	0.380	1.000	10	6.5	3
WGXF45000R	5.000	5.496	3.750	2.500	1.500	2.000	0.625	0.380	1.000	12	8.2	1
WGXF46000R	6.000	6.496	4.380	2.500	1.500	2.000	0.625	0.380	1.060	16	10.5	3
WGXF48000R	8.000	8.496	5.906	2.500	2.500	5.118	1.000	0.560	1.594	20	15.2	4

Cutter diameters 6.000" and above do not have coolant holes

WGX Cutter Bodies - Shank - INCH

Catalog No.	φDc	φD1	φDs	Lf	ℓs	L	Teeth	Fig.
WGX42000EW	2.000	2.461	1.250	1.591	2.379	3.970	4	5
WGX42500EW	2.500	3.008	1.250	1.591	2.379	3.970	5	5

Identification Details - Shell (Inch)

WGX F 4 2000 R

1 Cutter Series; 2 M : Fine Pitched, F : Extra-Fine Pitched; 3 Insert Series; 4 Diameter (2.000"); 5 Endmill Type

Identification Details - Shank (Inch)

WGX 4 2000 EW

1 Cutter Series; 2 Insert Series; 3 Diameter (2.000"); 4 Endmill Type

WGX Series

Rake Angle		
	Radial	−20° to −24°
	Axial	20° to 22°

6 mm 45°

P Steel ● | M Stainless Steel ○ | K Cast Iron ○ | N Non-Ferrous Metal | N Aluminum | S Exotic Alloy | H Hardened Steel

Fig 1

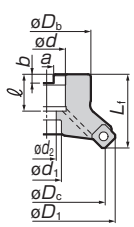


Fig 2

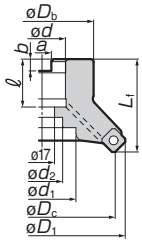


Fig 3

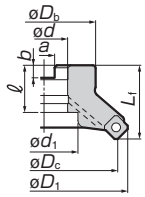


Fig 4

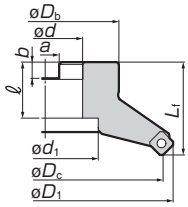


Fig 5

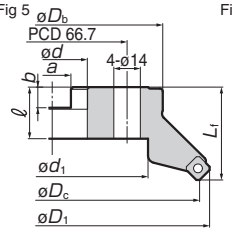
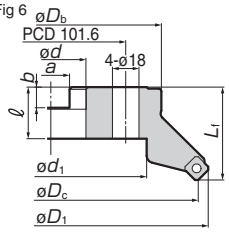


Fig 6



Body (Standard Pitch) - Metric

Cat. No.	Stock	Dimensions (mm) øDc	øD1	øDb	Lf	ød	a	b	ℓ	ød1	ød2	No. of Teeth	Weight (kg)	Fig.
WGX 13040RS	★	**40**	52	32	40	16	8.4	5.6	18	14	9	3	0.3	1
13050RS	★	**50**	62	40	40	22	10.4	6.3	20	18	11	3	0.4	1
13063RS	★	**63**	76	50	40	22	10.4	6.3	20	18	11	4	0.6	1
WGX 13080R	★	**80**	93	60	50	25.4	9.5	6	25	20	13	4	1.2	1
13100R	★	**100**	113	70	63	31.75	12.7	8	32.5	46	28	5	2.3	2
13125R	★	**125**	138	80	63	38.1	15.9	10	35.5	55	30	6	2.9	1
13160R	★	**160**	173	100	63	50.8	19	11	38	72	-	7	4.5	4
13200R	★	**200**	213	150	63	47.625	25.4	14	35	130	-	8	7.1	6
13250R	★	**250**	263	190	63	47.625	25.4	14	35	150	-	10	11.2	6

Body (Fine Pitch) - Metric

Cat. No.	Stock	Dimensions øDc	øD1	øDb	Lf	ød	a	b	ℓ	ød1	ød1	No. of Teeth	Weight (kg)	Fig.
WGXM 13050RS	★	**50**	62	40	40	22	10.4	6.3	20	18	11	4	0.4	1
13063RS	★	**63**	77	50	40	22	10.4	6.3	20	18	11	5	0.6	1
WGXM 13080R	★	**80**	94	60	50	25.4	9.5	6	25	20	13	6	1.1	1
13100R	★	**100**	114	70	63	31.75	12.7	8	32.5	46	28	7	2.2	2
13125R	★	**125**	139	80	63	38.1	15.9	10	35.5	55	30	8	2.9	1
13160R	★	**160**	174	100	63	50.8	19	11	38	72	-	10	4.5	4
13200R	★	**200**	214	150	63	47.625	25.4	14	35	130	-	12	7.0	6
13250R	★	**250**	264	190	63	47.625	25.4	14	35	150	-	14	11.1	6

Body (Extra- Fine Pitch) - Metric

Cat. No.	Stock	Dimensions øDc	øD1	øDb	Lf	ød	a	b	ℓ	ød1	ød2	No. of Teeth	Weight (kg)	Fig.
WGXF 13050RS	★	**50**	62	40	40	22	10.4	6.3	20	18	11	5	0.4	1
13063RS	★	**63**	77	50	40	22	10.4	6.3	20	18	11	6	0.6	1
WGXF 13080R	★	**80**	94	60	50	25.4	9.5	6	25	20	13	8	1.1	1
13100R	★	**100**	114	70	63	31.75	12.7	8	32.5	46	28	10	2.1	2
13125R	★	**125**	139	80	63	38.1	15.9	10	35.5	55	30	12	2.8	1
13160R	★	**160**	174	100	63	50.8	19	11	38	72	-	16	4.5	4
13200R	★	**200**	214	150	63	47.625	25.4	14	35	130	-	20	6.9	6
13250R	★	**250**	264	190	63	47.625	25.4	14	35	150	-	24	11.0	6

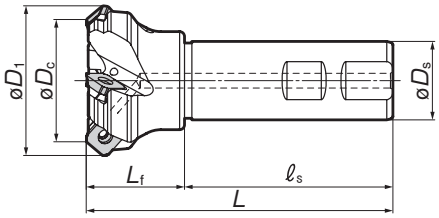
★: Worldwide Warehouse Item

Sizes ø160 mm or above do not have coolant holes

Body (Shank Type)

Cat. No.	Stock	Dimensions (mm) øDc	øD1	øDs	Lf	ℓs	L	No. of Teeth
WGX 13032EW	★	32	44	32	40	85	125	3
13040EW	★	40	52	32	40	85	125	3
13050EW	★	50	62	32	40	85	125	4
13063EW	★	63	76	32	40	85	125	5

★: Worldwide Warehouse Item



Indentification Details:

WGX M 13 050 R S

1	2	3	4	5	6
Cutter Series	M: Fine Pitched F : Extra-Fine Pitched	Insert Size	Cutter	Direction	Metric Bore

WGX Series

WGX Recommended Cutting Conditions							
ISO	Material	Hardness	Grade	Depth of Cut			Feed per Tooth
				.002 -.050	.050 - .125	.125 & over	
P	Low and Medium Carbon Steels	<250 Bhn	ACP100	775-1300	725-1250	675-1200	.006-.015
			ACP200	725-1200	675-1150	600-1125	.006-.015
			ACP300	675-1075	650-1025	525-925	.006-.015
	Medium Carbon Alloy Steels	<250 Bhn	ACP100	600-975	575-950	550-900	.006-.015
			ACP200	550-900	525-900	500-875	.006-.015
			ACP300	525-875	500-825	475-800	.006-.015
	Medium-High Carbon Steels	<250 Bhn	ACP100	600-975	575-950	550-900	.006-.015
			ACP200	575-950	550-925	500-875	.006-.015
			ACP300	550-925	525-900	525-850	.006-.015
	Free Machining Steels and Alloys	<250 Bhn	ACP100	775-1300	700-1250	675-1200	.006-.015
			ACP200	750-1275	675-1225	650-1150	.006-.015
			ACP300	675-1075	650-1050	650-1025	.006-.015
	Tool Steels	<250 Bhn	ACP100	475-820	450-790	425-750	.006-.012
			ACP200	450-800	435-775	400-725	.006-.012
			ACP300	435-785	425-760	400-715	.006-.012
		Bhn 220 - 350	ACP100	425-775	400-735	400-700	.004-.012
			ACP200	415-750	400-725	375-690	.004-.012
			ACP300	405-700	410-690	375-680	.004-.012
		>33 Hrc	ACP100	325-650	300-630	300-590	.004-.012
			ACP200	315-640	300-625	300-580	.004-.012
M	Martensitic and Ferritic Stainless Steels	<250 Bhn	ACM300	535-850	520-820	275-800	.004-.012
			ACM300	525-825	515-800	250-775	.004-.012
		>250 Bhn	ACM200	350-800	325-775	300-750	.004-.012
			ACM300	300-750	275-725	250-700	.004-.012
	Austenitic and Precipitation Hardending Stainless Steels	<250 Bhn >250Bhn	ACM300	500-740	475-720	450-675	.004-.012
			ACM200	250-750	225-725	200-700	.004-.012
K	Grey Cast Iron	>250 Bhn	ACK200	600-950	525-825	490-800	.004-.012
			ACK300	500-850	475-775	450-750	.004-.012
		<250 Bhn	ACK200	700-1050	625-925	590-900	.004-.015
			ACK300	600-950	575-875	550-850	.004-.015
	Ductile Iron	>250 Bhn	ACK200	600-925	550-875	490-800	.004-.012
			ACK300	550-825	500-775	450-750	.004-.012
S	Exotic Alloys: Inconel, Hastalloy, Waspalloy, etc.	>300Bhn	ACM200	125-550	110-500	95-450	.004-.010
			ACM300	100-160	70-150	60-135	.004-.010
N	Non-Ferrous Material		H1 DL1000	1000-4000 1100-6000	Not Recommended	Not Recommended	.006-.015

WGX + DGC Comparison

Needs	Surface Finish	Cutting Force	High Feed Rate	Insert Strength	Chip Evacuation	Cost Per Edge	General Versatility
Recommend	WGX	WGX	DGC	DGC	WGX	DGC	WGX

DualMill DGC Series

Double-sided 45° Lead Face Mill

■ Features & Benefits

Improved reliability and quality
Improved coating and insert runout provides stability of life for production
An excellent lineup of Inserts with optimized chamfers to prevent burrs improves surface finish

Superior economy
With the same sharpness at 3mm or less of similar one-sided inserts, you get twice the corners. Also, the cutter body holds both the ONMT & SNMT inserts, allowing up to 16 corners.

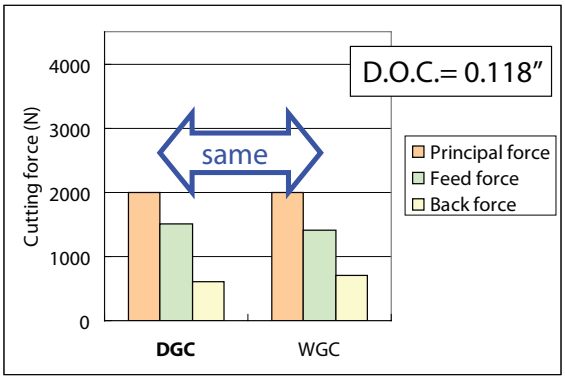
Extensive Lineup
A wide range of diameters (2.000" to 10.000") and pitches (Normal, Fine, Extra Fine), inch and metric sizes, allows you to choose what you need for your application.

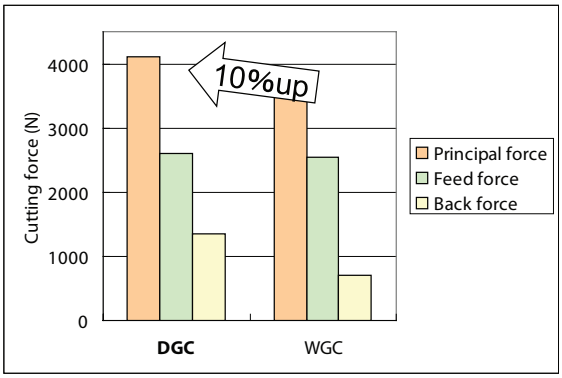
WGX + DGC Comparison

Needs	Surface Finish	Cutting Force	High Feed Rate	Insert Strength	Chip Evacuation	Cost Per Edge	General Versatility
Recommend	WGX	WGX	DGC	DGC	WGX	DGC	WGX

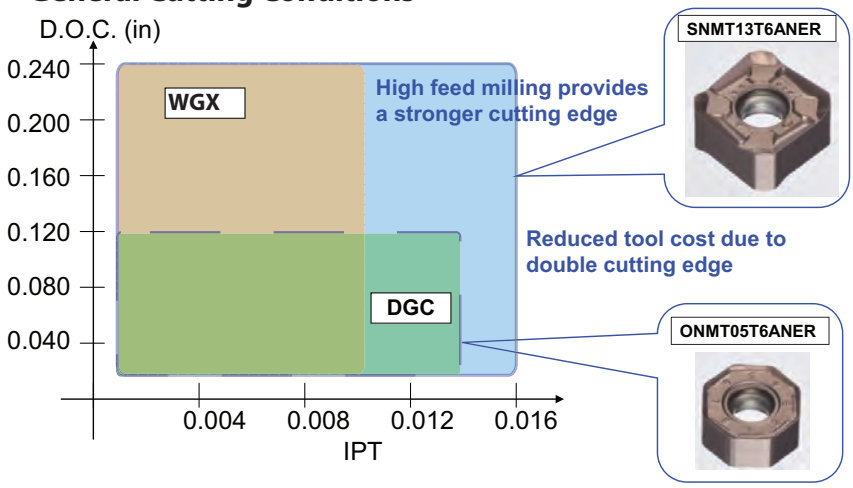
Cutting performance: DGC vs. WGC

Work material : Cr-Mo Steel(SCM435)
Cutting conditions : vc= 500 SFM fz=.012 IPT
Tool dia: 4.00"

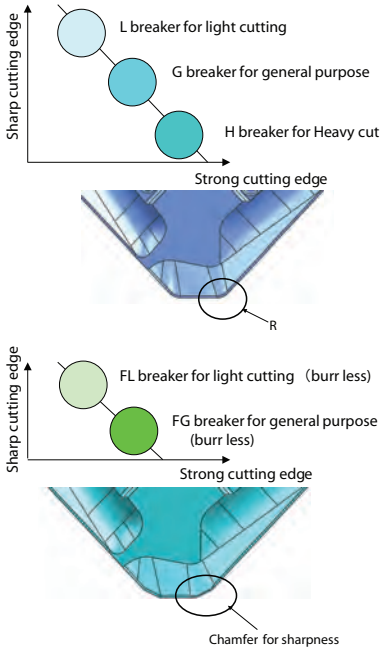




General Cutting Conditions

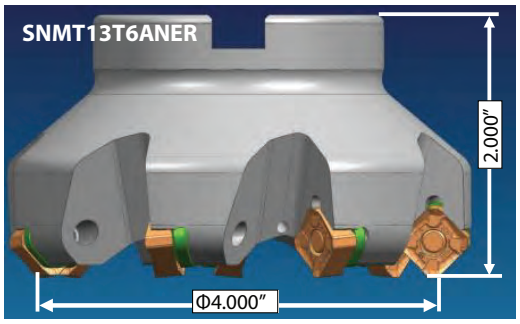


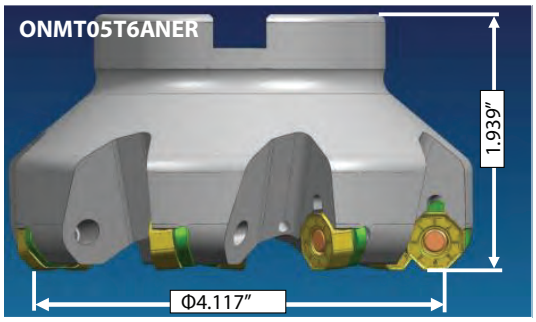
Edge Preparations



DGC Variation of Diameter of Insert

Both SNMT and ONMT inserts can be used on the same cutter body

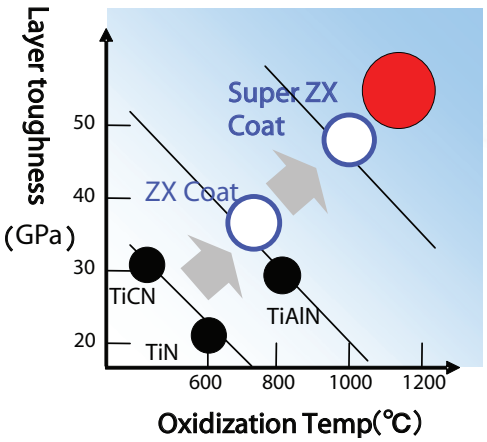


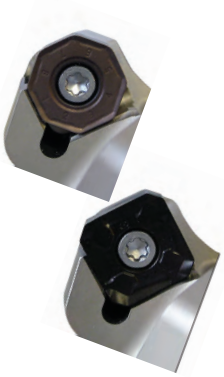


EX. φ 4.000"	# of cutting edges	Tool dia.	Cutter height	Max D.O.C
SNMT	8	4"	2"	6mm 0.236"
ONMT	16	4.117"	1.939"	3mm 0.118"

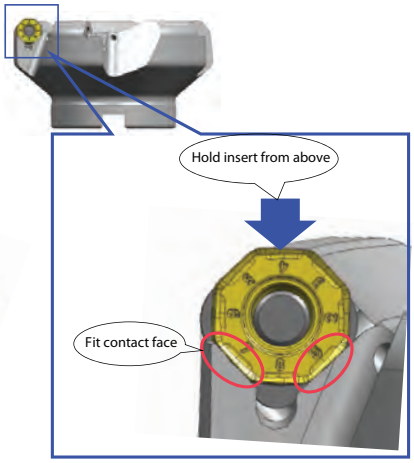
Machining stability with new Super ZX coating

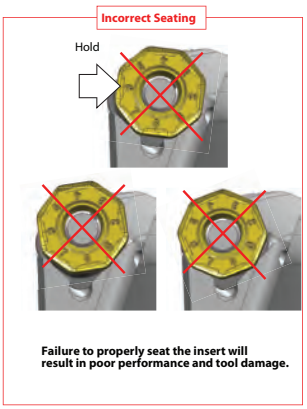
Super multi-layered new super ZX coating improves wear resistance, toughness, and anti-adhesion.



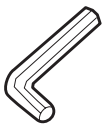


Proper Seating of the ONMT Insert





■ Parts

Seat	Seat Screw	L Type Wrench	Insert Screw	Spanner	Anti-seizure Cream	(Optional) Insert Screw(*)
						
DGCS13R	BW0609F	LH040	BFTX0412IP	TRDR15IP	SUMI-P	BFTX0418IP

*Corners can be changed simply by loosening the screw. (Only applies to DGC / DGCM types with body size φ80 or above.

DGC42000 - *INCH*

DualMill DGC Series

Double-sided 45º Lead Face Mill

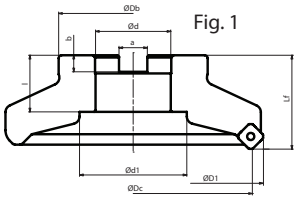


Fig. 1

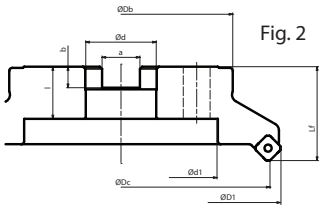


Fig. 2

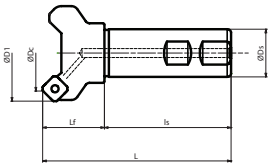


Fig. 3

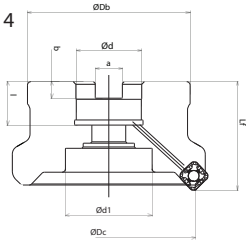


Fig. 4

Rake Angle: Radial: -10º Axial: -5º

DGC Cutter Bodies - Coarse Pitch - INCH

Catalog Number	Stock	φDc	φD1	φDb	Lf	φD	φd1	a	b	ℓ	Teeth	Fig.
DGC42000R	●	2.000	2.567	1.500	1.750	0.750	0.609	0.312	0.190	0.750	3	1
DGC42500R	●	2.500	3.067	1.750	1.750	1.000	0.797	0.375	0.220	0.750	4	1
DGC43000R	●	3.000	3.567	2.250	1.750	1.000	0.787	0.375	0.220	0.750	4	1
DGC44000R	●	4.000	4.567	2.870	2.000	1.250	1.000	0.500	0.280	0.750	5	1
DGC44000R-1.50	●	4.000	4.000		2.500	1.500	2.000	0.625	0.380	1.000	5	4
DGC45000R	●	5.000	5.567	3.750	2.500	1.500	2.000	0.625	0.380	1.000	6	1
DGC46000R	●	6.000	6.567	4.380	2.500	1.500	2.000	0.625	0.380	1.060	7	2
DGC48000R	●	8.000	8.567	5.906	2.500	2.500	5.118	1.000	0.560	1.594	8	2
DGC410000R	●	10.000	10.567	7.480	2.756	2.500	6.299	1.000	0.531	1.575	10	2

DGC Cutter Bodies - Fine Pitch - INCH

Catalog Number	Stock	φDc	φD1	φDb	Lf	φD	φd1	a	b	ℓ	Teeth	Fig.
DGCM42000R	●	2.000	2.567	1.500	1.750	0.750	0.609	0.312	0.190	0.750	4	1
DGCM42500R	●	2.500	3.067	1.750	1.750	1.000	0.797	0.375	0.220	0.750	5	1
DGCM43000R	●	3.000	3.567	2.250	1.750	1.000	0.787	0.375	0.220	0.750	6	1
DGCM44000R	●	4.000	4.567	2.870	2.000	1.250	1.000	0.500	0.280	0.750	7	1
DGCM44000R-1.50	●	4.000	4.000		2.500	1.500	2.000	0.625	0.380	1.000	7	4
DGCM45000R	●	5.000	5.567	3.750	2.500	1.500	2.000	0.625	0.380	1.000	8	1
DGCM46000R	●	6.000	6.567	4.380	2.500	1.500	2.000	0.625	0.380	1.060	10	2
DGCM48000R	●	8.000	8.567	5.906	2.500	2.500	5.118	1.000	0.560	1.594	12	2

DGC Cutter Bodies - Extra Fine Pitch - INCH

Catalog Number	Stock	φDc	φD1	φDb	Lf	φD	φd1	a	b	ℓ	Teeth	Fig.
DGCF42000R	●	2.000	2.567	1.500	1.750	0.750	0.609	0.312	0.190	0.750	5	1
DGCF42500R	●	2.500	3.067	1.750	1.750	1.000	0.797	0.375	0.220	0.750	6	1
DGCF43000R	●	3.000	3.567	2.250	1.750	1.000	0.787	0.375	0.220	0.750	8	1
DGCF44000R	●	4.000	4.567	2.870	2.000	1.250	1.000	0.500	0.280	0.750	10	1
DGCF44000R-1.50	●	4.000	4.000		2.500	1.500	2.000	0.625	0.380	1.000	10	4
DGCF45000R	●	5.000	5.567	3.750	2.500	1.500	2.000	0.625	0.380	1.000	12	1
DGCF46000R	●	6.000	6.567	4.380	2.500	1.500	2.000	0.625	0.380	1.060	14	2
DGCF48000R	●	8.000	8.567	5.906	2.500	2.500	5.118	1.000	0.560	1.594	16	2

DGC Cutter Bodies - Shank - INCH

Catalog Number	Stock	φDc	φD1	φDb	Lf	ℓs	L	Teeth	Fig.
DGC42000EW	●	2.000	2.567	1.250	1.591	2.379	3.970	4	3
DGC42500EW	●	2.000	2.567	1.250	1.591	2.379	3.970	5	

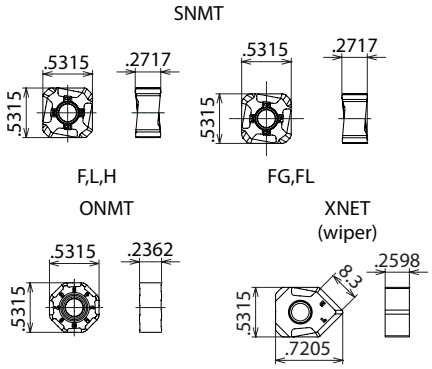
PLEASE NOTE: For 40, 50 and 63mm, arbor hole is standard in metric sizes, not inch sizes.

See pages 592-594 for recommended running parameters

Inserts	***P***			***K***		***Inserts Continued***	***P***	***M***	
Catalog Number	ACP100	ACP200	ACP300	ACK200	ACK300	Catalog Number	T4500A	ACM200	ACM300
SNMT13T6ANER-L	●	●	●	●	●	SNET13T6ANER-L		●	●
SNMT13T6ANER-G	●	●	●	●	●	SNET13T6ANER-G	●	●	●
SNMT13T6ANER-H	●	●	●	●	●				
SNMT13T6ANER-FL	●	●	●	●	●	SNET13T6ANER-FL		●	●
SNMT13T6ANER-FG	●	●	●	●	●	SNET13T6ANER-FG		●	●
ONMT05T6ANER-L	●	●	●	●	●	ONET05T6ANER-L		●	●
ONMT05T6ANER-G	●	●	●	●	●	ONET05T6ANER-G		●	●
XNEU13T6ANEN-W		●			●				

●: USA Stocked Item

Max. Depth of Cut
SNMT: 6mm (.240")
ONMT: 3mm (.120")



Rake Angle	Radial	−10°
	Axial	−5°

6 mm 45° (SNMT Type) 3 mm 45° (ONMT Type)

P Steel	M Stainless Steel	K Cast Iron	N Non-Ferrous Metal	N Aluminum	S Exotic Alloy	H Hardened Steel
●	○	○				

DUALMILL DGC13000 - METRIC

Fig. 1

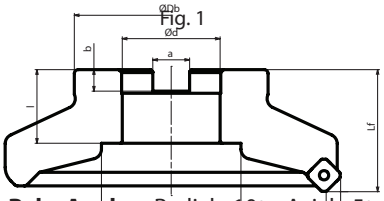


Fig. 2

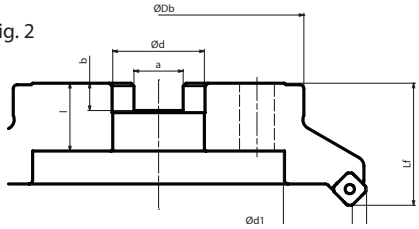
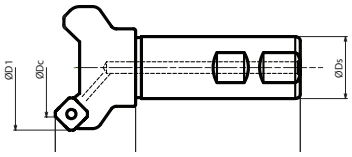


Fig. 3

Fig. 4



Rake Angle: Radial: -10° Axial: -5°

DGC Cutter Bodies - Coarse Pitch - METRIC

Catalog Number	Stock	φDc	φD1	φDb	Lf	φD	φD1	a	b	ℓ	Teeth	Fig.
DGC13040RS	●	40	54	36	40	16	13.5	8.4	5.6	18	3	1
DGC13050RS	●	50	64	40	40	22	18	10.4	6.3	20	3	1
DGC13063RS	●	63	77	50	40	22	18	10.4	6.3	20	4	1
DGC13080R	●	80	94	60	50	25.4	20	9.5	7	25	4	1
DGC13100R	●	100	114	70	63	31.75	28	12.7	8.5	32.5	5	1
DGC13125R	●	125	139	80	63	38.1	55	15.9	9.5	35.5	6	1
DGC13160R	●	160	174	100	63	50.8	72	19	9.5	38	7	2
DGC13200R	●	200	214	150	63	47.625	130	25.4	14	35	8	3
DGC13250R	●	250	264	190	63	47.625	150	25.4	14	35	10	3

DGC Cutter Bodies - Fine Pitch - METRIC

Catalog Number	Stock	φDc	φD1	φDb	Lf	φD	φD1	a	b	ℓ	Teeth	Fig.
DGCM13050RS	●	50	64	40	40	22	18	10.4	6.3	20	4	1
DGCM13063RS	●	63	77	50	40	22	18	10.4	6.3	20	5	1
DGCM13080R	●	80	94	60	50	25.4	20	9.5	7	25	6	1
DGCM13100R	●	100	114	70	63	31.75	28	12.7	8.5	32.5	7	1
DGCM13125R	●	125	139	80	63	38.1	55	15.9	9.5	35.5	8	1
DGCM13160R	●	160	174	100	63	50.8	72	19	9.5	38	10	2
DGCM13200R	●	200	214	150	63	47.625	130	25.4	14	35	12	3
DGCM13250R	●	250	264	190	63	47.625	150	25.4	14	35	14	3

DGC Cutter Bodies - Extra Fine Pitch - METRIC

Catalog Number	Stock	φDc	φD1	φDb	Lf	φD	φD1	a	b	ℓ	Teeth	Fig.
DGCF13050RS	●	50	64	40	40	22	18	10.4	6.3	20	5	1
DGCF13063RS	●	63	77	50	40	22	18	10.4	6.3	20	6	1
DGCF13080R	●	80	94	60	50	25.4	20	9.5	7	25	8	1
DGCF13100R	●	100	114	70	63	31.75	28	12.7	8.5	32.5	10	1
DGCF13125R	●	125	139	80	63	38.1	55	15.9	9.5	35.5	12	1
DGCF13160R	●	160	174	100	63	50.8	72	19	9.5	38	14	2
DGCF13200R	●	200	214	150	63	47.625	130	25.4	14	35	16	3
DGCF13250R	●	250	264	190	63	47.625	150	25.4	14	35	18	3

DGC Cutter Bodies - Shank - METRIC

Catalog Number	Stock	φDc	φD1	φDb	Lf	ℓs	L	Teeth	Fig.
DGC13040EW	●	40	54	32	40	85	125	3	4
DGC13050EW	●	50	64	32	40	85	125	3	
DGC13063EW	●	63	77	32	40	85	125	4	

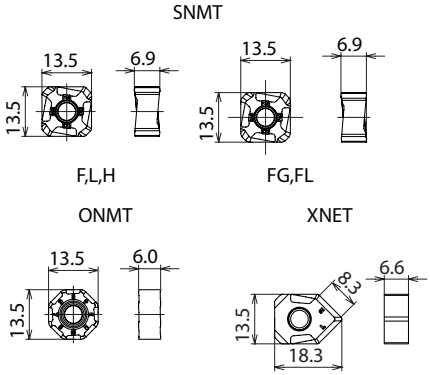
See pages 592-594 for recommended running parameters

PLEASE NOTE: For 40, 50 and 63mm, arbor hole is standard in metric sizes, not inch sizes.

Inserts	P			K		Inserts Continued	P	M	
Catalog Number	ACP100	ACP200	ACP300	ACK200	ACK300	Catalog Number	T4500A	ACM200	ACM300
SNMT13T6ANER-L	●	●	●	●	●	SNET13T6ANER-L		●	●
SNMT13T6ANER-G	●	●	●	●	●	SNET13T6ANER-G	●	●	●
SNMT13T6ANER-H	●	●	●	●	●				
SNMT13T6ANER-FL	●	●	●	●	●	SNET13T6ANER-FL		●	●
SNMT13T6ANER-FG	●	●	●	●	●	SNET13T6ANER-FG		●	●
ONMT05T6ANER-L	●	●	●	●	●	ONET05T6ANER-L		●	●
ONMT05T6ANER-G	●	●	●	●	●	ONET05T6ANER-G		●	●
XNEU13T6ANEN-W		●			●				

●: USA Stocked Item

Max. Depth of Cut
SNMT: 6mm (.240")
ONMT: 3mm (.120")



WGC Series

WaveMill Series

45° Lead Angle Face Mill

Features & Benefits

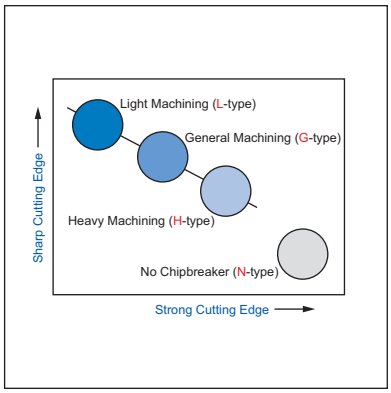
- 45° Lead Angle facilitates feed rate capabilities up to 30% higher than 90° tooling for high performance in face milling applications
- Cutter rake angles and insert design promote efficient cutting action with low horsepower consumption
- Light cutter assembly weight
- Lack of body overhang facilitates machining close to fixturing and/or part details
- Screw on insert design features carbide back up seats for durability, and ease of repair while offering easy set-up and indexing
- Accepts the widest variety of inserts of any Sumitomo milling cutter
- Available in "M" class (molded), "E" class, and several chipbreakers/edge preps and grades for almost any situation

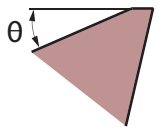
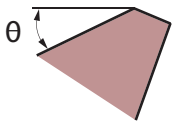
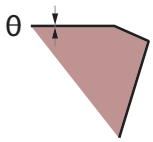
Shank type

Shell type
Coarse Pitch

Shell type
Fine Pitch

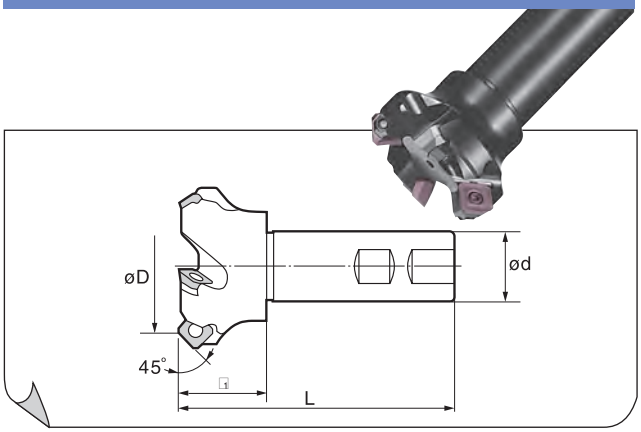
Chipbreaker Map



Breaker	L-Type	G-Type	H-Type	N-Type	W-Type
Figure					
Rake Angle θ	25°	20°	15°	0°	
Application	• Light cutting • Low force milling of thin work piece • Low burr design	• General purpose to interrupted milling • Main chipbreaker	• Interrupted to Heavy milling • For welded or rolled surfaces	• Very heavy milling	• High precision finish (Wiper edge)

Inch WGC4000

Applicable Insert: SEET, SEMT, SECW, XEEW



Weldon Shank Series

Catalog Number	Stock	Dimensions (Inches) ØD	Ød	L	ℓ1*	Insert Diameter	Max D.O.C.	# of Inserts
WGC4200WR	▲	2.000	1.250	3.970	1.7094	0.375	0.250	3
WGC4250WR	▲	2.500	1.250	3.970	1.7094	0.375	0.250	4

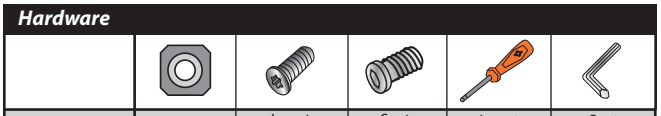
* This dimension represents the actual "extension from holder".

• USA stocked item

Insert Application Key

L	Light depth of cut applications
G	General purpose cutting applications
N	No chipbreaker
H	Heavy cutting applications

Hardware



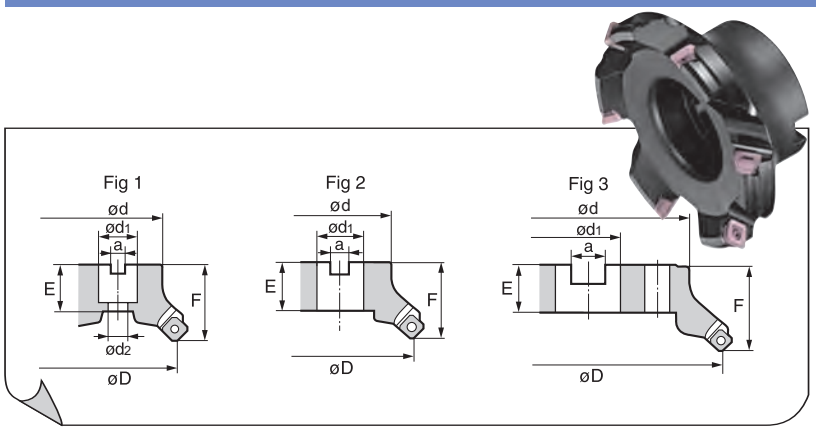
Catalog Number	Seat	Insert Screw*	Seat Screw**	Insert Wrench	Seat Wrench
WGC42□□WR	WGCS13R	BFTX03512IP	BW0507F	TRDR15IP	LH035
WGC4□□□SR	WGCS13R	BFTX03512IP	BW0507F	TRDR15IP	LH035
WGCF4□□□SR	WGCS13R	BFTX03512IP	BW0507F	TRDR15IP	LH035

* Torque specifications for insert screw=24-29 in/lbs.
**Torque specifications for seat screw=42-46 in/lbs.

See pages 592-594 for recommended running parameters

Inch WGC/F4000

Applicable Insert: SEET, SEMT, SECW, XEEW



Shell Mill Series

Catalog Number	Stock	Dimensions (Inches) ØD	Ød1	Ød2	F	Ød	a	E	No. of Teeth	Max D.O.C.	Fig.	Pitch
WGC4200SR*	▲	2.000	0.750	0.406	1.750	1.500	0.312	1.020	3	0.250	1	Coarse
WGC4250SR'	▲	2.500	1.000	0.531	1.750	1.750	0.375	1.020	4	0.250	1	Coarse
WGC4300SR'	▲	3.000	1.000	0.531	1.750	2.250	0.375	1.020	4	0.250	1	Coarse
WGC4400SR•	▲	4.000	1.250	0.656	2.000	2.870	0.500	1.020	5	0.250	1	Coarse
WGC4500SR	▲	5.000	1.500	–	2.500	3.750	0.625	1.060	6	0.250	2	Coarse
WGC4600SR	▲	6.000	1.500	–	2.500	4.380	0.625	1.060	7	0.250	2	Coarse
WGC4800SR	▲	8.000	2.500	–	2.500	5.120	1.000	1.595	8	0.250	3	Coarse
WGC41000SR	▲	10.00	2.500	–	2.756	7.087	1.000	1.575	10	0.250	3	Coarse

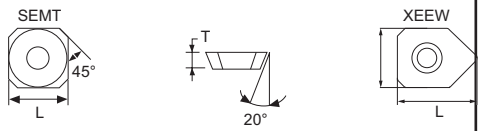
Socket Head Cap Screw: *3/8-24x1, '1/2-20x1.5, •5/8-18x1.5

Shell Mill Series

Catalog Number	Stock	Dimensions (Inches) ØD	Ød1	Ød2	F	Ød	a	E	No. of Teeth	Max D.O.C.	Fig.	Pitch
WGCF4200SR*	▲	2.000	0.750	0.406	1.750	1.500	0.312	1.020	4	0.250	1	Fine
WGCF4250SR'	▲	2.500	1.000	0.531	1.750	1.750	0.375	1.020	5	0.250	1	Fine
WGCF4300SR'	▲	3.000	1.000	0.531	1.750	2.250	0.375	1.020	6	0.250	1	Fine
WGCF4400SR•	▲	4.000	1.250	0.656	2.000	2.870	0.500	1.020	7	0.250	1	Fine
WGCF4500SR	▲	5.000	1.500	–	2.500	3.750	0.625	1.060	8	0.250	2	Fine
WGCF4600SR	▲	6.000	1.500	–	2.500	4.380	0.625	1.060	10	0.250	2	Fine
WGCF4800SR	▲	8.000	2.500	–	2.500	5.120	1.000	1.595	12	0.250	3	Fine

Socket Head Cap Screw: *3/8-24x1, '1/2-20x1.5, •5/8-18x1.5

Inserts



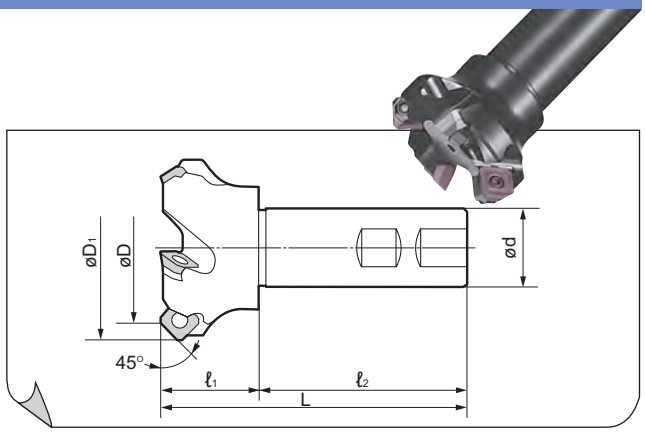
Sumitomo Catalog Number	DL1000	ACK200	ACK300	ACP100	ACP200	ACP300	T250A			A30N	EH520	H1	DA2200	DA1000	L	T	Facet Width	Facet Radii
							Cermet			Uncoated			PCD		Dimension (inch)			
SEET13T3AGFNL	▲		▲								▲	▲						
SEET13T3AGSNG		▲	▲	▲	▲	▲	▲				▲							
SEET13T3AGSNN		▲	▲	▲	▲	▲	▲			▲								
SEMT13T3AGSNG			▲	▲	▲	▲				▲					0.528	0.156	0.0639	0.0394
SEMT13T3AGSNH		▲	▲	▲	▲	▲												
SEMT13T3AGSNL		▲	▲	▲	▲	▲												
NF-SECW13T3AGTNN													▲	▲				
XEEW13T3AGERW			▲												0.707	0.156	0.320	-
NF-XEEW13T3AGFRW													▲	▲				

Note: SEET is a close tolerance, peripheral ground insert type which may provide better surface finish and repeatability

• USA stocked item
★ Worldwide Warehouse item
▲ USA limited availability item

Metric WGC4000

Applicable Insert: SEET, SEMT, SECW, XEEW



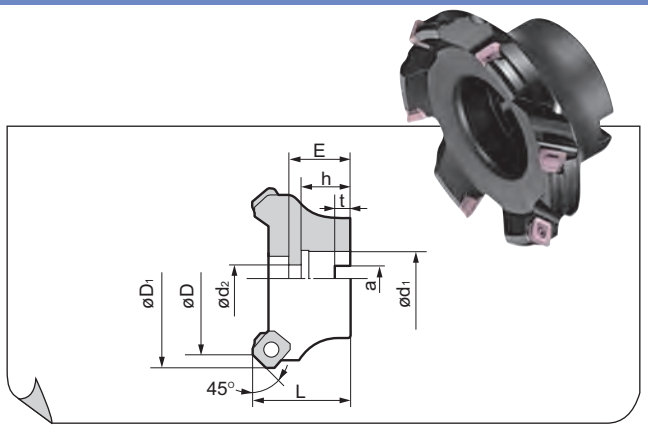
Weldon Shank Series (WGC 4000EW Type)

Catalog Number	Stock	Dimensions (mm)						# of Inserts
		ØD	ØD1	Ød	ℓ1	ℓ2	L	
WGC4032EW	▲	32	44	32	40	85	125	3
WGC4040EW	▲	40	52	32	40	85	125	3
WGC4050EW	▲	50	63	32	40	85	125	4
WGC4063EW	▲	63	76	32	40	85	125	5

▲ USA limited availability item

Metric WGC/F4000

Applicable Insert: SEET, SEMT, SECW, XEEW



Shell Mill Series (WGC 4000RS Type)

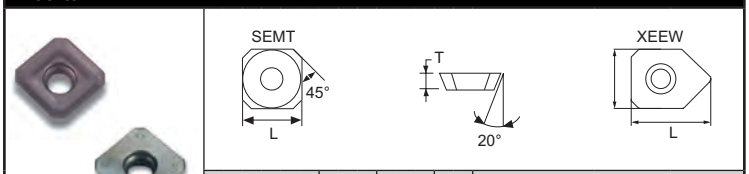
Catalog Number	Stock	Dimensions (mm)									# of Teeth
		ØD	ØD1	Ød1	Ød2	t	a	L	h	E	
WGC4040RS	▲	40	52	16	9	5.6	8.4	40	18	28	3
WGC4050RS	▲	50	63	22	11	6.3	10.4	40	20	26	3
WGC4063RS	▲	63	76	22	11	6.3	10.4	40	20	26	4

Shell Mill Series (WGCF 4000RS Type)

Catalog Number	Stock	Dimensions (mm)									# of Teeth
		ØD	ØD1	Ød1	Ød2	t	a	L	h	E	
WGCF4050RS	▲	50	63	22	11	6.3	10.4	40	20	26	5
WGCF4063RS	▲	63	76	22	11	6.3	10.4	40	20	26	6

▲ USA limited availability item

Inserts



Sumitomo Catalog Number	DL1000	ACK200	ACK300	ACP100	ACP200	ACP300	T250A (Cermet)			A30N (Uncoated)	EH520	H1	DA2200 (PCD)	DA1000	L	T	Facet Width	Facet Radii
SEET13T3AGFNL	▲		▲								▲	▲						
SEET13T3AGSNG		▲	▲	▲	▲	▲	▲				▲							
SEET13T3AGSNN		▲	▲	▲	▲	▲	▲			▲								
SEMT13T3AGSNG		▲	▲	▲	▲	▲				▲					0.528	0.156	0.0639	0.0394
SEMT13T3AGSNH		▲	▲	▲	▲	▲												
SEMT13T3AGSNL		▲	▲	▲	▲	▲												
NF-SECW13T3AGTNN													▲	▲				
XEEW13T3AGERW			▲												0.707	0.156	0.320	-
NF-XEEW13T3AGFRW													▲	▲				

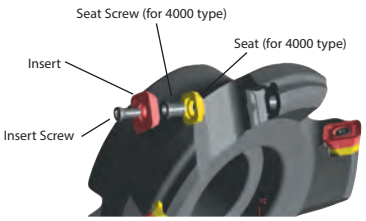
Note: SEET is a close tolerance, peripheral ground insert type which may provide better surface finish and repeatability

- • USA stocked item
- ▲ USA limited availability item

See pages 593-594 for recommended running parameters

Hardware

Catalog Number	Seat	Insert Screw*	Seat Screw**	Insert Wrench	Seat Wrench
WGC4□□□EW	–	BFTX03512IP	–	TRDR15IP	–
WGC/F4□□□EW/RS	WGCS13R	BFTX03512IP	BW0507F	TRDR15IP	LH035



* Torque specifications for insert screw=24-29 in/lbs.
**Torque specifications for seat screw=42-46 in/lbs.

Rake Angle		
Radial	−10° to −19° (3000 Type)	−20° to −24° (4000 Type)
Axial	+20°	+20° to 22°

4 mm 45° (3000 Type) | 6 mm 45° (4000 Type)

P	M	K	N	N	S	H
Steel	Stainless Steel	Cast Iron	Non-Ferrous Metal	Aluminum	Exotic Alloy	Hardened Steel
●	●	●	●	●	●	

Metric WGC/F4000

Applicable Insert: SEET, SEMT, SECW, XEEW

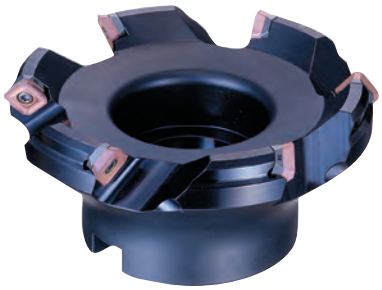


Fig 1

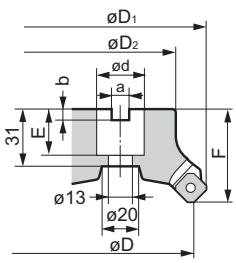


Fig 2

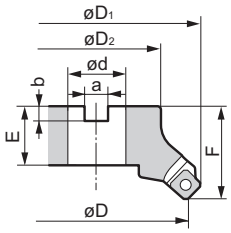
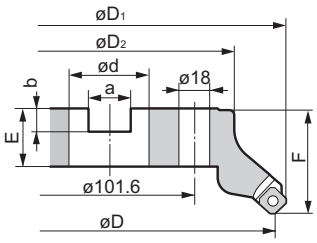


Fig 3



Shell Mill Series (WGC 4000 Type)

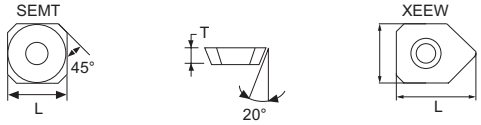
Catalog Number	Stock	Dimensions								No. of Teeth	Weight (kg)	Fig.
		ØD	$ØD_1$	$ØD_2$	F	Ød	a	b	E			
WGC4080R	▲	80	93	60	50	25.4	9.5	6	25	4	1.0	1
WGC4100R	▲	100	113	70	50	31.75	12.7	8	32	5	1.5	2
WGC4125R	▲	125	138	80	63	38.1	15.9	10	38	6	2.6	2
WGC4160R	▲	160	173	100	63	50.8	19	11	38	7	4.0	2
WGC4200R	▲	200	213	130	63	47.625	25.4	14	35	8	6.6	3

Shell Mill Series (WGCF 4000 Type)

Catalog Number	Stock	Dimensions								No. of Teeth	Weight (kg)	Fig.
		ØD	$ØD_1$	$ØD_2$	F	Ød	a	b	E			
WGCF4080R	▲	80	93	60	50	25.4	9.5	6	25	8	1.0	1
WGCF4100R	▲	100	113	70	50	31.75	12.7	8	32	10	1.5	2
WGCF4125R	▲	125	138	80	63	38.1	15.9	10	38	12	2.6	2
WGCF4160R	▲	160	173	100	63	50.8	19	11	38	16	4.0	2
WGCF4200R	▲	200	213	130	63	47.625	25.4	14	35	20	6.6	3

▲ USA limited availability item

Inserts



Sumitomo Catalog Number	DL1000	ACK200	ACK300	ACP100	ACP200	ACP300	T250A (Cermet)			A30N (Uncoated)	EH520	H1	DA2200 (PCD)	DA1000	L	T	Facet Width	Facet Radii
															Dimension (inch)			
SEET13T3AGFNL	▲		▲								▲	▲						
SEET13T3AGSNG		▲	▲	▲	▲	▲	▲				▲							
SEET13T3AGSNN		▲	▲	▲	▲	▲	▲			▲								
SEMT13T3AGSNG		▲	▲	▲	▲	▲				▲					0.528	0.156	0.0639	0.0394
SEMT13T3AGSNH		▲	▲	▲	▲	▲												
SEMT13T3AGSNL		▲	▲	▲	▲	▲												
NF-SECW13T3AGTNN													▲	▲				
XEEW13T3AGERW			▲												0.707	0.156	0.320	-
NF-XEEW13T3AGFRW													▲	▲				

Note: SEET is a close tolerance, peripheral ground insert type which may provide better surface finish and repeatability

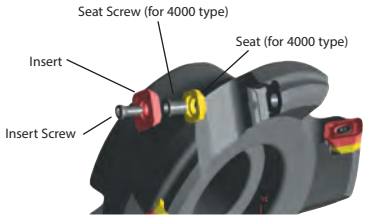
• USA stocked item

▲ USA limited availability item

See pages 593-594 for recommended running parameters

Hardware

Catalog Number	Seat	Insert Screw*	Seat Screw**	Insert Wrench	Seat Wrench
WGC/F 4□□□R	WGCS13R	BFTX03512IP	BW0507F	TRDR15IP	LH035



* Torque specifications for insert screw=24-29 in/lbs.

**Torque specifications for seat screw=42-46 in/lbs.

GOALMILL

Applicable Insert: LNGX

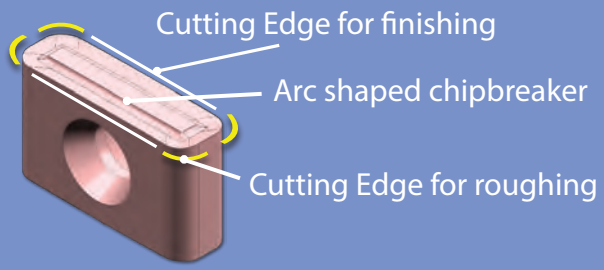
SumiMill GOALMILL

Cast Iron Roughing & Finishing Face Mill

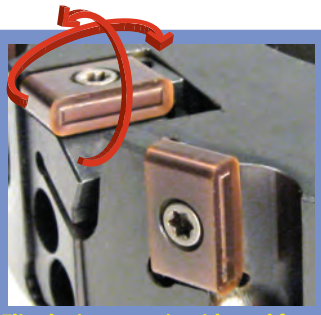
Features & Benefits

- Excellent surface finish capabilities
- Consists of fixed pocket inserts on the periphery
- Cartridges adjust easily and use the same insert as the periphery pockets
- All LNGX inserts have 8 cutting edges (12 when used with both right and left hand cutters)

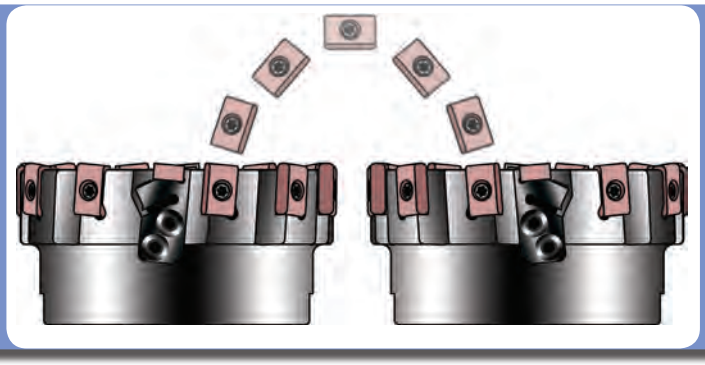
Insert Features



Four indexes can be used in the periphery pocket if the insert is rotated.



Flip the insert on its side and four indexes can also be used in the finishing cartridge.



By switching the insert to a left hand cutter, FOUR MORE ROUGHING EDGES can now be used. A total of 12 indexes are possible when using both right and left hand cutters.*

*Left-handed cutters are made to order

Master Tool can provide custom-made milling cutters to accommodate your specific applications.

Roughing	Semi-finishing	Finishing
<50Rz	<18Rz	<12.5Rz
45° 	45° w/wiper 	90° 

SumiMill GOALMILL

Applicable Insert: LNGX

Fig. 1

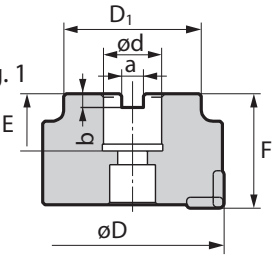


Fig. 2

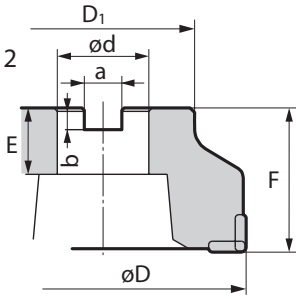
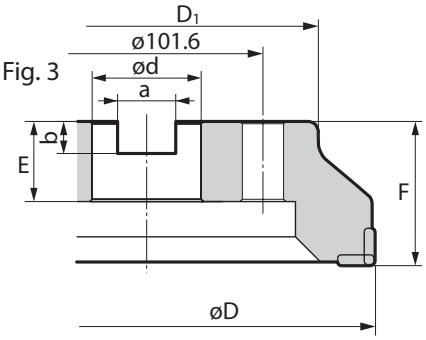


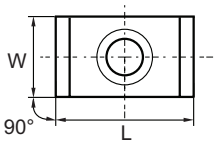
Fig. 3

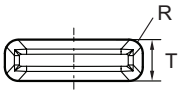


GOALMILL Cutter Bodies												Effective Cutting Dia.
Catalog Number	Stock	Dimensions (inch)							# of Teeth		Fig.	
		øD	øD1	ød	a	b	E	F	Roughing	Wiper		
GFV53000R	●	3.000	2.900	1.000	0.375	0.220	1.060	2.000	6	2	1	2.352
GFV54000R	●	4.000	3.380	1.500	0.638	0.385	1.060	2.000	10	2	1	3.342
GFV56000R	●	6.000	4.880	2.000	0.761	0.438	1.000	2.500	12	4	2	5.342
GFV58000R	●	8.000	6.040	2.500	1.136	0.560	1.595	2.500	20	4	3	7.342

NOTE: Left-handed cutters are made to order

GOALMILL Inserts & Hardware

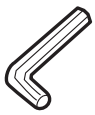




Catalog Number	Stock	Dimensions (inch)				Insert Screw*	Insert Wrench
		L	W	T	R		
LNGX160516PNFN-W-K244L9	●	0.625	0.375	0.187	0.063	BFTX03588	TTX15W
LNGX160516PNFN-W-K246L9	●						
LNGX160516PNFN-W-SN2100K	●						

*Torque specifications for insert screw= 26.5 in/lbs.

Cartridge & Hardware

				
Wiper Cartridge*	Cartridge Mount Screw	Wrench for Cartridge Mount Screw	Axial Adjustment Screw	Wrench for Adjustment Screw
GFVK5R	BX0418	LT15	ED090225E	TTX15W

*Insert not included with cartridge

Micro Adjustment:

- Check each of the fixed pocket milling inserts to find the one at the highest setting.
- Load the wiper cartridges into the face mill body and torque the cartridge mount screw
- Adjust the wiper cartridge using the axial adjustment screw so that it is .0010" ~ .0012" above the highest fixed pocket milling insert

Recommended Running Conditions

Gray Cast Iron			
Grade	SFM	D.O.C.	IPT
K244L9	450~1150	0.004~0.030	0.004~0.015
K246L9	400~650		
SN2100K	1000~3000	0.010~0.080	0.004~0.010

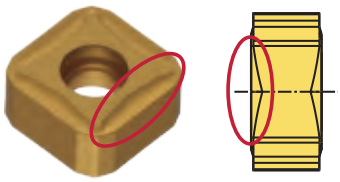
Ductile Cast Iron			
Grade	SFM	D.O.C.	IPT
K244L9	450~800	0.004~0.030	0.004~0.015
K246L9	400~600		

*Greater depths of cut (up to 4mm) possible if wiper cartridges are removed.

NOTE: If the wiper inserts will be indexed without presetting the wiper cartridge heights again, the first preset height should be from 0.001" to 0.002" (0.025 to 0.050 mm) above the highest fixed pocket periphery insert.

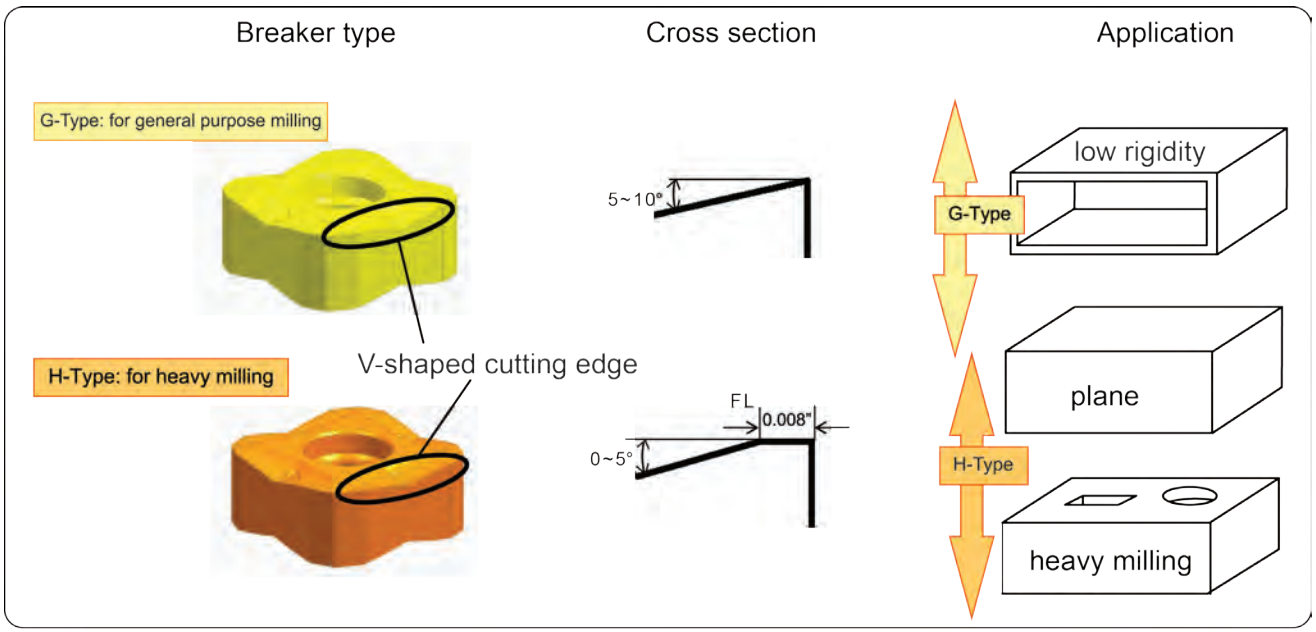
Features & Benefits

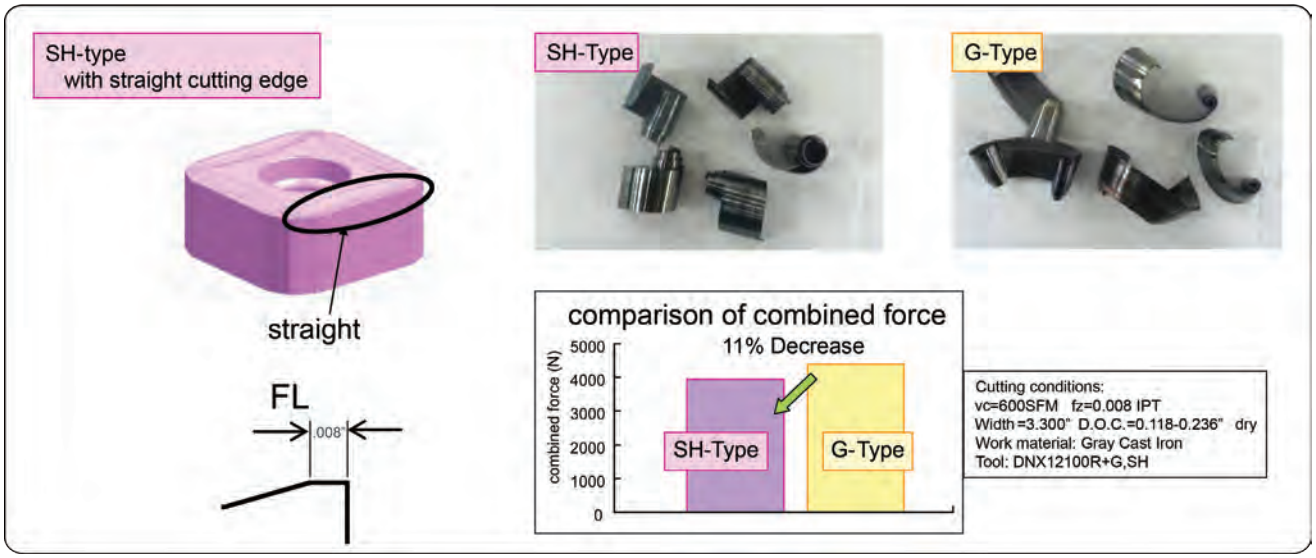
- For iron and steel applications
- Combination of cutter body type and insert design allows for a wider application range
- Low cutting forces and V-shaped insert edge together provide stable machining and less vibration
- Significant cost savings due to 8 cutting edges; able to achieve 1.5 times higher efficiency than the leading competitor



V-shaped cutting edge

Insert Characteristics





Rake Angle		
	Radial	−6°
	Axial	−5°

Max. Depth of Cut: 8mm / 25°

P	M	K	N	N	S	H
Steel	Stainless Steel	Cast Iron	Non-Ferrous Metal	Aluminum	Exotic Alloy	Hardened Steel
○		●				

DNX Series

Applicable Insert: SNMT

Fig. 1

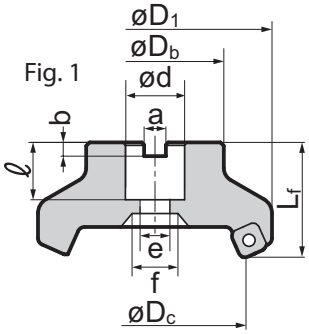


Fig. 2

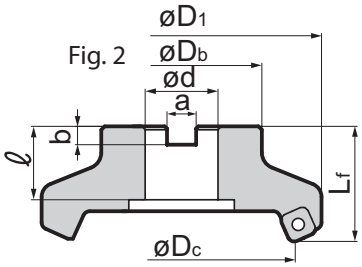
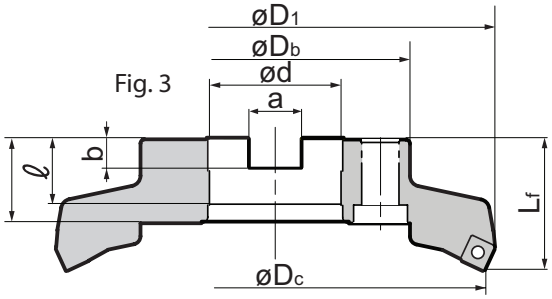


Fig. 3



SumiMill DNX Bodies - Coarse Pitch

Sumitomo Cat. Number	Dimensions (in)										# of Teeth	Pitch	Max D.O.C.	Fig.
	øDc	øD1	øDb	Lf	ød	a	b	ℓ	e	f				
DNX43000R	3.000	3.303	2.250	1.750	1.000	0.375	0.220	1.020	0.531	0.797	6	Coarse	0.314″	1
DNX44000R	4.000	4.315	2.870	2.000	1.250	0.500	0.280	1.020	0.656	1.000	7			1
DNX44000R-1.50	4.000	4.303	3.750	2.500	1.500	0.625	0.380	1.000	0.780	1.180	7			4
DNX45000R	5.000	5.303	3.750	2.500	1.500	0.625	0.380	1.060	-	-	8			2
DNX46000R	6.000	6.303	4.380	2.500	1.500	0.625	0.380	1.060	-	-	10			2
DNX48000R	8.000	8.303	5.120	2.500	2.500	1.000	0.560	1.595	-	-	12			3

SumiMill DNX Bodies - Fine Pitch

Sumitomo Cat. Number	Dimensions (in)										# of Teeth	Pitch	Max D.O.C.	Fig.
	øDc	øD1	øDb	Lf	ød	a	b	ℓ	e	f				
DNXF43000R	3.000	3.303	2.250	1.750	1.000	0.375	0.220	1.020	0.531	0.797	8	Fine	0.314″	1
DNXF44000R	4.000	4.315	2.870	2.000	1.250	0.500	0.280	1.020	0.656	1.000	10			1
DNX44000R-1.50	4.000	4.303	3.750	2.500	1.500	0.625	0.380	1.000	0.780	1.180	10			4
DNXF45000R	5.000	5.303	3.750	2.500	1.500	0.625	0.380	1.060	-	-	11			2
DNXF46000R	6.000	6.303	4.380	2.500	1.500	0.625	0.380	1.060	-	-	12			2
DNXF48000R	8.000	8.303	5.120	2.500	2.500	1.000	0.560	1.595	-	-	14			3

Inserts for DNX Series

Sumitomo Cat. Number	ACK100	ACK200	ACK300	ACP200	Edge Type	Fig.
SNMT1205ZNEN-G	●	●	●	●	V shaped	4
SNMT1205ZNEN-H	●	●	●	●		5
SNMT1205ZNEN-SH	★	★	★	★	Straight edge	6

Fig. 4

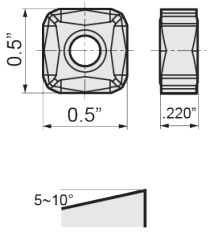


Fig. 5

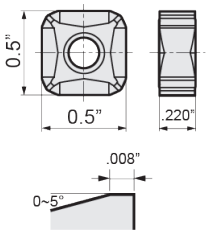
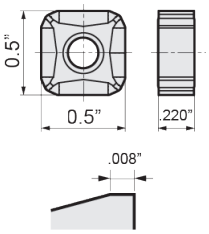


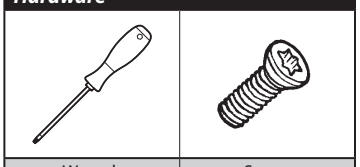
Fig. 6



Recommended Running Conditions

	Cast Iron				Steel	
	Gray Cast Iron		Ductile Cast Iron		Carbon Steel	Alloy Steel
Grade	**ACK200**	**ACK300**	**ACK100**	**ACK200**	**ACP200**	**ACP200**
SFM	400 ~ 1100	400 ~ 950	350 ~ 950	350 ~ 850	350 ~ 875	350 ~ 950
IPT	.004 ~ .014	.004 ~ .014	.004 ~ .012	.004 ~ .012	.004 ~ .010	.004 ~ .010
Max. D.O.C.	~ 0.314	~ 0.314	~ 0.314	~ 0.314	~ 0.314	~ 0.314

Hardware

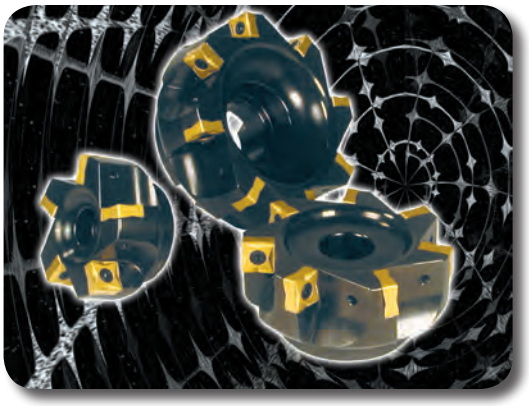


Wrench	Screw
TRDR15IP	BFTX0412IP

SPIDER MILL

Applicable Insert: SNEX, SNMX

High Productivity Cast Iron Milling Cutter With Eight Cutting Edges



Features & Benefits

- Double negative milling cutter with positive cutting insert geometry
- High productivity shell mill for gray cast iron and ductile iron face milling
- Eight (8) cutting edges per insert
- Available in the new grades ACK100 and ACK200
- Unique positive chipbreaker insert provides less cutting force, more productivity and longer tool life

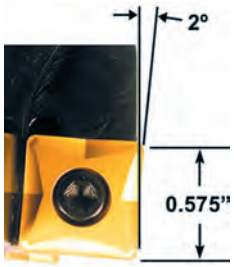


Figure 1

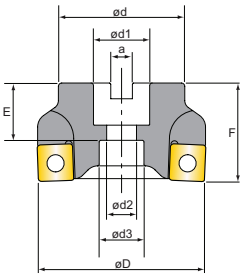
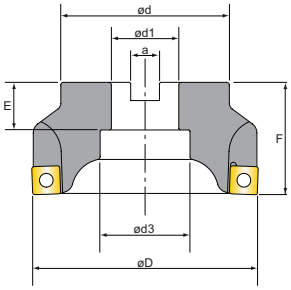


Figure 2

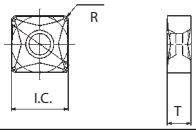


Spider Mill Cutter Bodies

Sumitomo Cat. No.	Status	Dimensions (Inch) øD	ød	F	ød1	ød2	ød3	E	a	I.C.	Pitch	Fig.
SDP42000R	•	2.000"	1.500"	1.750"	0.750"	0.406"	0.609"	1.020"	0.312"	0.500"	4	1
SDP42500R	•	2.500	1.750"	1.750"	1.000"	0.531"	0.797"	1.020"	0.375"	0.500"	5	1
SDP43000R	•	3.000	2.250"	1.750"	1.000"	0.531"	0.797"	1.020"	0.375"	0.500"	6	1
SDP53000R	•	3.000"	2.250"	1.750"	1.000"	0.531"	0.797"	1.020"	0.385"	0.625"	5	1
SDP54000R	•	4.000"	2.756"	2.000"	1.250"	0.656"	1.030"	1.090"	0.515"	0.625"	7	1
SDP55000R	•	5.000"	3.750"	2.500"	1.500"	N/A	2.000"	1.060"	0.635"	0.625"	8	2
SDP56000R	•	6.000"	4.380"	2.500"	1.500"	N/A	2.000"	1.060"	0.635"	0.625"	10	2

• USA stocked item

Inserts



Sumitomo Cat. No.	CVD Coated ACK100	ACK200	Dimensions (Inches) I.C.	T	R
SNMX120412DP	•	•	0.500	0.1875	0.031
SNEX156612DP	•	•	0.625	0.2660	0.047

• USA stocked item

Hardware

Applicable Cutter	Insert Screw	Wrench
SDP4□000R	BFTX0412N	TRD15
SDP5□000R	BFTX0513N	TTX20

Torque specifications for BFTX0513N is 45-49 in/lbs.

See pages 593-594 for recommended running parameters

High Feed Milling

Pages 315-319

INDEXABLE MILLING CUTTERS **PAGES**

MSX Mill Series

Applicable Insert: WDMT

Rake Angle		
Radial	-3° to -8°	
Axial	8°	

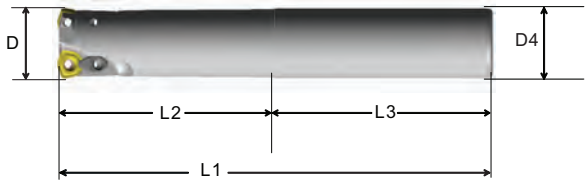
1.5mm 70° (08000 Type) | 2.0mm 70° (12000 Type) | 2.5mm 70° (14000 Type)

P	M	K	N	N	S	H
Steel	Stainless Steel	Cast Iron	Non-ferrous Metal	Aluminum	Exotic Alloy	Hardened Steel
○	○	○				○

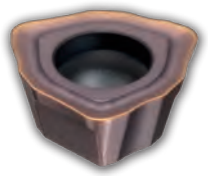
Features & Benefits

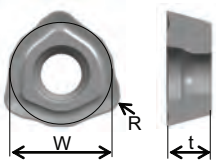
- High feed rate--up to .055 IPT
- Higher clamping rigidity due to double clamping system
- Air hole allows for better chip evacuation
- U.S. stock standard bodies available in .750" - 1.500"
- Capable of both ramping and helical boring applications
- Available in Weldon (EW) and Cylindrical (ELC) type shanks

MSX Mill Availability



Inserts





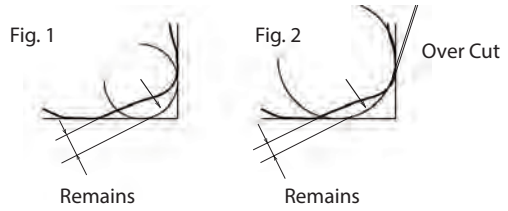
Sumitomo Cat. No.	Stock	Dimensions (in) D	D4	L1	L2	L3	# of teeth	Insert	ACK200	ACK300	ACP200	ACP300	Insert Dimensions (in) W	R	t
MSX20750EW	●	0.750	0.750	5.125	2.000	2.031	3	**WDMT0603ZDTR**	●	●	●	●	.250	.0591	.1181
MSX20750ELC	●		0.750	8.000	2.000	6.000	3								
MSX31000EW	●	1.000	1.000	4.781	2.500	2.281	2	**WDMT0804ZDTR**	●	●	●	●	.335	.0787	.1575
MSX31000ELC	●		1.000	10.000	2.500	7.500	2								
MSX41250EW	●	1.250	1.250	4.781	2.500	2.281	2	**WDMT1205ZDTR**	●	●	●	●	.472	.0787	.1969
MSX41250ELC	●		1.250	10.000	2.500	7.500	2								
MSX41500EW	●	1.500	1.250	4.781	2.500	2.281	2	**WDMT1205ZDTR**	●	●	●	●	.472	.0787	.1969
MSX41500ELC	●		1.500	10.000	2.500	7.500	2								
MSXF31000EW	○	1.000	1.000	4.781	2.500	2.281	3	**WDMT0804ZDTR**	●	●	●	●	.335	.0787	.1575
MSXF31250EW	○	1.250	1.250	4.781	2.500	2.281	3								
MSXF31500EW	○	1.500	1.500	4.781	2.500	2.281	4								
MSXF41500EW	○	1.500	1.500	4.781	2.500	2.281	3	**WDMT1205ZDTR**	●	●	●	●	.472	.0787	.1969

● USA stocked item ○: Available 1st Quarter 2015

Ramp Angle

Cutting Edge dia. (in)	WDMT0603ZDTR Max. Ad: .039 in R: .079 in			WDMT0804ZDTR Max. Ad: .060 in R: .098 in			WDMT1205ZDTR Max.Ad: .079 in R: .118 in		
	Ramp Angle	Helical Milling Min øD (in)	Helical Milling Max øD (in)	Ramp Angle	Helical Milling Min øD (in)	Helical Milling Max øD (in)	Ramp Angle	Helical Milling Min øD (in)	Helical Milling Max øD (in)
0.750	4° 00'	1.110	1.417						
1.000	2° 00'	1.580	1.920	4° 00'	1.420	1.920			
1.250				2° 30'	1.930	2.400	6° 30'	1.620	2.400
1.500				1° 30'	2.450	2.910	4° 00'	2.130	2.910

Programmed Radius Chart



R	WDMT0603ZDTR Remains (in)	Over Cut (in)	Fig.	WDMT0804ZDTR Remains (in)	Over Cut (in)	Fig.	WDMT1205ZDTR Remains (in)	Over Cut (in)	Fig.
.079	.016	0	1	.029	0	1	.052	0	1
.098	.010	.003	2	.023	0	1	.046	0	1
.118	.005	.011	2	.018	.001	2	.041	0	1
.138				.012	.007	2	.035	.00004	2
.158				.007	.014	2	.029	.004	2
.177							.024	.010	2
.197							.018	.016	2

Hardware

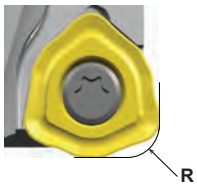
Screw	Wrench	Clamp	Ring	Clamp Screw	Applicable Cutter
BFTX02505IP	TRDR08IP	-	-	-	MSX20000
BFTX0305IP	TRDR08IP	CCH3.5	CR3	BFTX03510IP08	MSX30000 ≤1.0"
BFTX0306IP	TRDR08IP	CCH3.5	CR3	BFTX03510IP08	MSX30000 >1.0"
BFTX0409IP	TRDR15IP	CCH3.5	CR3	BFTX03510IP15	MSX40000

Recommended Running Conditions

ISO	Work Material	Hardness	Cutting Speed v_c(sfm) Min - Max	Feed Rate f_z(ipt) Min - Max	Depth of Cut	Recommended Grade
P	General Steel	>=200HB	330 ~ 660	<0.047	<0.039	ACP200, ACP300
	Alloy Steel	>=HRC45	260 ~ 590	<0.047	<0.031	ACP200, ACP300
M	Stainless Steel	-	260 ~490	<0.031	<0.039	ACP300, ACP300
K	Cast Iron	-	330 ~ 660	<0.055	<0.039	ACK200, ACP300

NOTE: The cutting conditions above are a guide. Actual Conditions will need to be adjusted according to machine rigidity, work clamp rigidity, cutting depth and other factors.

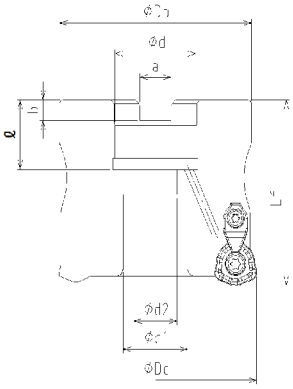
Ad: Maximum cutting depth



Rake Angle		
Radial	-2° to -8°	
Axial	8°	

1.5mm 70° (08000 Type) | 2.0mm 70° (12000 Type) | 2.5mm 70° (14000 Type)

P Steel	M Stainless Steel	K Cast Iron	N Non-ferrous Metal	N Aluminium	S Exotic Alloy	H Hardened Steel
○	○	○				○



MSX Shell Mill - INCH

Catalog Number	Stock	Dimensions (in)									No. of Teeth	Insert
		Dc	Db	Lf	d	a	b	ℓ	d1	d2		
MSX31500R	○	1.500	1.339	1.530	0.750	0.312	0.190	0.750	0.609	0.406	4	WDMT0804
MSX32000R	○	2.000	1.850	2.000	0.750	0.312	0.190	0.750	0.609	0.406	5	
MSX42000R	○	2.000	1.850	2.000	0.750	0.312	0.190	0.750	0.609	0.406	4	WDMT1205
MSX42500R	○	2.500	2.362	2.000	1.000	0.375	0.220	0.750	0.797	0.530	5	
MSX43000R	○	3.000	2.756	2.000	1.000	0.375	0.220	0.750	0.797	0.530	6	
MSX44000R-1.25	○	4.000	3.740	2.500	1.250	0.500	0.280	0.750	1.000	0.656	7	
MSX44000R-1.50	○	4.000	3.740	2.500	1.500	0.625	0.380	1.000	2.000	0.781	7	
MSXM42000R	○	2.000	1.850	2.000	0.750	0.312	0.190	0.750	0.609	0.406	5	
MSX52000R	○	2.000	1.850	2.000	0.750	0.312	0.190	0.750	0.609	0.406	4	WDMT1406
MSX52500R	○	2.500	2.362	2.000	1.000	0.375	0.220	0.750	0.797	0.531	5	
MSX53000R	○	3.000	2.756	2.000	1.000	0.375	0.220	0.750	0.797	0.531	5	
MSX54000R	○	4.000	3.740	2.500	1.250	0.500	0.280	0.750	1.000	0.656	6	
MSX54000R-1.50	○	4.000	3.740	2.500	1.500	0.625	0.380	1.000	2.000	0.781	7	
MSX55000R	○	5.000	3.937	2.500	1.500	0.625	0.380	1.000	2.000	0.781	7	
MSX56000R	○	6.000	3.937	2.500	1.500	0.625	0.380	1.000	2.000	0.781	8	

○: Available 1st Quarter 2015

Fig1

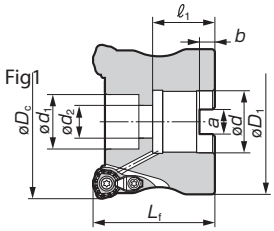
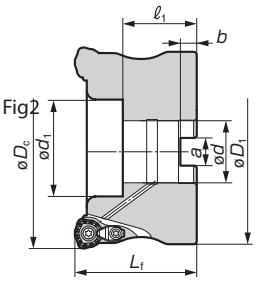


Fig2



MSX Shell Mill - Metric

Catalog Number	Stock	Dimensions (mm)									No. of Teeth	Weight (kg)	Fig.	Insert
		øDc	øD1	Lf	ød	a	b	ℓ1	ød1	ød2				
MSX08040RS	★	40	37	45	16	8.4	5.6	18	13.5	9	4	0.2	1	WDMT0804
MSX12050RS	★	50	47	50	22	10.4	6.3	20	18	11	4	0.3	1	WDMT1205
MSX12063RS	★	63	60	50	22	10.4	6.3	20	18	11	5	0.6	1	
MSX14050RS	★	50	47	50	22	10.4	6.3	20	17	11	3	0.3	1	WDMT1406
MSX14063RS	★	63	60	50	22	10.4	6.3	20	18	11	4	0.6	1	
MSX14080RS	★	80	76	63	27	12.4	7.0	25	20	13.5	5	1.4	1	
MSX14100RS	★	100	96	63	32	14.4	8.5	32	44	-	6	2.2	2	
MSX14080R	★	80	76	63	31.75	12.7	8.0	32	28	17	5	1.3	1	
MSX14100R	★	100	96	63	31.75	12.7	8.0	32	28	17	6	2.4	1	

Please use JISB1176 hexagonal bolt (ø80: M12 × 30-35mm, ø100: M16 × 40-45mm) for securing the ø80 or ø100 cutter to the arbour.

Metal Slash Mill
High Feed Milling Cutter

Features & Benefits

- Screw-on insert assembly
- U.S. stock standard bodies available in 2.000" - 4.000" diameters Worldwide stock includes 63.0 mm - 125 mm
- High feed rates (Maximum feed rate = 0.078" IPT) result in high productivity milling
- Four corner insert design yields low tooling costs per part
- Unique design directs cutting forces into the machine spindle to facilitate high feed rates even in low rigidity conditions
- Insert grades available for carbon steel, stainless steel, cast iron, & die steel

Fig 1

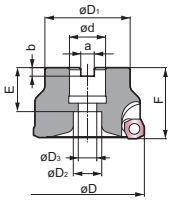
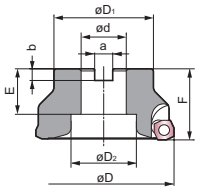


Fig 2

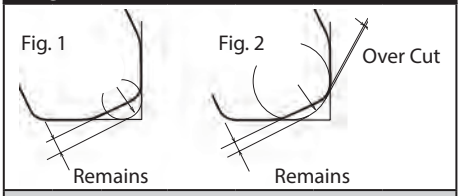


MS Mill Availability

Sumitomo Cat. No.	Stock	Dimensions (Inch / *mm*)									No. of Teeth	Fig.
		D	D1	D2	D3	F	d	a	b	E		
MS14020SR	•	2.000	1.500	0.609	0.406	1.750	0.750	0.319	0.190	1.020	4	1
MS14025SR	•	2.500	1.750	0.797	0.531	1.750	1.000	0.375	0.220	1.020	4	1
MS14030R	•	3.000	2.250	0.797	0.531	1.750	1.000	0.375	0.220	1.020	5	1
MS14040R	•	4.000	2.870	1.000	0.656	2.000	1.250	0.500	0.280	1.020	6	1
MS14063RS	★	*63.0*	*59.0*	*18.0*	*11.0*	*40.0*	*22.0*	*10.4*	*6.3*	*26.0*	*4*	*1*
MS14080R	★	*80.0*	*60.0*	*20.0*	*13.0*	*50.0*	*25.4*	*9.5*	*6.0*	*31.0*	*5*	*1*
MS14100R	★	*100.0*	*70.0*	*46.0*	*–*	*50.0*	*31.8*	*12.7*	*8.0*	*32.0*	*6*	*2*
MS14125R	★	*125.0*	*80.0*	*56.0*	*–*	*63.0*	*38.1*	*15.9*	*10.0*	*38.0*	*7*	*2*

• USA stocked item ★ Worldwide Warehouse item

Programmed Radius Chart



SDMW (SDEW)1406ZDTR						
R		Remains		Over Cut		Fig.
in	mm	in	mm	in	mm	
.079	2.0	0.064	1.628	0	0	1
.098	2.5	0.058	1.464	0	0	1
.118	3.0	0.051	1.300	0	0	1
.138	3.5	0.455	1.136	0	0	1
.158	4.0	0.038	0.972	0.0005	0.014	2
.177	4.5	0.032	0.808	0.005	0.118	2
.197	5.0	0.025	0.644	0.010	0.258	2

Inserts

Fig 3

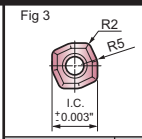
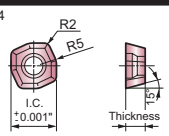


Fig 4



Sumitomo Cat. No.	Coated					Dimensions (Inches)				Fig.
	CS3000	ACK200	ACK300	ACP200	ACP300	I.C.	T	R2	R5	
SDEW1406ZDTR	★	★	★	★	•	0.551	0.236	0.079	0.197	4
SDMW1406ZDTR	•	•	•	•	•	0.551	0.236	0.079	0.197	3

SDEW = Ground tolerance inserts
• USA stocked item ★ Worldwide Warehouse item

Hardware


Applicable Cutter	Insert Screw	Wrench
MS 1400 series	BFTX0513N	TTX20

Torque specifications for BFTX0513N is 45-49 in/lbs.

Ramp Angle

Cutting Edge dia.	SDMW (SDEW)1406ZDTR		
	Max. Ad: .039 in (.015mm) R: .079 in (.003mm)		
	Ramp Angle	Helical Milling	
		Min øD	Max øD
2.0	2° 00'	3.189	3.858
2.5	1° 30'	4.213	4.882
3.0	1° 10'	5.197	5.866
4.0	0° 49'	7.205	7.874
63	*1° 00'*	*106*	*123*
80	*0° 50'*	*140*	*157*
100	*0° 30'*	*180*	*197*
125	*0° 30'*	*230*	*247*

Recommended Running Conditions

Material	Cutting Speed (SFM)	Feed Rate (IPT)	Depth of Cut (Inch)	Recommended Grades
Carbon Steel	500 ~ 820	< 0.078	< 0.059	ACP200, ACP300
Die Steel	325 ~ 650	< 0.059	< 0.059	ACP200, ACP300
Stainless Steel	525 ~ 650	< 0.039	< 0.059	ACP200, ACP300
Cast Iron	325 ~ 650	< 0.059	< 0.078	ACK200, ACK300

Multi-purpose Milling

Pages 319-330

INDEXABLE MILLING CUTTERS **PAGES**

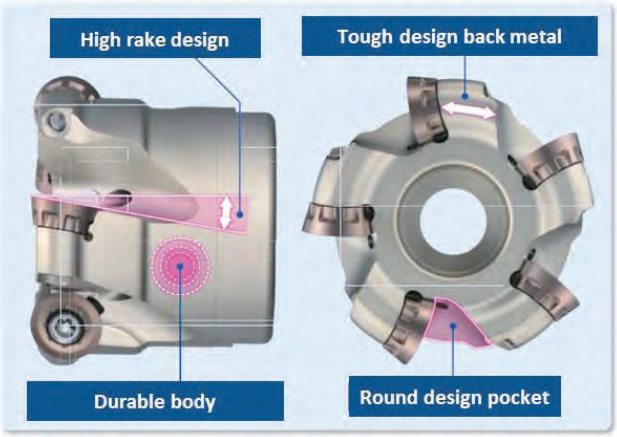
RSX Series

Wave Radius Mill

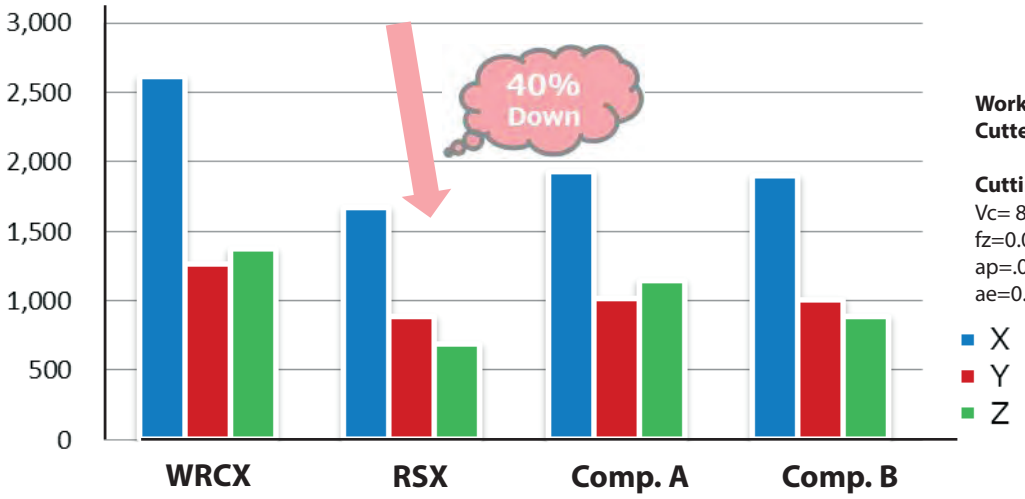
Radius Cutter for Stainless Steel & Exotic Material

Features & Benefits

- Wide application range that includes face milling, ramping, slotting, 3-D interpolation, and helical boring
- A highly durable body made of special alloyed steel and protected by a hard surface treatment
- Pocket design eliminates insert rotation during aggresive machining

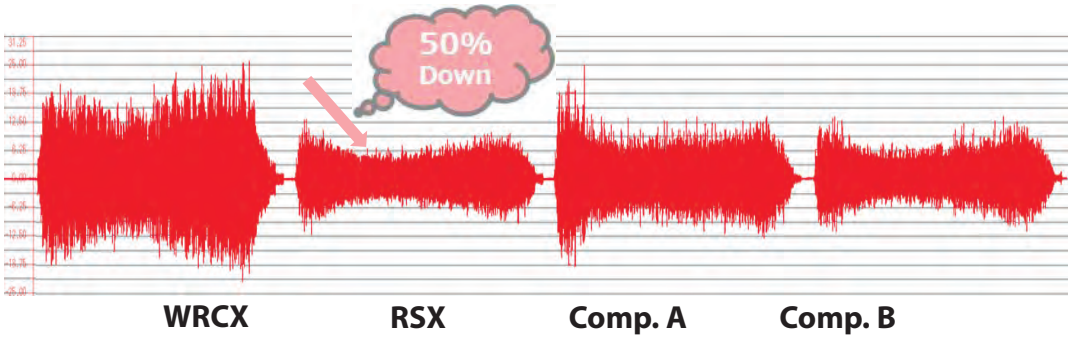


Low Cutting Force



Work piece: 304 Stainless Steel
Cutter: RSXF12050RS (2" cutter)
Cutting conditions:
Vc= 8 IPM
fz=0.02 in/t
ap=.079 in.
ae=0.39 in., WET

Low Vibration



Work piece: 304 Stainless Steel
Cutter: RSXF12050RS (2" cutter)
Cutting conditions:
Vc= 8 IPM
fz=0.02 in/t
ap=.079 in.
ae=0.39 in., DRY

RSX Series

Fig. 1

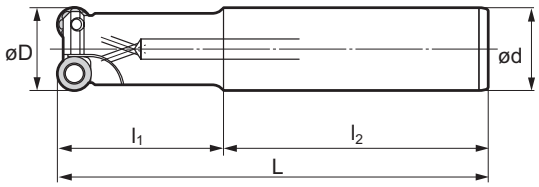


Fig. 2

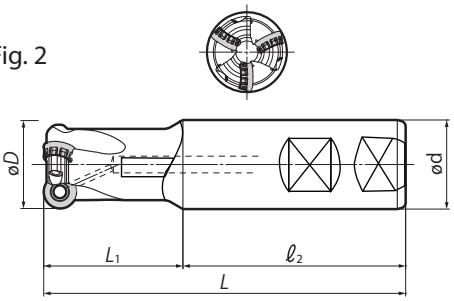
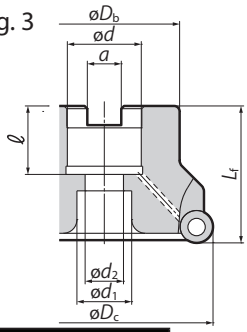


Fig. 3



RSX Cutter Bodies- End Mill-INCH

Catalog No.	Stock	φD	φd	L	l_1	l_2	Insert Type	# of Inserts	Shank Style	Weight (lbs)	Max Ramp Angle	Fig.
RSX31000EW	●	1.000	1.000	4.340	2.060	2.280	RDET10	2	Weldon	0.95	10° 15′	2
RSX31250EW	●	1.250	1.250	4.340	2.060	2.280	RDET10	3	Weldon	1.15	6° 45′	2
RSX31500EW	●	1.500	1.250	4.340	2.060	2.280	RDET10	3	Weldon	1.25	4 ° 45′	2
RSX41250EW	●	1.250	1.250	4.340	2.060	2.280	RDET12	2	Weldon	1.20	12° 30′	2
RSX41500EW	●	1.500	1.250	4.340	2.060	2.280	RDET12	3	Weldon	1.50	8° 30′	2
RSXF31000EW	●	1.000	1.000	4.340	2.060	2.280	RDET10	3	Weldon	1.00	10° 15′	2
RSXF31000ELC	●	1.000	1.000	10.000	3.750	6.250	RDET10	3	Cylindrical	2.00	10° 15′	1
RSXF31250EW	●	1.250	1.250	4.340	2.060	2.280	RDET10	4	Weldon	1.25	6° 45′	2
RSXF31250ELC	●	1.250	1.250	10.000	3.750	6.250	RDET10	4	Cylindrical	2.75	6° 45′	1
RSXF31500EW	●	1.500	1.250	4.340	2.060	2.280	RDET10	4	Weldon	1.40	4 ° 45′	2
RSXF31500ELC	●	1.500	1.250	10.000	3.750	6.250	RDET10	4	Cylindrical	3.25	4 ° 45′	1
RSXF41250EW	●	1.250	1.250	4.340	2.060	2.280	RDET12	3	Weldon	1.40	12° 30′	2
RSXF41250ELC	●	1.250	1.250	10.000	3.750	6.250	RDET12	3	Cylindrical	3.50	12° 30′	1
RSXF41500EW	●	1.500	1.250	4.340	2.060	2.280	RDET12	4	Weldon	1.65	8° 30′	2
RSXF41500ELC	●	1.500	1.250	10.000	3.750	6.250	RDET12	4	Cylindrical	4.00	8° 30′	1

RSX Cutter Bodies-Shell Mill-INCH

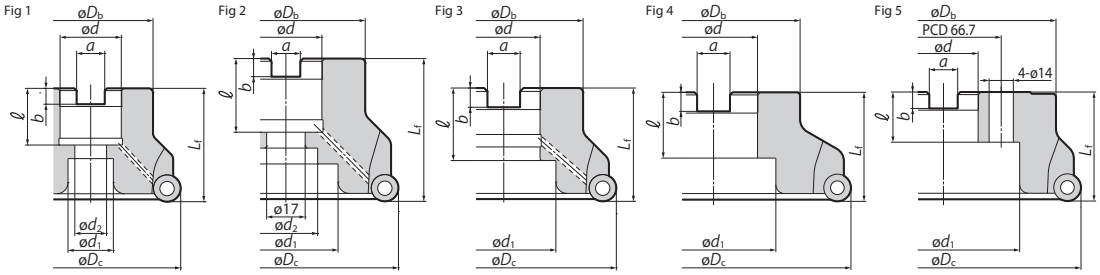
Catalog N	Stock	$φD_c$	$φD_b$	L_f	φd	$φd_2$	$φd_1$	ℓ	a	Insert Type	# of Inserts	Weight (lbs)	Max Ramp Angle	Fig.
RSX32000R	●	2.000	1.500	1.750	0.750	0.406	0.609	0.750	0.312	RDET10	4	0.80	3° 15′	3
RSX42000R	●	2.000	1.500	1.750	0.750	0.406	0.609	0.750	0.312	RDET12	4	0.70	5° 30′	3
RSX42500R	●	2.500	1.750	1.750	1.000	0.531	0.797	0.750	0.375	RDET12	5	1.1	4°	3
RSX43000R	●	3.000	2.250	1.750	1.000	0.531	0.797	0.750	0.375	RDET12	6	1.75	3°	3
RSX44000R-1.25	●	4.000	2.870	2.000	1.250	0.656	1.000	0.750	0.500	RDET12	7	3.75	2°	3
RSX44000R-1.50	●	4.000	2.870	2.500	1.500	0.781	2.000	1.000	0.625	RDET12	7	4.00	2°	3
RSX45000R	●	5.000	3.750	2.500	1.500	0.781	2.000	1.000	0.625	RDET12	8	7.60	1° 30′	3
RSX46000R	●	6.000	4.380	2.500	1.500	0.781	2.000	1.000	0.625	RDET12	9	11.90	1°	3
RSX52500R	●	2.500	1.750	1.750	1.000	0.531	0.797	0.750	0.375	RDET16	4	0.95	5° 50′	3
RSX53000R	●	3.000	2.250	1.750	1.000	0.531	0.797	0.750	0.375	RDET16	5	1.50	4° 20′	3
RSX54000R-1.25	●	4.000	2.870	2.000	1.250	0.656	1.000	0.750	0.500	RDET16	7	4.25	2° 50′	3
RSX54000R-1.50	●	4.000	2.870	2.500	1.500	0.781	2.000	1.000	0.625	RDET16	7	4.90	2°	3
RSX55000R	●	5.000	3.750	2.500	1.500	0.781	2.000	1.000	0.625	RDET16	8	7.1	1° 30′	3
RSX56000R	●	6.000	4.380	2.500	1.500	0.781	2.000	1.000	0.625	RDET16	9	11.2	1°	3
RSXF32000R	●	2.000	1.500	1.750	0.750	0.406	0.609	0.750	0.312	RDET10	6	0.75	3° 15′	3
RSXF42000R	●	2.000	1.500	1.750	0.750	0.406	0.609	0.750	0.312	RDET12	5	0.65	5° 30′	3
RSXF42500R	●	2.500	1.750	1.750	1.000	0.531	0.797	0.750	0.375	RDET12	6	1.05	4°	3
RSXF43000R	●	3.000	2.250	1.750	1.000	0.531	0.797	0.750	0.375	RDET12	8	1.75	3°	3
RSXF44000R-1.25	●	4.000	2.870	2.000	1.250	0.656	1.000	0.750	0.500	RDET12	9	4.75	2°	3
RSXF44000R-1.50	●	4.000	2.870	2.500	1.500	0.781	2.000	1.000	0.625	RDET12	9	5.25	2°	3
RSXF45000R	●	5.000	3.750	2.500	1.500	0.781	2.000	1.000	0.625	RDET12	11	7.5	1° 30′	3
RSXF46000R	●	6.000	4.380	2.500	1.500	0.781	2.000	1.000	0.625	RDET12	12	11.75	1°	3
RSXF52500R	●	2.500	1.750	1.750	1.000	0.531	0.797	0.750	0.375	RDET16	5	0.85	5° 50′	3
RSXF53000R	●	3.000	2.250	1.750	1.000	0.531	0.797	0.750	0.375	RDET16	6	1.55	4° 20′	3
RSXF54000R-1.25	●	4.000	2.870	2.000	1.250	0.656	1.000	0.750	0.500	RDET16	8	3.25	2° 50′	3
RSXF54000R-1.50	●	4.000	2.870	2.500	1.500	0.781	2.000	1.000	0.625	RDET16	8	4.35	2°	3
RSXF55000R	●	5.000	3.750	1.500	1.500	0.781	2.000	1.000	0.625	RDET16	9	6.4	1° 30′	3
RSXF56000R	●	6.000	6.000	4.380	2.500	1.500	0.781	1.000	1.312	RDET16	10	10.5	1°	3

RSX Series

Rake Angle		
	Radial	-5°
	Axial	10°

5mm (10000M) | 6mm (12000M) | 8mm (16000M)

P	M	K	N	N	S	H
Steel	Stainless Steel	Cast Iron	Non-Ferrous Metal	Aluminium	Exotic Alloy	Hardened Steel
	●				●	



RSX Cutter Bodies-Shell Mill-Metric

Catalog No.	Stock	φDc	φDb	Lf	φd	a	b	ℓ	φd1	φd2	Insert Type	# of Inserts	Weight (lbs)	Max. Ramp Angle	Fig.
RSX10040RS	★	40	34	40	16	8.4	5.6	18	14	9	RDET10	4	0.45	4° 30′	1
RSX10050RS	★	50	40	40	22	10.4	6.3	20	18	11	RDET10	5	0.66	3° 15′	1
RSX10052RS	★	52	40	40	22	10.4	6.3	20	18	11	RDET10	5	0.89	3° 10′	1
RSX12040RS	★	40	32	40	16	8.4	5.6	18	13.5	9	RDET12	3	0.45	8° 00′	1
RSX12050RS	★	50	40	40	22	10.4	6.3	20	18	11	RDET12	4	0.66	5° 30′	1
RSX12052RS	★	52	40	40	22	10.4	6.3	20	18	11	RDET12	4	0.66	5° 15′	1
RSX12063RS	★	63	40	40	22	10.4	6.3	20	18	11	RDET12	5	0.89	4° 00′	1
RSX12066RS	★	66	55	50	27	12.4	7.0	25	20	14	RDET12	6	1.54	3° 45′	1
RSX12080RS	★	80	55	50	27	12.4	7.0	25	20	14	RDET12	6	2.20	2° 50′	1
RSX12100RS	★	100	70	50	32	14.4	8.5	32	46	-	RDET12	6	3.09	2° 10′	3
RSX16063RS	★	63	50	40	22	10.4	6.3	20	18	11	RDET16	4	1.10	6° 00′	1
RSX16080RS	★	80	55	50	27	12.4	7.0	25	20	14	RDET16	5	1.98	4° 10′	1
RSX16100RS	★	100	70	50	32	14.4	8.532	32	46	-	RDET16	6	2.87	3° 00′	3
RSX16125RS	★	125	80	63	40	16.4	9.5	29	52	29	RDET16	6	5.73	2° 20′	1
RSX Cutter Bodies-Shell Mill-Metric with Inch Arbor															
RSX12080R	★	80	55	50	1.0 in.	9.5	6.0	25	20	13	RDET12	6	2.20	2° 50′	1
RSX12100R	★	100	70	63	1.25 in.	12.7	8.0	32.5	46	28	RDET12	6	4.19	2° 10′	2
RSX16080R	★	80	55	50	1.0 in.	9.5	6.0	25	20	13	RDET16	5	1.98	4° 10′	1
RSX16100R	★	100	70	63	1.25 in.	12.7	8.0	32.5	46	28	RDET12	6	3.97	3° 00′	2
RSX16125R	★	125	80	63	1.50 in.	15.9	10.0	35.5	55	30	RDET12	6	5.95	2° 20′	1
RSXF Cutter Bodies-Shell Mill-Metric															
RSXF10040RS	★	40	34	40	16	8.4	5.6	18	14	9	RDET10	5	0.45	4° 30′	1
RSXF10050RS	★	50	40	40	22	10.4	6.3	20	18	11	RDET10	6	0.66	3° 15′	1
RSXF10052RS	★	52	40	40	22	10.4	6.3	20	18	11	RDET10	6	0.66	3° 10′	1
RSXF12040RS	★	40	32	40	16	8.4	5.6	18	13.5	9	RDET12	4	0.45	8° 00′	1
RSXF12050RS	★	50	40	40	22	10.4	6.3	20	18	11	RDET12	5	0.66	5° 30′	1
RSXF12052RS	★	52	40	40	22	10.4	6.3	20	18	11	RDET12	5	0.66	5° 15′	1
RSXF12063RS	★	63	40	40	22	10.4	6.3	20	18	11	RDET12	6	0.88	4° 00′	1
RSXF12066RS	★	66	55	50	27	12.4	7.0	25	20	14	RDET12	7	1.54	3° 45′	1
RSXF12080RS	★	80	55	50	27	12.4	7.0	25	20	14	RDET12	7	1.98	2° 50′	1
RSXF12100RS	★	100	70	50	32	14.4	8.5	32	46	-	RDET12	10	2.86	2° 10′	3
RSXF16063RS	★	63	50	40	22	10.4	6.3	20	18	11	RDET16	4	0.88	6° 00′	1
RSXF16080RS	★	80	55	50	27	12.4	7.0	25	20	14	RDET16	6	1.75	4° 10′	1
RSXF16100RS	★	100	70	50	32	14.4	8.5	32	46	-	RDET16	6	2.86	3° 00′	3
RSXF16125RS	★	125	80	63	40	16.4	9.5	29	52	29	RDET16	8	5.51	2° 20′	1
RSXF16160RS	★	160	130	63	40	16.4	9.5	29	88	-	RDET16	10	10.58	-	5
RSXF Cutter Bodies-Shell Mill-Metric with Inch Arbor															
RSXF12080R	★	80	55	50	1.0 in.	9.5	6.0	25	20	13	RDET12	7	2.20	2° 50′	1
RSXF12100R	★	100	70	63	1.25 in.	12.7	8.0	32.5	46	28	RDET12	10	3.97	2° 10′	2
RSXF16080R	★	80	55	50	1.0 in.	9.5	6.0	25	20	13	RDET16	6	1.75	4° 10′	1
RSXF16100R	★	100	70	63	1.25 in.	12.7	8.0	32.5	46	28	RDET16	7	3.75	3° 00′	2
RSXF16125R	★	125	80	63	1.5 in.	15.9	10.0	35.5	55	30	RDET16	8	5.73	2° 20′	1
RSXF16160R	★	160	100	63	2.0 in.	19.0	11.0	38	72	-	RDET16	10	9.48	-	4

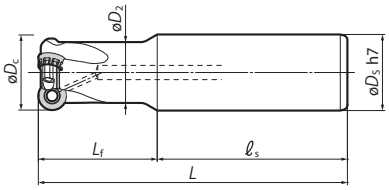
★: Worldwide Warehouse Item

Rake Angle		
	Radial	-5°
	Axial	10°

5mm (10000M) | 6mm (12000M) | 8mm (16000M)

P	M	K	N	N	S	H
Steel	Stainless Steel	Cast Iron	Non-Ferrous Metal	Aluminum	Exotic Alloy	Hardened Steel
	●				●	

RSX Series



RSX Cutter Bodies-End Mill-Metric

Catalog No.	Stock	φDc	φDs	φD2	Lf	ℓf	L	Insert Type	# of Inserts	Weight (lbs)	Ramp Angle	Fig.
RSX10025ES	★	25	25	20.3	50	80	130	RDET10	2	0.88	10° 30′	1
RSX10032ES	★	32	32	27.1	50	80	130	RDET10	3	1.54	6° 45′	1
RSX12032ES	★	32	32	25.6	50	80	130	RDET12	2	1.54	12° 30′	1
RSXF10025ES	★	25	25	20.3	50	80	130	RDET10	3	0.88	10° 30′	1
RSXF10032ES	★	32	32	27.1	50	80	130	RDET10	4	1.54	6° 45′	1
RSXF12032ES	★	32	32	25.6	50	80	130	RDET12	3	1.54	12° 30′	1

★: Worldwide Warehouse Item

Insert & Parts Information

Inserts	P		K		M		S	Dimensions	
	ACP200	ACP300	ACK200	ACK300	ACM100	ACM200	ACM300	IC	Thickness
RDET10T3M0EN-G			○	○	●	●	●	0.394	0.156
RDET10T3M0EN-H	○	○	○	○	●	●	●		
RDET1204M0EN-G			○	○	●	●	●	0.472	0.187
RDET1204M0EN-H	○	○	○	○	●	●	●		
RDET1606M0EN-G			○	○	●	●	●	0.629	0.256
RDET1606M0EN-H	○	○	○	○	●	●	●		

●: U.S.A. Stock Item ○: Available First Quarter 2015

Parts

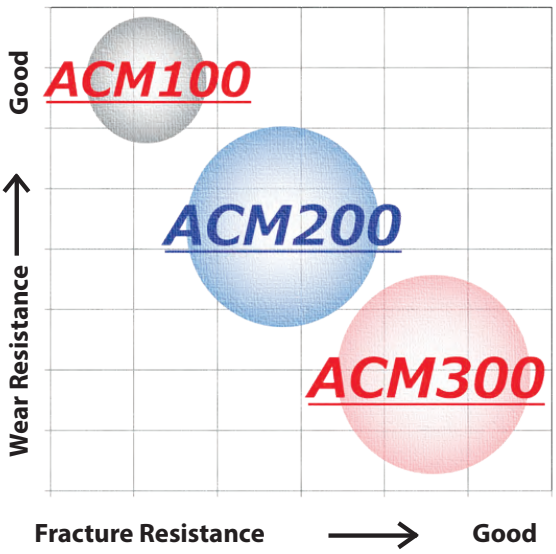
Applicable Cutters	Wrench	Insert Screw	Recommended Tightening Torque Inch / LBs
RSX30000 Cutters	TRDR15IP	BFTX03584IP	25
RSX40000 Cutters		BFTX0409IP	25
RSX50000 Cutters	TRDR20IP	BFTX0409IP	45

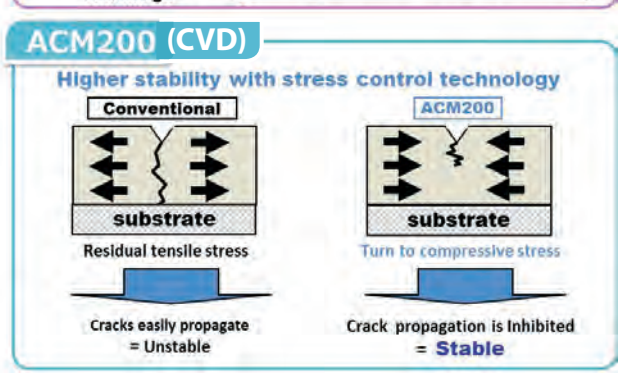
Cutting Conditions

ISO			Work Material	Hardness	Cutting Speed v_c(sfm) Min - Max	Feed Rate f_z(ipt) Min - Max	Recommended Grade
M	Stainless Steel	Cr Based	Ferrite System	200 HB	500 - 650	0.006 – 0.014	ACM300
			Martensitic	200~330HB	250 - 600	0.006 – 0.014	ACM300
		Cr-Ni Based	Austenitc	200 HB	500 - 650	0.006 - 0.014	ACM300
			400 Series	230~270HB	250 - 600	0.006 - 0.014	ACM200
			Precipitation Hardening	330HB	200 - 525	0.006 - 0.014	ACM200
S	Heat Resistant Alloy		Ni Based Material System	250~350HB	65 - 130	0.004 - 0.012	ACM100 ACM200
	Titanium		Pure Titanium	(Rm400)	200 - 325	0.004 – 0.012	
			α+β Alloy System	(Rm1050)	130 - 200	0.004 – 0.012	

NOTE: The cutting conditions above are a guide.
Actual Conditions will need to be adjusted according to machine rigidity, work clamp rigidity, cutting depth and other factors.

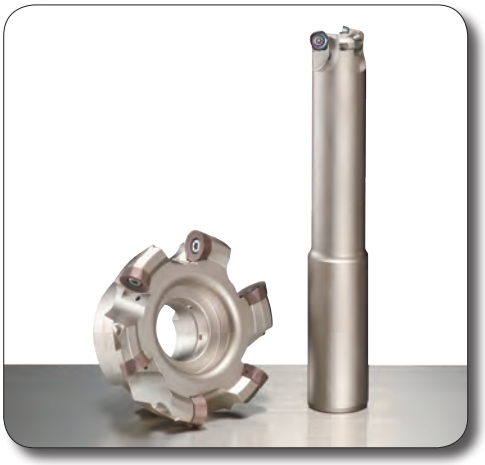
ACM Grade Information





WRCX Series

Multi-purpose Milling
Multi-application WaveMill

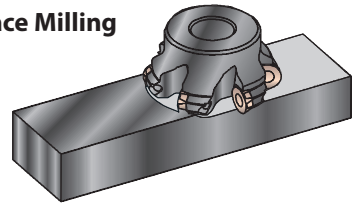


Features & Benefits

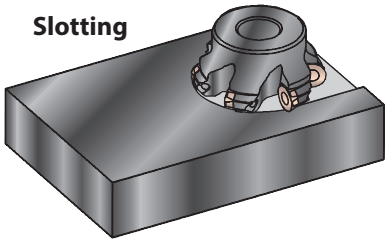
- 8 corner polygon inserts withstand extraordinary feed rates while providing improved finishes
- Highly durable cutter body made of special alloyed steel and protected by a hard surface treatment
- Wide application range that includes face milling, ramping, slotting, 3-D interpolation, and helical boring
- Pocket design eliminates insert rotation and breakage during aggressive machining
- Wide flute relief provides excellent chip evacuation

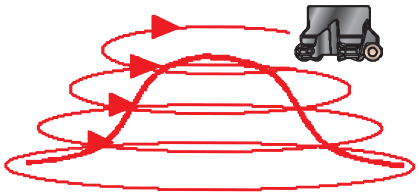
Application Examples

Face Milling

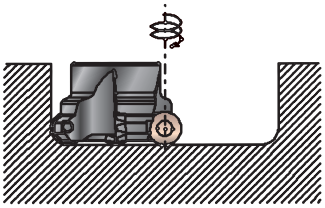


Slotting

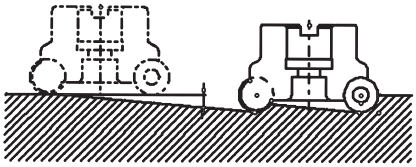




3-D Interpolation/Surfacing



Helical Boring



Ramping

Recommended Running Conditions

ISO	Work Material	Grades	øD = 1.00" - 1.25"		øD = 1.50" - 3.00"		øD = 4.00" - 6.00"	
			SFM	IPT	SFM	IPT	SFM	IPT
P	Carbon Steel	ACP200	260-**395**-525	.004-**.012**-.016	330-**525**-655	.008-**.016**-.024	490-**655**-820	.012-**.016**-.024
P	Alloy Steel (HRC<40)	ACP200	195-**330**-460	.004-**.008**-.012	330-**460**-590	.008-**.012**-.016	330-**525**-655	.004-**.012**-.020
M	Stainless Steel (304)	ACP200, ACP300	195-**330**-395	.004-**.006**-.008	260-**395**-525	.004-**.008**-.012	525-**590**-655	.006-**.008**-.012
K	Gray Cast Iron	ACK200, ACK300	195-**260**-395	.004-**.008**-.012	260-**395**-525	.004-**.008**-.016	330-**490**-655	.004-**.006**-.008
N	Non-ferrous Metal	H1, DL1000	655-**1640**-3280	.004-**.008**-.012	655-**1640**-3280	.004-**.012**-.016	655-**1640**-3280	.008-**.016**-.024

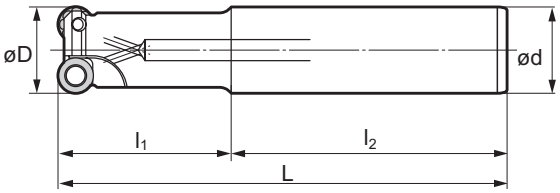
Min.-**OPTIMUM**-Max.

WRCX Series

Applicable Insert: QPMT, QPET

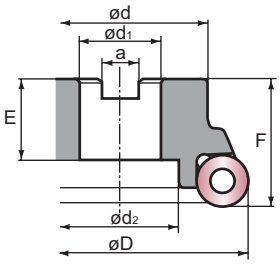
WRCX Endmill Cutter Bodies - Weldon/Cylindrical Shank - INCH

Catalog Number	Stock	Dimensions (inch) øD	ød	L	l_1	l_2	Insert Dia.	# of Inserts	Ramp Angle	Shank Style
WRCX31000EW	•	1.000	1.000	4.341	2.060	2.281	0.375	2	11°30′	Weldon
WRCX31000ELC	•	1.000	1.000	10.000	3.750	6.250	0.375	2	11°30′	Cylindrical
WRCX31250EW	•	1.250	1.250	4.341	2.060	2.281	0.375	3	7°30′	Weldon
WRCX31250ELC	•	1.250	1.250	10.000	3.750	6.250	0.375	3	7°30′	Cylindrical
WRCX31500EW	•	1.500	1.500	4.341	2.060	2.281	0.375	4	5°30′	Weldon
WRCX31500ELC	•	1.500	1.500	10.000	3.750	6.250	0.375	4	5°30′	Cylindrical
WRCX41250EW	•	1.250	1.250	4.341	2.060	2.281	0.500	2	18°30′	Weldon
WRCX41250ELC	•	1.250	1.250	10.000	3.750	6.250	0.500	2	18°30′	Cylindrical
WRCX41500EW	•	1.500	1.500	4.341	2.060	2.281	0.500	3	12°30′	Weldon
WRCX41500ELC	•	1.500	1.500	10.000	3.750	6.250	0.500	3	12°30′	Cylindrical

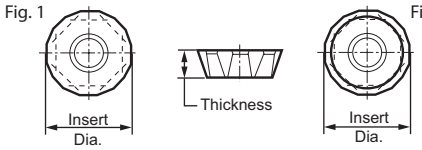


WRCXShell Mill Cutter Bodies - INCH

Catalog Number	Stock	Dimensions *(mm)* øD	ød	F	$ød_1$	$ød_2$	$ød_3$	E	a	Insert Dia.	# of Inserts	Ramp Angle
WRCX32000R	•	2.000	1.50	1.75	0.750	0.406	0.609	1.020	0.312	0.375	4	5°30′
WRCX42000R	•	2.000	1.50	1.75	0.750	0.406	0.609	1.020	0.312	0.500	4	7°30′
WRCX42500R	•	2.500	1.75	1.75	1.000	0.531	0.797	1.020	0.375	0.500	4	5°30′
WRCX43000R	•	3.000	2.25	1.75	1.000	0.531	0.797	1.020	0.375	0.500	5	4°
WRCX63000R	•	3.000	2.25	1.75	1.000	0.531	0.797	1.020	0.375	0.750	5	7°30′
WRCX44000R	•	4.000	2.87	2.00	1.250	0.656	1.000	1.020	0.500	0.500	6	2°30′
WRCX64000R	•	4.000	2.87	2.00	1.250	0.656	1.000	1.020	0.500	0.750	6	4°30′
WRCX84000R	•	4.000	2.87	2.00	1.250	0.656	1.000	1.020	0.500	1.000	6	6°
WRCX65000R	•	5.000	3.75	2.50	1.500	-	2.000	1.060	0.625	0.750	6	3°15′
WRCX85000R	•	5.000	3.75	2.50	1.500	-	2.000	1.060	0.625	1.000	6	4°15′
WRCX66000R	•	6.000	3.75	2.50	1.500	-	2.000	1.060	0.625	0.750	8	3°15′
WRCX86000R	•	6.000	3.70	2.50	1.500	-	2.000	1.060	0.625	1.000	8	3°15′



Inserts



Catalog Number	Availability AC230	ACK300	ACP100	ACP200	ACP300	DL1000	H1	Dimensions (in) Insert Dia.	T	Max D.O.C.	Fig.
QPMT32.510PPEN	•	•	•	•	•			0.375	0.156	0.1875	1
QPMT32.510PPEN-H	•	•	•		•			0.375	0.156	0.1875	2
QPMT4312PPEN	•	•	•	•	•			0.500	0.1875	0.250	1
QPMT4312PPEN-H	•	•	•		•			0.500	0.1875	0.250	2
QPMT6416PPEN	•	•	•	•	•			0.750	0.250	0.375	1
QPMT6416PPEN-H	•	•	•		•			0.750	0.250	0.375	2
QPMT8424PPEN	•	•	•	•	•			1.000	0.250	0.500	1
QPMT8424PPEN-H	•	•	•		•			1.000	0.250	0.500	2
QPET32.510PPENS*						•	•	0.375	0.156	0.1875	1
QPET4312PPENS*						•	•	0.500	0.1875	0.250	1
QPET6416PPENS*						•	•	0.750	0.250	0.375	1

*4 indexes due to wiper

Coolant Through Bolts

Catalog Number	Cutter Size
BFXH 3/8 x 1	**2.00"**
BFXH 1/2 x 1 1/4	**2.50"**
BFXH 1/2 x 1 1/4	**3.00"**
BFXH 5/8 x 1 1/4	**4.00"**
BFXH 3/4 x 1 1/2	**5.00"**

Hardware

Cutter	Wrench	Screw
WRCX3□□□R	TRDR15IP	BFTX03584IP
WRCX4□□□R		BFTX0409IP
WRCX6□□□R	TRDR20IP	BFTX0511IP
WRCX8□□□R		BFTX0615IP

WBMR Series

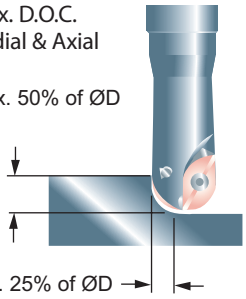
Applicable Insert: WDMT

Features & Benefits

- Dedicated 2-flute ball nose endmill designed specifically for high performance rough cutting of steels, alloys, and tool steels
- Provides maximum cutter efficiency for the most time consuming portion of most machining operations–roughing
- Neutral insert edge with positive relief on face is incredibly strong but consumes low amounts of horsepower
- Strong tool steel body designed with anti-rotation lugs insures that cutting inserts are movement free, even at heavy feed rates and high cutting speeds
- "X" style cutter bodies allow the creation of part side walls with as little as three degrees of draft without side wall interference from the tool tip all the way to the face of a standard ISO Weldon shank tool holder
- Three separate lengths per diameter allow the end user to choose the best tool for the job at hand
- Cylindrical shank tooling allows extended reach, and the possibility of customization along with the correct design for use with the latest high strength milling chucks
- Negative assembly tolerancing eliminates 3-dimensional surface violations due to cumulative tooling errors
- The perfect 1-2 punch for the roughing of dies and mold work when combined with our WRC cutters

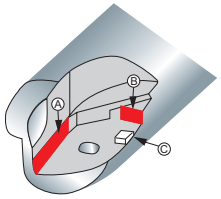
- Max. D.O.C. Radial & Axial

Max. 50% of ØD

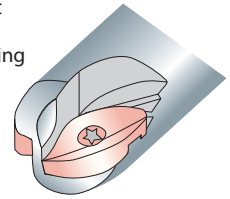


Max. 25% of ØD

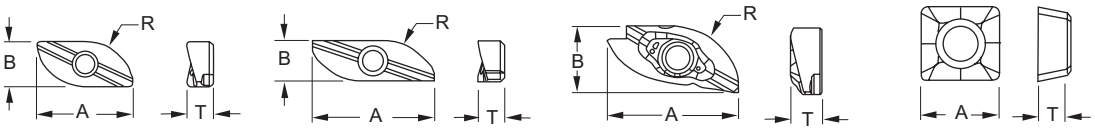
- Anti-rotational design



Prevents insert breakage by positively locking into A, B, & C.



Inserts for all WBMR Series Ballnose Endmills

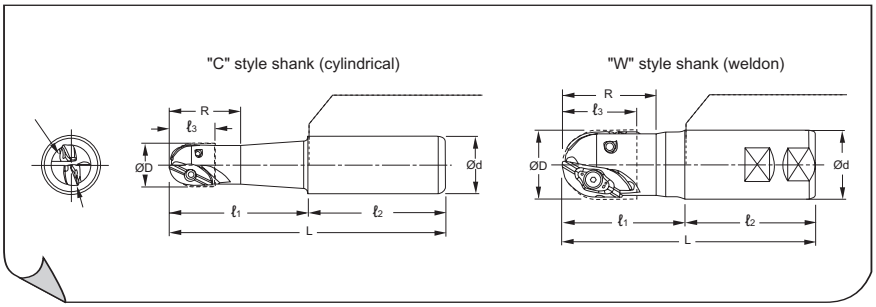


Catalog Number	Style	Position	A	B	T	R	Applicable Cutters
ZNMT3CX	1	center	0.720	0.361	0.189	0.375	WBMR075SX, MX, LX, or LCX
ZNMT3SX	2	outer	0.795	0.280	0.167	0.375	
ZNMT4CX	1	center	0.887	0.480	0.224	0.500	WBMR100SX, MX, LX, LCX,
ZNMT4SX	2	outer	0.913	0.369	0.217	0.500	SLX, MLX, or LLX
ZNMT5CX	1	center	1.150	0.615	0.281	0.625	WBMR125SX, MX, LX, LCX,
ZNMT5SX	2	outer	1.185	0.472	0.263	0.625	SLX, MLX, or LLX
ZNMT6X	3	center & outer	1.430	0.781	0.348	0.750	WBMR150SX, MX, or LX
ZNMT8X	3	center & outer	1.705	1.012	0.400	1.000	WBMR200SX, MX, or LX
SPMT09T308*	4	peripheral insert	0.375 (I.C.)	N/A	0.156	.031	WBMR100 & 125 SLX, MLX, or LLX

*Used in "Extended Length of Cut" Endmills only

WBMR BALLNOSE ENDMILL

Applicable Insert: ZNMT



WBMR Cutters (Standard Length)

Catalog Number	Stock	Dimensions (Inches)								Inserts
		ØD	Ød	Shank	L	ℓ_3	ℓ_1	ℓ_2	R	
WBMR075SX	•	0.750	1.000	W	4.546	0.752	2.285	2.261	1.181	ZNMT3_X
WBMR075MX	•	0.750	1.000	W	6.046	0.752	3.785	2.261	1.181	ZNMT3_X
WBMR075LX	•	0.750	1.000	W	7.546	0.752	5.285	2.261	1.181	ZNMT3_X
WBMR100SX	•	1.000	1.250	W	4.796	0.917	2.535	2.261	1.378	ZNMT4_X
WBMR100MX	•	1.000	1.250	W	6.546	0.917	4.285	2.261	1.378	ZNMT4_X
WBMR100LX	•	1.000	1.250	W	8.296	0.917	6.035	2.261	1.378	ZNMT4_X
WBMR100LCX	•	1.000	1.250	C	11.750	0.917	2.535*	9.215**	1.378	ZNMT4_X
WBMR125SX	•	1.250	1.250	W	4.796	1.228	2.535	2.261	1.693	ZNMT5_X
WBMR125MX	•	1.250	1.250	W	6.796	1.228	4.535	2.261	1.693	ZNMT5_X
WBMR125LX	•	1.250	1.250	W	8.796	1.228	6.535	2.261	1.693	ZNMT5_X
WBMR125LCX	•	1.250	1.250	C	13.750	1.228	2.535*	11.215**	1.693	ZNMT5_X
WBMR150SX	•	1.500	1.500	W	5.223	1.543	2.535	2.688	1.940	ZNMT6X
WBMR150MX	•	1.500	1.500	W	7.779	1.543	4.535	3.244	3.688	ZNMT6X
WBMR150LX	•	1.500	1.500	W	9.779	1.543	6.535	3.244	5.488	ZNMT6X
WBMR200SX	•	2.000	2.000	W	6.029	1.862	2.785	3.244	2.256	ZNMT8X
WBMR200MX	•	2.000	2.000	W	8.279	1.862	5.035	3.244	4.138	ZNMT8X
WBMR200LX	•	2.000	2.000	W	10.529	1.862	7.285	3.244	6.163	ZNMT8X

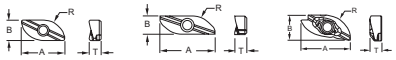
Note: All 0.750"-1.250" cutters require (1) Center "CX" insert and (1) Outer "SX" insert to accomplish the "D" diameter specified. The tolerance of the "D" diameter is +.000/-.020.
*Represents relieved portion of cutter body
**Represents straight portion of cutter body
• USA stocked item

Hardware


Catalog Number	Screw	Wrench
WBMR075□X	BFTX0307N	TRX10
WBMR100□X	BFTX0409N	TRD15
WBMR125□X	BFTX0511N	TRD20
WBMR150□X	BFTX0619N	TRD25
WBMR200□X	BFTX0619N	TRD25

Torque specifications for BFTX0307N insert screw is 18-22 in/lbs.
Torque specifications for BFTX0409N insert screw is 27-31 in/lbs.
Torque specifications for BFTX0511N insert screw is 44-49 in/lbs.
Torque specifications for BFTX0619N insert screw is 62-67 in/lbs.

Inserts



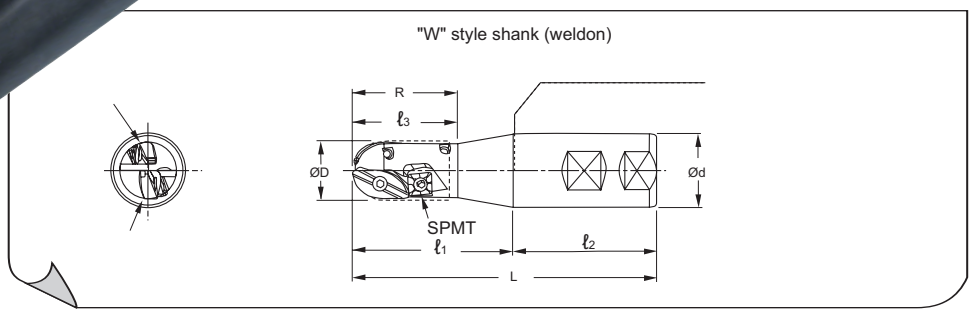
Sumitomo Cat. No.	Coated						Dimensions (Inches)				
	ACZ310	ACZ330	ACZ350	ACK300	ACP200	ACP300	A	B	T	R	Figure
ZNMT3CX	▲	▲	▲	•	•	•	0.720	0.361	0.189	0.375	1
ZNMT3SX	▲	▲	▲	•	•	•	0.795	0.280	0.167	0.375	2
ZNMT4CX	▲	▲	▲	•	•	•	0.887	0.480	0.224	0.500	1
ZNMT4SX	▲	▲	▲	•	•	•	0.913	0.369	0.217	0.500	2
ZNMT5CX	▲	▲	▲	•	•	•	1.150	0.615	0.281	0.625	1
ZNMT5SX	▲	▲	▲	•	•	•	1.185	0.472	0.263	0.625	2
ZNMT6X	▲		▲	•	•	•	1.430	0.781	0.348	0.750	3
ZNMT8X	▲		▲	•	•	•	1.705	1.012	0.400	1.000	3

"CX" denotes center insert (Fig. 1)
"SX" denotes outer insert (Fig. 2)
Fig. 3 inserts are used in both center and outer position.
• USA stocked item

See pages 592-593 for recommended running parameters

WBMR BALLNOSE ENDMILL

Applicable Insert: ZNMT, SPMT

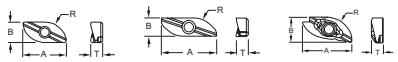


WBMR Cutters (Extended Length)

Catalog Number	Stock	Dimensions (Inches) ØD	Ød	Shank	L	ℓ_3	ℓ_1	ℓ_2	R	Inserts 1 & 2	Insert style 4
WBMR100SLX	•	1.000	1.250	W	4.796	1.535	2.535	2.261	1.653	ZNMT4_X	SPMT09T308
WBMR100MLX	•	1.000	1.250	W	6.546	1.535	4.285	2.261	1.653	ZNMT4_X	SPMT09T308
WBMR100LLX	•	1.000	1.250	W	8.296	1.535	6.035	2.261	1.653	ZNMT4_X	SPMT09T308
WBMR125SLX	•	1.250	1.250	W	4.796	1.835	2.535	2.261	1.968	ZNMT5_X	SPMT09T308
WBMR125MLX	•	1.250	1.250	W	6.796	1.835	4.535	2.261	1.968	ZNMT5_X	SPMT09T308
WBMR125LLX	•	1.250	1.250	W	8.796	1.835	6.535	2.261	1.968	ZNMT5_X	SPMT09T308

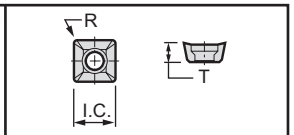
Note: All 0.750" - 1.250" cutters require (1) Center "CX" insert and (1) Outer "SX" insert to accomplish the "D" diameter specified.
The tolerance of the "D" diameter is +.000/-.020.
*This dimension represents the actual "extension from holder."
• USA stocked item

Inserts



Sumitomo Cat. No.	Coated ACZ310	ACZ330	ACZ350	ACK300	ACP200	ACP300	Dimensions (Inches) A	B	T	R	Figure
ZNMT3CX	▲	▲	▲	•	•	•	0.720	0.361	0.189	0.375	1
ZNMT3SX	▲	▲	▲	•	•	•	0.795	0.280	0.167	0.375	2
ZNMT4CX	▲	▲	▲	•	•	•	0.887	0.480	0.224	0.500	1
ZNMT4SX	▲	▲	▲	•	•	•	0.913	0.369	0.217	0.500	2
ZNMT5CX	▲	▲	▲	•	•	•	1.150	0.615	0.281	0.625	1
ZNMT5SX	▲	▲	▲	•	•	•	1.185	0.472	0.263	0.625	2
ZNMT6X	▲		▲	•	•	•	1.430	0.781	0.348	0.750	3
ZNMT8X	▲		▲	•	•	•	1.705	1.012	0.400	1.000	3

"CX" denotes center insert (Fig. 1)
"SX" denotes outer insert (Fig. 2)
▲ USA Limited Availablity Item
• USA stocked item



Sumitomo Cat. No.	Coated ACK300				Dimensions (Inches) I.C.	T	R
SPMT09T308	•				0.375	0.156	0.031

• USA stocked item

Hardware

Catalog Number	Insert	Screw	Wrench
WBMR100□LX	ZNMT4_X	BFTX0409N	TRD15
WBMR125□LX	ZNMT5_X	BFTX0511N	TRD20
WBMR□□□□LX	SPMT09T308	BFTX0409N	TRD15

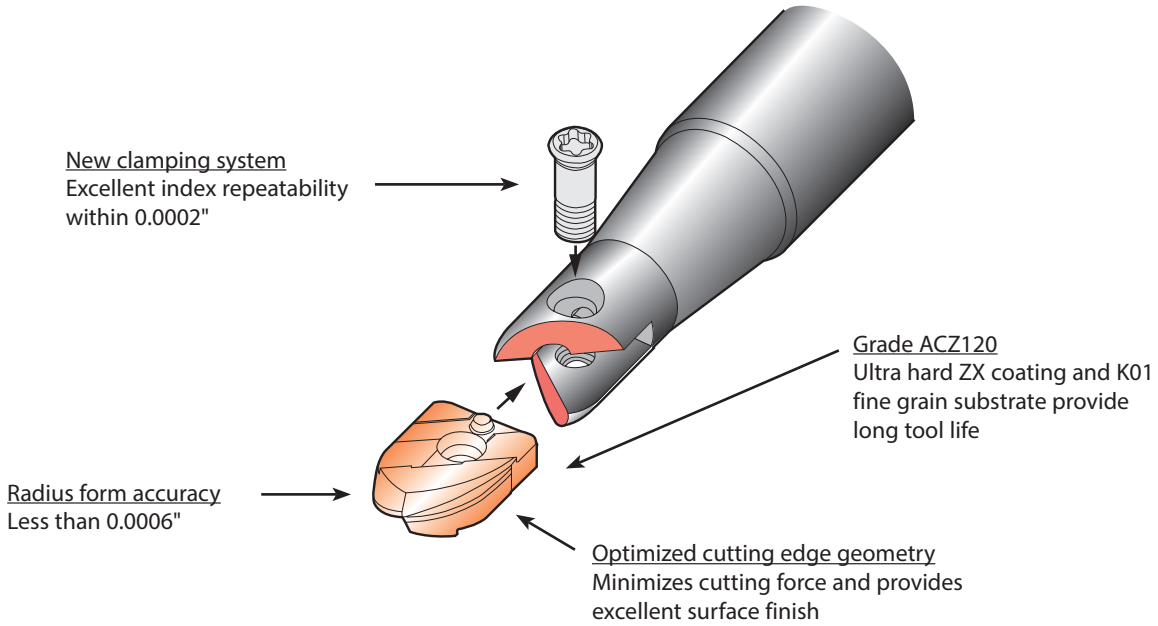
Torque specifications for BFTX0409N insert screw is 27-31 in/lbs.
Torque specifications for BFTX0511N insert screw is 44-49 in/lbs.

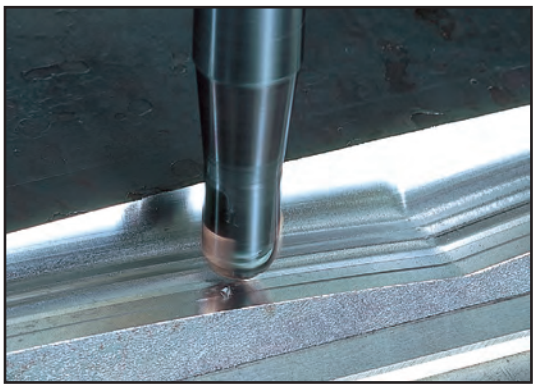
See pages 592-593 for recommended running parameters

WBMF BALLNOSE ENDMILL

Features & Benefits

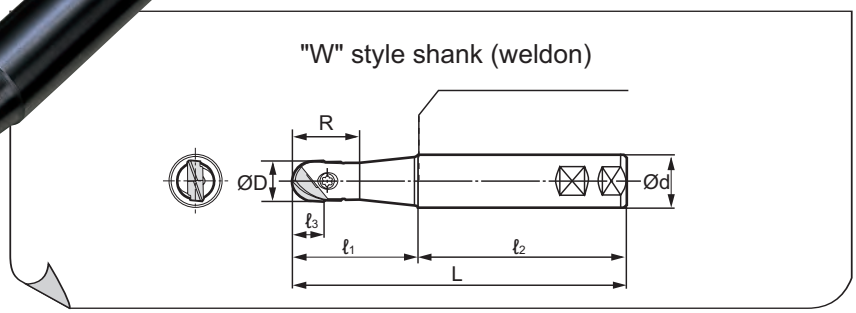
- Highly accurate fully ground insert offers reliable repeatability (within 0.0002") to simplify the finish milling processes of complex 3-dimensional work
- Multi ground locking surfaces and screw-on insert design makes the cutter assembly super strong and rigid
- The tool body design matches that of the WBMR line to provide worry-free programming, insuring no side wall interference down to as little as 3° of draft without body modification of weldon style tools
- Each diameter is offered in multiple lengths to allow application of the shortest, most efficient length for the job
- ACZ120, ZX coated carbide inserts efficiently cut hardened mold and die steels with low cutting forces and long tool life
- Sharp helical cutting edge generates excellent surface finishes to reduce or eliminate time consuming hand polishing operations





WBMF BALLNOSE ENDMILL

Applicable Insert: ZPGU

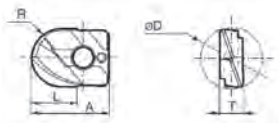


WBMF Cutters (Standard Length)

Catalog Number	Stock	Dimensions (Inches)								Inserts
		D	d	Shank	L	ℓ_1	ℓ_2	ℓ_3	R	
WBMF10500S	•	0.500	0.625	W	3.678	1.772	1.906	0.427	0.782	ZPGU2S
WBMF10500M	•	0.500	0.625	W	4.428	2.5222	1.906	0.427	0.782	ZPGU2S
WBMF10500L	•	0.500	0.750	W	5.300	3.270	2.031	0.427	0.782	ZPGU2S
WBMF10625S	•	0.625	0.750	W	3.801	1.770	2.0313	0.470	1.000	ZPGU2.5S
WBMF10625M	•	0.625	0.750	W	4.551	2.520	2.0313	0.470	1.000	ZPGU2.5S
WBMF10625L	•	0.625	1.000	W	5.546	3.265	2.2813	0.470	1.000	ZPGU2.5S
WBMF10750S	•	0.750	1.000	W	4.5459	2.265	2.2813	0.572	1.250	ZPGU3S
WBMF10750M	•	0.750	1.000	W	6.0459	3.7647	2.2813	0.572	1.250	ZPGU3S
WBMF10750L	•	0.750	1.000	W	7.546	5.265	2.2813	0.572	1.250	ZPGU3S
WBMF11000S	•	1.000	1.250	W	4.793	2.5117	2.2813	0.736	1.500	ZPGU4S
WBMF11000M	•	1.000	1.250	W	6.546	4.265	2.2813	0.736	1.500	ZPGU4S
WBMF11000L	•	1.000	1.250	W	8.296	6.0147	2.2813	0.736	1.500	ZPGU4S
WBMF11250S	•	1.250	1.250	W	4.796	2.515	2.2813	0.919	1.750	ZPGU5S
WBMF11250M	•	1.250	1.250	W	6.796	4.515	2.2813	0.919	1.750	ZPGU5S
WBMF11250L	•	1.250	1.250	W	8.796	6.5147	2.2813	0.919	1.750	ZPGU5S

• USA stocked item

Inserts



Sumitomo Cat. No.	Coated ACZ120				Dimensions (Inches) ØD	L	A	T	R
ZPGU2S	•				0.500	0.427	0.722	0.220	0.250
ZPGU2.5S	•				0.625	0.470	0.805	0.240	0.3125
ZPGU3S	•				0.750	0.572	0.946	0.280	0.375
ZPGU4S	•				1.000	0.736	1.130	0.299	0.500
ZPGU5S	•				1.250	0.919	1.392	0.339	0.625

• USA stocked item

Hardware

Catalog Number	Screw	Wrench
WBMF10500□	BFTG0409F	TRD15
WBMF10625□	BFTG0513F	TRD20
WBMF10750□	BFTG0617F	TRD25
WBMF11000□	BFTG0621F	TRD25
WBMF11250□	BFTG0825F	TRD25

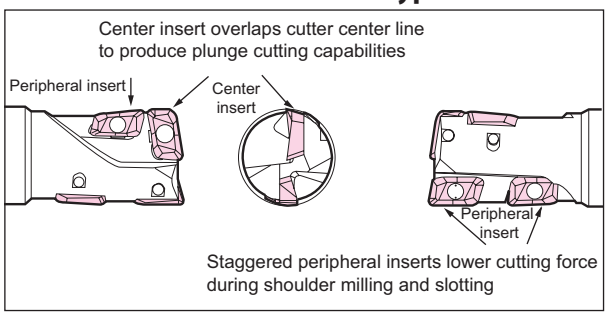
See pages 592-593 for recommended running parameters

WMM Series

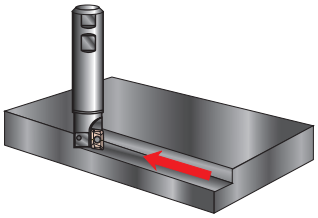
Features & Benefits

- Multi-functional cutter efficiently performs the cutting operations of several tools
- Excellent for ramping, helical cutting, pocketing, and drilling
- Inserts interchangeable with those used on the WEM and WRM cutters
- Strong high rake inserts provide smooth cutting action

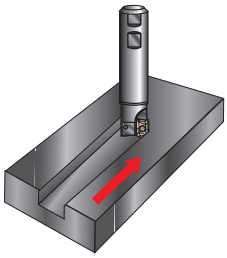
■ Insert orientation of WMM type cutter



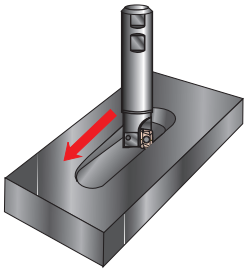
■ Multi-purpose Applications



Shoulder milling

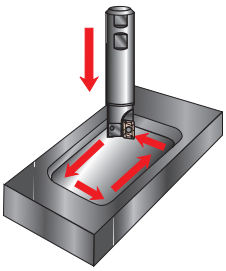


Slotting

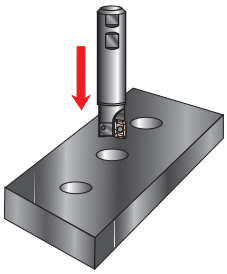


Ramping

Max. depth = effective depth of cut
Ramping Angle = 0~30°

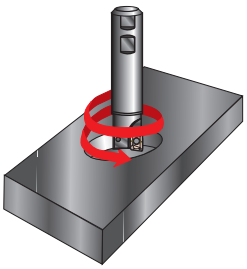


Pocketing



Drilling

Always use step feed (.020˝-.040˝) when drilling. It is recommended that the drill depth is ≤0.6D.

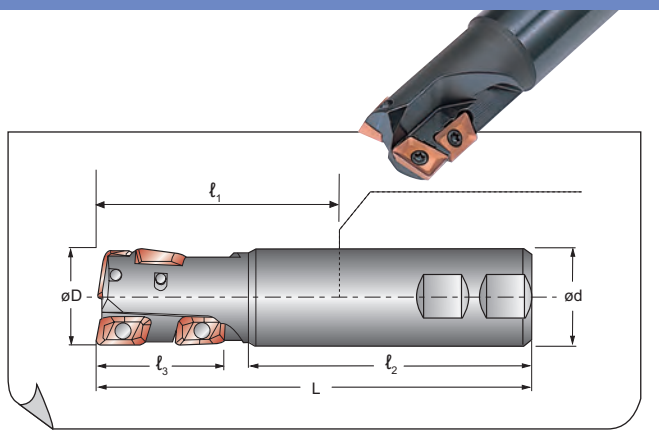


Helical boring
Boring-expanding

- a hole of 1.2-1.8 x diameter without prepared hole
- Helical angle = 0° to 30°

Inch WMM10000

Applicable Insert: APET10 APMT10



WMM Endmills

Catalog Number	Stock	Dimensions (Inches) ØD	Ød	L	ℓ1	ℓ2	ℓ3 Max D.O.C.	# of Inserts
WMM10100M	•	1.000	1.000	4.000	1.7394	2.281	1.050	4
WMM10125M	•	1.250	1.250	5.000	2.7394	2.281	1.390	5

• USA stocked item

Inserts

Figure 1

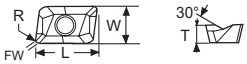
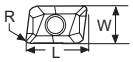


Figure 2



Sumitomo Cat. No.	Coated ACZ310	ACZ330	ACZ350	DL1000	Uncoated H1			Dimensions (Inches) L	W	T	R	Facet Width	Fig.
APET103504PDER	•	•	•					0.394	0.250	0.138	0.016	0.0315	1
APET103504PDFR-J				•	•			0.394	0.250	0.138	0.016	0.0315	1
APMT103504PDER	•	•	•					0.394	0.250	0.138	0.016	N/A	2
APMT103504PDER-H	•	•	•					0.394	0.250	0.138	0.016	N/A	2
APMT103508PDER	•		•					0.394	0.250	0.138	0.031	N/A	2
APMT103508PDER-H	•		•					0.394	0.250	0.138	0.031	N/A	2
APMT103512PDER	•		•					0.394	0.250	0.138	0.047	N/A	2
APMT103512PDER-H	•		•					0.394	0.250	0.138	0.047	N/A	2

"J" denotes inserts with a polished face.
"H" denotes inserts with heavy edge preparation.
• USA stocked item

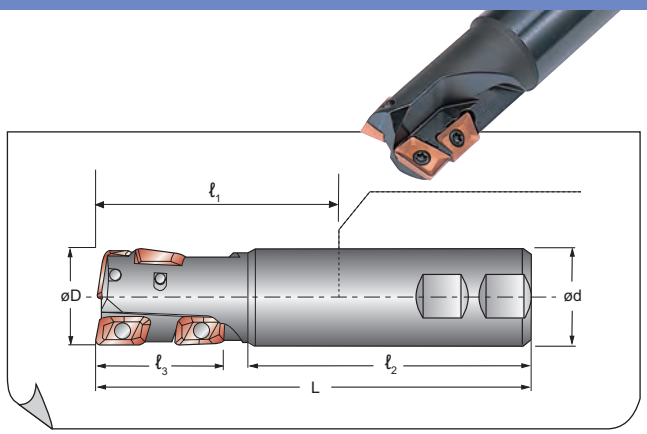
Hardware

Catalog Number	Screw	Wrench
WMM10□□□M	BFTX02506N	TRD08

Torque specifications for BFTX02506N insert screw=10-14 inch/lbs.

Inch WMM16000

Applicable Insert: APET16 APMT16



WMM Endmills

Catalog Number	Stock	Dimensions (Inches) ØD	Ød	L	ℓ1	ℓ2	ℓ3 Max D.O.C.	# of Inserts
WMM16150M	•	1.500	1.250	5.000	2.7394	2.281	1.540	4

• USA stocked item

Inserts

Figure 1

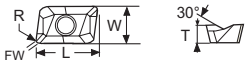
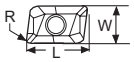


Figure 2



Sumitomo Cat. No.	Coated ACZ310	ACZ330	ACZ350	DL1000	Uncoated H1			Dimensions (Inches) L	W	T	R	Facet Width	Fig.
APET160504PDFR-J				•	•			0.630	0.375	0.218	0.016	0.0827	1
APET160508PDER	•	•	•					0.630	0.375	0.218	0.031	0.071	1
APET160508PDFR-J				•	•			0.630	0.375	0.218	0.031	0.071	1
APMT160508PDER	•	•	•					0.630	0.375	0.218	0.031	N/A	2
APMT160508PDER-H	•	•	•					0.630	0.375	0.218	0.031	N/A	2
APMT160512PDER	•		•					0.630	0.375	0.218	0.047	N/A	2
APMT160512PDER-H	•		•					0.630	0.375	0.218	0.047	N/A	2
APMT160516PDER			•					0.630	0.375	0.218	0.063	N/A	2
APMT160516PDER-H		•	•					0.630	0.375	0.218	0.063	N/A	2
APMT160532PDER-H	•	•	•					0.630	0.375	0.218	0.125	N/A	2

"J" denotes inserts with a polished face.
"H" denotes inserts with heavy edge preparation.
• USA stocked item

Hardware

Catalog Number	Screw	Wrench
WMM16□□□M	BFTX03584	TRD15

Torque specifications for BFTX03584 insert screw=27-31 inch/lbs.

See pages 592-593 for recommended running parameters

Modular Tooling

Pages 331-336

Features & Benefits

Exchangeable head endmills are available in 3 types!

1) High Efficiency Endmill
WEX Type: 15 Items

2) Multi-purpose Radius Endmill
RSX Type: 8 Items

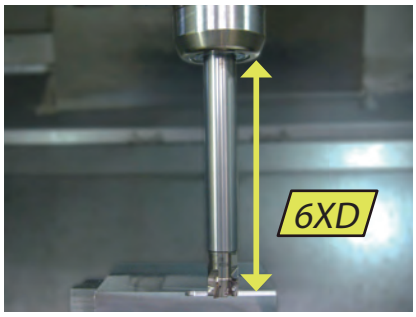
3) Ultra-High Feed Endmill
MSX Type: 13 Items

- A wide variety of possible combinations with carbide arbors (16 items) and steel arbors (4 items).

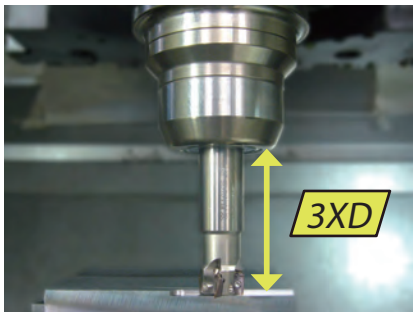
■ Charateristics

Standard Type (integrated arbor) from 2 to 3XD sizes, supports milling up to 6XD size using a carbide arbor.

Modular Type + Carbide Arbor



Standard Type (Integrated Arbor)

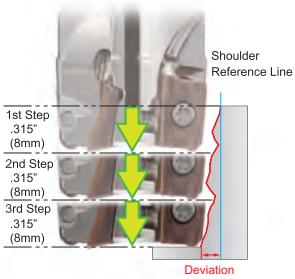


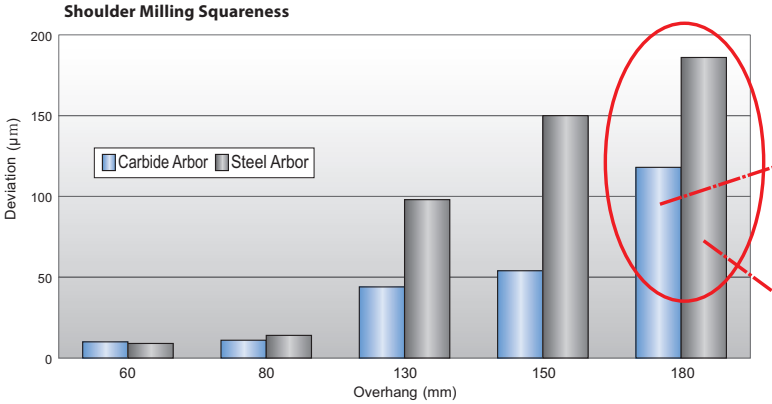
Work Material: 1049
Tool: WEX2025M12Z4 (φ25x4 flutes)
Cutting Conditions: v_c=328 SFM f_z=0.004 IPT a_e=.315" mm x 3 D.O.C=.079" Equipment = M/C BT50

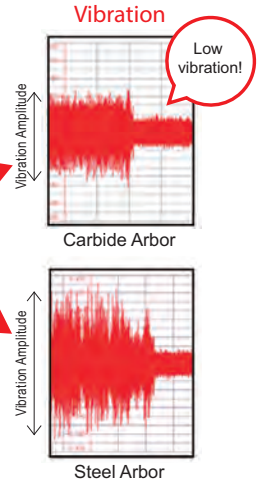
Note: Overhang varies depending on cutting conditions such as the tool used, machine rigidity, and work clamp rigidity.

■ Performance

Carbide arbors achieve greater precision and stable milling compared to steel arbors.







Work Material: 1049
Tool: WEX2025M12Z4 (φ25x4 flutes)
Cutting Conditions: v_c=328 SFM f_z=0.004 IPT a_e=.315" mm x 3 D.O.C=.079" Equipment = M/C BT50

Suitable for milling with long overhangs when combined with carbide or steel arbors

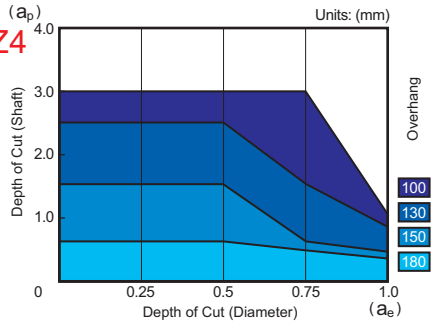
Economically designed exchangeable head!

Application Range

(Work Material: 1049 Equipment: Vertical M/C BT50 Dry)

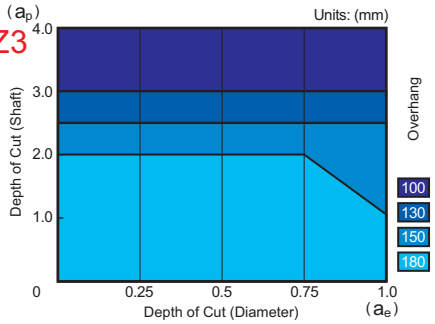
WEX2025M12Z4

(v_c=180m/min, f_z=0.1mm)



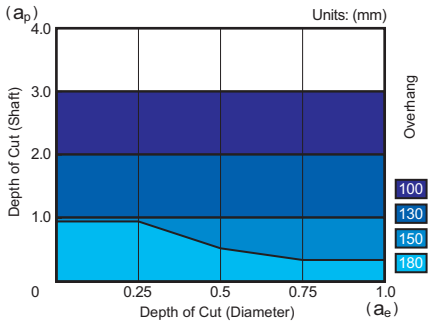
WEX3035M16Z3

(v_c=180m/min, f_z=0.1mm)



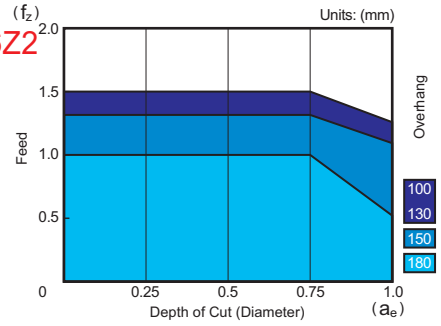
RSX12000M

(v_c=160m/min, f_z=0.2mm)



MSX12032M16Z2

(v_c=160m/min, a_p=1.2mm)

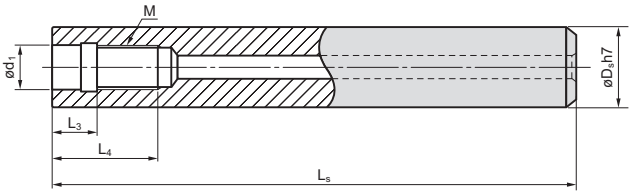


Note: These tables indicate reference machining conditions. Actual machining parameters should be adjusted based on machine rigidity and work clamp rigidity.

SEC-Modular Tools Special Arbors (Carbide Arbors/Steel Arbors)

Carbide Arbors

Steel Arbors



Carbide Arbors

Catalog Number	Stock	Dimension (mm)						
		M	ød$_1$	øD$_s$	L$_s$	L$_3$	L$_4$	L$_5$*
MA15M08L120C	★	M8	8.5	15	120	10	18	145
MA15M08L160C	★	M8	8.5	15	160	10	18	185
MA16M08L120C	★	M8	8.5	16	120	10	18	145
MA16M08L160C	★	M8	8.5	16	160	10	18	185
MA18M10L150C	★	M10	10.5	18	150	10	20	180
MA18M10L200C	★	M10	10.5	18	200	10	20	230
MA20M10L150C	★	M10	10.5	20	150	10	20	180
MA20M10L200C	★	M10	10.5	20	200	10	20	230
MA23M12L200C	★	M12	12.5	23	200	10	22	235
MA23M12L250C	★	M12	12.5	23	250	10	22	285
MA25M12L200C	★	M12	12.5	25	200	10	22	235
MA25M12L250C	★	M12	12.5	25	250	10	22	285
MA28M16L200C	★	M16	17.0	28	200	10	24	240
MA28M16L300C	★	M16	17.0	28	300	10	24	340
MA32M16L200C	★	M16	17.0	32	200	10	24	240
MA32M16L300C	★	M16	17.0	32	300	10	24	340

★Worldwide Warehouse Item

Steel Arbors

Catalog Number	Stock	Dimension (mm)						
		M	ød$_1$	øD$_s$	L$_s$	L$_3$	L$_4$	L$_5$
MA16M08L120S	★	M8	8.5	16	120	10	18	145
MA20M10L150S	★	M10	10.5	20	150	10	20	180
MA25M12L200S	★	M12	12.5	25	200	10	22	235
MA32M16L200S	★	M16	17.0	32	200	10	24	240

★Worldwide Warehouse Item

Endmill Identification

MA 15 M08 L120 C

(1)	(2)	(3)	(4)	(5)
Cutter Series	Shank Diameter	Mounting Screw	Arbor Length	C: Carbide S: Steel

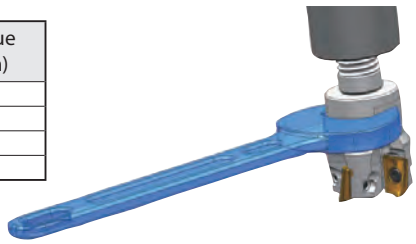
Recommended Tightening Torque (N•m)

*Notes about tightening the head.

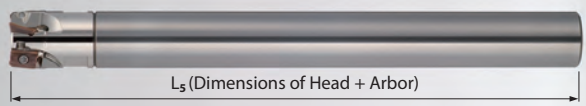
·When attaching the head to an arbor, follow the standard tightening torque in the table below.

·Check the mounting screw size for the head and arbor beforehand.

Screw Size	Torque (N·m)
M8	23
M10	46
M12	80
M16	90



■ Set Dimensions (*)



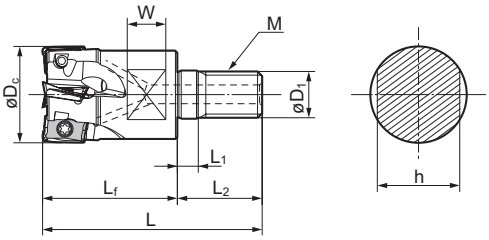
WEX 2000M/3000M

Exchangeable Head Endmills

WEX High efficiency, high definition finishing endmill

WEX2000M

WEX3000M



Modular Head (WEX2000M)

Catalog Number	Stock	Dimensions (mm) øDc	øD1	M	L	Lf	L1	L2	W	h	No. of Teeth
WEX 2016M08Z2	★	16	8.5	M8	42	25	5	17	8	13	2
WEX 2018M08Z2	★	18	8.5	M8	42	25	5	17	8	13	2
WEX 2020M10Z3	★	20	10.5	M10	49	30	5	19	8	15	3
WEX 2022M10Z3	★	22	10.5	M10	49	30	5	19	8	15	3
WEX 2025M12Z4	★	25	12.5	M12	56	35	5	21	10	19	4
WEX 2028M12Z4	★	28	12.5	M12	56	35	5	21	10	19	4
WEX 2030M16Z4	★	30	17.0	M16	63	40	5	23	10	24	4
WEX 2032M16Z5	★	32	17.0	M16	63	40	5	23	10	24	5
WEX 2040M16Z6	★	40-	17.0	M16	63	40	5	23	10	24	6

★Worldwide Warehouse Item — Inserts are not included

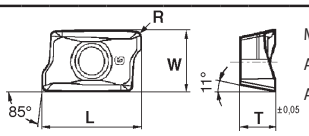
Modular Head (WEX3000M)

Catalog Number	Stock	Dimensions (mm) øDc	øD1	M	L	Lf	L1	L2	W	h	No. of Teeth
WEX 3025M12Z2	★	25	12.5	M12	56	35	5	21	10	19	2
WEX 3028M12Z2	★	28	12.5	M12	56	35	5	21	10	19	2
WEX 3030M16Z3	★	30	17.0	M16	63	40	5	23	10	24	3
WEX 3032M16Z3	★	32	17.0	M16	63	40	5	23	10	24	3
WEX 3035M16Z3	★	35	17.0	M16	63	40	5	23	10	24	3
WEX 3040M16Z4	★	40	17.0	M16	63	40	5	23	10	24	4

★Worldwide Warehouse Item — Inserts are not included

■ Arbor

WEX2000 Inserts

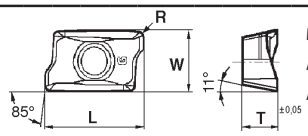


Max. Depth of Cut
AXMT12: 10mm (.394")
AXMT17: 14mm (.551")

Sumitomo Cat. No.	P ACP100	P ACP200	P ACP300	K ACK200	K ACK300	M ACM200	M ACM300	N DL1000	N H1	Dimensions (Inches) L	W	T	R	Facet Width
AXMT123504PEERG	●	●	●	●	●					.472	.260	.138	.016	.061
AXMT123504PEERH	●	●	●	●	●					.472	.260	.138	.016	.061
AXMT123508PEERG	●	●	●	●	●					.472	.260	.138	.031	.061
AXMT123508PEERH	●	●	●	●	●					.472	.260	.138	.031	.061
AXMT123512PEERG	●	●	●	●	●					.472	.260	.138	.047	.061
AXMT123512PEERH	●	●	●	●	●					.472	.260	.138	.047	.061
AXMT123504PEERE						●	●			.472	.260	.138	.016	.061
AXMT123508PEERE						●	●			.472	.260	.138	.031	.061
AXMT123508PEEREH						●	●			.472	.260	.138	.031	.061
AXMT123512PEERE						●	●			.472	.260	.138	.047	.061
AXMT123516PEERE						●	●			.472	.260	.138	.063	.061
✱ AXMT123524PEERE						●	●			.472	.260	.138	.094	.061
✱ AXMT123532PEERE						●	●			.472	.260	.138	.126	.061
AXET123502PEFRS								●	●	.472	.260	.138	.047	.061
AXET123504PEFRS								●	●	.472	.260	.138	.016	.061
AXET123508PEFRS								●	●	.472	.260	.138	.031	.061

✱ : insert radii expansion • USA stocked item

WEX3000 Inserts



Max. Depth of Cut
AXMT12: 10mm (.394")
AXMT17: 14mm (.551")

Sumitomo Cat. No.	P ACP100	P ACP200	P ACP300	K ACK200	K ACK300	M ACM200	M ACM300	N DL1000	N H1	Dimensions (Inches) L	W	T	R	Facet Width
AXMT170504PEERG	●	●	●	●	●					.689	.402	.219	.016	.118
AXMT170508PEERG	●	●	●	●	●					.689	.402	.219	.031	.118
AXMT170508PEERH	●	●	●	●	●					.689	.402	.219	.031	.118
AXMT170508PEERL	●	●	●	●	●					.689	.402	.219	.031	.118
AXMT170512PEERG	●	●	●	●	●					.689	.402	.219	.047	.118
AXMT170512PEERH		●		●						.689	.402	.219	.047	.118
AXMT170516PEERG	●	●	●	●	●					.689	.402	.219	.063	.118
AXMT170520PEERG	●	●	●	●	●					.689	.402	.219	.079	.118
AXMT170530PEERG	●	●	●	●	●					.689	.402	.219	.118	.118
AXMT170532PEERG		●								.689	.402	.219	.126	.118
AXMT170504PEERE						●	●			.689	.402	.219	.016	.118
AXMT170508PEERE						●	●			.689	.402	.219	.031	.118
AXMT170508PEEREH						●	●			.689	.402	.219	.031	.118
AXET170512PEERE						●	●			.689	.402	.219	.047	.118
AXET170516PEERE						●	●			.689	.402	.219	.063	.118
AXET170520PEERE						●	●			.689	.402	.219	.079	.118
✱ AXET170524PEERE						●	●			.689	.402	.219	.094	.118
AXET170530PEERE						●	●			.689	.402	.219	.118	.118
✱ AXET170531PEERE						●	●			.689	.402	.219	.122	.118
✱ AXET170548PEERE						●	●			.689	.402	.219	.189	.118
✱ AXET170563PEERE						●	●			.689	.402	.219	.248	.118
AXET170502PEFRS								●	●	.689	.402	.219	.008	.118
AXET170504PEFRS								●	●	.689	.402	.219	.016	.118
AXET170508PEFRS								●	●	.689	.402	.219	.031	.118

✱ : insert radii expansion • USA stocked item

■ Modular Head Identification

WEX 2 016 M08 Z2

(1) Cutter Series — (2) Insert Size — (3) Diameter — (4) Mounting Screw — (5) No. of Flutes

-G: General Purpose, H: Strong Edge, E/EH: Stainless Steel, S: For Aluminum Alloy
* Cutter body modification is required.

Hardware (WEX2000M)

Spanner	Screw	Recommended Tightening Torque (N·m)	Applicable Endmill
TRDR08IP	BFTX0305IP	2.0	WEX2016M, WEX2018M
	BFTX0306IP	2.0	WEX2020M ~ WEX2040M

Anti-seizure cream SUMI-P included in the package

Hardware (WEX3000M)

Spanner	Screw	Recommended Tightening Torque (N·m)	Applicable Endmill
TRDR15IP	BFTX0407IP	3.0	WEX3025M ~ WEX3030M
	BFTX0409IP	3.0	WEX3032M ~ WEX3040M

Anti-seizure cream SUMI-P included in the package

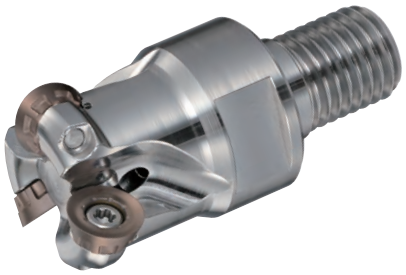
Rake Angle		
	Radial	-5° ~ -8°
	Axial	10°

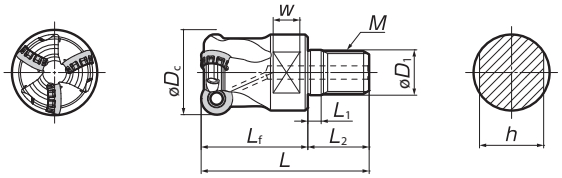
5 mm (10000M) | 6 mm (12000M)

P	M	K	N	N	S	H
Steel	Stainless Steel	Cast Iron	Non-Ferrous Metal	Aluminum	Exotic Alloy	Hardened Steel
	●				●	

RSX

Milling for steel, stainless steel, cast iron, and non-ferrous alloys





Modular Head Course Pitch

Catalog Number	Stock	Dimensions (mm)									No. of Teeth	Weight (kg)
		øDc	øD1	M	L	Lf	L1	L2	W	h		
RSX10025M12Z2	★	25	12.5	M12	56	35	5	21	10	19	2	0.1
RSX10032M16Z3	★	32	17.0	M16	63	40	5	23	10	24	3	0.2
RSX12032M16Z2	★	32	17.0	M16	63	40	5	23	10	24	4	0.2
RSX12040M16Z3	★	40	17.0	M16	63	40	5	23	10	24	4	0.3

Arbor

Modular Head Fine Pitch

Catalog Number	Stock	Dimensions (mm)									No. of Teeth	Weight (kg)
		øDc	øD1	M	L	Lf	L1	L2	W	h		
RSXF10025M12Z3	★	25	12.5	M12	56	35	5	21	10	19	3	0.1
RSXF10032M16Z4	★	32	17.0	M16	63	40	5	23	10	24	4	0.2
RSXF12032M16Z3	★	30	17.0	M16	63	40	5	23	10	24	3	0.2
RSXF12040M16Z4	★	32	17.0	M16	63	40	5	23	10	24	3	0.3

★Worldwide Warehouse Item

Inserts are not included.

Modular Head Identification Details

RSX F 10 025 M12 Z3

(1)	(2)	(3)	(4)	(5)	(6)
Cutter Series	Pitch Type	Insert Size	Diameter	Mounting Screw	No. of Teeth

Insert & Parts Information

Inserts	P		K		M		S	Dimensions	
	ACP200	ACP300	ACK200	ACK300	ACM100	ACM200	ACM300	IC	Thickness
RDET10T3M0EN-G			○	○	●	●	●	0.394	0.156
RDET10T3M0EN-H	○	○	○	○	●	●	●		
RDET1204M0EN-G			○	○	●	●	●	0.472	0.187
RDET1204M0EN-H	○	○	○	○	●	●	●		
RDET1606M0EN-G			○	○	●	●	●	0.629	0.256
RDET1606M0EN-H	○	○	○	○	●	●	●		

H

G

Hardware

Spanner	Screw	Recommended Tightening Torque (N x m)	Applicable Head
TRDR15IP	BFTX03584IP	3.0	RSX10000M
	BFTX0409IP	3.0	RSX12000M

MSX 0600M/0800M/01200M

Exchangeable Head Endmills

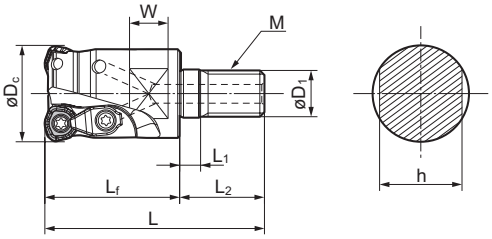
MSX

Ultra-high speed, high efficiency machining endmill

MSX06000M Type
(MSX06000M type only with single clamp)

MSX08000M Type

MSX12000M Type



Modular Head (MSX 06000M)		Applicable Insert WDMT06 Type									
Catalog Number	Stock	Dimensions (mm)									No. of Teeth
		$øD_c$	$øD_1$	M	L	L_f	L_1	L_2	W	h	
MSX 06016M08Z2	★	16	8.5	M8	42	25	5	17	8	13	2
MSX 06018M08Z2	★	18	8.5	M8	42	25	5	17	8	13	2
MSX 06020M10Z3	★	20	10.5	M10	49	30	5	19	8	15	3
MSX 06022M10Z3	★	22	10.5	M10	49	30	5	19	8	15	3
MSX 06025M12Z3	★	25	12.5	M12	56	35	5	21	10	19	3

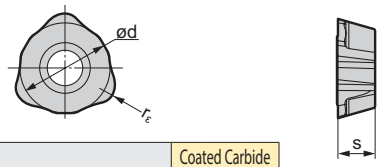
Modular Head (MSX 08000M)		Applicable Insert WDMT08 Type									
Catalog Number	Stock	Dimensions (mm)									No. of Teeth
		$øD_c$	$øD_1$	M	L	L_f	L_1	L_2	W	h	
MSX 08025M12Z2	★	25	12.5	M12	56	35	5	21	10	19	2
MSX 08028M12Z2	★	28	12.5	M12	56	35	5	21	10	19	2
MSX 08030M16Z3	★	30	17.0	M16	63	40	5	23	10	24	3
MSX 08032M16Z3	★	32	17.0	M16	63	40	5	23	10	24	3
MSX 08035M16Z3	★	35	17.0	M16	63	40	5	23	10	24	3

Modular Head (MSX 12000M)		Applicable Insert WDMT12 Type									
Catalog Number	Stock	Dimensions (mm)									No. of Teeth
		$øD_c$	$øD_1$	M	L	L_f	L_1	L_2	W	h	
MSX 12032M16Z2	★	32	17.0	M16	63	40	5	23	10	24	2
MSX 12035M16Z2	★	35	17.0	M16	63	40	5	23	10	24	2
MSX 12040M16Z3	★	40	17.0	M16	63	40	5	23	10	24	3

★Worldwide Warehouse Item

■ Arbor

Inserts



Usage	Catalog Number	Coated Carbide			Dimensions (mm)		
		ACP200	ACP300	ACK300	ød	s	r_ε
General Purpose	**WDMT 0603 ZDTR**	●	●	●	6.35	3.0	1.5
	WDMT 0804 ZDTR	●	●	●	8.50	4.0	2.0
	WDMT 1205 ZDTR	●	●	●	12.00	5.0	2.0
Honed Type	**WDMT 0603 ZDTR-H**	●	●	●	6.35	3.0	1.5
	WDMT 0804 ZDTR-H	●	●	●	8.50	4.0	2.0
	WDMT 1205 ZDTR-H	●	●	●	12.00	5.0	2.0

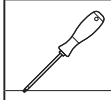
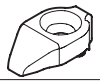
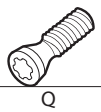
• USA stocked item

■ Modular Head Identification

MSX 06 016 M08 Z2

(1) Cutter Series — (2) Insert Size — (3) Diameter — (4) Mounting Screw — (5) No. of Flutes

Hardware

Wrench	Screws	Clamp	C ring	Clamp Screw	Recommended Tightening Torque (N•m)	Applicable Head
						
TRDR08IP	BFTX02505IP	Q	Q	Q	1.5	MSX06000M
	BFTX0306IP	CCH3.5	CR3	BFTX03510IP08	2.0	MSX08000M
TRDR15IP	BFTX0409IP	CCH3.5	CR3	BFTX03510IP15	3.0	MSX12000M

■ Performance

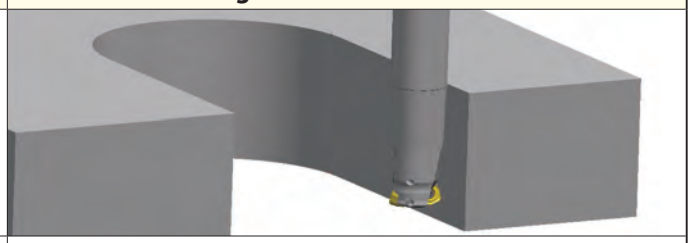
Tool: MSX12032EM Insert: WDMT1205ZDTR-ACP200 *Actual measurement for an integrated endmill type.

Helical Boring

Work material : 1015
Cutting Conditions : v_c=558 SFM n=1,700min^{-1} f_z=.059 IPT
D.O.C.=.032" Radial=.276" OH=5.315"

Results: Some chattering but cut edge looks good and provides good chip control.
20% better efficiency than competitor A.
(Chipping found on Comp A's tool)

Contour Machining



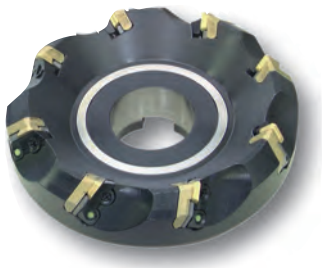
Work material : 4137
Cutting Conditions : v_c=492 SFM n=1,500min^{-1} f_z=.039 IPT
D.O.C.=.032" Radial=.354"~.472" OH=5.315"

Results: 50% faster feed rate than competitor B.
(Comp B's tool failed to perform at this rate)

Discontinued Items

Pages 337-345

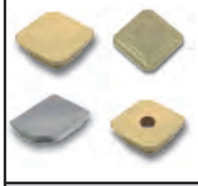
■ UFO Fine Pitch Face Mill Series
UFO "400" Face Mills

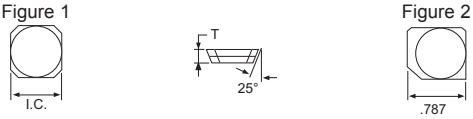


■ UFO Coarse Pitch Face Mill Series
UFO "400 & 500" Face Mills

■ UFO End Mill Series

Inserts Apply to UFO Endmills, 400 & 500 Face Mills

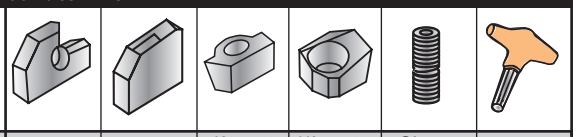




Sumitomo Cat. No.	Coated											Cermet			Uncoated					Dimensions (Inches)			
	ACZ310	ACZ330	ACZ350	AC230	AC325	AC211	EH20Z	K245R2	ACK200	ACK300	ACP100	ACP200	ACP300	T250A	T110A		A30N	G10E	H10E	H1		I.C.	T	Facet Width	Figure
SFEN12T3AZFN																				▲		0.500	0.156	0.088	1
SFKN12T3AZTN		▲	▲	▲	▲						▲	▲	▲	▲			▲								
SFKN12T3AZFN	▲					▲	▲		▲	▲								▲							
SFKR12T3AZEN				▲																					
SFKN1504AZTN*		▲	▲	▲	▲						▲	▲	▲				▲					0.625	0.1875	0.088	
SFKN1504AZFN*	▲					▲	▲		▲	▲								▲							
UW12500R															▲				▲			0.500	0.156	0.218	2

TN = "T" land FN = honed ▲ USA limited Availablity Item *: UFO 500 Face Mill Coarse Pitch

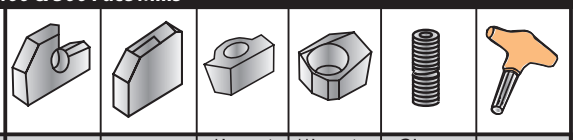
Hardware for UFO 400 Face Mills



Catalog Number	Locator	Seat	*Insert Clamp	**Locator Clamp	Clamp Screw	Wrench
UFO4 □ □ EXR8	UF4KR	UF4SR	UFTWR	UFKWR	WB715T	TT25

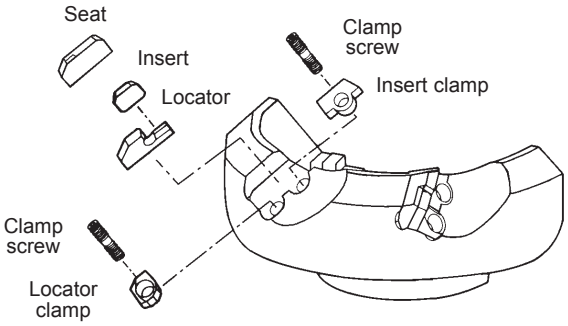
* Torque specifications for insert clamp screw=49-53 in/lbs.
**Torque specifications for locator clamp screws=62-66 in/lbs.

Hardware for UFO 400 & 500 Face Mills



Catalog Number	Locator	Seat	*Insert Clamp	**Locator Clamp	Clamp Screw	Wrench
UFO402R	UF4KR	UF4SRS	UFTWR	UFKWR	WB715T	TT25
UFO4 □ □ R		UF4SR				
UFO402L	UF4KL	UF4SLS	UFTWL	UFKWL	WB715T	TT25
UFO4 □ □ L		UF4SL				
UFO5 □ □ R	UF5KR	UF5SR	UFTWR	UFKWR	WB715T	TT25
UFO5 □ □ L	UF5KL	UF5SL	UFTWL	UFKWL	WB715T	TT25

*Torque specifications for insert clamp screw=49-53 in/lbs.
**Torque specifications for locator clamp screws=62-66 in/lbs.



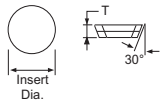
INDEXABLE SHELL MILLS
UFO SERIES
Applicable Insert: RGMN

■ UFOR Face Mill Series
UFOR "600" Face Mills

■ CHE Bridgeport Shank Series
CHE Shoulder Mills

■ CHE Weldon Shank Series
CHE Shoulder Mills

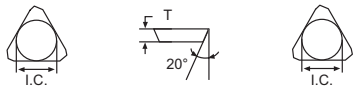
Inserts Apply to UFOR 600 Face Mills



Sumitomo Cat. No.	Coated AC325	Coated EH20Z		Dimensions Insert Dia.	Dimensions T
RGMN2004SNS Edge prep = 0.008" x -30°	▲			0.7874 (20 mm)	0.1875
RGMN2004SNI Edge prep = 0.002" x -15°		▲			
RGMN2004SNT Edge prep = 0.002" x -30°		▲			

Note: use "SNS" for Steel applications
use "SNI" for Inconel applications
use "SNT" for Titanium applications
▲ USA limited availability item

Inserts Apply to CHE Shoulder Mills



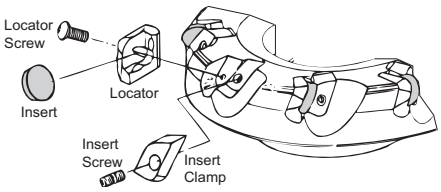
Sumitomo Cat. No.	Coated AC230	Coated AC325	Coated AC211	Cermet T250A				Uncoated A30N	Uncoated G10E	Uncoated H1		PCD DA2200	PCD DA150	PCD DA1000	Dimensions (Inches) I.C.	T		Figure
TECN32R										▲					0.375	0.125		1
TEEN32R									▲			▲	▲		0.375	0.125		2
NF-TEEN32R												▲		▲	0.375	0.125		2
TEKN32TR		▲													0.375	0.125		1
TECN43R										▲					0.500	0.1875		1
TEEN43R												▲	▲		0.500	0.1875		2
NF-TEEN43R												▲		▲	0.500	0.1875		2
TEKN43R	▲		▲						▲						0.500	0.1875		1
TEKN43TR		▲	▲	▲				▲							0.500	0.1875		1

"T" denotes inserts with a T-Land

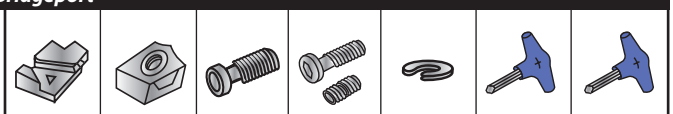
Hardware for UFOR 600 Face Mills

Catalog Number	Locator	Insert Clamp	Locator Screw**	Insert Screw*	Wrench
UFOR6 □ □ R	GRKR	GRWR	BH0410T	WB8-20	TH040 TRD15

*Torque specifications for insert clamp screw=58-62 in/lbs.
**Torque specifications for locator clamp screws=35-40 in/lbs.



Hardware for CHE Bridgeport



Catalog Number	Locator	Clamp	Locator Screw	Clamp Screw	Retaining Ring	Clamp Wrench	Locator Wrench
CHE3-1 □ □ □ RR8	–	CCH5R	–	BHE0510	ER04	–	LH030
CHE4-2000RR8	LCE4R	CEWR	FBH0512	WB8R-16T	–	TT27	TH030

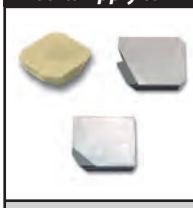
Hardware for CHE Weldon

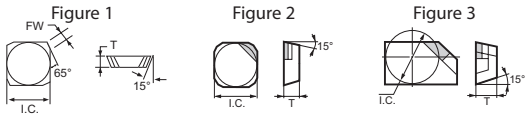
Catalog Number	Locator	Clamp	Locator Screw	Clamp Screw	Retaining Ring	Clamp Wrench	Locator Wrench
CHE2- □ □ □ □ RW	–	CCH4R	–	BHE0407	ER03	–	TH025
CHE3- 1 □ □ □ RW	–	CCH5R	–	BHE0510	ER04	–	LH030
CHE4- 2000RW	LCE4R	CEWR	FBH0512	WB8R-16T	–	TT27	TH030

Section of Discontinued Milling Cutters

■ **APG Face Mill Series**
APG 400 Face Mills

Inserts Apply to APG 400 Face Mills

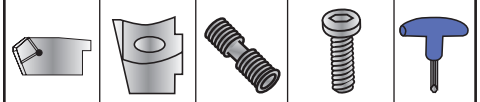




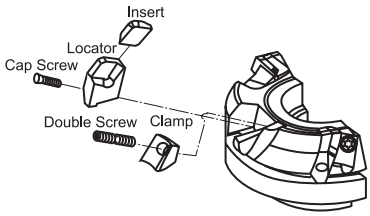
Sumitomo Cat. No.	Coated					Uncoated					PCD					Dimensions (Inches)			
	AC325					A30N	H1				DA2200	DA150	DA200	DA1000		I.C.	T	Facet Width	Figure
SDC42R							▲				▲	▲				0.500	0.125	0.0938	1
SDC42TR	▲					▲										0.500	0.125	0.0938	1
NF-SDC42R											▲			▲		0.500	0.125	0.0938	2
APW4R											▲		▲			0.500	0.125	0.193	3

"T" denotes inserts with T-Land
▲ USA limited availability item

Hardware for APG 400 Face Mills

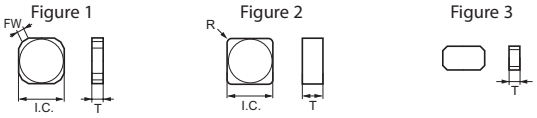


Catalog Number	Locator	Insert Clamp	Clamp Bolt	Cap Screw	Wrench
APG403R	LAP40RL	ATW45RL	WB820	BXF0520RL	TH040
APG404R					
APG405R			WB824T WB824TL		TT27
APG406R					
APG408R					



■ **DNF Face Mill Series**

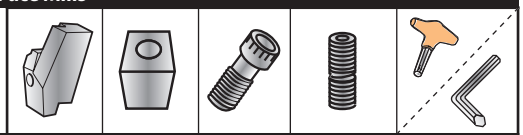
Inserts Apply to DNF Face Mills



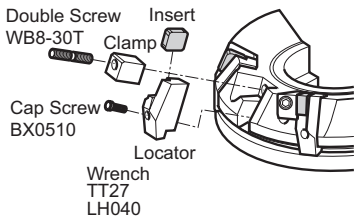
Sumitomo Cat. No.	Coated		Cermet			Uncoated					CBN					Dimensions (Inches)				
	ACZ310	AC325	T250A			H10E					BN5800					I.C.	T	R	Facet Width	Figure
CSNH43M	▲															0.500	0.189	–	0.500	1
SNG432		▲									•					0.500	0.1875	0.0312	–	2
SNG433											•							0.0469		
SNG434											•							0.0625		
SNMN433	▲	▲		▲						▲						0.500	0.1875	0.0469	–	
NW100*				▲												–	0.197	–	–	3

▲ USA limited availability item • USA stocked item
*Wiper requires LNFW40R cartridge

Hardware for DNF Face Mills



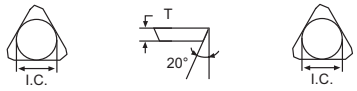
Catalog Number	Locator	Insert Clamp	Locator Clamp	Insert Screw*	Wrench
DNF □□□□R	LNF40R	FTW40R	BX0510	WB830T	TT27 LH040



Torque specifications for locator clamp (WB830T)= 71-75 in/lbs.
Torque specifications for insert clamp (WB830T)= 57-62 in/lbs.

■ **CHG Face Mill Series**

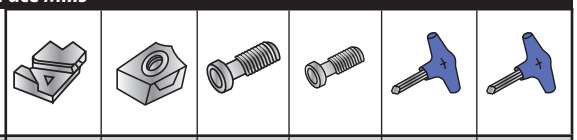
Inserts Apply to CHG Face Mills



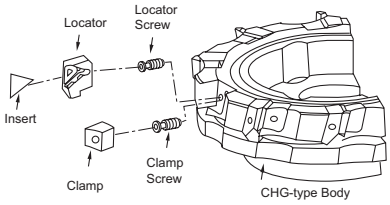
Sumitomo Cat. No.	Coated				Cermet				Uncoated			PCD			Dimensions (Inches)		
	AC230	AC325	AC211		T250A				A30N	G10E	H1	DA2200	DA150	DA1000	I.C.	T	Figure
TECN43R											▲				0.500	0.1875	1
TEEN43R												▲	▲		0.500	0.1875	2
NF-TEEN43R												▲		▲	0.500	0.1875	2
TEKN43R	▲		▲							▲					0.500	0.1875	1
TEKN43TR	▲	▲			▲					▲					0.500	0.1875	1

"T" denotes inserts with a T-Land.
▲ USA limited availability item

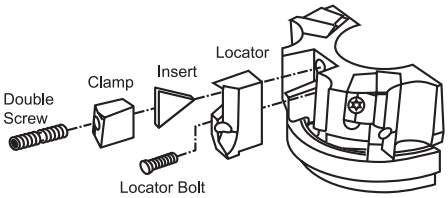
Hardware for CHG Face Mills



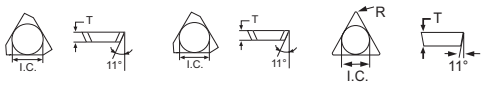
Catalog Number	Locator	Clamp	Clamp Bolt	Locator Screw	Clamp Wrench	Locator Wrench
CHG403R	LCH4R	CHWR	FBX0811	FBH0512	TH040	TH030
CHG404R						
CHG405R						
CHG406R			FBX0817			
CHG408R						



■ **CPG 400 & 500 Face Mill Series**



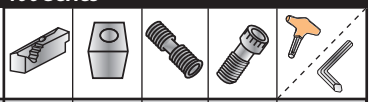
Inserts Apply to CPG 400 & 500 Face Mills



Sumitomo Cat. No.	Coated				Cermet				Uncoated				Dimensions (Inches)			
	AC230	AC325	AC211	EH20Z	T250A				A30N	G10E			I.C.	T	R	Figure
TPCH43R			▲							▲			0.500	0.1875		1
TPCH43TR	▲	▲			▲				▲				0.500	0.1875		1
TPC53P12R									▲				0.625	0.1875		2
TPC53P12RA									▲				0.625	0.1875		2
TPG431		▲							▲	▲			0.500	0.1875	0.0156	3
TPG432		▲		▲					▲	▲			0.500	0.1875	0.0312	3
TPG433		▲		▲									0.500	0.1875	0.0469	3
TPMN431		▲							▲				0.500	0.1875	0.0156	3
TPMN432		▲							▲				0.500	0.1875	0.0312	3
TPMN433		▲								▲			0.500	0.1875	0.0469	3
TPMN434									▲				0.500	0.1875	0.0625	3

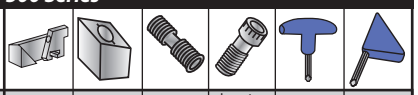
"T" denotes inserts with a T-Land.
▲ USA limited availability item

Hardware for 400 Series



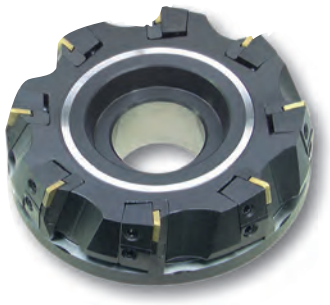
Catalog Number	Locator	Clamp	Clamp Bolt	Locator Bolt	Wrench
CPG03R	LCP40R	PTW40R	WB8-24T	BX0510	TT27 / LH040
CPG04R					
CPG05R		PTW41R			
CPG06R					

Hardware for 500 Series



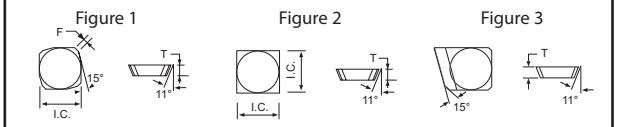
Catalog Number	Locator	Clamp	Clamp Bolt	Locator Clamp Bolt	Wrench	Wrench
CPG504R	LCP50R	PTW50R	WB8-24T	BH0408	TT27	TT25
CPG505R						
CPG506R		PTW51R				
CPG508R						
CPG510R						

Section of Discontinued Milling Cutters



■ **DPG 400 Face Mill Series**

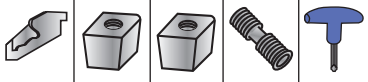
Inserts for DPG 400 Face Mills



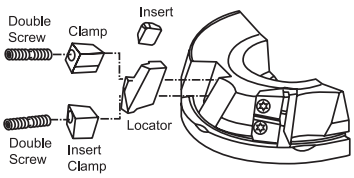
Sumitomo Cat. No.	Coated ACZ310	Coated AC230	Coated AC325	Coated AC211	Coated EH20Z	Uncoated A30N	Uncoated G10E			I.C.	T	Facet Width	R	Figure
SPCH42R	▲			▲						0.500	0.125	0.125	N/A	1
SPCH42TR		▲				▲								
SPG421							▲			0.500	0.125	N/A	0.0156	2
SPG422			▲		▲		▲						0.0312	
SPG423					▲								0.0469	
SPMN421						▲							0.0156	
SPMN422			▲										0.0312	
SPMN423			▲			▲	▲						0.0469	
SPMN424			▲										0.0625	
DPW500R				▲						0.480	0.126	0.126	N/A	3

"T" denotes inserts with a T-Land.
▲ USA limited availability item

Hardware for DPG 400 Face Mills



Catalog Number	Locator	Locator Clamp	Insert Clamp	Clamp Bolt	Wrench
DPG403R	GL40R	GLW40R	GTW40R	WB830T	TT27
DPG404R		GLW41R	GTW41R	WB824T	
DPG406R					
DPG408R		GLW42R	GTW42R	WB830T	
DPG410R					
DPG412R					



Torque specifications for locator clamp (WB830T)=71-75 in/lbs.
Torque specifications for insert clamp (WB830T)=57-62 in/lbs.

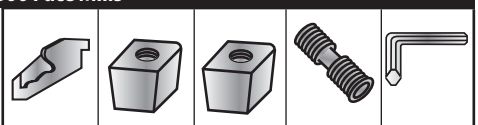
■ **DPG 500 Face Mill Series**

Inserts Apply to DPG 500 Face Mills

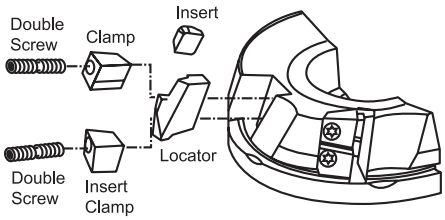
Sumitomo Cat. No.	Coated ACZ310	Coated AC230	Coated AC325	Coated AC211	Coated EH20Z	Uncoated A30N	Uncoated G10E			I.C.	T	Facet Width	R	Figure
SPCH53TR			▲			▲				0.625	0.1875	0.1875	N/A	1
SPCH53TRR		▲												
SPMN533			▲			▲	▲			0.625	0.1875	0.0469	N/A	2

"T" denotes inserts with a T-Land.
▲ USA limited availability item

Hardware for DPG 500 Face Mills



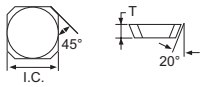
Catalog Number	Locator	Locator Clamp	Insert Clamp	Clamp Bolt	Wrench
DPG503R	GL50R	GLW50R	GTW50R	WB830T	TT27
DPG504R		GLW51R	GTW51R	WB824T	
DPG506R					
DPG508R		GLW52R	GTW52R	WB830T	
DPG510R					
DPG512R					

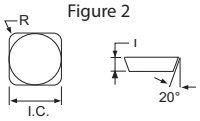


Torque specifications for locator clamp (WB830T)=71-75 in/lbs.
Torque specifications for insert clamp (WB830T)=57-62 in/lbs.

■ **EHG 400 Face Mill Series**

Inserts Apply to EHG Face Mills



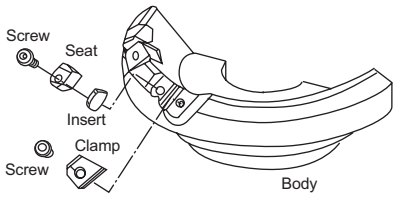


Sumitomo Cat. No.	Coated								Cermet			Uncoated				Dimensions (in)				
	ACZ310	ACZ330	ACZ350	AC230	AC325	AC211	EH20Z		T250A			A30	A30N	G10E		I.C.	T	R	Facet Width	Fig.
SEKN42M	▲					▲	▲							▲		0.500	0.125	N/A	0.0625	1
SEKN42MT			▲	▲	▲				▲				▲							
SEKN53M	▲															0.625	0.1875			
SEKN53MT		▲	▲	▲	▲				▲				▲							
SEMR42M				▲												0.500	0.125			
SEC422					▲							▲		▲				0.0312	N/A	2

"M" denotes honed inserts
"MT" denotes inserts with a T-Land
▲ USA limited availability item

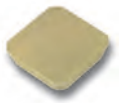
Hardware for EHG Face Mills

Catalog Number	Seat	Clamp	Clamp & Locator Screw	Wrench
EHG4 □ □	EHK4R	EHW4R	EHBX0512	TH040



■ **FPG 400 & 500 Face Mill Series**

Inserts Apply to FPG Face Mills



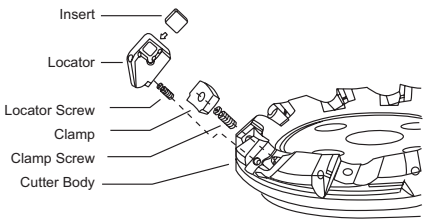
Sumitomo Cat. No.	Coated							Cermet			Uncoated			PCD		Dimensions (in)		
	ACZ310	ACZ330	ACZ350	AC230	AC325	AC211	EH20Z	T250A			A30N	G10E		DA150		I.C.	T	Facet Width
SDKN42M	▲					▲	▲							▲		0.500	0.125	0.0781
SDKN42MT		▲	▲	▲	▲			▲			▲							
SDKN53M						▲	▲					▲				0.625	0.1875	
SDKN53MT			▲	▲	▲			▲										

"M" denotes honed inserts
"MT" denotes inserts with a T-Land
▲ USA limited availability item

Hardware for FPG Face Mills

Catalog Number	Locator	Clamp	Clamp Screw**	Locator Screw*	Clamp Wrench	Locator Wrench
FPG4 □ □ R	LFP4R	FPWR	FBX0817	FBH0512	TH040	TH030
FPG5 □ □ R	LFP5R					

*Torque specification for FBH0512=58-62 in/lbs.
**Torque specification for FBX0817=44-49 in/lbs.



WEM 4000/5000

Hardware

Catalog Number	Screw	Wrench
WEM3□□□RW□	BFTX02506N	TRD08
WEM3□□EX	BFTX02506N	TRD08

Torque specifications for BFTX02506N insert screw=10-14 inch/lbs.

Hardware for WEM

Catalog Number	Screw	Wrench
WMM10□□□M	BFTX02506N	TRD08

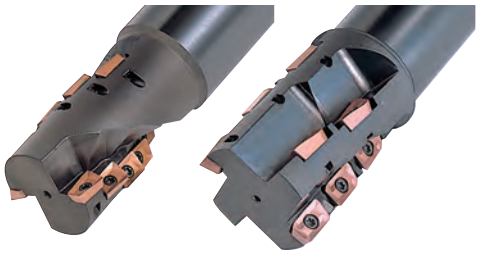
Torque specifications for BFTX02506N insert screw=10-14 inch/lbs.

Hardware

Catalog Number	Screw	Wrench
WMM16□□□M	BFTX03584	TRD15

Torque specifications for BFTX03584 insert screw=27-31 inch/lbs.

WRM 10000/16000



Hardware

Catalog Number	Screw	Wrench
WRM10□□□M	BFTX02506N	TRD08

Torque specifications for BFTX02506N insert screw=10-14 inch/lbs.

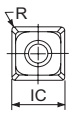
Hardware

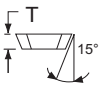
Catalog Number	Screw	Wrench
WRM16□□□M	BFTX03588	TRD15

Torque specifications for BFTX03588 insert screw=27-31 inch/lbs.

WFM 400/500

Inserts Apply to WFM Cutters





Sumitomo Cat. No.	Coated				Uncoated					Dimensions (Inches)		
	AC230	AC2310	AC2330	AC2350	K245R2	G10E				I.C.	T	R
XDMT120408PDEN	▲	▲	▲	▲	▲	▲				0.500	0.1875	0.031
XDMT120408PDENH	▲	▲	▲	▲		▲				0.500	0.1875	0.031
XDMT150408PDEN	▲	▲	▲	▲		▲				0.625	0.1875	0.031

▲ USA limited availability item

Hardware for WFM Cutters

Catalog Number	Seat	Insert Screw	Set Screw	Wrench	Wrench
WFM□40□R	WFMS4R	BFTX0414	BT0506	TRD20	TH025
WFM□50□R	WFMS5R	BFTX0515N	BT0506	TRD20	TH025

PWC

■ **SumiEdge Mill Cutter Bodies**

Fig. 1

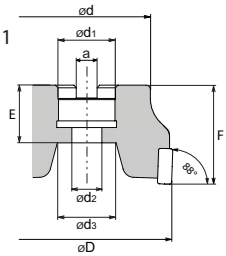
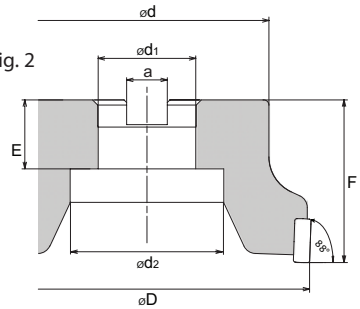
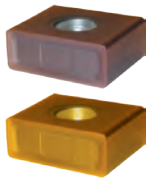


Fig. 2



Inserts Apply to SumiEdge Mill Cutter Bodies



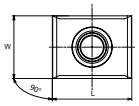


Fig. 1

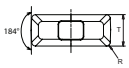
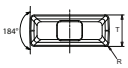


Fig. 2



Sumitomo Cat. No.	Grade ACK200	Grade ACK300	L	W	T	R	Facet Width	Fig.
LNMX160608PNSN-G	▲	▲	0.634	0.476	0.250	0.032	0.218	1
LNMX160608PNSN-H	▲	▲	0.634	0.476	0.250	0.032	0.218	2
LNMX1606-W		▲	0.636	0.476	0.250	0.032	*	-

*See page 000 for facet width information.

Hardware

		
Applicable Cutter	Insert Screw	Wrench
PWC Series	BFTX0511N	TTX15W

SUMITOMO

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Pages 347-385

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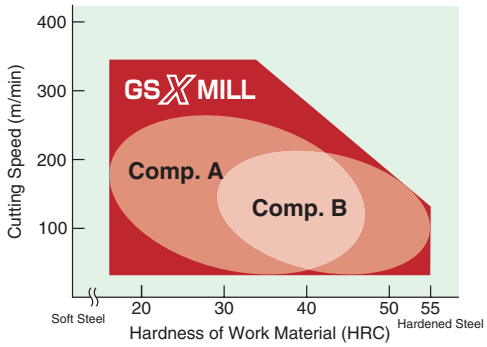
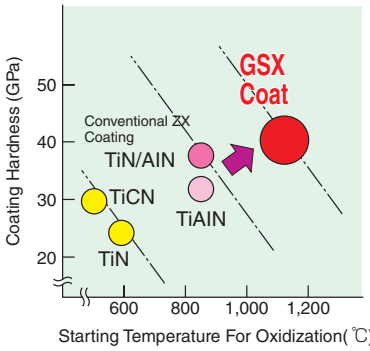
Features & Benefits

- Wide variation of three flute types and four flute lengths enable use in a wide variety of applications.
- Fine carbide substrate provides high traverse rupture strength and excellent thermal shock resistance improving reliability in wet cutting applications.
- GSX Coat provides improved reliability and longer tool life.
- Large rake angle and unique flute design improve sharpness and chip evacuation.
- Corner edge with gash land improves cutting edge strength.
- Sharper edge S type and fracture resistant C type added to the 2D size series.

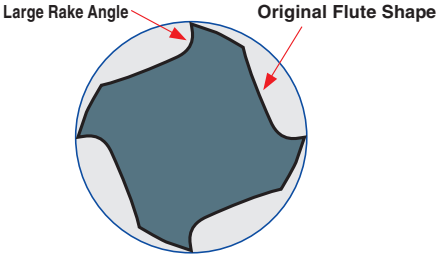
■ Wear Resistance



■ Thermal Resistance



■ Improved Chip Evacuation

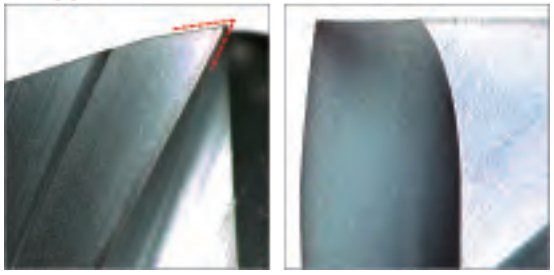


Large rake angle combined with our unique flute design improves sharpness and chip evacuation.

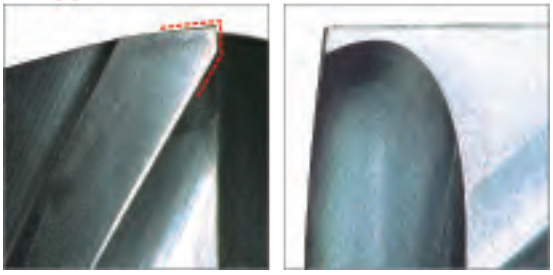
■ 2 cutting edge designs expand machining applications

Sharper edge S type and fracture resistant C type added to the 2D size series.

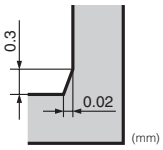
S Type Sharp Corner: Sharper Edge Design



C Type Gash Land: Fracture Resistant Design



Note: When using endmills with gash land, some material remains as shown on the right. If you need sharp corners, use the S Type.



Ex.: Corner on a ϕ10mm hole

■ Application Range

◎ : Best ○ : Good Blank : Not recommended

P					H			M	S		K	N			
					Hardened Steel										
General Structure Rolled Steel	Carbon Steel	Alloy Steel	Pre-hardened Steel	Die Steel	45 to 55 HRC	55 to 60 HRC	60 HRC	Stainless Steel	Ti Alloy	Heat Resistant Alloy	Cast Iron	Al Alloy	Copper Alloy	Graphite	CFRP
○	◎	◎	◎	◎	◎ *1			◎	○	○	○				

*1 : GSXSLT30000C is recommended for 50 HRC or less.

■ Recommended Milling Examples

Application	Surface Milling		Groove Milling		Groove Finishing	
Form						
	Roughing	Finishing	Roughing	Finishing	Roughing	Finishing
S Type		◎		○ *2		◎
C Type	◎	○	◎	◎	◎	○

S Type is best for removing inside corners

*2 : Use with small depth of cut.

■ Product Range

Application	No. of Teeth	Flute Length					
		1.5D	2D		3D		4D
		C Type	S Type	C Type	S Type	C Type	C Type
General Purpose	2	GSX20000C-1.5D φ1.0 to φφ20.0mm	Expansion GSX20000S-2D φ0.5 to φφ20.0mm	Expansion GSX20000C-2D φ0.5 to φφ25.0mm	New GSX20000S-3D φ0.5 to φφ20.0mm	GSX20000C-3D φ1.0 to φφ20.0mm	GSX20000C-4D φ1.0 to φφ20.0mm
	3	GSX30000C-1.5D φ1.0 to φφ20.0mm		GSX30000C-2D φ1.0 to φφ20.0mm			
	4	GSX40000C-1.5D φ1.0 to φφ20.0mm	Expansion GSX40000S-2D φ1.0 to φφ20.0mm	Expansion GSX40000C-2D φ1.0 to φφ25.0mm	New GSX40000S-3D φ1.0 to φφ20.0mm	GSX40000C-3D φ1.0 to φφ20.0mm	GSX40000C-4D φ1.0 to φφ20.0mm

*1 C type end cutting edge (gash land) GS MILL Series

Endmill Series

■ High Precision

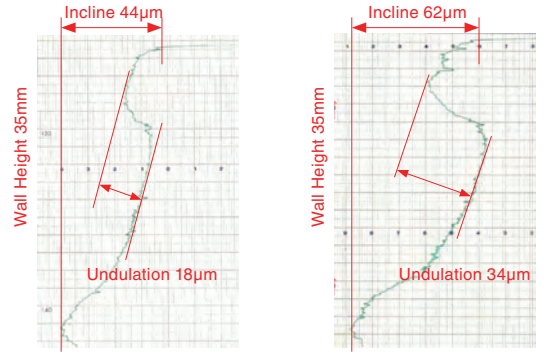
Diametrical tolerance held to 2/3 of the previous type. Also features reduced variation and does not require tool diameter correction when replacing tools.

■ Multi-Purpose

Optimized flute design of slotted 3 flute (short) type reduces cutting resistance.

1. Allows drilling, slot milling and other continuous (compound) applications.
2. Perfect for use on thin walls and small machining centres.

■ Long, High Rigidity Flutes

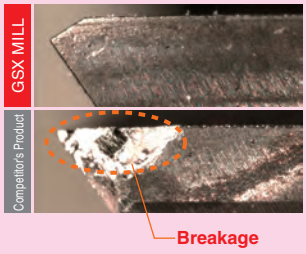


Tool Dimensions : ø10 (2 Flutes)
Work Material : S50C
Cutting Speed : 44m/min (1,400min-1)
Feed Rate : 240mm/min (0.086mm/t)

Depth-of-cut: a_p=35mm
a_e=0.1mm×25 times
Coolant : Wet
BT30 Vertical Machining Centre

■ Application Examples

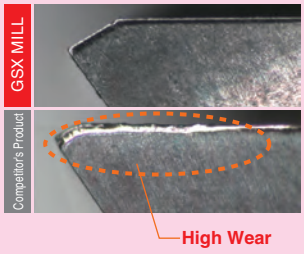
Carbon Steel Grooving with GSX20000C



Gash land for stronger cutting edge.

Tool Dimension	ϕ6 (2 Flutes)
Work Material	S50C
Cutting Speed	87m/min (4615min^{-1})
Feed Rate	553mm/min (0.06mm/t)
Depth-of-cut	a_p=3mm a_e=6mm
Coolant	Dry
Vertical Machining Centre	BT50

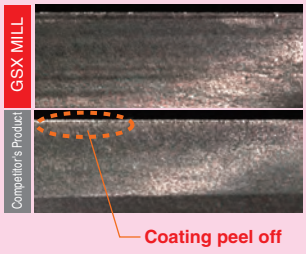
Cast Iron Grooving with GSX20000C



GSX Coat for improved wear resistance.

Tool Dimension	ϕ10(2 Flutes)
Work Material	Equivalent to FDC600
Cutting Speed	66m/min(2100min^{-1})
Feed Rate	302mm/min(0.072mm/t)
Depth-of-cut	a_p=5mm×5 passes a_e=10mm
Coolant	Dry
Vertical Machining Centre	BT40

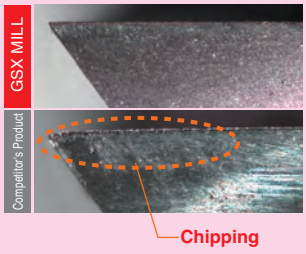
Stainless Steel Machining with GSX20000C



Improved reliability even under wet machining.

Tool Dimension	ϕ10(2 Flutes)
Work Material	SUS304
Cutting Speed	50m/min(1591min^{-1})
Feed Rate	127mm/min(0.04mm/t)
Depth-of-cut	a_p=10mm a_e=0.5mm
Coolant	Wet
Vertical Machining Centre	BT50

Surface Milling S50C with GSX20000S



S type delivers optimum cutting performance.

Tool Dimension	ϕ6(2 Flutes)
Work Material	S50C
Cutting Speed	87m/min(4615min^{-1})
Feed Rate	553mm/min(0.06mm/t)
Depth-of-cut	a_p=10mm a_e=0.3mm
Coolant	Dry
Vertical Machining Centre	BT50

GSX Series Solid Carbide Endmills

■ Recommended Milling Examples

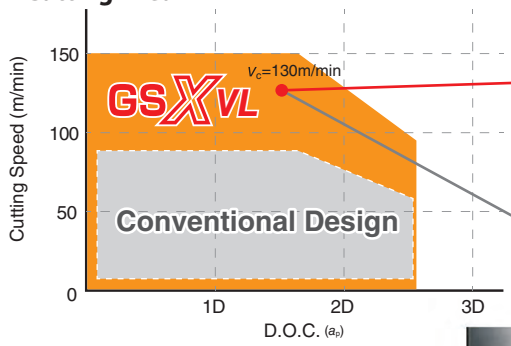
Application	Side Milling		Groove Milling		Groove Finishing	
	Roughing	Finishing	Roughing	Finishing	Roughing	Finishing
Square Type	◎	○	◎	◎	◎	○
Radius Type	◎	○	◎	◎	◎	○

■ Diameter

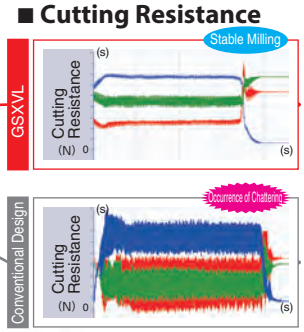
■ Drastically improved resistance to chattering and breakage

Optimization of irregular pitch and lead design drastically improve vibration and breakage resistance. Achieving high-speed, high efficiency milling by lowering cutting resistance.

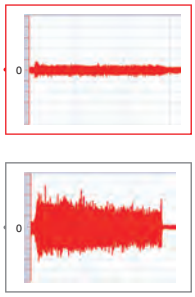
■ Cutting Area



■ Cutting Resistance



■ Vibration Data



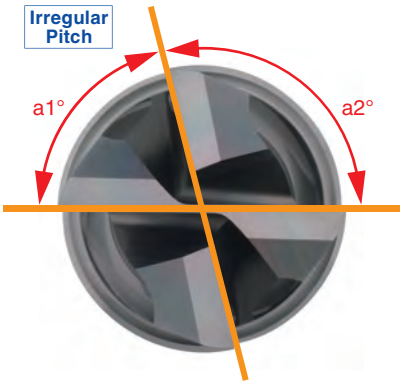
●Side Milling

Work Material: S50C Tool diameter: ϕ10

Cutting Conditions: n=4,100min^{-1}
v_f=1,450mm/min
a_p=15mm, a_e=2mm, Wet

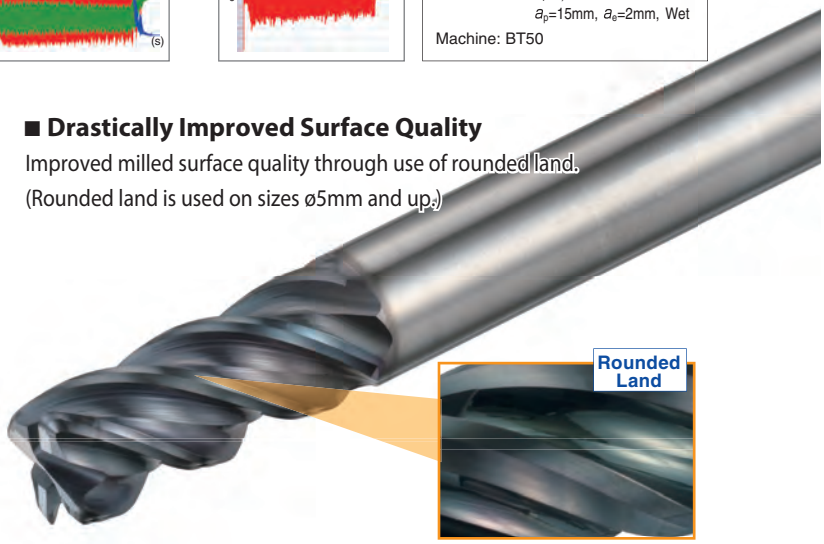
Machine: BT50

■ Irregular Pitch and Irregular Lead

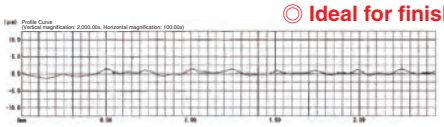
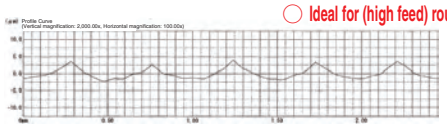
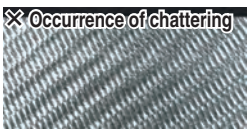
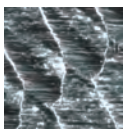
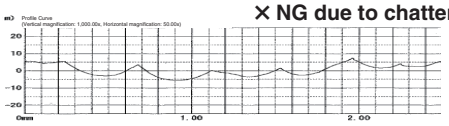


■ Drastically Improved Surface Quality

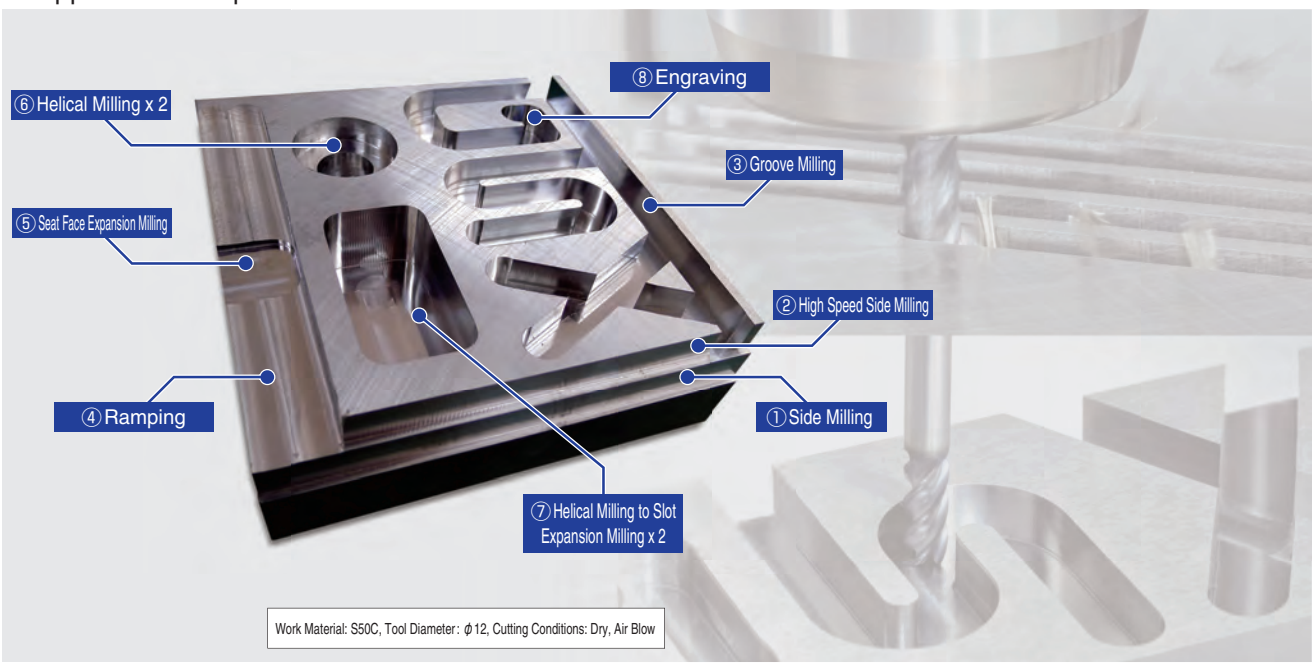
Improved milled surface quality through use of rounded land.
(Rounded land is used on sizes ø5mm and up.)



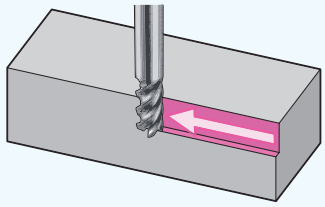
■ Application Examples (Work Material: SUS304)

Tool	Cutting Conditions	Surface Finish Quality	Enlarged Machined Surface	Surface Roughness
GSXVL Anti-vibration Type Irregular Pitch Irregular Lead ϕ12	n=1,200min^{-1} v_f=300mm/min a_p=18mm, a_e=1.2mm Wet	◎ Good 		◎ Ideal for finishing 
	n=1,300min^{-1} v_f=630mm/min a_p=18mm, a_e=1.2mm Wet	○ Surface is rough but without chattering 		○ Ideal for (high feed) roughing 
Competitor's Product Regular Pitch ϕ12	n=1,200min^{-1} v_f=300mm/min a_p=18mm, a_e=1.2mm Wet	× Occurrence of chattering 		× NG due to chattering 

■ Application Examples

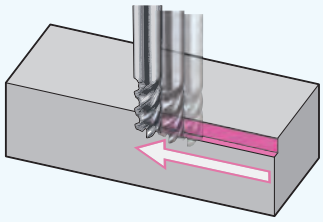


① Side Milling



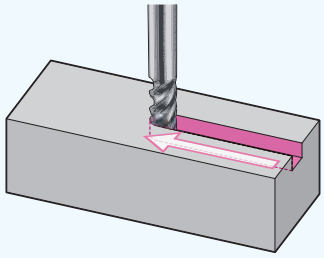
Cutting Conditions: v_c=102m/min (n=4,100min^{-1})
v_f=1,080mm/min (0.1mm/t)
a_p=24mm, a_e=2.0mm

② High Speed Side Milling



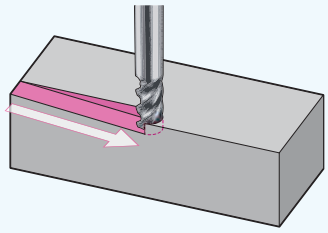
Cutting Conditions: v_c=151m/min (n=4,000min^{-1})
v_f=4,800mm/min (0.3mm/t)
a_p=12mm, a_e=2.0mm

③ Groove Milling



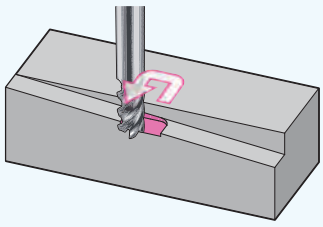
Cutting Conditions: v_c=90m/min (n=2,400min^{-1})
v_f=960mm/min (0.1mm/t)
a_p=12mm

④ Ramping



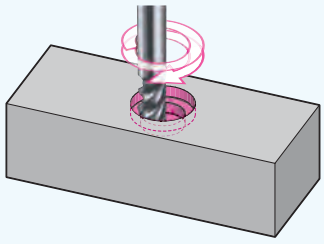
Cutting Conditions: v_c=90m/min (n=2,400min^{-1})
v_f=480mm/min (0.05mm/t)
Ramp Angle 5°

⑤ Seat Face Expansion Milling



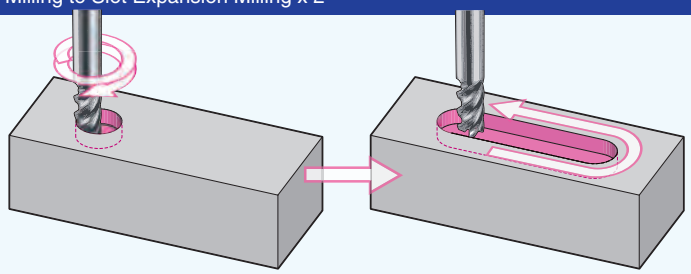
Cutting Conditions: v_c=90m/min (n=2,400min^{-1})
v_f=960mm/min (0.1mm/t)

⑥ Helical Milling x 2



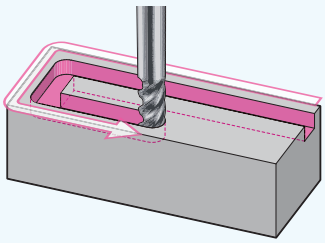
Cutting Conditions: v_c=90m/min (n=2,400min^{-1})
v_f=480mm/min (0.05mm/t)
Ramp Angle 3°

⑦ Helical Milling to Slot Expansion Milling x 2



Cutting Conditions: v_c=90m/min (n=2,400min^{-1})
[Helical] v_f=480mm/min (0.05mm/t) [Slot Expansion] v_f=672mm/min (0.07mm/t) [Finishing] v_f=1,920mm/min (0.2mm/t)
Ramp Angle 3°
a_p=24mm, a_e=0.1mm

⑧ Engraving



Cutting Conditions: v_c=79m/min (n=2,100min^{-1})
v_f=588mm/min (0.07mm/t)
a_p=12mm

GSX Series Solid Carbide Endmills

■ Recommended Milling Examples

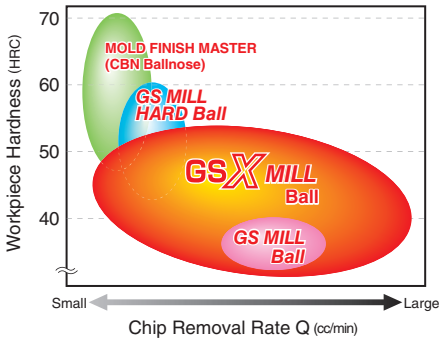
Application	Radius Milling		Copy Millimg		Pocket Millimg	
	Roughing	Finishing	Roughing	Finishing	Roughing	Finishing
Ballnose Type	◎	◎	◎	◎	◎	◎

■ Diameter

■ Improved Thermal Resistance and Wear Resistance

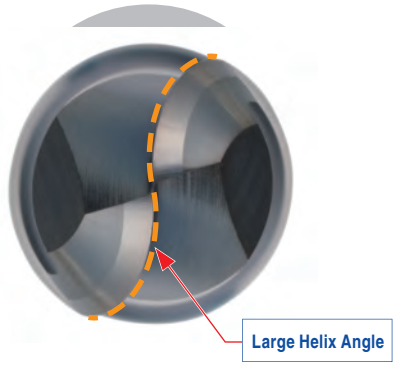
New coating combined with a fine-grained carbide substrate exhibit better thermal and wear resistance.

■ Application Range



■ Reduced Cutting Resistance

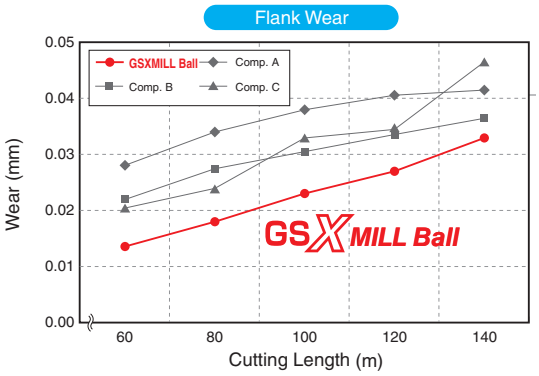
Large helix angle on cutting edge reduces cutting resistance.



■ Improved Chip Evacuation

Unique pocket design and expanded pocket area promotes better chip evacuation.

■ Application Examples



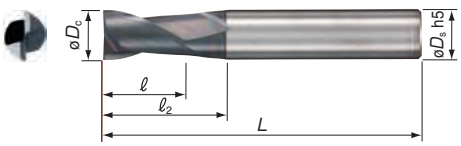
Chipping at the center, large flank wear

Work Material: SKD61 (50HRC)
Tool Dimensions: R3 (2 Flutes)
Cutting Conditions: v_c=179m/min(n=9,500min^{-1}), V_f=2,250mm/min(f_z=0.12mm/t)
a_p=0.2 to 1.0mm, p_f=0.3mm, Wet
Equipment: Vertical Machining Centre BT40

GSX End Mill-INCH 1.5D Gash Land

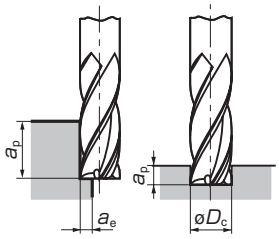
Item	Stock	Flutes	Length	Diam. (inch) φD_c	Diam. (mm) φD_c	Shank Diam. (inch) φD_s	Flute Length (inch) ℓ	Neck Length (inch) ℓ_2	OAL (inch) L	R (inch)
GSX204C-1.5D	○	2	1.5D	0.0625	*1.588*	0.1250	0.0938	0.1331	1.500	-
GSX206C-1.5D	○	2	1.5D	0.0938	*2.381*	0.1250	0.1406	0.1800	1.500	-
GSX208C-1.5D	○	2	1.5D	0.1250	*3.175*	0.1250	0.1875	-	2.000	-
GSX210C-1.5D	○	2	1.5D	0.1563	*3.969*	0.1875	0.2344	0.2934	2.000	-
GSX212C-1.5D	○	2	1.5D	0.1875	*4.763*	0.1875	0.2813	-	2.000	-
GSX214C-1.5D	○	2	1.5D	0.2188	*5.558*	0.2500	0.3282	0.407	2.000	-
GSX216C-1.5D	○	2	1.5D	0.2500	*6.350*	0.2500	0.3750	-	2.000	-
GSX218C-1.5D	○	2	1.5D	0.2813	*7.144*	0.3125	0.4219	0.501	2.500	-
GSX220C-1.5D	○	2	1.5D	0.3125	*7.938*	0.3125	0.4688	-	2.500	-
GSX224C-1.5D	○	2	1.5D	0.3750	*9.525*	0.3750	0.5625	-	3.000	-
GSX228C-1.5D	○	2	1.5D	0.4375	*11.113*	0.4375	0.6563	-	3.000	-
GSX232C-1.5D	○	2	1.5D	0.5000	*12.700*	0.5000	0.7500	-	3.000	-
GSX236C-1.5D	○	2	1.5D	0.5625	*14.288*	0.5625	0.8438	-	3.500	-
GSX240C-1.5D	○	2	1.5D	0.6250	*15.875*	0.6250	0.9375	-	3.500	-
GSX244C-1.5D	○	2	1.5D	0.6875	*17.463*	0.6875	1.0313	-	4.000	-
GSX248C-1.5D	○	2	1.5D	0.7500	*19.050*	0.7500	1.1250	-	4.000	-
GSX256C-1.5D	○	2	1.5D	0.8750	*22.225*	0.8750	1.3125	-	4.000	-
GSX264C-1.5D	○	2	1.5D	1.0000	*25.400*	1.0000	1.5000	-	4.000	-

○ - Items Available 1st Quarter 2015



■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Endmill Identification (GSX MILL Series Only)

GSX 2 04 C - 1.5D

1	2	3	4	5
Series Code	# of Flutes	Diameter in 64ths (4/64 = 0.0625")	Cutting Edge S: Sharp Edge C: Gash Land	Cutting Edge Length

■ Recommended Cutting Conditions
■ Side Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (in)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)
< 0.039	19,600	9.84	19,600	9.84	19,600	9.84	18,300	7.09	12,700	3.94	9,000	2.36	11,000	2.76	9,000	1.97
< 0.078	11,200	13.39	11,200	13.39	11,200	13.39	10,500	9.45	7,300	5.12	5,300	3.15	6,400	3.54	5,300	2.76
< 0.156	6,400	18.11	6,400	18.11	6,400	18.11	6,000	12.60	4,200	7.09	3,000	4.33	3,600	4.72	3,000	3.54
< 0.236	4,600	22.05	4,600	22.05	4,600	22.05	4,300	15.75	3,000	8.27	2,200	5.12	2,700	5.51	2,200	3.94
< 0.315	3,400	22.05	3,400	22.05	3,400	22.05	3,200	15.75	2,200	8.27	1,600	5.12	2,000	5.51	1,600	3.94
< 0.393	2,800	22.05	2,800	22.05	2,800	22.05	2,600	15.75	1,800	8.27	1,300	5.12	1,600	5.51	1,300	3.94
< 0.472	2,300	22.05	2,300	22.05	2,300	22.05	2,200	15.75	1,500	8.27	1,100	5.12	1,300	5.51	1,100	3.94
< 0.630	1,700	17.72	1,700	17.72	1,700	17.72	1,600	12.60	1,100	7.09	800	3.94	1,000	4.33	800	3.35
< 0.787	1,350	14.96	1,350	14.96	1,350	14.96	1,300	11.02	900	6.30	650	3.54	800	3.94	650	2.95
Standard Depth-of-cut a_p	1.5D_c										1.0D_c					
Standard Depth-of-cut a_e	0.05D_c										0.02D_c					

■ Groove Milling

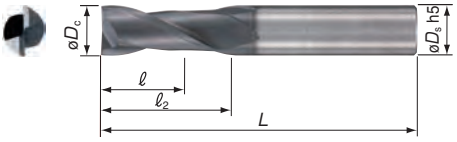
Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (in)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)
< 0.039	19,600	7.87	19,600	9.84	19,600	9.84	18,300	7.09	12,700	3.94	9,000	2.36	11,000	1.97	4,500	0.79
< 0.078	11,200	10.63	11,200	13.39	11,200	13.39	10,500	9.45	7,300	5.12	5,300	3.15	6,400	2.56	2,650	0.98
< 0.156	6,400	14.57	6,400	18.11	6,400	18.11	6,000	12.60	4,200	7.09	3,000	4.33	3,600	3.15	1,500	1.38
< 0.236	4,600	17.72	4,600	22.05	4,600	22.05	4,300	15.75	3,000	8.27	2,200	5.12	2,700	3.94	1,100	1.57
< 0.315	3,400	17.72	3,400	22.05	3,400	22.05	3,200	15.75	2,200	8.27	1,600	5.12	2,000	3.94	800	1.57
< 0.393	2,800	17.72	2,800	22.05	2,800	22.05	2,600	15.75	1,800	8.27	1,300	5.12	1,600	3.94	650	1.57
< 0.472	2,300	17.72	2,300	22.05	2,300	22.05	2,200	15.75	1,500	8.27	1,100	5.12	1,300	3.94	500	1.57
< 0.630	1,700	14.17	1,700	17.72	1,700	17.72	1,600	12.60	1,100	7.09	800	3.94	1,000	3.15	400	1.38
< 0.787	1,350	11.81	1,350	14.96	1,350	14.96	1,300	11.02	900	6.30	650	3.54	800	2.76	320	1.18
Standard Depth-of-cut a_p	0.2D_c		0.5D_c						0.2D_c		0.05D_c		0.2D_c			

GSX Series Solid Carbide Endmills

GSX End Mill-INCH 2D Gash Land

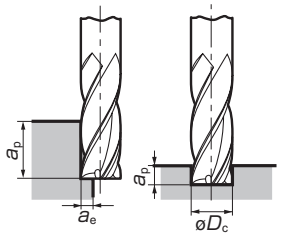
Item	Stock	Flutes	Length	Diam. (inch) φDc	Diam. (mm) φDc	Shank Diam. (inch) φDs	Flute Length (inch) ℓ	Neck Length (inch) ℓ2	OAL (inch) L	R (inch)
GSX204C-2D	○	2	2D	0.0625	*1.588*	0.1250	0.1250	0.1644	1.500	-
GSX206C-2D	○	2	2D	0.0938	*2.381*	0.1250	0.1875	0.2269	1.500	-
GSX208C-2D	○	2	2D	0.1250	*3.175*	0.1250	0.2500	-	2.000	-
GSX210C-2D	○	2	2D	0.1563	*3.969*	0.1875	0.3125	0.3716	2.000	-
GSX212C-2D	○	2	2D	0.1875	*4.763*	0.1875	0.3750	-	2.000	-
GSX214C-2D	○	2	2D	0.2188	*5.558*	0.2500	0.4376	0.516	2.000	-
GSX216C-2D	○	2	2D	0.2500	*6.350*	0.2500	0.5000	-	2.000	-
GSX218C-2D	○	2	2D	0.2813	*7.145*	0.3125	0.5626	0.641	2.500	-
GSX220C-2D	○	2	2D	0.3125	*7.938*	0.3125	0.6250	-	2.500	-
GSX224C-2D	○	2	2D	0.3750	*9.525*	0.3750	0.7500	-	3.000	-
GSX228C-2D	○	2	2D	0.4375	*11.113*	0.4375	0.8750	-	3.000	-
GSX232C-2D	○	2	2D	0.5000	*12.700*	0.5000	1.0000	-	3.000	-
GSX236C-2D	○	2	2D	0.5625	*14.288*	0.5625	1.1250	-	3.500	-
GSX240C-2D	○	2	2D	0.6250	*15.875*	0.6250	1.2500	-	3.500	-
GSX244C-2D	○	2	2D	0.6875	*17.463*	0.6875	1.3750	-	4.000	-
GSX248C-2D	○	2	2D	0.7500	*19.050*	0.7500	1.5000	-	4.000	-
GSX256C-2D	○	2	2D	0.8750	*22.225*	0.8750	1.7500	-	4.000	-
GSX264C-2D	○	2	2D	1.0000	*25.400*	1.0000	2.0000	-	4.000	-

○ - Items Available 1st Quarter 2015



■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Endmill Identification (GSX MILL Series Only)

GSX 2 04 C - 2D

1	2	3	4	5
Series Code	# of Flutes	Diameter in 64ths (4/64 = 0.0625")	Cutting Edge S: Sharp Edge C: Gash Land	Cutting Edge Length

■ Recommended Cutting Conditions

■ Side Milling

Work Material / Cond. / Dc (in)	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)
< 0.039	19,600	9.84	19,600	9.84	19,600	9.84	18,300	7.09	12,700	3.94	9,000	2.36	11,000	2.76	9,000	1.97
< 0.078	11,200	13.39	11,200	13.39	11,200	13.39	10,500	9.45	7,300	5.12	5,300	3.15	6,400	3.54	5,300	2.76
< 0.156	6,400	18.11	6,400	18.11	6,400	18.11	6,000	12.60	4,200	7.09	3,000	4.33	3,600	4.72	3,000	3.54
< 0.236	4,600	22.05	4,600	22.05	4,600	22.05	4,300	15.75	3,000	8.27	2,200	5.12	2,700	5.51	2,200	3.94
< 0.315	3,400	22.05	3,400	22.05	3,400	22.05	3,200	15.75	2,200	8.27	1,600	5.12	2,000	5.51	1,600	3.94
< 0.393	2,800	22.05	2,800	22.05	2,800	22.05	2,600	15.75	1,800	8.27	1,300	5.12	1,600	5.51	1,300	3.94
< 0.472	2,300	22.05	2,300	22.05	2,300	22.05	2,200	15.75	1,500	8.27	1,100	5.12	1,300	5.51	1,100	3.94
< 0.630	1,700	17.72	1,700	17.72	1,700	17.72	1,600	12.60	1,100	7.09	800	3.94	1,000	4.33	800	3.35
< 0.787	1,350	14.96	1,350	14.96	1,350	14.96	1,300	11.02	900	6.30	650	3.54	800	3.94	650	2.95
< 1.000	1,000	11.81	1,000	11.81	1,000	11.81	1,000	8.66	700	4.72	500	2.76	640	3.15	500	2.36
Standard Depth-of-cut a_p	1.5D_c										1.0D_c					
Standard Depth-of-cut a_e	0.05D_c										0.02D_c					

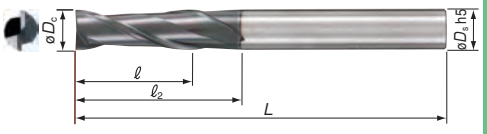
■ Groove Milling

Work Material / Cond. / Dc (in)	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)
< 0.039	19,600	7.87	19,600	9.84	19,600	9.84	18,300	7.09	12,700	3.94	9,000	2.36	11,000	1.97	4,500	0.79
< 0.078	11,200	10.63	11,200	13.39	11,200	13.39	10,500	9.45	7,300	5.12	5,300	3.15	6,400	2.56	2,650	0.98
< 0.156	6,400	14.57	6,400	18.11	6,400	18.11	6,000	12.60	4,200	7.09	3,000	4.33	3,600	3.15	1,500	1.38
< 0.236	4,600	17.72	4,600	22.05	4,600	22.05	4,300	15.75	3,000	8.27	2,200	5.12	2,700	3.94	1,100	1.57
< 0.315	3,400	17.72	3,400	22.05	3,400	22.05	3,200	15.75	2,200	8.27	1,600	5.12	2,000	3.94	800	1.57
< 0.393	2,800	17.72	2,800	22.05	2,800	22.05	2,600	15.75	1,800	8.27	1,300	5.12	1,600	3.94	650	1.57
< 0.472	2,300	17.72	2,300	22.05	2,300	22.05	2,200	15.75	1,500	8.27	1,100	5.12	1,300	3.94	500	1.57
< 0.630	1,700	14.17	1,700	17.72	1,700	17.72	1,600	12.60	1,100	7.09	800	3.94	1,000	3.15	400	1.38
< 0.787	1,350	11.81	1,350	14.96	1,350	14.96	1,300	11.02	900	6.30	650	3.54	800	2.76	320	1.18
< 1.000	1,000	9.45	1,000	11.81	1,000	11.81	1,000	8.66	700	4.72	500	2.76	640	2.17	250	0.98
Standard Depth-of-cut a_p	0.2D_c		0.5D_c						0.2D_c		0.05D_c		0.2D_c			

GSX End Mill-INCH 3D Gash Land

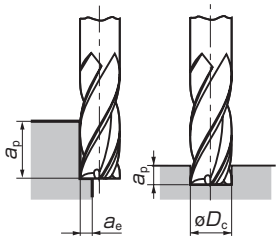
Item	Stock	Flutes	Length	Diam. (inch) φDc	Diam. (mm) φDc	Shank Diam. (inch) φDs	Flute Length (inch) ℓ	Neck Length (inch) ℓ2	OAL (inch) L	R (inch)
GSX204C-3D	○	2	3D	0.0625	*1.588*	0.1250	0.1875	0.2269	1.500	-
GSX206C-3D	○	2	3D	0.0938	*2.381*	0.1250	0.2813	0.3206	1.500	-
GSX208C-3D	○	2	3D	0.1250	*3.175*	0.1250	0.3750	-	2.000	-
GSX210C-3D	○	2	3D	0.1563	*3.969*	0.1875	0.4688	0.5278	2.000	-
GSX212C-3D	○	2	3D	0.1875	*4.763*	0.1875	0.5625	-	2.000	-
GSX214C-3D	○	2	3D	0.2188	*5.558*	0.2500	0.6564	0.735	2.000	-
GSX216C-3D	○	2	3D	0.2500	*6.350*	0.2500	0.7500	-	2.000	-
GSX218C-3D	○	2	3D	0.2813	*7.145*	0.3125	0.8439	0.923	3.000	-
GSX220C-3D	○	2	3D	0.3125	*7.938*	0.3125	0.9375	-	3.000	-
GSX224C-3D	○	2	3D	0.3750	*9.525*	0.3750	1.1250	-	3.500	-
GSX228C-3D	○	2	3D	0.4375	*11.113*	0.4375	1.3125	-	3.500	-
GSX232C-3D	○	2	3D	0.5000	*12.700*	0.5000	1.5000	-	3.500	-
GSX236C-3D	○	2	3D	0.5625	*14.288*	0.5625	1.6875	-	4.500	-
GSX240C-3D	○	2	3D	0.6250	*15.875*	0.6250	1.8750	-	4.500	-
GSX244C-3D	○	2	3D	0.6875	*17.463*	0.6875	2.0625	-	4.500	-
GSX248C-3D	○	2	3D	0.7500	*19.050*	0.7500	2.2500	-	5.000	-
GSX256C-3D	○	2	3D	0.8750	*22.225*	0.8750	2.6250	-	5.000	-
GSX264C-3D	○	2	3D	1.0000	*25.400*	1.0000	3.0000	-	5.500	-

○ - Items Available 1st Quarter 2015



■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. In rare cases, chattering may occur in early milling stages, dissipating after 2m of cutting.
5. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Endmill Identification (GSX MILL Series Only)

GSX 2 04 C - 3D

1	2	3	4	5
Series Code	# of Flutes	Diameter in 64ths (4/64 = 0.0625")	Cutting Edge S: Sharp Edge C: Gash Land	Cutting Edge Length

■ Recommended Cutting Conditions

■ Side Milling

Work Material / Cond. / Dc (in)	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)
< 0.039	16,600	7.48	16,600	7.48	16,600	7.48	15,500	5.51	10,500	2.76	7,500	1.77	9,400	1.97	7,500	1.38
< 0.078	9,500	9.84	9,500	9.84	9,500	9.84	9,000	7.87	6,200	4.72	4,500	2.36	5,200	2.76	4,500	1.97
< 0.156	5,200	12.99	5,200	12.99	5,200	12.99	4,800	7.87	3,400	5.91	2,250	2.95	2,600	3.54	2,250	2.56
< 0.236	3,500	14.17	3,500	14.17	3,500	14.17	3,200	9.84	2,550	6.69	1,500	3.54	1,700	3.94	1,500	3.15
< 0.315	2,600	12.60	2,600	12.60	2,600	12.60	2,400	9.45	1,900	6.69	1,100	3.54	1,300	3.94	1,100	3.15
< 0.393	2,100	11.81	2,100	11.81	2,100	11.81	1,900	9.06	1,500	6.69	900	3.54	1,000	3.94	900	3.15
< 0.472	1,750	11.02	1,750	11.02	1,750	11.02	1,600	9.06	1,250	6.69	750	3.54	850	3.94	750	3.15
< 0.630	1,300	9.45	1,300	9.45	1,300	9.45	1,200	7.87	950	5.91	550	2.95	650	3.35	550	2.56
< 0.787	1,050	8.66	1,050	8.66	1,050	8.66	950	7.09	750	5.51	450	2.76	500	2.95	450	2.36
Standard Depth-of-cut a_p	2.5Dc								2.0Dc							
Standard Depth-of-cut a_e	Below ø3 : 0.05Dc ø3 and above : 0.1Dc								0.02Dc							

■ Groove Milling

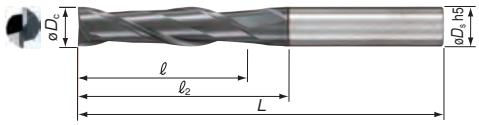
Work Material / Cond. / Dc (in)	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)
< 0.039	16,600	2.76	16,600	3.15	16,600	3.15	15,500	1.97	10,500	1.97	7,500	1.38	9,400	1.18	3,750	0.39
< 0.078	9,500	3.15	9,500	3.94	9,500	3.94	9,000	3.54	6,200	2.36	4,500	1.77	5,200	1.57	2,250	0.59
< 0.156	5,200	4.72	5,200	5.91	5,200	5.91	4,800	4.72	3,400	3.15	2,200	1.97	2,600	1.97	1,250	0.79
< 0.236	3,500	5.51	3,500	6.69	3,500	6.69	3,200	5.12	2,550	3.94	1,500	1.97	1,700	2.36	950	0.98
< 0.315	2,600	5.51	2,600	6.30	2,600	6.30	2,400	5.12	1,900	3.94	1,100	1.97	1,300	2.36	700	0.98
< 0.393	2,100	5.12	2,100	5.91	2,100	5.91	1,900	4.72	1,500	3.54	900	1.97	1,000	2.36	550	0.98
< 0.472	1,750	5.12	1,750	5.91	1,750	5.91	1,600	4.72	1,250	3.54	750	1.97	850	2.36	450	0.98
< 0.630	1,300	4.33	1,300	5.12	1,300	5.12	1,200	4.33	950	3.15	550	1.77	650	1.97	350	0.79
< 0.787	1,050	3.94	1,050	4.72	1,050	4.72	950	3.94	750	2.76	450	1.57	500	1.57	280	0.59
Standard Depth-of-cut a_p	0.1Dc		0.2Dc								0.05Dc		0.1Dc			

GSX Series Solid Carbide Endmills

GSX End Mill-INCH 4D Gash Land

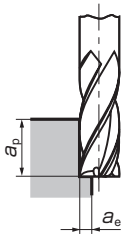
Item	Stock	Flutes	Length	Diam. (inch) φD_c	Diam. (mm) φD_c	Shank Diam. (inch) φD_s	Flute Length (inch) ℓ	Neck Length (inch) $ℓ_2$	OAL (inch) L	R (inch)
GSX204C-4D	○	2	4D	0.0625	1.588	0.1250	0.2500	0.2894	1.500	-
GSX206C-4D	○	2	4D	0.0938	2.381	0.1250	0.3750	0.4144	2.000	-
GSX208C-4D	○	2	4D	0.1250	3.175	0.1250	0.5000	-	2.000	-
GSX210C-4D	○	2	4D	0.1563	3.969	0.1875	0.6250	0.6841	2.000	-
GSX212C-4D	○	2	4D	0.1875	4.763	0.1875	0.7500	-	2.500	-
GSX214C-4D	○	2	4D	0.2188	5.558	0.2500	0.8752	0.954	2.500	-
GSX216C-4D	○	2	4D	0.2500	6.350	0.2500	1.0000	-	2.500	-
GSX218C-4D	○	2	4D	0.2813	7.145	0.3125	1.1252	1.204	3.000	-
GSX220C-4D	○	2	4D	0.3125	7.938	0.3125	1.2500	-	3.000	-
GSX224C-4D	○	2	4D	0.3750	9.525	0.3750	1.5000	-	3.500	-
GSX228C-4D	○	2	4D	0.4375	11.113	0.4375	1.7500	-	4.000	-
GSX232C-4D	○	2	4D	0.5000	12.700	0.5000	2.0000	-	4.000	-
GSX236C-4D	○	2	4D	0.5625	14.288	0.5625	2.2500	-	5.000	-
GSX240C-4D	○	2	4D	0.6250	15.875	0.6250	2.5000	-	5.000	-
GSX244C-4D	○	2	4D	0.6875	17.463	0.6875	2.7500	-	5.000	-
GSX248C-4D	○	2	4D	0.7500	19.050	0.7500	3.0000	-	5.500	-
GSX256C-4D	○	2	4D	0.8750	22.225	0.8750	3.5000	-	5.500	-
GSX264C-4D	○	2	4D	1.0000	25.400	1.0000	4.0000	-	6.000	-

○ - Items Available 1st Quarter 2015



■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. In rear cases, chattering may occur in early milling stages, dissipating after 2m of cutting.
5. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. This series is not recommended for grooving.
7. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Endmill Identification (GSX MILL Series Only)

GSX 2 04 C - 4D

1	2	3	4	5
Series Code	# of Flutes	Diameter in 64ths (4/64 = 0.0625")	Cutting Edge S: Sharp Edge C: Gash Land	Cutting Edge Length

■ Recommended Cutting Conditions

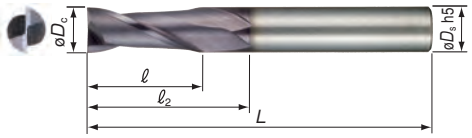
■ Side Milling

Work Material / Cond. / D_c (in)	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)
< 0.039	9,000	5.12	9,000	5.12	9,000	5.12	7,000	3.74	6,500	1.97	4,500	1.18	5,400	1.57	4,500	0.98
< 0.078	4,500	7.09	4,500	7.09	4,500	7.09	3,500	4.72	3,200	2.76	2,300	1.57	2,700	1.97	2,300	1.38
< 0.156	2,250	9.45	2,250	9.45	2,250	9.45	1,750	6.30	1,600	3.74	1,200	2.36	1,350	2.56	1,200	1.57
< 0.236	1,500	11.81	1,500	11.81	1,500	11.81	1,150	6.69	1,050	4.33	800	2.76	900	2.76	800	1.97
< 0.315	1,100	10.24	1,100	10.24	1,100	10.24	850	6.69	800	4.33	600	2.76	660	2.76	600	1.97
< 0.393	900	9.84	900	9.84	900	9.84	700	6.30	650	4.33	460	2.76	540	2.76	460	1.97
< 0.472	750	9.45	750	9.45	750	9.45	580	6.30	520	4.33	400	2.76	450	2.76	400	1.97
< 0.630	550	7.87	550	7.87	550	7.87	440	5.51	400	3.74	300	2.17	330	2.36	300	1.77
< 0.787	450	7.09	450	7.09	450	7.09	350	4.72	320	3.35	240	1.77	270	1.97	240	1.57
Standard Depth-of-cut a_p	3.5D_c										3.0D_c					
Standard Depth-of-cut a_e	0.08D_c						0.04D_c									

GSX End Mill-INCH 2D Sharp Edge

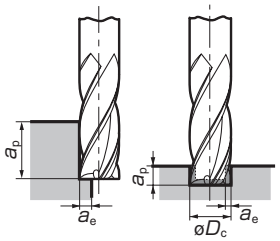
Item	Stock	Flutes	Length	Diam. (inch) φDc	Diam. (mm) φDc	Shank Diam. (inch) φDs	Flute Length (inch) ℓ	Neck Length (inch) ℓ2	OAL (inch) L	R (inch)
GSX204S-2D	○	2	2D	0.0625	1.588	0.1250	0.1250	0.1644	1.500	-
GSX206S-2D	○	2	2D	0.0938	2.381	0.1250	0.1875	0.2269	1.500	-
GSX208S-2D	○	2	2D	0.1250	3.175	0.1250	0.2500	-	2.000	-
GSX210S-2D	○	2	2D	0.1563	3.969	0.1875	0.3125	0.3716	2.000	-
GSX212S-2D	○	2	2D	0.1875	4.763	0.1875	0.3750	-	2.000	-
GSX214S-2D	○	2	2D	0.2188	5.558	0.2500	0.4376	0.516	2.000	-
GSX216S-2D	○	2	2D	0.2500	6.350	0.2500	0.5000	-	2.000	-
GSX218S-2D	○	2	2D	0.2813	7.145	0.3125	0.5626	0.641	2.500	-
GSX220S-2D	○	2	2D	0.3125	7.938	0.3125	0.6250	-	2.500	-
GSX224S-2D	○	2	2D	0.3750	9.525	0.3750	0.7500	-	3.000	-
GSX228S-2D	○	2	2D	0.4375	11.113	0.4375	0.8750	-	3.000	-
GSX232S-2D	○	2	2D	0.5000	12.700	0.5000	1.0000	-	3.000	-
GSX236S-2D	○	2	2D	0.5625	14.288	0.5625	1.1250	-	3.500	-
GSX240S-2D	○	2	2D	0.6250	15.875	0.6250	1.2500	-	3.500	-
GSX244S-2D	○	2	2D	0.6875	17.463	0.6875	1.3750	-	4.000	-
GSX248S-2D	○	2	2D	0.7500	19.050	0.7500	1.5000	-	4.000	-
GSX256S-2D	○	2	2D	0.8750	22.225	0.8750	1.7500	-	4.000	-
GSX264S-2D	○	2	2D	1.0000	25.400	1.0000	2.0000	-	4.000	-

○ - Items Available 1st Quarter 2015



■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. This series is not recommended for groove milling.
6. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Endmill Identification (GSX MILL Series Only)

GSX 2 04 S - 2D

1	2	3	4	5
Series Code	# of Flutes	Diameter in 64ths (4/64 = 0.0625")	Cutting Edge S: Sharp Edge C: Gash Land	Cutting Edge Length

■ Recommended Cutting Conditions

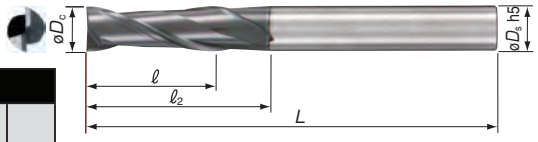
■ Side Milling

Work Material / Cond. / Dc (in)	Structural Steel SS		Carbon Steel SC 150 to 250HB		Cast Iron FC		Alloy Steel SCM 25 to 35HRC		Tempered Steel, Hardened Steel NAK, HPM 35 to 45HRC		Hardened Steel 45 to 55HRC		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)
< 0.039	22,000	14.17	22,000	14.17	22,000	14.17	19,000	8.66	13,000	5.51	9,500	3.54	11,300	3.54	9,500	2.56
< 0.078	11,500	17.32	11,500	17.32	11,500	17.32	11,000	11.42	7,500	7.09	5,400	4.33	6,500	4.72	5,400	3.35
< 0.156	6,000	22.05	6,000	22.05	6,000	22.05	5,800	14.57	4,000	9.06	2,900	5.91	3,400	6.30	2,900	3.94
< 0.236	4,200	23.62	4,200	23.62	4,200	23.62	4,000	15.75	2,700	9.45	2,000	6.30	2,400	6.69	2,000	4.72
< 0.315	3,000	23.62	3,000	23.62	3,000	23.62	2,800	15.75	2,000	9.45	1,450	6.30	1,800	6.69	1,450	4.72
< 0.393	2,500	23.62	2,500	23.62	2,500	23.62	2,350	15.75	1,600	9.45	1,200	6.30	1,450	6.69	1,200	4.72
< 0.472	2,100	23.62	2,100	23.62	2,100	23.62	2,000	15.75	1,350	9.45	1,000	6.30	1,200	6.69	1,000	4.72
< 0.630	1,500	19.69	1,500	19.69	1,500	19.69	1,450	12.60	1,000	8.27	750	5.12	900	5.51	750	3.54
< 0.787	1,200	18.11	1,200	18.11	1,200	18.11	1,150	11.42	800	7.87	600	4.33	700	4.72	600	2.95
Standard Depth-of-cut a_p	2.0Dc															
Standard Depth-of-cut a_e	0.03Dc										0.01Dc					

■ Groove Finishing

Work Material / Cond. / Dc (in)	Structural Steel SS		Carbon Steel SC 150 to 250HB		Cast Iron FC		Alloy Steel SCM 25 to 35HRC		Tempered Steel, Hardened Steel NAK, HPM 35 to 45HRC		Hardened Steel 45 to 55HRC		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)
< 0.039	22,000	14.17	22,000	14.17	22,000	14.17	19,000	8.66	13,000	5.51	9,500	3.54	11,300	3.54	9,500	2.56
< 0.078	11,500	17.32	11,500	17.32	11,500	17.32	11,000	11.42	7,500	7.09	5,400	4.33	6,500	4.72	5,400	3.35
< 0.156	6,000	22.05	6,000	22.05	6,000	22.05	5,800	14.57	4,000	9.06	2,900	5.91	3,400	6.30	2,900	3.94
< 0.236	4,200	23.62	4,200	23.62	4,200	23.62	4,000	15.75	2,700	9.45	2,000	6.30	2,400	6.69	2,000	4.72
< 0.315	3,000	23.62	3,000	23.62	3,000	23.62	2,800	15.75	2,000	9.45	1,450	6.30	1,800	6.69	1,450	4.72
< 0.393	2,500	23.62	2,500	23.62	2,500	23.62	2,350	15.75	1,600	9.45	1,200	6.30	1,450	6.69	1,200	4.72
< 0.472	2,100	23.62	2,100	23.62	2,100	23.62	2,000	15.75	1,350	9.45	1,000	6.30	1,200	6.69	1,000	4.72
< 0.630	1,500	19.69	1,500	19.69	1,500	19.69	1,450	12.60	1,000	8.27	750	5.12	900	5.51	750	3.54
< 0.787	1,200	18.11	1,200	18.11	1,200	18.11	1,150	11.42	800	7.87	600	4.33	700	4.72	600	2.95
Standard Depth-of-cut a_p	1.5Dc															
Standard Depth-of-cut a_e	Below 0.02Dc															

GSX Series Solid Carbide Endmills



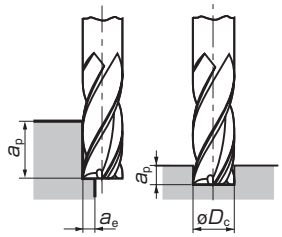
GSX End Mill-INCH 3D Sharp Edge

Item	Stock	Flutes	Length	Diam. (inch) φDc	Diam. (mm) φDc	Shank Diam. (inch) φDs	Flute Length (inch) ℓ	Neck Length (inch) ℓ2	OAL (inch) L	R (inch)
GSX204S-3D	○	2	3D	0.0625	1.588	0.1250	0.1875	0.2269	1.500	-
GSX206S-3D	○	2	3D	0.0938	2.381	0.1250	0.2813	0.3206	1.500	-
GSX208S-3D	○	2	3D	0.1250	3.175	0.1250	0.3750	-	2.000	-
GSX210S-3D	○	2	3D	0.1563	3.969	0.1875	0.4688	0.5278	2.000	-
GSX212S-3D	○	2	3D	0.1875	4.763	0.1875	0.5625	-	2.000	-
GSX214S-3D	○	2	3D	0.2188	5.558	0.2500	0.6564	0.735	2.000	-
GSX216S-3D	○	2	3D	0.2500	6.350	0.2500	0.7500	-	2.000	-
GSX218S-3D	○	2	3D	0.2813	7.145	0.3125	0.8439	0.923	3.000	-
GSX220S-3D	○	2	3D	0.3125	7.938	0.3125	0.9375	-	3.000	-
GSX224S-3D	○	2	3D	0.3750	9.525	0.3750	1.1250	-	3.500	-
GSX228S-3D	○	2	3D	0.4375	11.113	0.4375	1.3125	-	3.500	-
GSX232S-3D	○	2	3D	0.5000	12.700	0.5000	1.5000	-	3.500	-
GSX236S-3D	○	2	3D	0.5625	14.288	0.5625	1.6875	-	4.500	-
GSX240S-3D	○	2	3D	0.6250	15.875	0.6250	1.8750	-	4.500	-
GSX244S-3D	○	2	3D	0.6875	17.463	0.6875	2.0625	-	4.500	-
GSX248S-3D	○	2	3D	0.7500	19.050	0.7500	2.2500	-	5.000	-
GSX256S-3D	○	2	3D	0.8750	22.225	0.8750	2.6250	-	5.000	-
GSX264S-3D	○	2	3D	1.0000	25.400	1.0000	3.0000	-	5.500	-

○ - Items Available 1st Quarter 2015

■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. In rare cases, chattering may occur in early milling stages, dissipating after 2m of cutting.
5. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Endmill Identification (GSX MILL Series Only)

GSX 2 04 S - 3D

1	2	3	4	5
Series Code	# of Flutes	Diameter in 64ths (4/64 = 0.0625")	Cutting Edge S: Sharp Edge C: Gash Land	Cutting Edge Length

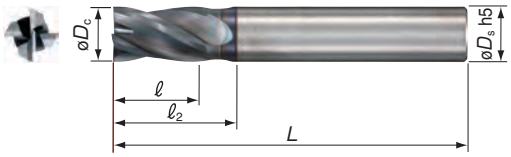
■ Recommended Cutting Conditions

■ Side Milling

Work Material / Cond. / Dc (in)	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)
< 0.039	18,500	9.84	18,500	9.84	18,500	9.84	17,000	5.91	11,500	3.94	8,000	2.56	9,400	2.56	8,000	1.77
< 0.078	9,400	9.84	9,400	9.84	9,400	9.84	8,500	7.87	6,700	5.12	4,000	2.56	4,600	3.54	4,000	2.36
< 0.156	4,500	13.78	4,500	13.78	4,500	13.78	4,300	9.84	3,500	8.27	2,000	4.33	2,300	4.33	2,000	2.76
< 0.236	3,100	15.75	3,100	15.75	3,100	15.75	2,800	11.81	2,400	8.66	1,300	4.72	1,500	4.72	1,300	3.54
< 0.315	2,300	14.96	2,300	14.96	2,300	14.96	2,100	11.81	1,800	8.66	950	4.72	1,100	4.72	900	3.54
< 0.393	1,800	13.78	1,800	13.78	1,800	13.78	1,700	11.81	1,400	8.66	700	4.72	900	4.72	800	3.54
< 0.472	1,500	13.78	1,500	13.78	1,500	13.78	1,400	11.81	1,200	8.66	650	4.33	750	4.72	650	3.54
< 0.630	1,100	11.81	1,100	11.81	1,100	11.81	1,000	9.45	900	7.48	480	3.54	550	3.94	490	2.76
< 0.787	900	11.02	900	11.02	900	11.02	850	8.27	700	6.69	400	3.15	440	3.54	400	2.36
Standard Depth-of-cut a_p	2.5Dc								2.0Dc							
Standard Depth-of-cut a_e	Below ø3: 0.02Dc From ø3 to below ø8: 0.05Dc ø8 and above: 0.07Dc								0.01Dc							

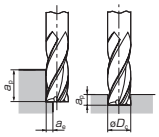
■ Groove Milling

Work Material / Cond. / Dc (in)	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)
< 0.039	18,500	9.84	18,500	9.84	18,500	9.84	17,000	5.91	11,500	3.94	8,000	2.56	9,400	2.56	8,000	1.77
< 0.078	9,400	9.84	9,400	9.84	9,400	9.84	8,500	7.87	6,700	5.12	4,000	2.56	4,600	3.54	4,000	2.36
< 0.156	4,500	13.78	4,500	13.78	4,500	13.78	4,300	9.84	3,500	8.27	2,000	4.33	2,300	4.33	2,000	2.76
< 0.236	3,100	15.75	3,100	15.75	3,100	15.75	2,800	11.81	2,400	8.66	1,300	4.72	1,500	4.72	1,300	3.54
< 0.315	2,300	14.96	2,300	14.96	2,300	14.96	2,100	11.81	1,800	8.66	950	4.72	1,100	4.72	900	3.54
< 0.393	1,800	13.78	1,800	13.78	1,800	13.78	1,700	11.81	1,400	8.66	700	4.72	900	4.72	800	3.54
< 0.472	1,500	13.78	1,500	13.78	1,500	13.78	1,400	11.81	1,200	8.66	650	4.33	750	4.72	650	3.54
< 0.630	1,100	11.81	1,100	11.81	1,100	11.81	1,000	9.45	900	7.48	480	3.54	550	3.94	490	2.76
< 0.787	900	11.02	900	11.02	900	11.02	850	8.27	700	6.69	400	3.15	440	3.54	400	2.36
Standard Depth-of-cut a_p	0.02Dc Max.															



■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Endmill Identification (GSX Series Only)

GSX 4 04 C - 1.5D

GSX	4	04	C	1.5D
1 Series Code	2 # of Flutes	3 Diameter in 64ths (4/64 = 0.0625")	4 Cutting Edge S: Sharp Edge C: Gash Land	5 Cutting Edge Length

GSX End Mill- INCH 1.5D Gash Land

Item	Stock	Flutes	Length	Diam. (inch) φDc	Diam. (mm) φDc	Shank Diam. (inch) φDs	Flute Length (inch) ℓ	Neck Length (inch) ℓ2	OAL (inch) L	R (inch)
GSX404C-1.5D	O	4	1.5D	0.0625	1.588	0.1250	0.0938	0.1331	1.500	-
GSX406C-1.5D	O	4	1.5D	0.0938	2.381	0.1250	0.1406	0.1800	1.500	-
GSX408C-1.5D	O	4	1.5D	0.1250	3.175	0.1250	0.1875	-	2.000	-
GSX410C-1.5D	O	4	1.5D	0.1563	3.969	0.1875	0.2344	0.2934	2.000	-
GSX412C-1.5D	O	4	1.5D	0.1875	4.763	0.1875	0.2813	-	2.000	-
GSX414C-1.5D	O	4	1.5D	0.2188	5.558	0.2500	0.3282	0.407	2.000	-
GSX416C-1.5D	O	4	1.5D	0.2500	6.350	0.2500	0.3750	-	2.000	-
GSX418C-1.5D	O	4	1.5D	0.2813	7.145	0.3125	0.4220	0.501	2.500	-
GSX420C-1.5D	O	4	1.5D	0.3125	7.938	0.3125	0.4688	-	2.500	-
GSX424C-1.5D	O	4	1.5D	0.3750	9.525	0.3750	0.5625	-	3.000	-
GSX428C-1.5D	O	4	1.5D	0.4375	11.113	0.4375	0.6563	-	3.000	-
GSX432C-1.5D	O	4	1.5D	0.5000	12.700	0.5000	0.7500	-	3.000	-
GSX436C-1.5D	O	4	1.5D	0.5625	14.288	0.5625	0.8438	-	3.500	-
GSX440C-1.5D	O	4	1.5D	0.6250	15.875	0.6250	0.9375	-	3.500	-
GSX444C-1.5D	O	4	1.5D	0.6875	17.463	0.6875	1.0313	-	4.000	-
GSX448C-1.5D	O	4	1.5D	0.7500	19.050	0.7500	1.1250	-	4.000	-
GSX456C-1.5D	O	4	1.5D	0.8750	22.225	0.8750	1.3125	-	4.000	-
GSX464C-1.5D	O	4	1.5D	1.0000	25.400	1.0000	1.5000	-	4.000	-

O - Items Available 1st Quarter 2015

■ Recommended Cutting Conditions
■ Side Milling

Work Material / Cond. / Dc (in)	Structural Steel SS		Carbon Steel SC 150 to 250HB		Cast Iron FC		Alloy Steel SCM 25 to 35HRC		Tempered Steel, Hardened Steel NAK, HPM 35 to 45HRC		Hardened Steel 45 to 55HRC		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)
< 0.039	24,000	18.50	24,000	18.50	24,000	18.50	21,000	11.42	14,500	7.09	10,500	4.72	12,600	4.72	10,500	3.35
< 0.078	12,800	22.44	12,800	22.44	12,800	22.44	12,000	14.96	8,300	9.06	6,000	5.91	7,200	6.30	6,000	4.33
< 0.156	6,800	28.74	6,800	28.74	6,800	28.74	6,400	19.29	4,400	11.81	3,200	7.87	3,800	8.27	3,200	5.12
< 0.236	4,600	30.71	4,600	30.71	4,600	30.71	4,300	20.47	3,000	12.60	2,200	8.27	2,650	8.66	2,200	5.91
< 0.315	3,400	30.71	3,400	30.71	3,400	30.71	3,200	20.47	2,200	12.60	1,600	8.27	2,000	8.66	1,600	5.91
< 0.393	2,800	30.71	2,800	30.71	2,800	30.71	2,600	20.47	1,800	12.60	1,300	8.27	1,500	8.66	1,300	5.91
< 0.472	2,300	30.71	2,300	30.71	2,300	30.71	2,200	20.47	1,500	12.60	1,100	8.27	1,300	8.66	1,100	5.91
< 0.630	1,700	25.59	1,700	25.59	1,700	25.59	1,600	16.54	1,100	11.02	800	6.69	1,000	7.09	800	4.72
< 0.787	1,350	23.62	1,350	23.62	1,350	23.62	1,300	14.96	900	10.24	650	5.91	800	6.30	650	3.94
Standard Depth-of-cut a_p	1.5Dc										1.0Dc					
Standard Depth-of-cut a_e	0.05Dc										0.02Dc					

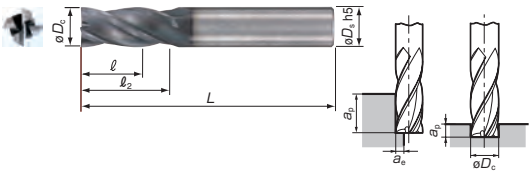
■ Side Milling (High Speed Machining Center)

Work Material / Cond. / Dc (in)	Structural Steel SS		Carbon Steel SC 150 to 250HB		Cast Iron FC		Alloy Steel SCM 25 to 35HRC		Tempered Steel, Hardened Steel NAK, HPM 35 to 45HRC		Hardened Steel 45 to 55HRC		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)
< 0.039	60,000	47.24	60,000	47.24	60,000	47.24	60,000	33.46	60,000	28.35	48,000	19.69	32,000	11.81	-	-
< 0.078	47,800	86.61	47,800	86.61	47,800	86.61	47,800	62.99	39,800	47.24	31,800	35.43	15,900	15.75	-	-
< 0.156	23,900	102.36	23,900	102.36	23,900	102.36	23,900	74.80	19,900	55.12	15,900	43.31	8,000	19.29	-	-
< 0.236	16,000	106.30	16,000	106.30	16,000	106.30	16,000	78.74	13,300	59.06	10,600	47.24	5,300	20.47	-	-
< 0.315	12,000	106.30	12,000	106.30	12,000	106.30	12,000	78.74	10,000	59.06	8,000	47.24	4,000	20.47	-	-
< 0.393	9,600	106.30	9,600	106.30	9,600	106.30	9,600	78.74	8,000	59.06	6,400	47.24	3,200	20.47	-	-
< 0.472	8,000	106.30	8,000	106.30	8,000	106.30	8,000	78.74	6,700	59.06	5,300	47.24	2,700	20.47	-	-
< 0.630	6,000	86.61	6,000	86.61	6,000	86.61	6,000	62.99	5,000	47.24	4,000	35.43	2,000	17.72	-	-
< 0.787	4,800	78.74	4,800	78.74	4,800	78.74	4,800	55.12	4,000	43.31	3,200	29.53	1,600	14.96	-	-
Standard Depth-of-cut a_p	1.5Dc										1.0Dc				-	
Standard Depth-of-cut a_e	0.05Dc										0.02Dc				-	

■ Groove Milling

Work Material / Cond. / Dc (in)	Structural Steel SS		Carbon Steel SC 150 to 250HB		Cast Iron FC		Alloy Steel SCM 25 to 35HRC		Tempered Steel, Hardened Steel NAK, HPM 35 to 45HRC		Hardened Steel 45 to 55HRC		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)
< 0.039	24,000	14.96	24,000	18.50	24,000	18.50	21,000	11.42	14,500	7.09	10,500	4.72	12,600	3.35	5,200	1.18
< 0.078	12,800	18.11	12,800	22.44	12,800	22.44	12,000	14.96	8,300	9.06	6,000	5.91	7,200	4.33	3,000	1.57
< 0.156	6,800	22.83	6,800	28.74	6,800	28.74	5,400	19.29	4,400	11.81	3,200	7.87	3,800	5.12	1,600	2.17
< 0.236	4,600	24.41	4,600	30.71	4,600	30.71	4,300	20.47	3,000	12.60	2,200	8.27	2,650	6.30	1,100	2.56
< 0.315	3,400	24.41	3,400	30.71	3,400	30.71	3,200	20.47	2,200	12.60	1,600	8.27	2,000	6.30	800	2.56
< 0.393	2,800	24.41	2,800	30.71	2,800	30.71	2,600	20.47	1,800	12.60	1,300	8.27	1,600	6.30	650	2.56
< 0.472	2,300	24.41	2,300	30.71	2,300	30.71	2,200	20.47	1,500	12.60	1,100	8.27	1,300	6.30	550	2.56
< 0.630	1,700	20.47	1,700	22.05	1,700	22.05	1,600	16.54	1,100	11.02	800	6.69	1,000	5.12	400	2.17
< 0.787	1,350	18.90	1,350	23.62	1,350	23.62	1,300	14.96	900	10.24	650	5.91	800	4.33	320	1.97
Standard Depth-of-cut a_p	0.2Dc		0.5Dc						0.2Dc		0.05Dc		0.2Dc			

GSX Series Solid Carbide Endmills



■ Endmill Identification (GSX Series Only)

GSX 4 04 C - 2D

1	2	3	4	5
Series Code	# of Flutes	Diameter in 64ths (4/64 = 0.0625")	Cutting Edge S: Sharp Edge C: Gash Land	Cutting Edge Length

■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.

GSX End Mill- INCH 2D Gash Land

Item	Stock	Flutes	Length	Diam. (inch) φDc	Diam. (mm) φDc	Shank Diam. (inch) φDs	Flute Length (inch) ℓ	Neck Length (inch) ℓ2	OAL (inch) L	R (inch)
GSX404C-2D	○	4	2D	0.0625	1.588	0.1250	0.1250	0.1644	1.500	-
GSX406C-2D	○	4	2D	0.0938	2.381	0.1250	0.1875	0.2269	1.500	-
GSX408C-2D	○	4	2D	0.1250	3.175	0.1250	0.2500	-	2.000	-
GSX410C-2D	○	4	2D	0.1563	3.969	0.1875	0.3125	0.3716	2.000	-
GSX412C-2D	○	4	2D	0.1875	4.763	0.1875	0.3750	-	2.000	-
GSX414C-2D	○	4	2D	0.2188	5.558	0.2500	0.4376	0.516	2.000	-
GSX416C-2D	○	4	2D	0.2500	6.350	0.2500	0.5000	-	2.000	-
GSX418C-2D	○	4	2D	0.2813	7.145	0.3125	0.5626	0.641	2.500	-
GSX420C-2D	○	4	2D	0.3125	7.938	0.3125	0.6250	-	2.500	-
GSX424C-2D	○	4	2D	0.3750	9.525	0.3750	0.7500	-	3.000	-
GSX428C-2D	○	4	2D	0.4375	11.113	0.4375	0.8750	-	3.000	-
GSX432C-2D	○	4	2D	0.5000	12.700	0.5000	1.0000	-	3.000	-
GSX436C-2D	○	4	2D	0.5625	14.288	0.5625	1.1250	-	3.500	-
GSX440C-2D	○	4	2D	0.6250	15.875	0.6250	1.2500	-	3.500	-
GSX444C-2D	○	4	2D	0.6875	17.463	0.6875	1.3750	-	4.000	-
GSX448C-2D	○	4	2D	0.7500	19.050	0.7500	1.5000	-	4.000	-
GSX456C-2D	○	4	2D	0.8750	22.225	0.8750	1.7500	-	4.000	-
GSX464C-2D	○	4	2D	1.0000	25.400	1.0000	2.0000	-	4.000	-

○ - Items Available 1st Quarter 2015

■ Side Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
Dc (in)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)
< 0.039	24,000	18.50	24,000	18.50	24,000	18.50	21,000	11.42	14,500	7.09	10,500	4.72	12,600	4.72	10,500	3.35
< 0.078	12,800	22.44	12,800	22.44	12,800	22.44	12,000	14.96	8,300	9.06	6,000	5.91	7,200	6.30	6,000	4.33
< 0.156	6,800	28.74	6,800	28.74	6,800	28.74	6,400	19.29	4,400	11.81	3,200	7.87	3,800	8.27	3,200	5.12
< 0.236	4,600	30.71	4,600	30.71	4,600	30.71	4,300	20.47	3,000	12.60	2,200	8.27	2,650	8.66	2,200	5.91
< 0.315	3,400	30.71	3,400	30.71	3,400	30.71	3,200	20.47	2,200	12.60	1,600	8.27	2,000	8.66	1,600	5.91
< 0.393	2,800	30.71	2,800	30.71	2,800	30.71	2,600	20.47	1,800	12.60	1,300	8.27	1,500	8.66	1,300	5.91
< 0.472	2,300	30.71	2,300	30.71	2,300	30.71	2,200	20.47	1,500	12.60	1,100	8.27	1,300	8.66	1,100	5.91
< 0.630	1,700	25.59	1,700	25.59	1,700	25.59	1,600	16.54	1,100	11.02	800	6.69	1,000	7.09	800	4.72
< 0.787	1,350	23.62	1,350	23.62	1,350	23.62	1,300	14.96	900	10.24	650	5.91	800	6.30	650	3.94
< 1.000	1,000	18.90	1,000	18.90	1,000	18.90	1,000	11.81	700	7.87	500	4.72	640	4.72	500	3.15
Standard Depth-of-cut ap	1.5Dc										1.0Dc					
Standard Depth-of-cut ae	0.05Dc										0.02Dc					

■ Side Milling (High Speed Machining Center)

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
Dc (in)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)
< 0.039	60,000	47.24	60,000	47.24	60,000	47.24	60,000	33.46	60,000	28.35	48,000	19.69	32,000	11.81	-	-
< 0.078	47,800	86.61	47,800	86.61	47,800	86.61	47,800	62.99	39,800	47.24	31,800	35.43	15,900	15.75	-	-
< 0.156	23,900	102.36	23,900	102.36	23,900	102.36	23,900	74.80	19,900	55.12	15,900	43.31	8,000	19.29	-	-
< 0.236	16,000	106.30	16,000	106.30	16,000	106.30	16,000	78.74	13,300	59.06	10,600	47.24	5,300	20.47	-	-
< 0.315	12,000	106.30	12,000	106.30	12,000	106.30	12,000	78.74	10,000	59.06	8,000	47.24	4,000	20.47	-	-
< 0.393	9,600	106.30	9,600	106.30	9,600	106.30	9,600	78.74	8,000	59.06	6,400	47.24	3,200	20.47	-	-
< 0.472	8,000	106.30	8,000	106.30	8,000	106.30	8,000	78.74	6,700	59.06	5,300	47.24	2,700	20.47	-	-
< 0.630	6,000	86.61	6,000	86.61	6,000	86.61	6,000	62.99	5,000	47.24	4,000	35.43	2,000	17.72	-	-
< 0.787	4,800	78.74	4,800	78.74	4,800	78.74	4,800	55.12	4,000	43.31	3,200	29.53	1,600	14.96	-	-
< 1.000	3,800	59.06	3,800	59.06	3,800	59.06	3,800	43.31	3,200	35.43	2,500	23.62	1,300	11.81	-	-
Standard Depth-of-cut ap	1.5Dc										1.0Dc					
Standard Depth-of-cut ae	0.05Dc										0.02Dc					

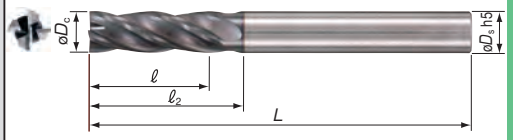
■ Groove Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
Dc (in)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)
< 0.039	24,000	14.96	24,000	18.50	24,000	18.50	21,000	11.42	14,500	7.09	10,500	4.72	12,600	3.35	5,200	1.18
< 0.078	12,800	18.11	12,800	22.44	12,800	22.44	12,000	14.96	8,300	9.06	6,000	5.91	7,200	4.33	3,000	1.57
< 0.156	6,800	22.83	6,800	28.74	6,800	28.74	5,400	19.29	4,400	11.81	3,200	7.87	3,800	5.12	1,600	2.17
< 0.236	4,600	24.41	4,600	30.71	4,600	30.71	4,300	20.47	3,000	12.60	2,200	8.27	2,650	6.30	1,100	2.56
< 0.315	3,400	24.41	3,400	30.71	3,400	30.71	3,200	20.47	2,200	12.60	1,600	8.27	2,000	6.30	800	2.56
< 0.393	2,800	24.41	2,800	30.71	2,800	30.71	2,600	20.47	1,800	12.60	1,300	8.27	1,600	6.30	650	2.56
< 0.472	2,300	24.41	2,300	30.71	2,300	30.71	2,200	20.47	1,500	12.60	1,100	8.27	1,300	6.30	550	2.56
< 0.630	1,700	20.47	1,700	22.05	1,700	22.05	1,600	16.54	1,100	11.02	800	6.69	1,000	5.12	400	2.17
< 0.787	1,350	18.90	1,350	23.62	1,350	23.62	1,300	14.96	900	10.24	650	5.91	800	4.33	320	1.97
< 1.000	1,000	14.96	1,000	17.72	1,000	17.72	1,000	11.81	700	7.87	500	4.72	640	3.15	250	1.57
Standard Depth-of-cut ap	0.2Dc		0.5Dc						0.2Dc		0.05Dc		0.2Dc			

GSX End Mill-INCH 3DGash Land

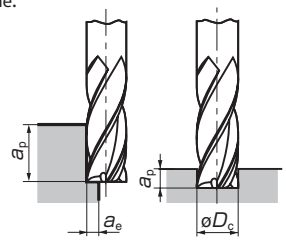
Item	Stock	Flutes	Length	Diam. (inch) φDc	Diam. (mm) φDc	Shank Diam. (inch) φDs	Flute Length (inch) ℓ	Neck Length (inch) ℓ2	OAL (inch) L	R (inch)
GSX404C-3D	○	4	3D	0.0625	1.588	0.1250	0.1875	0.2269	1.500	-
GSX406C-3D	○	4	3D	0.0938	2.381	0.1250	0.2813	0.3206	1.500	-
GSX408C-3D	○	4	3D	0.1250	3.175	0.1250	0.3750	-	2.000	-
GSX410C-3D	○	4	3D	0.1563	3.969	0.1875	0.4688	0.5278	2.000	-
GSX412C-3D	○	4	3D	0.1875	4.763	0.1875	0.5625	-	2.000	-
GSX414C-3D	○	4	3D	0.2188	5.558	0.2500	0.6564	0.735	2.000	-
GSX416C-3D	○	4	3D	0.2500	6.350	0.2500	0.7500	-	2.000	-
GSX418C-3D	○	4	3D	0.2813	7.145	0.3125	0.8439	0.923	3.000	-
GSX420C-3D	○	4	3D	0.3125	7.938	0.3125	0.9375	-	3.000	-
GSX424C-3D	○	4	3D	0.3750	9.525	0.3750	1.1250	-	3.500	-
GSX428C-3D	○	4	3D	0.4375	11.113	0.4375	1.3125	-	3.500	-
GSX432C-3D	○	4	3D	0.5000	12.700	0.5000	1.5000	-	3.500	-
GSX436C-3D	○	4	3D	0.5625	14.288	0.5625	1.6875	-	4.500	-
GSX440C-3D	○	4	3D	0.6250	15.875	0.6250	1.8750	-	4.500	-
GSX444C-3D	○	4	3D	0.6875	17.463	0.6875	2.0625	-	4.500	-
GSX448C-3D	○	4	3D	0.7500	19.050	0.7500	2.2500	-	5.000	-
GSX456C-3D	○	4	3D	0.8750	22.225	0.8750	2.6250	-	5.000	-
GSX464C-3D	○	4	3D	1.0000	25.400	1.0000	3.0000	-	5.500	-

○ - Items Available 1st Quarter 2015



■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. In rare cases, chattering may occur in early milling stages, dissipating after 2m of cutting.
5. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Endmill Identification (GSX MILL Series Only)

GSX 4 04 C - 3D

1	2	3	4	5
Series Code	# of Flutes	Diameter in 64ths (4/64 = 0.0625")	Cutting Edge S: Sharp Edge C: Gash Land	Cutting Edge Length

■ Recommended Cutting Conditions

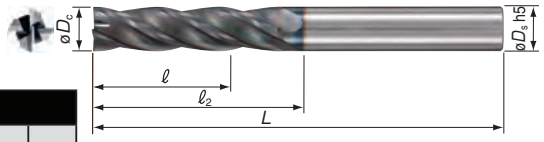
■ Side Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
Dc (in)	Spindle Speed (min-1)	Feed Rate (IPM)	Spindle Speed (min-1)	Feed Rate (IPM)	Spindle Speed (min-1)	Feed Rate (IPM)	Spindle Speed (min-1)	Feed Rate (IPM)	Spindle Speed (min-1)	Feed Rate (IPM)	Spindle Speed (min-1)	Feed Rate (IPM)	Spindle Speed (min-1)	Feed Rate (IPM)	Spindle Speed (min-1)	Feed Rate (IPM)
< 0.039	21,000	14.17	21,000	14.17	21,000	14.17	19,000	8.66	13,000	5.51	9,000	3.54	10,500	3.54	9,000	2.56
< 0.078	10,500	14.17	10,500	14.17	10,500	14.17	9,600	11.42	7,500	7.09	4,500	4.33	5,200	4.72	4,500	3.35
< 0.156	5,200	19.69	5,200	19.69	5,200	19.69	4,800	14.57	4,000	11.02	2,250	5.91	2,600	6.30	2,250	3.94
< 0.236	3,500	22.05	3,500	22.05	3,500	22.05	3,200	15.75	2,700	11.81	1,500	6.30	1,700	6.69	1,500	4.72
< 0.315	2,600	20.47	2,600	20.47	2,600	20.47	2,400	15.75	2,000	11.81	1,100	6.30	1,300	6.69	1,100	4.72
< 0.393	2,100	19.69	2,100	19.69	2,100	19.69	1,900	15.75	1,600	11.81	900	6.30	1,000	6.30	900	4.72
< 0.472	1,750	19.69	1,750	19.69	1,750	19.69	1,600	15.75	1,350	11.81	750	5.91	850	6.30	750	4.72
< 0.630	1,300	16.54	1,300	16.54	1,300	16.54	1,200	12.99	1,000	10.24	550	4.72	650	5.51	550	3.94
< 0.787	1,050	14.96	1,050	14.96	1,050	14.96	950	11.42	800	9.06	450	4.33	500	4.72	450	3.54
Standard Depth-of-cut a_p	2.5Dc										2.0Dc					
Standard Depth-of-cut a_e	Below ø3: 0.05Dc From ø3 to below ø8: 0.1Dc ø8 and above: 0.15Dc								0.02Dc							

■ Groove Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
Dc (in)	Spindle Speed (min-1)	Feed Rate (IPM)	Spindle Speed (min-1)	Feed Rate (IPM)	Spindle Speed (min-1)	Feed Rate (IPM)	Spindle Speed (min-1)	Feed Rate (IPM)	Spindle Speed (min-1)	Feed Rate (IPM)	Spindle Speed (min-1)	Feed Rate (IPM)	Spindle Speed (min-1)	Feed Rate (IPM)	Spindle Speed (min-1)	Feed Rate (IPM)
< 0.039	16,600	5.51	16,600	5.51	16,600	5.51	15,500	3.94	10,500	3.94	7,500	2.76	9,400	2.36	3,750	0.79
< 0.078	9,500	6.30	9,500	6.30	9,500	6.30	9,000	7.09	6,200	4.72	4,500	3.54	5,200	3.15	2,250	1.18
< 0.156	5,200	6.30	5,200	7.09	5,200	7.09	4,800	6.30	3,400	4.33	2,200	2.56	2,600	2.76	1,250	0.98
< 0.236	3,500	6.30	3,500	7.87	3,500	7.87	3,200	6.30	2,550	4.72	1,500	2.56	1,700	2.76	950	0.98
< 0.315	2,600	6.30	2,600	7.87	2,600	7.87	2,400	6.30	1,900	4.72	1,100	2.56	1,300	2.76	700	0.98
< 0.393	2,100	6.30	2,100	7.87	2,100	7.87	1,900	6.30	1,500	4.72	900	2.56	1,000	2.76	550	0.98
< 0.472	1,750	6.30	1,750	7.87	1,750	7.87	1,600	6.30	1,250	4.72	750	2.56	850	2.76	450	0.98
< 0.630	1,300	6.30	1,300	7.87	1,300	7.87	1,200	6.30	950	4.72	550	2.56	650	2.76	350	0.98
< 0.787	1,050	6.30	1,050	7.87	1,050	7.87	950	6.30	750	4.72	450	2.56	500	2.76	280	0.98
Standard Depth-of-cut a_p	0.1Dc		0.2Dc								0.05Dc		0.1Dc			

GSX Series Solid Carbide Endmills



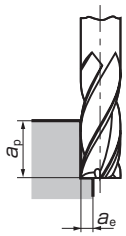
GSX End Mill-INCH 4D Gash Land

Item	Stock	Flutes	Length	Diam. (inch) φDc	Diam. (mm) φDc	Shank Diam. (inch) φDs	Flute Length (inch) ℓ	Neck Length (inch) ℓ2	OAL (inch) L	R (inch)
GSX404C-4D	○	4	4D	0.0625	1.588	0.1250	0.2500	0.2894	1.500	-
GSX406C-4D	○	4	4D	0.0938	2.381	0.1250	0.3750	0.4144	1.500	-
GSX408C-4D	○	4	4D	0.1250	3.175	0.1250	0.5000	-	2.000	-
GSX410C-4D	○	4	4D	0.1563	3.969	0.1875	0.6250	0.6841	2.000	-
GSX412C-4D	○	4	4D	0.1875	4.763	0.1875	0.7500	-	2.500	-
GSX414C-4D	○	4	4D	0.2188	5.558	0.2500	0.8752	0.954	2.500	-
GSX416C-4D	○	4	4D	0.2500	6.350	0.2500	1.0000	-	2.500	-
GSX418C-4D	○	4	4D	0.2813	7.145	0.3125	1.1252	1.204	3.000	-
GSX420C-4D	○	4	4D	0.3125	7.938	0.3125	1.2500	-	3.000	-
GSX424C-4D	○	4	4D	0.3750	9.525	0.3750	1.5000	-	3.500	-
GSX428C-4D	○	4	4D	0.4375	11.113	0.4375	1.7500	-	4.000	-
GSX432C-4D	○	4	4D	0.5000	12.700	0.5000	2.0000	-	4.000	-
GSX436C-4D	○	4	4D	0.5625	14.288	0.5625	2.2500	-	5.000	-
GSX440C-4D	○	4	4D	0.6250	15.875	0.6250	2.5000	-	5.000	-
GSX444C-4D	○	4	4D	0.6875	17.463	0.6875	2.7500	-	5.000	-
GSX448C-4D	○	4	4D	0.7500	19.050	0.7500	3.0000	-	5.500	-
GSX456C-4D	○	4	4D	0.8750	22.225	0.8750	3.5000	-	5.500	-
GSX464C-4D	○	4	4D	1.0000	25.400	1.0000	4.0000	-	6.000	-

○ - Items Available 1st Quarter 2015

■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. In rare cases, chattering may occur in early milling stages, dissipating after 2m of cutting.
5. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. This series is not recommended for grooving.
7. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Endmill Identification (GSX MILL Series Only)

GSX 4 04 C - 4D

1	2	3	4	5
Series Code	# of Flutes	Diameter in 64ths (4/64 = 0.0625")	Cutting Edge S: Sharp Edge C: Gash Land	Cutting Edge Length

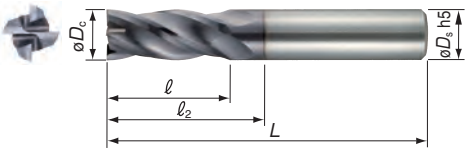
■ Recommended Cutting Conditions
■ Side Milling

Work Material / Cond. / D_c mm	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)
< 0.039	9,000	5.51	9,000	5.51	9,000	5.51	7,000	3.15	6,500	2.36	4,500	1.57	5,400	1.57	4,500	1.57
< 0.078	4,500	5.51	4,500	5.51	4,500	5.51	3,500	3.94	3,200	3.15	2,300	2.17	2,700	2.17	2,300	1.57
< 0.156	2,250	7.87	2,250	7.87	2,250	7.87	1,750	4.72	1,600	3.94	1,200	2.36	1,350	1.97	1,200	1.38
< 0.236	1,500	9.84	1,500	9.84	1,500	9.84	1,150	6.30	1,050	5.51	800	2.56	900	1.77	800	1.38
< 0.315	1,100	8.66	1,100	8.66	1,100	8.66	850	6.30	800	5.12	600	2.56	660	1.77	600	1.38
< 0.393	900	8.27	900	8.27	900	8.27	700	5.51	650	4.72	460	2.56	540	1.77	460	1.38
< 0.472	750	7.87	750	7.87	750	7.87	580	5.51	520	4.33	400	2.56	450	1.77	400	1.38
< 0.630	550	6.69	550	6.69	550	6.69	440	4.72	400	3.74	300	2.17	330	1.77	300	1.38
< 0.787	450	5.91	450	5.91	450	5.91	350	3.94	320	3.15	240	1.97	270	1.77	240	1.38
Standard Depth-of-cut a_p	$3.5D_c$										$3.0D_c$					
Standard Depth-of-cut a_e	Below ø3: $0.04D_c$ From ø3 to below ø8: $0.08D_c$ ø8 and above: $0.1D_c$										$0.02D_c$					

GSX End Mill-INCH 2DSharp Edge

Item	Stock	Flutes	Length	Diam. (inch) φD_C	Diam. (mm) φD_C	Shank Diam. (inch) φD_S	Flute Length (inch) ℓ	Neck Length (inch) $ℓ_2$	OAL (inch) L	R (inch)
GSX404S-2D	○	4	2D	0.0625	1.588	0.1250	0.1250	0.1644	1.500	-
GSX406S-2D	○	4	2D	0.0938	2.381	0.1250	0.1875	0.2269	1.500	-
GSX408S-2D	○	4	2D	0.1250	3.175	0.1250	0.2500	-	2.000	-
GSX410S-2D	○	4	2D	0.1563	3.969	0.1875	0.3125	0.3716	2.000	-
GSX412S-2D	○	4	2D	0.1875	4.763	0.1875	0.3750	-	2.000	-
GSX414S-2D	○	4	2D	0.2188	5.558	0.2500	0.4376	0.516	2.000	-
GSX416S-2D	○	4	2D	0.2500	6.350	0.2500	0.5000	-	2.000	-
GSX418S-2D	○	4	2D	0.2813	7.145	0.3125	0.5626	0.641	2.500	-
GSX420S-2D	○	4	2D	0.3125	7.938	0.3125	0.6250	-	2.500	-
GSX424S-2D	○	4	2D	0.3750	9.525	0.3750	0.7500	-	3.000	-
GSX428S-2D	○	4	2D	0.4375	11.113	0.4375	0.8750	-	3.000	-
GSX432S-2D	○	4	2D	0.5000	12.700	0.5000	1.0000	-	3.000	-
GSX436S-2D	○	4	2D	0.5625	14.288	0.5625	1.1250	-	3.500	-
GSX440S-2D	○	4	2D	0.6250	15.875	0.6250	1.2500	-	3.500	-
GSX444S-2D	○	4	2D	0.6875	17.463	0.6875	1.3750	-	4.000	-
GSX448S-2D	○	4	2D	0.7500	19.050	0.7500	1.5000	-	4.000	-
GSX456S-2D	○	4	2D	0.8750	22.225	0.8750	1.7500	-	4.000	-
GSX464S-2D	○	4	2D	1.0000	25.400	1.0000	2.0000	-	4.000	-

○ - Items Available 1st Quarter 2015



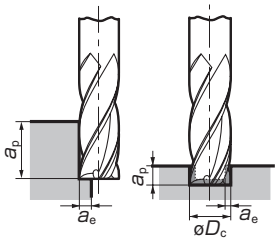
■ Endmill Identification (GSX Series Only)

GSX 4 04 S - 2D

1	2	3	4	5
Series Code	# of Flutes	Diameter in 64ths (4/64 = 0.0625")	Cutting Edge S: Sharp Edge C: Gash Land	Cutting Edge Length

■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. This series is not recommended for groove milling.
6. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



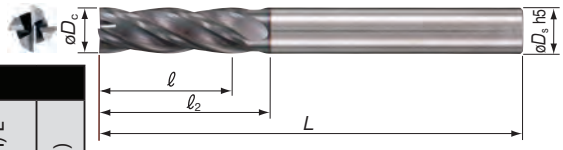
■ Side Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC 150 to 250HB		Cast Iron FC		Alloy Steel SCM 25 to 35HRC		Tempered Steel, Hardened Steel NAK, HPM 35 to 45HRC		Hardened Steel 45 to 55HRC		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_C (in)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)
< 0.039	22,000	14.173	22,000	14.173	22,000	14.173	19,000	8.661	13,000	5.512	9,500	3.543	11,300	3.543	9,500	2.559
< 0.078	11,500	17.323	11,500	17.323	11,500	17.323	11,000	11.417	7,500	7.087	5,400	4.331	6,500	4.724	5,400	3.346
< 0.156	6,000	22.047	6,000	22.047	6,000	22.047	5,800	14.567	4,000	9.055	2,900	5.906	3,400	6.299	2,900	3.937
< 0.236	4,200	23.622	4,200	23.622	4,200	23.622	4,000	15.748	2,700	9.449	2,000	6.299	2,400	6.693	2,000	4.724
< 0.312	3,000	23.622	3,000	23.622	3,000	23.622	2,800	15.748	2,000	9.449	1,450	6.299	1,800	6.693	1,450	4.724
< 0.393	2,500	23.622	2,500	23.622	2,500	23.622	2,350	15.748	1,600	9.449	1,200	6.299	1,450	6.693	1,200	4.724
< 0.472	2,100	23.622	2,100	23.622	2,100	23.622	2,000	15.748	1,350	9.449	1,000	6.299	1,200	6.693	1,000	4.724
< 0.630	1,500	19.685	1,500	19.685	1,500	19.685	1,450	12.598	1,000	8.268	750	5.118	900	5.512	750	3.543
< 0.787	1,200	18.110	1,200	18.110	1,200	18.110	1,150	11.417	800	7.874	600	4.331	700	4.724	600	2.953
Standard Depth-of-cut a_p	2.0D_c															
Standard Depth-of-cut a_e	0.03D_c										0.01D_c					

■ Groove Finishing

Work Material / Cond.	Structural Steel SS		Carbon Steel SC 150 to 250HB		Cast Iron FC		Alloy Steel SCM 25 to 35HRC		Tempered Steel, Hardened Steel NAK, HPM 35 to 45HRC		Hardened Steel 45 to 55HRC		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_C (in)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)	Spindle Speed (min^{-1})	Feed Rate (IPM)
< 0.039	22,000	14.173	22,000	14.173	22,000	14.173	19,000	8.661	13,000	5.512	9,500	3.543	11,300	3.543	9,500	2.559
< 0.078	11,500	17.323	11,500	17.323	11,500	17.323	11,000	11.417	7,500	7.087	5,400	4.331	6,500	4.724	5,400	3.346
< 0.156	6,000	22.047	6,000	22.047	6,000	22.047	5,800	14.567	4,000	9.055	2,900	5.906	3,400	6.299	2,900	3.937
< 0.236	4,200	23.622	4,200	23.622	4,200	23.622	4,000	15.748	2,700	9.449	2,000	6.299	2,400	6.693	2,000	4.724
< 0.312	3,000	23.622	3,000	23.622	3,000	23.622	2,800	15.748	2,000	9.449	1,450	6.299	1,800	6.693	1,450	4.724
< 0.393	2,500	23.622	2,500	23.622	2,500	23.622	2,350	15.748	1,600	9.449	1,200	6.299	1,450	6.693	1,200	4.724
< 0.472	2,100	23.622	2,100	23.622	2,100	23.622	2,000	15.748	1,350	9.449	1,000	6.299	1,200	6.693	1,000	4.724
< 0.630	1,500	19.685	1,500	19.685	1,500	19.685	1,450	12.598	1,000	8.268	750	5.118	900	5.512	750	3.543
< 0.787	1,200	18.110	1,200	18.110	1,200	18.110	1,150	11.417	800	7.874	600	4.331	700	4.724	600	2.953
Standard Depth-of-cut a_p	1.5D_c															
Standard Depth-of-cut a_e	Below 0.02D_c															

GSX Series Solid Carbide Endmills



GSX End Mill-INCH 3D Sharp Edge

Item	Stock	Flutes	Length	Diam. (inch) φDc	Diam. (mm) φDc	Shank Diam. (inch) φDs	Flute Length (inch) ℓ	Neck Length (inch) ℓ2	OAL (inch) L	R (inch)
GSX404S-3D	○	4	3D	0.0625	1.588	0.1250	0.1875	0.2269	1.500	-
GSX406S-3D	○	4	3D	0.0938	2.381	0.1250	0.2813	0.3206	1.500	-
GSX408S-3D	○	4	3D	0.1250	3.175	0.1250	0.3750	-	2.000	-
GSX410S-3D	○	4	3D	0.1563	3.969	0.1875	0.4688	0.5278	2.000	-
GSX412S-3D	○	4	3D	0.1875	4.763	0.1875	0.5625	-	2.000	-
GSX414S-3D	○	4	3D	0.2188	5.558	0.2500	0.6564	0.735	2.000	-
GSX416S-3D	○	4	3D	0.2500	6.350	0.2500	0.7500	-	2.000	-
GSX418S-3D	○	4	3D	0.2813	7.145	0.3125	0.8439	0.923	3.000	-
GSX420S-3D	○	4	3D	0.3125	7.938	0.3125	0.9375	-	3.000	-
GSX424S-3D	○	4	3D	0.3750	9.525	0.3750	1.1250	-	3.500	-
GSX428S-3D	○	4	3D	0.4375	11.113	0.4375	1.3125	-	3.500	-
GSX432S-3D	○	4	3D	0.5000	12.700	0.5000	1.5000	-	3.500	-
GSX436S-3D	○	4	3D	0.5625	14.288	0.5625	1.6875	-	4.500	-
GSX440S-3D	○	4	3D	0.6250	15.875	0.6250	1.8750	-	4.500	-
GSX444S-3D	○	4	3D	0.6875	17.463	0.6875	2.0625	-	4.500	-
GSX448S-3D	○	4	3D	0.7500	19.050	0.7500	2.2500	-	5.000	-
GSX456S-3D	○	4	3D	0.8750	22.225	0.8750	2.6250	-	5.000	-
GSX464S-3D	○	4	3D	1.0000	25.400	1.0000	3.0000	-	5.500	-

○ - Items Available 1st Quarter 2015

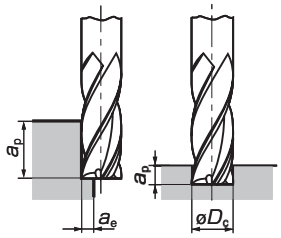
■ Endmill Identification (GSX Series Only)

GSX 4 04 S - 3D

1	2	3	4	5
Series Code	# of Flutes	Diameter in 64ths (4/64 = 0.0625")	Cutting Edge S: Sharp Edge C: Gash Land	Cutting Edge Length

■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. In rare cases, chattering may occur in early milling stages, dissipating after 2m of cutting.
5. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.

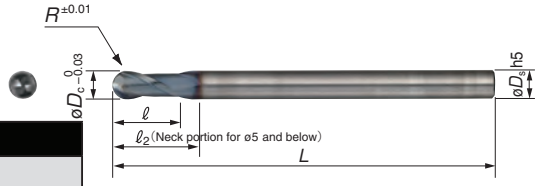


■ Side Milling

Work Material / Cond. / Dc (in)	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)
< 0.039	18,500	9.843	18,500	9.843	18,500	9.843	17,000	5.906	11,500	3.937	8,000	2.559	9,400	2.559	8,000	1.772
< 0.078	9,400	9.843	9,400	9.843	9,400	9.843	8,500	7.874	6,700	5.118	4,000	2.559	4,600	3.543	4,000	2.362
< 0.156	4,500	13.780	4,500	13.780	4,500	13.780	4,300	9.843	3,500	8.268	2,000	4.331	2,300	4.331	2,000	2.756
< 0.236	3,100	15.748	3,100	15.748	3,100	15.748	2,800	11.811	2,400	8.661	1,300	4.724	1,500	4.724	1,300	3.543
< 0.312	2,300	14.961	2,300	14.961	2,300	14.961	2,100	11.811	1,800	8.661	950	4.724	1,100	4.724	900	3.543
< 0.393	1,800	13.780	1,800	13.780	1,800	13.780	1,700	11.811	1,400	8.661	700	4.724	900	4.724	800	3.543
< 0.472	1,500	13.780	1,500	13.780	1,500	13.780	1,400	11.811	1,200	8.661	650	4.331	750	4.724	650	3.543
< 0.630	1,100	11.811	1,100	11.811	1,100	11.811	1,000	9.449	900	7.480	480	3.543	550	3.937	490	2.756
< 0.787	900	11.024	900	11.024	900	11.024	850	8.268	700	6.693	400	3.150	440	3.543	400	2.362
Standard Depth-of-cut a_p	2.5Dc								2.0Dc							
Standard Depth-of-cut a_e	Below ø3: 0.02Dc From ø3 to below ø8: 0.05Dc ø8 and above: 0.07Dc								0.01Dc							

■ Groove Milling

Work Material / Cond. / Dc (in)	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)	Spindle Speed (min⁻¹)	Feed Rate (IPM)
< 0.039	18,500	9.843	18,500	9.843	18,500	9.843	17,000	5.906	11,500	3.937	8,000	2.559	9,400	2.559	8,000	1.772
< 0.078	9,400	9.843	9,400	9.843	9,400	9.843	8,500	7.874	6,700	5.118	4,000	2.559	4,600	3.543	4,000	2.362
< 0.156	4,500	13.780	4,500	13.780	4,500	13.780	4,300	9.843	3,500	8.268	2,000	4.331	2,300	4.331	2,000	2.756
< 0.236	3,100	15.748	3,100	15.748	3,100	15.748	2,800	11.811	2,400	8.661	1,300	4.724	1,500	4.724	1,300	3.543
< 0.312	2,300	14.961	2,300	14.961	2,300	14.961	2,100	11.811	1,800	8.661	950	4.724	1,100	4.724	900	3.543
< 0.393	1,800	13.780	1,800	13.780	1,800	13.780	1,700	11.811	1,400	8.661	700	4.724	900	4.724	800	3.543
< 0.472	1,500	13.780	1,500	13.780	1,500	13.780	1,400	11.811	1,200	8.661	650	4.331	750	4.724	650	3.543
< 0.630	1,100	11.811	1,100	11.811	1,100	11.811	1,000	9.449	900	7.480	480	3.543	550	3.937	490	2.756
< 0.787	900	11.024	900	11.024	900	11.024	850	8.268	700	6.693	400	3.150	440	3.543	400	2.362
Standard Depth-of-cut a_p	0.02Dc Max.															



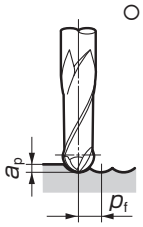
GSX End Mill-INCH Ballnose

Item	Stock	Flutes	Diam. (inch) φDc	Diam. (mm) φDc	Shank Diam. (inch) φDs	Flute Length (inch) ℓ	Neck Length (inch) ℓ2	OAL (inch) L	R (inch)
GSXB204	○	2	0.0625	1.588	0.1250	0.0938	0.1331	2.000	0.0313
GSXB206	○	2	0.0938	2.381	0.1250	0.1406	0.1800	2.500	0.0469
GSXB208	○	2	0.1250	3.175	0.1250	0.1875	-	2.500	0.0625
GSXB210	○	2	0.1563	3.969	0.1875	0.2344	0.2934	3.000	0.0781
GSXB212	○	2	0.1875	4.763	0.1875	0.2813	-	3.000	0.0938
GSXB214	○	2	0.2188	5.558	0.2500	0.3282	0.407	3.000	0.1094
GSXB216	○	2	0.2500	6.350	0.2500	0.3750	-	3.000	0.1250
GSXB218	○	2	0.2813	7.145	0.3125	0.4220	0.501	3.500	0.1407
GSXB220	○	2	0.3125	7.938	0.3125	0.4688	-	3.500	0.1563
GSXB224	○	2	0.3750	9.525	0.3750	0.5625	-	4.000	0.1875
GSXB228	○	2	0.4375	11.113	0.4375	0.6563	-	4.000	0.2188
GSXB232	○	2	0.5000	12.700	0.5000	0.7500	-	4.500	0.2500
GSXB236	○	2	0.5625	14.288	0.5625	0.8438	-	4.500	0.2813
GSXB240	○	2	0.6250	15.875	0.6250	0.9375	-	5.500	0.3125
GSXB244	○	2	0.6875	17.463	0.6875	1.0313	-	5.500	0.3438
GSXB248	○	2	0.7500	19.050	0.7500	1.1250	-	6.000	0.3750
GSXB256	○	2	0.8750	22.225	0.8750	1.3125	-	6.500	0.4375
GSXB264	○	2	1.0000	25.400	1.0000	1.5000	-	7.000	0.5000

○ - Items Available 1st Quarter 2015

■ Recommended Cutting Conditions

1. If cutting noise and vibration are present, please change the cutting conditions accordingly.
2. If the machine is not designed to achieve the recommended spindle speed, please use the max. spindle speed available.



■ Radius Milling

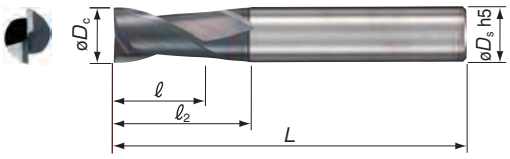
Work Material / Cutting Conditions R (in)	Carbon Steel, Alloy Steel (Below 25HRC)		Carbon Steel, Alloy Steel (Below 50HRC)		Cast Iron Special Cast Iron		Stainless Steel Titanium Alloy	
	Spindle Speed (min-1)	Feed Rate (IPM)	Spindle Speed (min-1)	Feed Rate (IPM)	Spindle Speed (min-1)	Feed Rate (IPM)	Spindle Speed (min-1)	Feed Rate (IPM)
0.20	50,000	2,100	35,000	1,150	50,000	2,100	50,000	1,750
0.30	50,000	2,500	35,000	1,350	50,000	2,500	50,000	2,100
0.50	50,000	3,000	35,000	1,600	50,000	3,000	50,000	2,500
0.75	35,000	3,000	24,000	1,650	35,000	3,200	34,000	2,500
1.00	27,500	3,000	19,000	1,700	35,000	3,900	26,000	2,500
1.25	22,500	3,000	15,500	1,700	28,000	3,900	21,000	2,500
1.50	19,000	3,000	13,000	1,700	24,000	3,900	17,500	2,500
2.00	17,000	3,800	12,000	2,100	20,000	4,100	15,000	2,700
2.50	15,500	4,300	11,000	2,200	18,000	4,600	12,000	2,500
3.00	14,000	4,700	10,500	2,500	16,500	5,300	10,500	2,500
3.50	12,500	4,200	9,000	2,100	14,000	4,500	9,000	2,200
4.00	11,000	3,500	7,900	1,900	12,500	4,000	7,800	1,900
5.00	9,000	2,800	6,300	1,500	10,500	3,300	6,300	1,500
6.00	7,500	2,400	5,200	1,250	8,700	2,800	5,200	1,250
7.00	6,400	2,100	4,500	1,100	7,400	2,400	4,500	1,100
8.00	5,600	1,800	3,900	950	6,500	2,100	3,900	950
9.00	5,000	1,600	3,500	850	5,800	1,900	3,500	850
10.00	4,500	1,450	3,100	750	5,200	1,700	3,150	750
12.50	3,600	1,150	2,500	600	4,200	1,350	2,500	600
Standard Depth-of-cut a_p	0.02Dc		0.02Dc		0.02Dc		0.02Dc	
Standard Depth-of-cut p_f	0.05Dc		0.05Dc		0.05Dc		0.05Dc	

GSX Series Solid Carbide Endmills

GSX End Mill-METRIC 1.5D Gash Land

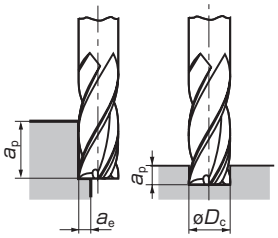
ITEM	Stock	Type	Flutes	Diam. (mm) φD_c	Shank Diam. (mm) φD_s	Flute Length (mm) ℓ	Neck Length (mm) ℓ_2	OAL (mm) L	Corner Radius (mm)
GSX20100C-1.5D	★	Square	2	1.0	4	1.5	2.5	40	-
GSX20150C-1.5D	★	Square	2	1.5	4	2.3	3.3	40	-
GSX20200C-1.5D	★	Square	2	2.0	4	3.0	4.0	40	-
GSX20250C-1.5D	★	Square	2	2.5	4	3.8	4.8	40	-
GSX20300C-1.5D	★	Square	2	3.0	6	4.5	6.0	45	-
GSX20350C-1.5D	★	Square	2	3.5	6	5.3	6.8	45	-
GSX20400C-1.5D	★	Square	2	4.0	6	6.0	7.5	45	-
GSX20450C-1.5D	★	Square	2	4.5	6	6.8	8.3	50	-
GSX20500C-1.5D	★	Square	2	5.0	6	7.5	9.5	50	-
GSX20550C-1.5D	★	Square	2	5.5	6	8.3	10.3	50	-
GSX20600C-1.5D	★	Square	2	6.0	6	9.0	-	50	-
GSX20700C-1.5D	★	Square	2	7.0	8	11.0	13.0	60	-
GSX20800C-1.5D	★	Square	2	8.0	8	12.0	-	60	-
GSX20900C-1.5D	★	Square	2	9.0	10	14.0	16.0	70	-
GSX21000C-1.5D	★	Square	2	10.0	10	15.0	-	70	-
GSX21200C-1.5D	★	Square	2	12.0	12	18.0	-	75	-

★ - World Wide Warehouse Item



■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Endmill Identification (GSX MILL Series Only)

GSX 2 1000 C - 1.5D

1	2	3	4	5
Series Code	No. of Teeth	Diameter x 100	Cutting Edge	Cutting Edge Length

(10mm x 100 = 1000)

S: Sharp Edge
C: Gash Land

■ Recommended Cutting Conditions
■ Side Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	19,600	250	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	70	9,000	50
2.0	11,200	340	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	90	5,300	70
4.0	6,400	460	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	120	3,000	90
6.0	4,600	560	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	140	2,200	100
8.0	3,400	560	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	140	1,600	100
10.0	2,800	560	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	140	1,300	100
12.0	2,300	560	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	140	1,100	100
16.0	1,700	450	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	110	800	85
20.0	1,350	380	1,350	380	1,350	380	1,300	280	900	160	650	90	800	100	650	75
Standard Depth-of-cut a_p	$1.5D_c$										$1.0D_c$					
Standard Depth-of-cut a_e	$0.05D_c$										$0.02D_c$					

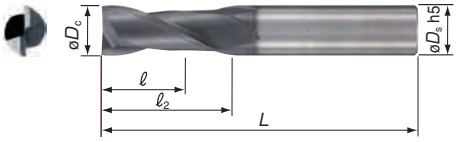
■ Groove Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	19,600	200	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	50	4,500	20
2.0	11,200	270	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	65	2,650	25
4.0	6,400	370	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	80	1,500	35
6.0	4,600	450	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	100	1,100	40
8.0	3,400	450	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	100	800	40
10.0	2,800	450	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	100	650	40
12.0	2,300	450	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	100	500	40
16.0	1,700	360	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	80	400	35
20.0	1,350	300	1,350	380	1,350	380	1,300	280	900	160	650	90	800	70	320	30
Standard Depth-of-cut a_p	$0.2D_c$		$0.5D_c$						$0.2D_c$		$0.05D_c$		$0.2D_c$			

GSX End Mill-METRIC 2D Gash Land

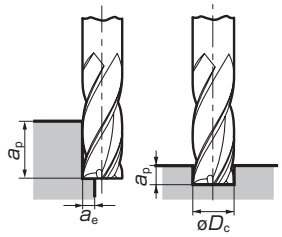
ITEM	Stock	Type	Flutes	Diam. (mm) φD_c	Shank Diam. (mm) φD_s	Flute Length (mm) ℓ	Neck Length (mm) ℓ_2	OAL (mm) L	Corner Radius (mm)
GSX20050C-2D	★	Square	2	0.5	4	1.0	1.4	40	-
GSX20100C-2D	★	Square	2	1.0	4	2.0	3.0	40	-
GSX20150C-2D	★	Square	2	1.5	4	3.0	4.0	40	-
GSX20200C-2D	★	Square	2	2.0	4	4.0	5.0	40	-
GSX20250C-2D	★	Square	2	2.5	4	5.0	6.0	40	-
GSX20300C-2D	★	Square	2	3.0	6	6.0	7.5	45	-
GSX20350C-2D	★	Square	2	3.5	6	7.0	8.5	45	-
GSX20400C-2D	★	Square	2	4.0	6	8.0	9.5	45	-
GSX20450C-2D	★	Square	2	4.5	6	9.0	10.5	50	-
GSX20500C-2D	★	Square	2	5.0	6	10.0	12.0	50	-
GSX20550C-2D	★	Square	2	5.5	6	11.0	13.0	50	-
GSX20600C-2D	★	Square	2	6.0	6	12.0	-	50	-
GSX20700C-2D	★	Square	2	7.0	8	14.0	16.0	60	-
GSX20800C-2D	★	Square	2	8.0	8	16.0	-	60	-
GSX20900C-2D	★	Square	2	9.0	10	18.0	20.0	70	-
GSX21000C-2D	★	Square	2	10.0	10	20.0	-	70	-
GSX21200C-2D	★	Square	2	12.0	12	24.0	-	75	-
GSX21600C-2D	★	Square	2	16.0	16	32.0	-	90	-
GSX22000C-2D	★	Square	2	20.0	20	40.0	-	100	-
GSX22500C-2D	★	Square	2	25.0	25	50.0	-	120	-

★ - World Wide Warehouse Item



■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Endmill Identification (GSX MILL Series Only)

GSX 2 0050 C - 2D

1	2	3	4	5
Series Code	No. of Teeth	Diameter x100 (10mm x 100 = 1000)	Cutting Edge (S: Sharp Edge, C: Gash Land)	Cutting Edge Length

■ Recommended Cutting Conditions

■ Side Milling

Work Material / Cond.		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		19,600	250	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	70	9,000	50
2.0		11,200	340	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	90	5,300	70
4.0		6,400	460	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	120	3,000	90
6.0		4,600	560	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	140	2,200	100
8.0		3,400	560	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	140	1,600	100
10.0		2,800	560	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	140	1,300	100
12.0		2,300	560	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	140	1,100	100
16.0		1,700	450	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	110	800	85
20.0		1,350	380	1,350	380	1,350	380	1,300	280	900	160	650	90	800	100	650	75
25.0		1,000	300	1,000	300	1,000	300	1,000	220	700	120	500	70	640	80	500	60
Standard Depth-of-cut	a_p	$1.5D_c$										$1.0D_c$					
	a_e	$0.05D_c$										$0.02D_c$					

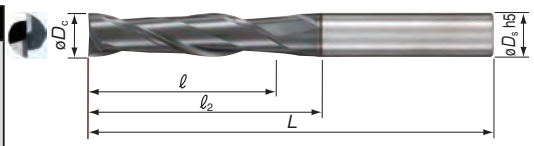
■ Groove Milling

Work Material / Cond.		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		19,600	200	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	50	4,500	20
2.0		11,200	270	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	65	2,650	25
4.0		6,400	370	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	80	1,500	35
6.0		4,600	450	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	100	1,100	40
8.0		3,400	450	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	100	800	40
10.0		2,800	450	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	100	650	40
12.0		2,300	450	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	100	500	40
16.0		1,700	360	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	80	400	35
20.0		1,350	300	1,350	380	1,350	380	1,300	280	900	160	650	90	800	70	320	30
25.0		1,000	240	1,000	300	1,000	300	1,000	220	700	120	500	70	640	55	250	25
Standard Depth-of-cut	a_p	$0.2D_c$		$0.5D_c$						$0.2D_c$		$0.05D_c$		$0.2D_c$			

GSX End Mill-METRIC 3D Gash Land

ITEM	Stock	Type	Flutes	Diam. (mm) φD_c	Shank Diam. (mm) φD_s	Flute Length (mm) ℓ	Neck Length (mm) ℓ_2	OAL (mm) L	Corner Radius (mm)
GSX20100C-3D	★	Square	2	1.0	4	3.0	4.0	40	-
GSX20150C-3D	★	Square	2	1.5	4	4.5	5.5	40	-
GSX20200C-3D	★	Square	2	2.0	4	6.0	7.0	40	-
GSX20250C-3D	★	Square	2	2.5	4	7.5	8.5	40	-
GSX20300C-3D	★	Square	2	3.0	6	9.0	10.5	50	-
GSX20400C-3D	★	Square	2	4.0	6	12.0	13.5	50	-
GSX20500C-3D	★	Square	2	5.0	6	15.0	17.0	50	-
GSX20600C-3D	★	Square	2	6.0	6	18.0	-	50	-
GSX20800C-3D	★	Square	2	8.0	8	24.0	-	70	-
GSX21000C-3D	★	Square	2	10.0	10	30.0	-	90	-
GSX21200C-3D	★	Square	2	12.0	12	36.0	-	90	-
GSX21600C-3D	★	Square	2	16.0	16	48.0	-	110	-

★ - World Wide Warehouse Item



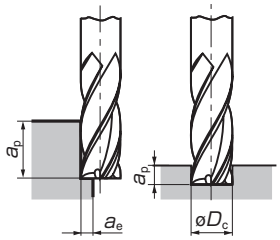
■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. In rare cases, chattering may occur in early milling stages, dissipating after 2m of cutting.
5. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.

■ Endmill Identification (GSX MILL Series Only)

GSX 2 0050 C - 3D

1	2	3	4	5
Series Code	No. of Teeth	Diameter x100 (10mm x 100 = 1000)	Cutting Edge (S: Sharp Edge, C: Gash Land)	Cutting Edge Length

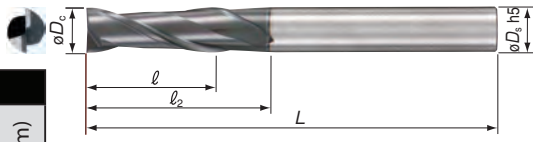


■ Recommended Cutting Conditions
■ Side Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0	16,600	190	16,600	190	16,600	190	15,500	140	10,500	70	7,500	45	9,400	50	7,500	35
2.0	9,500	250	9,500	250	9,500	250	9,000	200	6,200	120	4,500	60	5,200	70	4,500	50
4.0	5,200	330	5,200	330	5,200	330	4,800	200	3,400	150	2,250	75	2,600	90	2,250	65
6.0	3,500	360	3,500	360	3,500	360	3,200	250	2,550	170	1,500	90	1,700	100	1,500	80
8.0	2,600	320	2,600	320	2,600	320	2,400	240	1,900	170	1,100	90	1,300	100	1,100	80
10.0	2,100	300	2,100	300	2,100	300	1,900	230	1,500	170	900	90	1,000	100	900	80
12.0	1,750	280	1,750	280	1,750	280	1,600	230	1,250	170	750	90	850	100	750	80
16.0	1,300	240	1,300	240	1,300	240	1,200	200	950	150	550	75	650	85	550	65
20.0	1,050	220	1,050	220	1,050	220	950	180	750	140	450	70	500	75	450	60
Standard Depth-of-cut a_p	2.5D_c								2.0D_c							
Standard Depth-of-cut a_e	Below ø3 0.05D_c ø3 and above 0.1D_c								0.02D_c							

■ Groove Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0	16,600	70	16,600	80	16,600	80	15,500	50	10,500	50	7,500	35	9,400	30	3,750	10
2.0	9,500	80	9,500	100	9,500	100	9,000	90	6,200	60	4,500	45	5,200	40	2,250	15
4.0	5,200	120	5,200	150	5,200	150	4,800	120	3,400	80	2,200	50	2,600	50	1,250	20
6.0	3,500	140	3,500	170	3,500	170	3,200	130	2,550	100	1,500	50	1,700	60	950	25
8.0	2,600	140	2,600	160	2,600	160	2,400	130	1,900	100	1,100	50	1,300	60	700	25
10.0	2,100	130	2,100	150	2,100	150	1,900	120	1,500	90	900	50	1,000	60	550	25
12.0	1,750	130	1,750	150	1,750	150	1,600	120	1,250	90	750	50	850	60	450	25
16.0	1,300	110	1,300	130	1,300	130	1,200	110	950	80	550	45	650	50	350	20
20.0	1,050	100	1,050	120	1,050	120	950	100	750	70	450	40	500	40	280	15
Standard Depth-of-cut a_p	0.1D_c		0.2D_c								0.05D_c		0.1D_c			



GSX End Mill-METRIC 4D Gash Land

ITEM	Stock	Type	Flutes	Diam. (mm) φDc	Shank Diam. (mm) φDs	Flute Length (mm) ℓ	Neck Length (mm) ℓ2	OAL (mm) L	Corner Radius (mm)
GSX20100C-4D	★	Square	2	1.0	4	4.0	5.0	40	-
GSX20150C-4D	★	Square	2	1.5	4	6.0	7.0	40	-
GSX20200C-4D	★	Square	2	2.0	4	8.0	9.0	40	-
GSX20250C-4D	★	Square	2	2.5	4	10.0	11.0	50	-
GSX20300C-4D	★	Square	2	3.0	6	12.0	13.5	50	-
GSX20400C-4D	★	Square	2	4.0	6	16.0	17.5	50	-
GSX20500C-4D	★	Square	2	5.0	6	20.0	22.0	60	-
GSX20600C-4D	★	Square	2	6.0	6	24.0	-	60	-
GSX20800C-4D	★	Square	2	8.0	8	32.0	-	80	-
GSX21000C-4D	★	Square	2	10.0	10	40.0	-	90	-
GSX21200C-4D	★	Square	2	12.0	12	48.0	-	100	-

★ - World Wide Warehouse Item

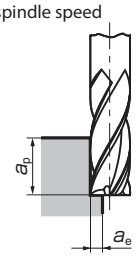
■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. In rear cases, chattering may occur in early milling stages, dissipating after 2m of cutting.
5. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. This series is not recommended for grooving.
7. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.

■ Endmill Identification (GSX MILL Series Only)

GSX 2 0050 C - 4D

1	2	3	4	5
Series Code	No. of Teeth	Diameter x 100 (10mm x 100 = 1000)	Cutting Edge (S: Sharp Edge, C: Gash Land)	Cutting Edge Length



■ Side Milling

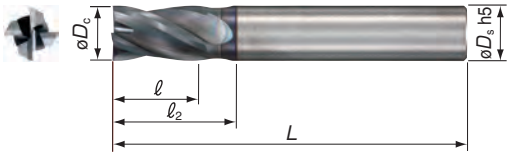
Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0	9,000	130	9,000	130	9,000	130	7,000	95	6,500	50	4,500	30	5,400	40	4,500	25
2.0	4,500	180	4,500	180	4,500	180	3,500	120	3,200	70	2,300	40	2,700	50	2,300	35
4.0	2,250	240	2,250	240	2,250	240	1,750	160	1,600	95	1,200	60	1,350	65	1,200	40
6.0	1,500	300	1,500	300	1,500	300	1,150	170	1,050	110	800	70	900	70	800	50
8.0	1,100	260	1,100	260	1,100	260	850	170	800	110	600	70	660	70	600	50
10.0	900	250	900	250	900	250	700	160	650	110	460	70	540	70	460	50
12.0	750	240	750	240	750	240	580	160	520	110	400	70	450	70	400	50
16.0	550	200	550	200	550	200	440	140	400	95	300	55	330	60	300	45
20.0	450	180	450	180	450	180	350	120	320	85	240	45	270	50	240	40
Standard Depth-of-cut a_p	$3.5D_c$										$3.0D_c$					
Standard Depth-of-cut a_e	$0.08D_c$						$0.04D_c$									

GSX Series Solid Carbide Endmills

GSX End Mill-METRIC 1.5D Gash Land

ITEM	Stock	Type	Flutes	Diam. (mm) φD_C	Shank Diam. (mm) φD_S	Flute Length (mm) ℓ	Neck Length (mm) $ℓ_2$	OAL (mm) L	Corner Radius (mm)
GSX40100C-1.5D	★	Square	4	1.0	4	1.5	2.5	40	-
GSX40150C-1.5D	★	Square	4	1.5	4	2.3	3.3	40	-
GSX40200C-1.5D	★	Square	4	2.0	4	3.0	4.0	40	-
GSX40250C-1.5D	★	Square	4	2.5	4	3.8	4.8	40	-
GSX40300C-1.5D	★	Square	4	3.0	6	4.5	6.0	45	-
GSX40350C-1.5D	★	Square	4	3.5	6	5.3	6.8	45	-
GSX40400C-1.5D	★	Square	4	4.0	6	6.0	7.5	45	-
GSX40450C-1.5D	★	Square	4	4.5	6	6.8	8.3	50	-
GSX40500C-1.5D	★	Square	4	5.0	6	7.5	9.5	50	-
GSX40550C-1.5D	★	Square	4	5.5	6	8.3	10.3	50	-
GSX40600C-1.5D	★	Square	4	6.0	6	9.0	-	50	-
GSX40700C-1.5D	★	Square	4	7.0	8	11.0	13.0	60	-
GSX40800C-1.5D	★	Square	4	8.0	8	12.0	-	60	-
GSX40900C-1.5D	★	Square	4	9.0	10	14.0	16.0	70	-
GSX41000C-1.5D	★	Square	4	10.0	10	15.0	-	70	-
GSX41200C-1.5D	★	Square	4	12.0	12	18.0	-	75	-

★ - World Wide Warehouse Item



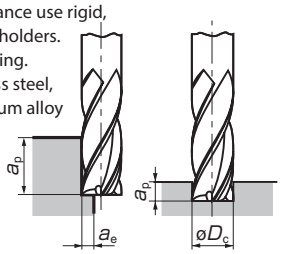
■ Endmill Identification (GSX MILL Series Only)

GSX 4 0100 C - 1.5D

1	2	3	4	5
Series Code	No. of Teeth	Diameter x 100	Cutting Edge	Cutting Edge Length

■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Side Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC 150 to 250HB		Cast Iron FC		Alloy Steel SCM 25 to 35HRC		Tempered Steel, Hardened Steel NAK, HPM 35 to 45HRC		Hardened Steel 45 to 55HRC		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	24,000	470	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	120	10,500	85
2.0	12,800	570	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	160	6,000	110
4.0	6,800	730	6,800	730	6,800	730	6,400	490	4,400	300	3,200	200	3,800	210	3,200	130
6.0	4,600	780	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	220	2,200	150
8.0	3,400	780	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	220	1,600	150
10.0	2,800	780	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,500	220	1,300	150
12.0	2,300	780	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	220	1,100	150
16.0	1,700	650	1,700	650	1,700	650	1,600	420	1,100	280	800	170	1,000	180	800	120
20.0	1,350	600	1,350	600	1,350	600	1,300	380	900	260	650	150	800	160	650	100
Standard Depth-of-cut a_p	1.5D_c										1.0D_c					
Standard Depth-of-cut a_e	0.05D_c										0.02D_c					

■ Side Milling (High Speed Machining Center)

Work Material / Cond.	Structural Steel SS		Carbon Steel SC 150 to 250HB		Cast Iron FC		Alloy Steel SCM 25 to 35HRC		Tempered Steel, Hardened Steel NAK, HPM 35 to 45HRC		Hardened Steel 45 to 55HRC		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	60,000	1,200	60,000	1,200	60,000	1,200	60,000	850	60,000	720	48,000	500	32,000	300	-	-
2.0	47,800	2,200	47,800	2,200	47,800	2,200	47,800	1,600	39,800	1,200	31,800	900	15,900	400	-	-
4.0	23,900	2,600	23,900	2,600	23,900	2,600	23,900	1,900	19,900	1,400	15,900	1,100	8,000	490	-	-
6.0	16,000	2,700	16,000	2,700	16,000	2,700	16,000	2,000	13,300	1,500	10,600	1,200	5,300	520	-	-
8.0	12,000	2,700	12,000	2,700	12,000	2,700	12,000	2,000	10,000	1,500	8,000	1,200	4,000	520	-	-
10.0	9,600	2,700	9,600	2,700	9,600	2,700	9,600	2,000	8,000	1,500	6,400	1,200	3,200	520	-	-
12.0	8,000	2,700	8,000	2,700	8,000	2,700	8,000	2,000	6,700	1,500	5,300	1,200	2,700	520	-	-
16.0	6,000	2,200	6,000	2,200	6,000	2,200	6,000	1,600	5,000	1,200	4,000	900	2,000	450	-	-
20.0	4,800	2,000	4,800	2,000	4,800	2,000	4,800	1,400	4,000	1,100	3,200	750	1,600	380	-	-
Standard Depth-of-cut a_p	1.5D_c										1.0D_c				-	
Standard Depth-of-cut a_e	0.05D_c										0.02D_c				-	

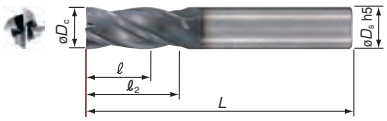
■ Groove Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC 150 to 250HB		Cast Iron FC		Alloy Steel SCM 25 to 35HRC		Tempered Steel, Hardened Steel NAK, HPM 35 to 45HRC		Hardened Steel 45 to 55HRC		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	24,000	380	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	85	5,200	30
2.0	12,800	460	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	110	3,000	40
4.0	6,800	580	6,800	730	6,800	730	5,400	490	4,400	300	3,200	200	3,800	130	1,600	55
6.0	4,600	620	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	160	1,100	65
8.0	3,400	620	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	160	800	65
10.0	2,800	620	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,600	160	650	65
12.0	2,300	620	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	160	550	65
16.0	1,700	520	1,700	560	1,700	560	1,600	420	1,100	280	800	170	1,000	130	400	55
20.0	1,350	480	1,350	600	1,350	600	1,300	380	900	260	650	150	800	110	320	50
Standard Depth-of-cut a_p	0.2D_c		0.5D_c						0.2D_c		0.05D_c		0.2D_c			

GSX End Mill-METRIC 2D Gash Land

ITEM	Stock	Type	Flutes	Diam. (mm) φD_c	Shank Diam. (mm) φD_s	Flute Length (mm) ℓ	Neck Length (mm) ℓ_2	OAL (mm) L	Corner Radius(mm)
GSX40100C-2D	★	Square	4	1.0	4	2.0	3.0	40	-
GSX40150C-2D	★	Square	4	1.5	4	3.0	4.0	40	-
GSX40200C-2D	★	Square	4	2.0	4	4.0	5.0	40	-
GSX40250C-2D	★	Square	4	2.5	4	5.0	6.0	40	-
GSX40300C-2D	★	Square	4	3.0	6	6.0	7.5	45	-
GSX40350C-2D	★	Square	4	3.5	6	7.0	8.5	45	-
GSX40400C-2D	★	Square	4	4.0	6	8.0	9.5	45	-
GSX40450C-2D	★	Square	4	4.5	6	9.0	10.5	50	-
GSX40500C-2D	★	Square	4	5.0	6	10.0	12.0	50	-
GSX40550C-2D	★	Square	4	5.5	6	11.0	13.0	50	-
GSX40600C-2D	★	Square	4	6.0	6	12.0	-	50	-
GSX40700C-2D	★	Square	4	7.0	8	14.0	16.0	60	-
GSX40800C-2D	★	Square	4	8.0	8	16.0	-	60	-
GSX40900C-2D	★	Square	4	9.0	10	18.0	20.0	70	-
GSX41000C-2D	★	Square	4	10.0	10	20.0	-	70	-
GSX41200C-2D	★	Square	4	12.0	12	24.0	-	75	-
GSX41600C-2D	★	Square	4	16.0	16	32.0	-	90	-
GSX42000C-2D	★	Square	4	20.0	20	40.0	-	100	-
GSX42500C-2D	★	Square	4	25.0	25	50.0	-	120	-

★ - World Wide Warehouse Item



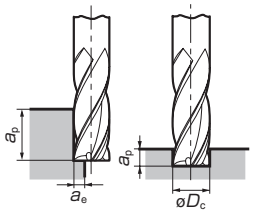
■ Endmill Identification (GSX MILL Series Only)

GSX 4 0100 C - 2D

1	2	3	4	5
Series Code	No. of Teeth	Diameter x 100 (10mm x 100 = 1000)	Cutting Edge	Cutting Edge Length

■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Side Milling

Work Material / Cond. / D_c(mm)	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	24,000	470	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	120	10,500	85
2.0	12,800	570	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	160	6,000	110
4.0	6,800	730	6,800	730	6,800	730	6,400	490	4,400	300	3,200	200	3,800	210	3,200	130
6.0	4,600	780	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	220	2,200	150
8.0	3,400	780	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	220	1,600	150
10.0	2,800	780	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,500	220	1,300	150
12.0	2,300	780	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	220	1,100	150
16.0	1,700	650	1,700	650	1,700	650	1,600	420	1,100	280	800	170	1,000	180	800	120
20.0	1,350	600	1,350	600	1,350	600	1,300	380	900	260	650	150	800	160	650	100
25.0	1,000	480	1,000	480	1,000	480	1,000	300	700	200	500	120	640	120	500	80
Standard Depth-of-cut a_p	1.5D_c										1.0D_c					
Standard Depth-of-cut a_e	0.05D_c										0.02D_c					

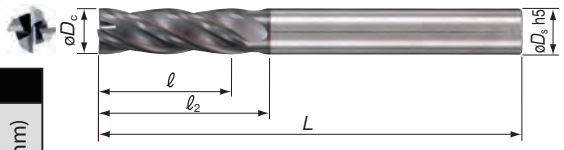
■ Side Milling (High Speed Machining Center)

Work Material / Cond. / D_c(mm)	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed min^{-1}	Feed Rate mm/min	Spindle Speed min^{-1}	Feed Rate mm/min	Spindle Speed min^{-1}	Feed Rate mm/min	Spindle Speed min^{-1}	Feed Rate mm/min	Spindle Speed min^{-1}	Feed Rate mm/min	Spindle Speed min^{-1}	Feed Rate mm/min	Spindle Speed min^{-1}	Feed Rate mm/min	Spindle Speed min^{-1}	Feed Rate mm/min
1.0	60,000	1,200	60,000	1,200	60,000	1,200	60,000	850	60,000	720	48,000	500	32,000	300	Q	Q
2.0	47,800	2,200	47,800	2,200	47,800	2,200	47,800	1,600	39,800	1,200	31,800	900	15,900	400	Q	Q
4.0	23,900	2,600	23,900	2,600	23,900	2,600	23,900	1,900	19,900	1,400	15,900	1,100	8,000	490	Q	Q
6.0	16,000	2,700	16,000	2,700	16,000	2,700	16,000	2,000	13,300	1,500	10,600	1,200	5,300	520	Q	Q
8.0	12,000	2,700	12,000	2,700	12,000	2,700	12,000	2,000	10,000	1,500	8,000	1,200	4,000	520	Q	Q
10.0	9,600	2,700	9,600	2,700	9,600	2,700	9,600	2,000	8,000	1,500	6,400	1,200	3,200	520	Q	Q
12.0	8,000	2,700	8,000	2,700	8,000	2,700	8,000	2,000	6,700	1,500	5,300	1,200	2,700	520	Q	Q
16.0	6,000	2,200	6,000	2,200	6,000	2,200	6,000	1,600	5,000	1,200	4,000	900	2,000	450	Q	Q
20.0	4,800	2,000	4,800	2,000	4,800	2,000	4,800	1,400	4,000	1,100	3,200	750	1,600	380	Q	Q
25.0	3,800	1,500	3,800	1,500	3,800	1,500	3,800	1,100	3,200	900	2,500	600	1,300	300	Q	Q
Standard Depth-of-cut a_p	1.5D_c										1.0D_c					
Standard Depth-of-cut a_e	0.05D_c										0.02D_c					

■ Groove Milling

Work Material / Cond. / D_c(mm)	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	24,000	380	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	85	5,200	30
2.0	12,800	460	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	110	3,000	40
4.0	6,800	580	6,800	730	6,800	730	5,400	490	4,400	300	3,200	200	3,800	130	1,600	55
6.0	4,600	620	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	160	1,100	65
8.0	3,400	620	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	160	800	65
10.0	2,800	620	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,600	160	650	65
12.0	2,300	620	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	160	550	65
16.0	1,700	520	1,700	560	1,700	560	1,600	420	1,100	280	800	170	1,000	130	400	55
20.0	1,350	480	1,350	600	1,350	600	1,300	380	900	260	650	150	800	110	320	50
25.0	1,000	380	1,000	450	1,000	450	1,000	300	700	200	500	120	640	80	250	40
Standard Depth-of-cut a_p	0.2D_c		0.5D_c						0.2D_c		0.05D_c		0.2D_c			

GSX Series Solid Carbide Endmills



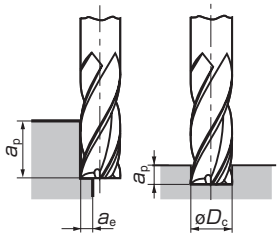
GSX End Mill-METRIC 3D Gash Land

ITEM	Stock	Type	Flutes	Diam. (mm) φDc	Shank Diam. (mm) φDs	Flute Length (mm) ℓ	Neck Length (mm) ℓ2	OAL (mm) L	Corner Radius (mm)
GSX40100C-3D	★	Square	4	1.0	4	3.0	4.0	40	-
GSX40150C-3D	★	Square	4	1.5	4	4.5	5.5	40	-
GSX40200C-3D	★	Square	4	2.0	4	6.0	7.0	40	-
GSX40250C-3D	★	Square	4	2.5	4	7.5	8.5	40	-
GSX40300C-3D	★	Square	4	3.0	6	9.0	10.5	50	-
GSX40400C-3D	★	Square	4	4.0	6	12.0	13.5	50	-
GSX40500C-3D	★	Square	4	5.0	6	15.0	17.0	50	-
GSX40600C-3D	★	Square	4	6.0	6	18.0	-	50	-
GSX40800C-3D	★	Square	4	8.0	8	24.0	-	70	-
GSX41000C-3D	★	Square	4	10.0	10	30.0	-	90	-
GSX41200C-3D	★	Square	4	12.0	12	36.0	-	90	-
GSX41600C-3D	★	Square	4	16.0	16	48.0	-	110	-

★ - World Wide Warehouse Item

■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. In rare cases, chattering may occur in early milling stages, dissipating after 2m of cutting.
5. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Endmill Identification (GSX MILL Series Only)

GSX 4 0100 C - 3D

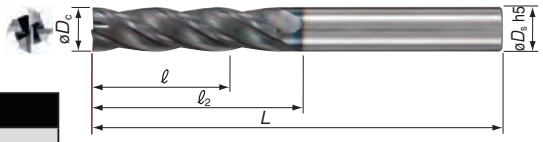
1	2	3	4	5
Series Code	No. of Teeth	Diameter x 100 (10mm x 100 = 1000)	Cutting Edge (S: Sharp Edge, C: Gash Land)	Cutting Edge Length

■ Side Milling

Work Material / Cond. / D_c (mm)	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	21,000	360	21,000	360	21,000	360	19,000	220	13,000	140	9,000	90	10,500	90	9,000	65
2.0	10,500	360	10,500	360	10,500	360	9,600	290	7,500	180	4,500	110	5,200	120	4,500	85
4.0	5,200	500	5,200	500	5,200	500	4,800	370	4,000	280	2,250	150	2,600	160	2,250	100
6.0	3,500	560	3,500	560	3,500	560	3,200	400	2,700	300	1,500	160	1,700	170	1,500	120
8.0	2,600	520	2,600	520	2,600	520	2,400	400	2,000	300	1,100	160	1,300	170	1,100	120
10.0	2,100	500	2,100	500	2,100	500	1,900	400	1,600	300	900	160	1,000	160	900	120
12.0	1,750	500	1,750	500	1,750	500	1,600	400	1,350	300	750	150	850	160	750	120
16.0	1,300	420	1,300	420	1,300	420	1,200	330	1,000	260	550	120	650	140	550	100
20.0	1,050	380	1,050	380	1,050	380	950	290	800	230	450	110	500	120	450	90
Standard Depth-of-cut a_p	2.5D_c										2.0D_c					
Standard Depth-of-cut a_e	Below ø3: 0.05D_c From ø3 to below ø8: 0.1Dc ø8 and above: 0.15D_c								0.02D_c							

■ Groove Milling

Work Material / Cond. / D_c (mm)	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	16,600	140	16,600	140	16,600	140	15,500	100	10,500	100	7,500	70	9,400	60	3,750	20
2.0	9,500	160	9,500	160	9,500	160	9,000	180	6,200	120	4,500	90	5,200	80	2,250	30
4.0	5,200	160	5,200	180	5,200	180	4,800	160	3,400	110	2,200	65	2,600	70	1,250	25
6.0	3,500	160	3,500	200	3,500	200	3,200	160	2,550	120	1,500	65	1,700	70	950	25
8.0	2,600	160	2,600	200	2,600	200	2,400	160	1,900	120	1,100	65	1,300	70	700	25
10.0	2,100	160	2,100	200	2,100	200	1,900	160	1,500	120	900	65	1,000	70	550	25
12.0	1,750	160	1,750	200	1,750	200	1,600	160	1,250	120	750	65	850	70	450	25
16.0	1,300	160	1,300	200	1,300	200	1,200	160	950	120	550	65	650	70	350	25
20.0	1,050	160	1,050	200	1,050	200	950	160	750	120	450	65	500	70	280	25
Standard Depth-of-cut a_p	0.1D_c		0.2D_c								0.05D_c		0.1D_c			



GSX End Mill-METRIC 4D Gash Land

ITEM	Stock	Type	Flutes	Diam. (mm) φDc	Shank Diam. (mm) φDs	Flute Length (mm) ℓ	Neck Length (mm) ℓ2	OAL (mm) L	Corner Radius (mm)
GSX40100C-4D	★	Square	4	1.0	4	4.0	5.0	40	-
GSX40150C-4D	★	Square	4	1.5	4	6.0	7.0	40	-
GSX40200C-4D	★	Square	4	2.0	4	8.0	9.0	40	-
GSX40250C-4D	★	Square	4	2.5	4	10.0	11.0	50	-
GSX40300C-4D	★	Square	4	3.0	6	12.0	13.5	50	-
GSX40400C-4D	★	Square	4	4.0	6	16.0	17.5	50	-
GSX40500C-4D	★	Square	4	5.0	6	20.0	22.0	60	-
GSX40600C-4D	★	Square	4	6.0	6	24.0	-	60	-
GSX40800C-4D	★	Square	4	8.0	8	32.0	-	80	-
GSX41000C-4D	★	Square	4	10.0	10	40.0	-	90	-
GSX41200C-4D	★	Square	4	12.0	12	48.0	-	100	-
GSX41600C-4D	★	Square	4	16.0	16	64.0	-	120	-

★ - World Wide Warehouse Item

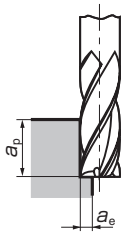
■ Endmill Identification (GSXMILL Series Only)

GSX 4 0100 C - 4D

1	2	3	4	5
Series Code	No. of Teeth	Diameter x 100 (10mm x 100 = 1000)	Cutting Edge (S: Sharp Edge, C: Gash Land)	Cutting Edge Length

■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. In rare cases, chattering may occur in early milling stages, dissipating after 2m of cutting.
5. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. This series is not recommended for grooving.
7. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Side Milling

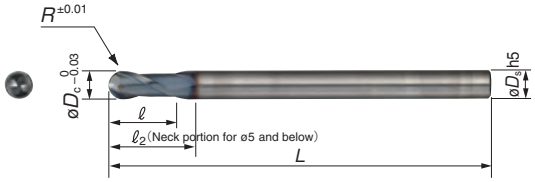
Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	9,000	140	9,000	140	9,000	140	7,000	80	6,500	60	4,500	40	5,400	40	4,500	40
2.0	4,500	140	4,500	140	4,500	140	3,500	100	3,200	80	2,300	55	2,700	55	2,300	40
4.0	2,250	200	2,250	200	2,250	200	1,750	120	1,600	100	1,200	60	1,350	50	1,200	35
6.0	1,500	250	1,500	250	1,500	250	1,150	160	1,050	140	800	65	900	45	800	35
8.0	1,100	220	1,100	220	1,100	220	850	160	800	130	600	65	660	45	600	35
10.0	900	210	900	210	900	210	700	140	650	120	460	65	540	45	460	35
12.0	750	200	750	200	750	200	580	140	520	110	400	65	450	45	400	35
16.0	550	170	550	170	550	170	440	120	400	95	300	55	330	45	300	35
20.0	450	150	450	150	450	150	350	100	320	80	240	50	270	45	240	35
Standard Depth-of-cut a_p	$3.5D_c$										$3.0D_c$					
Standard Depth-of-cut a_e	Below ø3: $0.04D_c$ From ø3 to below ø8: $0.08D_c$ ø8 and above: $0.1D_c$										$0.02D_c$					

GSX Series Solid Carbide Endmills

GSX End Mill-METRIC BALLNOSE

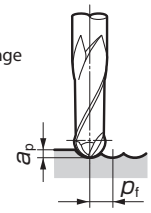
ITEM	Stock	Type	Flutes	Diam. (mm) φDc	Shank Diam. (mm) φDs	Flute Length (mm) ℓ	Neck Length (mm) ℓ2	OAL (mm) L	Corner Radius (mm)
GSXB20020	○	Ballnose	2	0.4	4	0.6	0.8	50	0.20
GSXB20030	○	Ballnose	2	0.6	4	0.9	1.2	50	0.30
GSXB20050	○	Ballnose	2	1.0	4	1.5	2.0	50	0.50
GSXB20075	○	Ballnose	2	1.5	4	2.3	3.0	50	0.75
GSXB20100	○	Ballnose	2	2.0	6	3.0	4.0	60	1.00
GSXB20125	○	Ballnose	2	2.5	6	4.0	5.0	60	1.25
GSXB20150	○	Ballnose	2	3.0	6	4.5	6.0	60	1.50
GSXB20200	○	Ballnose	2	4.0	6	6.0	8.0	70	2.00
GSXB20250	○	Ballnose	2	5.0	6	7.5	10.0	80	2.50
GSXB20300	○	Ballnose	2	6.0	6	9.0	-	80	3.00
GSXB20350	○	Ballnose	2	7.0	8	11.0	20.0	90	3.50
GSXB20400	○	Ballnose	2	8.0	8	12.0	-	90	4.00
GSXB20500	○	Ballnose	2	10.0	10	15.0	-	100	5.00
GSXB20600	○	Ballnose	2	12.0	12	18.0	-	110	6.00
GSXB20700	○	Ballnose	2	14.0	16	21.0	38.0	110	7.00
GSXB20800	○	Ballnose	2	16.0	16	24.0	-	140	8.00
GSXB20900	○	Ballnose	2	18.0	20	27.0	50.0	140	9.00
GSXB21000	○	Ballnose	2	20.0	20	30.0	-	160	10.00

○ - Items Available 1st Quarter 2015



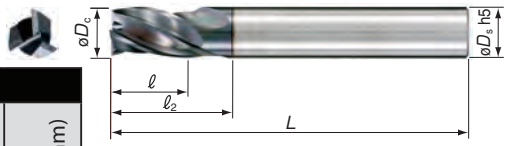
■ Recommended Cutting Conditions

1. If cutting noise and vibration are present, please change the cutting conditions accordingly.
2. If the machine is not designed to achieve the recommended spindle speed, please use the max. spindle speed available.



■ Radius Milling

Work Material / Cutting Conditions R(mm)	Carbon Steel, Alloy Steel (Below 25HRC)		Carbon Steel, Alloy Steel (Below 50HRC)		Cast Iron Special Cast Iron		Stainless Steel Titanium Alloy	
	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
0.20	50,000	2,100	35,000	1,150	50,000	2,100	50,000	1,750
0.30	50,000	2,500	35,000	1,350	50,000	2,500	50,000	2,100
0.50	50,000	3,000	35,000	1,600	50,000	3,000	50,000	2,500
0.75	35,000	3,000	24,000	1,650	35,000	3,200	34,000	2,500
1.00	27,500	3,000	19,000	1,700	35,000	3,900	26,000	2,500
1.25	22,500	3,000	15,500	1,700	28,000	3,900	21,000	2,500
1.50	19,000	3,000	13,000	1,700	24,000	3,900	17,500	2,500
2.00	17,000	3,800	12,000	2,100	20,000	4,100	15,000	2,700
2.50	15,500	4,300	11,000	2,200	18,000	4,600	12,000	2,500
3.00	14,000	4,700	10,500	2,500	16,500	5,300	10,500	2,500
3.50	12,500	4,200	9,000	2,100	14,000	4,500	9,000	2,200
4.00	11,000	3,500	7,900	1,900	12,500	4,000	7,800	1,900
5.00	9,000	2,800	6,300	1,500	10,500	3,300	6,300	1,500
6.00	7,500	2,400	5,200	1,250	8,700	2,800	5,200	1,250
7.00	6,400	2,100	4,500	1,100	7,400	2,400	4,500	1,100
8.00	5,600	1,800	3,900	950	6,500	2,100	3,900	950
9.00	5,000	1,600	3,500	850	5,800	1,900	3,500	850
10.00	4,500	1,450	3,100	750	5,200	1,700	3,150	750
12.50	3,600	1,150	2,500	600	4,200	1,350	2,500	600
Standard Depth-of-cut a_p	0.02Dc		0.02Dc		0.02Dc		0.02Dc	
Standard Depth-of-cut p_f	0.05Dc		0.05Dc		0.05Dc		0.05Dc	



GSX End Mill-METRIC 1.5D Gash Land

ITEM	Stock	Type	Flutes	Diam. (mm)	Shank Diam. (mm)	Flute Length (mm)	Neck Length (mm)	OAL (mm)	Corner Radius (mm)
GSX30100C-1.5D	★	Square	3	1.0	4	1.5	2.5	40	-
GSX30150C-1.5D	★	Square	3	1.5	4	2.3	3.3	40	-
GSX30200C-1.5D	★	Square	3	2.0	4	3.0	4.0	40	-
GSX30250C-1.5D	★	Square	3	2.5	4	3.8	4.8	40	-
GSX30300C-1.5D	★	Square	3	3.0	6	4.5	6.0	45	-
GSX30400C-1.5D	★	Square	3	4.0	6	6.0	7.5	45	-
GSX30500C-1.5D	★	Square	3	5.0	6	7.5	9.5	50	-
GSX30600C-1.5D	★	Square	3	6.0	6	9.0	-	50	-
GSX30700C-1.5D	★	Square	3	7.0	8	11.0	13.0	60	-
GSX30800C-1.5D	★	Square	3	8.0	8	12.0	-	60	-
GSX30900C-1.5D	★	Square	3	9.0	10	14.0	16.0	70	-
GSX31000C-1.5D	★	Square	3	10.0	10	15.0	-	70	-
GSX31200C-1.5D	★	Square	3	12.0	12	18.0	-	75	-

★ - World Wide Warehouse Item

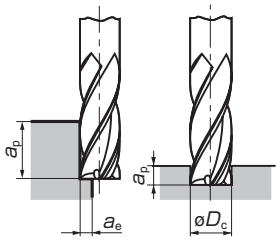
■ Endmill Identification (GSXMILL Series Only)

GSX 3 0100 C - 1.5D

1	2	3	4	5
Series Code	No. of Teeth	Diameter x 100	Cutting Edge	Cutting Edge Length

■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



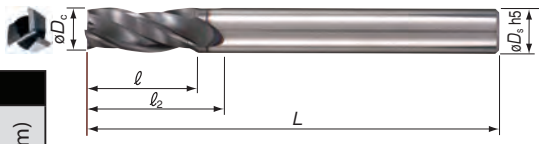
■ Side Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	19,600	300	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	90	9,000	65
2.0	11,200	410	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	120	5,300	90
4.0	6,400	550	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	150	3,000	120
6.0	4,600	670	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,700	180	2,200	130
8.0	3,400	670	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	180	1,600	130
10.0	2,800	670	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	180	1,300	130
12.0	2,300	670	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	180	1,100	130
16.0	1,700	550	1,700	550	1,700	550	1,600	370	1,100	230	800	140	1,000	150	800	100
20.0	1,350	490	1,350	490	1,350	490	1,300	330	900	210	650	120	800	130	650	90
Standard Depth-of-cut a_p	$1.5D_c$										$1.0D_c$					
Standard Depth-of-cut a_e	$0.05D_c$										$0.02D_c$					

■ Groove Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	19,600	240	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	65	4,500	25
2.0	11,200	320	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	85	2,650	35
4.0	6,400	450	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	100	1,500	50
6.0	4,600	540	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,650	130	1,150	55
8.0	3,400	540	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	130	800	55
10.0	2,800	540	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	130	650	55
12.0	2,300	540	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	130	500	55
16.0	1,700	440	1,700	550	1,700	550	1,600	370	1,100	230	800	140	1,000	110	400	45
20.0	1,350	390	1,350	490	1,350	490	1,300	330	900	210	650	120	800	90	320	40
Standard Depth-of-cut a_p	$0.2D_c$		$0.5D_c$						$0.2D_c$		$0.05D_c$		$0.2D_c$			

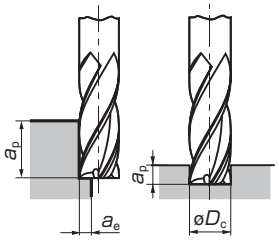
GSX Series Solid Carbide Endmills



GSX End Mill-METRIC 2D Gash Land

ITEM	Stock	Type	Flutes	Diam. (mm)	Shank Diam. (mm)	Flute Length (mm)	Neck Length (mm)	OAL (mm)	Corner Radius (mm)
GSX30100C-2D	★	Square	3	1.0	4	2.5	3.5	40	-
GSX30150C-2D	★	Square	3	1.5	4	3.8	4.8	40	-
GSX30200C-2D	★	Square	3	2.0	4	5.0	6.0	40	-
GSX30250C-2D	★	Square	3	2.5	4	6.3	7.3	40	-
GSX30300C-2D	★	Square	3	3.0	6	7.5	9.0	45	-
GSX30400C-2D	★	Square	3	4.0	6	11.0	12.5	45	-
GSX30500C-2D	★	Square	3	5.0	6	13.0	15.0	50	-
GSX30600C-2D	★	Square	3	6.0	6	13.0	-	50	-
GSX30700C-2D	★	Square	3	7.0	8	16.0	18.0	60	-
GSX30800C-2D	★	Square	3	8.0	8	19.0	-	60	-
GSX30900C-2D	★	Square	3	9.0	10	19.0	21.0	70	-
GSX31000C-2D	★	Square	3	10.0	10	22.0	-	70	-
GSX31200C-2D	★	Square	3	12.0	12	26.0	-	75	-

★ - World Wide Warehouse Item



■ Endmill Identification (GSXMILL Series Only)

GSX 3 0100 C - 2D

1	2	3	4	5
Series Code	No. of Teeth	Diameter x 100	Cutting Edge	Cutting Edge Length

■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.

■ Side Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	19,600	300	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	90	9,000	65
2.0	11,200	410	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	120	5,300	90
4.0	6,400	550	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	150	3,000	120
6.0	4,600	670	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,700	180	2,200	130
8.0	3,400	670	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	180	1,600	130
10.0	2,800	670	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	180	1,300	130
12.0	2,300	670	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	180	1,100	130
16.0	1,700	550	1,700	550	1,700	550	1,600	370	1,100	230	800	140	1,000	150	800	100
20.0	1,350	490	1,350	490	1,350	490	1,300	330	900	210	650	120	800	130	650	90
Standard Depth-of-cut a_p	1.5D_c										1.0D_c					
Standard Depth-of-cut a_e	0.05D_c										0.02D_c					

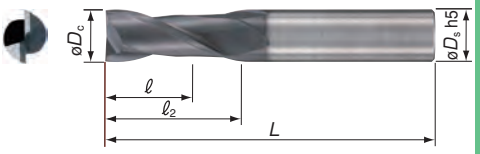
■ Groove Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	19,600	240	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	65	4,500	25
2.0	11,200	320	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	85	2,650	35
4.0	6,400	450	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	100	1,500	50
6.0	4,600	540	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,650	130	1,150	55
8.0	3,400	540	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	130	800	55
10.0	2,800	540	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	130	650	55
12.0	2,300	540	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	130	500	55
16.0	1,700	440	1,700	550	1,700	550	1,600	370	1,100	230	800	140	1,000	110	400	45
20.0	1,350	390	1,350	490	1,350	490	1,300	330	900	210	650	120	800	90	320	40
Standard Depth-of-cut a_p	0.2D_c		0.5D_c						0.2D_c		0.05D_c		0.2D_c			

GSX End Mill-METRIC 2D Sharp Edge

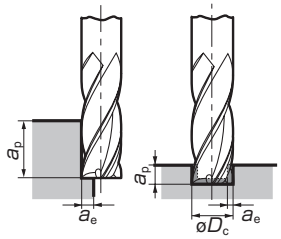
ITEM	Stock	Type	Flutes	Diam. (mm)	Shank Diam. (mm)	Flute Length (mm)	Neck Length (mm)	OAL (mm)	Corner Radius (mm)	Fig.
GSX20050S-2D	★	Square	2	0.5	4	1.3	1.7	40	-	
GSX20100S-2D	★	Square	2	1.0	4	2.5	3.5	40	-	
GSX20150S-2D	★	Square	2	1.5	4	3.8	4.8	40	-	
GSX20150S-2D-S3	★	Square	2	1.5	3	3.8	4.8	38	-	
GSX20200S-2D	★	Square	2	2.0	4	5.0	6.0	40	-	
GSX20200S-2D-S3	★	Square	2	2.0	3	5.0	6.0	38	-	
GSX20250S-2D	★	Square	2	2.5	4	6.3	7.3	40	-	
GSX20300S-2D	★	Square	2	3.0	6	7.5	9.0	45	-	
GSX20300S-2D-S3	★	Square	2	3.0	3	7.5	-	38	-	
GSX20350S-2D	★	Square	2	3.5	6	8.8	10.3	45	-	
GSX20400S-2D	★	Square	2	4.0	6	11.0	14.0	45	-	
GSX20400S-2D-S4	★	Square	2	4.0	4	11.0	-	45	-	
GSX20450S-2D	★	Square	2	4.5	6	11.3	12.8	50	-	
GSX20500S-2D	★	Square	2	5.0	6	13.0	19.6	50	-	
GSX20550S-2D	★	Square	2	5.5	6	13.0	19.6	50	-	
GSX20600S-2D	★	Square	2	6.0	6	13.0	-	50	-	
GSX20700S-2D	★	Square	2	7.0	8	16.0	21.1	60	-	
GSX20800S-2D	★	Square	2	8.0	8	19.0	-	60	-	
GSX20900S-2D	★	Square	2	9.0	10	19.0	24.1	70	-	
GSX21000S-2D	★	Square	2	10.0	10	22.0	-	70	-	
GSX21200S-2D	★	Square	2	12.0	12	26.0	-	75	-	
GSX21600S-2D	★	Square	2	16.0	16	32.0	-	90	-	
GSX22000S-2D	★	Square	2	20.0	20	40.0	-	100		

★ - World Wide Warehouse Item



■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. If chattering is a pr oblem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. This series is not recommended for groove milling.
6. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Endmill Identification (GSXMILL Series Only)

GSX 2 0150 S - 2D - S3

1	2	3	4	5	6
Series Code	No. of Teeth	Diameter x 100	Cutting Edge	Cutting Edge Length	Shank Diameter

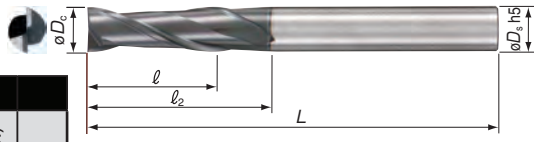
■ Side Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0	16,600	180	16,600	180	16,600	180	15,500	130	10,500	70	7,500	45	9,400	50	7,500	35
2.0	9,500	250	9,500	250	9,500	250	9,000	200	6,200	100	4,500	60	5,400	70	4,500	50
4.0	5,400	330	5,400	330	5,400	330	5,000	250	3,400	120	2,500	75	3,000	90	2,500	65
6.0	4,000	400	4,000	400	4,000	400	3,700	300	2,550	150	1,900	100	2,300	110	1,900	80
8.0	3,000	400	3,000	400	3,000	400	2,800	300	1,900	150	1,400	100	1,700	110	1,400	80
10.0	2,400	400	2,400	400	2,400	400	2,200	300	1,500	150	1,100	100	1,300	110	1,100	80
12.0	2,000	400	2,000	400	2,000	400	1,850	300	1,300	150	950	100	1,100	110	950	80
16.0	1,500	330	1,500	330	1,500	330	1,400	250	950	120	700	75	850	85	700	60
20.0	1,200	280	1,200	280	1,200	280	1,100	220	750	110	550	65	650	75	550	55
Standard Depth-of-cut a_p	$2.0D_c$															
Standard Depth-of-cut a_e	$0.02D_c$										$0.01D_c$					

■ Groove Finishing

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0	16,600	180	16,600	180	16,600	180	15,500	130	10,500	70	7,500	45	9,400	50	7,500	35
2.0	9,500	250	9,500	250	9,500	250	9,000	200	6,200	100	4,500	60	5,400	70	4,500	50
4.0	5,400	330	5,400	330	5,400	330	5,000	250	3,400	120	2,500	75	3,000	90	2,500	65
6.0	4,000	400	4,000	400	4,000	400	3,700	300	2,550	150	1,900	100	2,300	110	1,900	80
8.0	3,000	400	3,000	400	3,000	400	2,800	300	1,900	150	1,400	100	1,700	110	1,400	80
10.0	2,400	400	2,400	400	2,400	400	2,200	300	1,500	150	1,100	100	1,300	110	1,100	80
12.0	2,000	400	2,000	400	2,000	400	1,850	300	1,300	150	950	100	1,100	110	950	80
16.0	1,500	330	1,500	330	1,500	330	1,400	250	950	120	700	75	850	85	700	60
20.0	1,200	280	1,200	280	1,200	280	1,100	220	750	110	550	65	650	75	550	55
Standard Depth-of-cut a_p	$1.5D_c$															
Standard Depth-of-cut a_e	$0.02D_c$ Max.															

GSX Series Solid Carbide Endmills



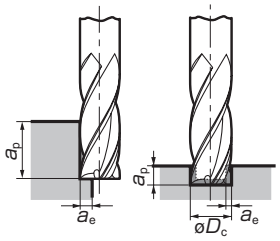
GSX End Mill-METRIC 3D Sharp Edge

ITEM	Stock	Type	Flutes	Diam. (mm)	Shank Diam. (mm)	Flute Length (mm)	Neck Length (mm)	OAL (mm)	Corner Radius (mm)	Fig.
GSX20050S-3D	★	Square	2	0.5	4	1.5	1.9	40	-	
GSX20100S-3D	★	Square	2	1.0	4	3.0	4.0	40	-	
GSX20150S-3D	★	Square	2	1.5	4	4.5	5.5	40	-	
GSX20200S-3D	★	Square	2	2.0	4	6.0	7.0	40	-	
GSX20250S-3D	★	Square	2	2.5	4	7.5	8.5	40	-	
GSX20300S-3D	★	Square	2	3.0	6	9.0	10.5	50	-	
GSX20400S-3D	★	Square	2	4.0	6	12.0	13.5	50	-	
GSX20500S-3D	★	Square	2	5.0	6	15.0	17.0	50	-	
GSX20600S-3D	★	Square	2	6.0	6	18.0	-	50	-	
GSX20800S-3D	★	Square	2	8.0	8	24.0	-	70	-	
GSX21000S-3D	★	Square	2	10.0	10	30.0	-	90	-	
GSX21200S-3D	★	Square	2	12.0	12	36.0	-	90	-	
GSX21600S-3D	★	Square	2	16.0	16	48.0	-	110	-	

★ - World Wide Warehouse Item

■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. This series is not recommended for grooving.
6. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Endmill Identification (GSXMILL Series Only)

GSX 2 0050 S - 3D

1	2	3	4	5
Series Code	No. of Teeth	Diameter x 100 (10mm x 100 = 1000)	Cutting Edge (S: Sharp Edge, C: Gash Land)	Cutting Edge Length

■ Side Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0	14,000	140	14,000	140	14,000	140	13,200	100	8,900	50	6,300	30	8,000	35	6,300	25
2.0	8,100	180	8,100	180	8,100	180	7,600	150	5,300	90	3,700	45	4,400	50	3,800	40
4.0	4,400	240	4,400	240	4,400	240	4,000	150	2,900	110	1,900	55	2,200	65	1,900	50
6.0	2,900	260	2,900	260	2,900	260	2,700	180	2,100	130	1,200	65	1,400	75	1,200	60
8.0	2,200	230	2,200	230	2,200	230	2,000	180	1,600	130	900	65	1,100	75	900	60
10.0	1,800	220	1,800	220	1,800	220	1,600	170	1,300	130	750	65	850	75	750	60
12.0	1,500	200	1,500	200	1,500	200	1,300	170	1,000	130	630	65	700	75	600	60
16.0	1,100	170	1,100	170	1,100	170	1,000	150	800	110	450	55	550	65	450	50
20.0	850	160	850	160	850	160	800	130	600	100	350	50	400	55	350	45
Standard Depth-of-cut a_p	$2.5D_c$								$2.0D_c$							
Standard Depth-of-cut a_e	Below ø3-$0.02D_c$, ø3 and above $0.05D_c$								$0.01D_c$							

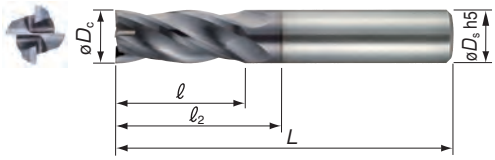
■ Groove Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0	14,000	140	14,000	140	14,000	140	13,200	100	8,900	50	6,300	30	8,000	35	6,300	25
2.0	8,100	180	8,100	180	8,100	180	7,600	150	5,300	90	3,700	45	4,400	50	3,800	40
4.0	4,400	240	4,400	240	4,400	240	4,000	150	2,900	110	1,900	55	2,200	65	1,900	50
6.0	2,900	260	2,900	260	2,900	260	2,700	180	2,100	130	1,200	65	1,400	75	1,200	60
8.0	2,200	230	2,200	230	2,200	230	2,000	180	1,600	130	900	65	1,100	75	900	60
10.0	1,800	220	1,800	220	1,800	220	1,600	170	1,300	130	750	65	850	75	750	60
12.0	1,500	200	1,500	200	1,500	200	1,300	170	1,000	130	630	65	700	75	600	60
16.0	1,100	170	1,100	170	1,100	170	1,000	150	800	110	450	55	550	65	450	50
20.0	850	160	850	160	850	160	800	130	600	100	350	50	400	55	350	45
Standard Depth-of-cut a_p	$0.02D_c$ Max.															

GSX End Mill-METRIC 2D Sharp Edge

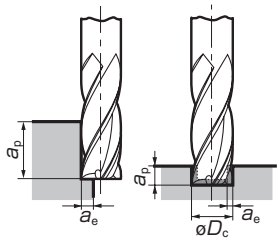
ITEM	Stock	Type	Flutes	Diam. (mm)	Shank Diam. (mm)	Flute Length (mm)	Neck Length (mm)	OAL (mm)	Corner Radius (mm)
GSX40100S-2D	★	Square	4	1.0	4	2.5	3.5	40	-
GSX40100S-2D-S3	★	Square	4	1.0	3	2.5	3.5	38	-
GSX40150S-2D	★	Square	4	1.5	4	3.8	4.8	40	-
GSX40200S-2D	★	Square	4	2.0	4	5.0	6.0	40	-
GSX40200S-2D-S3	★	Square	4	2.0	3	5.0	6.0	38	-
GSX40250S-2D	★	Square	4	2.5	4	6.3	7.3	40	-
GSX40300S-2D	★	Square	4	3.0	6	7.5	9.0	45	-
GSX40300S-2D-S3	★	Square	4	3.0	3	7.5	-	38	-
GSX40350S-2D	★	Square	4	3.5	6	8.8	10.0	45	-
GSX40400S-2D	★	Square	4	4.0	6	11.0	14.0	45	-
GSX40400S-2D-S4	★	Square	4	4.0	4	11.0	-	45	-
GSX40450S-2D	★	Square	4	4.5	6	11.3	12.8	50	-
GSX40500S-2D	★	Square	4	5.0	6	13.0	19.6	50	-
GSX40550S-2D	★	Square	4	5.5	6	13.0	19.6	50	-
GSX40600S-2D	★	Square	4	6.0	6	13.0	-	50	-
GSX40700S-2D	★	Square	4	7.0	8	16.0	21.1	60	-
GSX40800S-2D	★	Square	4	8.0	8	19.0	-	60	-
GSX40900S-2D	★	Square	4	9.0	10	19.0	24.1	70	-
GSX41000S-2D	★	Square	4	10.0	10	22.0	-	70	-
GSX41200S-2D	★	Square	4	12.0	12	26.0	-	75	-
GSX41600S-2D	★	Square	4	16.0	16	32.0	-	90	-
GSX42000S-2D	★	Square	4	20.0	20	40.0	-	100	-

★ - World Wide Warehouse Item



■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. This series is not recommended for groove milling.
6. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Endmill Identification (GSXMILL Series Only)

GSX 4 0100 S - 2D - S3

1	2	3	4	5	6
Series Code	No. of Teeth	Diameter (10mm x 100 = 1000)	Cutting Edge	Cutting Edge Length	Shank Diameter

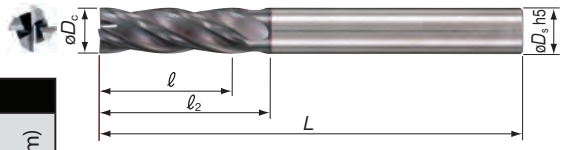
■ Side Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC 150 to 250HB		Cast Iron FC		Alloy Steel SCM 25 to 35HRC		Tempered Steel, Hardened Steel NAK, HPM 35 to 45HRC		Hardened Steel 45 to 55HRC		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	22,000	360	22,000	360	22,000	360	19,000	220	13,000	140	9,500	90	11,300	90	9,500	65
2.0	11,500	440	11,500	440	11,500	440	11,000	290	7,500	180	5,400	110	6,500	120	5,400	85
4.0	6,000	560	6,000	560	6,000	560	5,800	370	4,000	230	2,900	150	3,400	160	2,900	100
6.0	4,200	600	4,200	600	4,200	600	4,000	400	2,700	240	2,000	160	2,400	170	2,000	120
8.0	3,000	600	3,000	600	3,000	600	2,800	400	2,000	240	1,450	160	1,800	170	1,450	120
10.0	2,500	600	2,500	600	2,500	600	2,350	400	1,600	240	1,200	160	1,450	170	1,200	120
12.0	2,100	600	2,100	600	2,100	600	2,000	400	1,350	240	1,000	160	1,200	170	1,000	120
16.0	1,500	500	1,500	500	1,500	500	1,450	320	1,000	210	750	130	900	140	750	90
20.0	1,200	460	1,200	460	1,200	460	1,150	290	800	200	600	110	700	120	600	75
Standard Depth-of-cut a_p	$2.0D_c$															
Standard Depth-of-cut a_e	$0.03D_c$										$0.01D_c$					

■ Groove Finishing

Work Material / Cond.	Structural Steel SS		Carbon Steel SC 150 to 250HB		Cast Iron FC		Alloy Steel SCM 25 to 35HRC		Tempered Steel, Hardened Steel NAK, HPM 35 to 45HRC		Hardened Steel 45 to 55HRC		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	22,000	360	22,000	360	22,000	360	19,000	220	13,000	140	9,500	90	11,300	90	9,500	65
2.0	11,500	440	11,500	440	11,500	440	11,000	290	7,500	180	5,400	110	6,500	120	5,400	85
4.0	6,000	560	6,000	560	6,000	560	5,800	370	4,000	230	2,900	150	3,400	160	2,900	100
6.0	4,200	600	4,200	600	4,200	600	4,000	400	2,700	240	2,000	160	2,400	170	2,000	120
8.0	3,000	600	3,000	600	3,000	600	2,800	400	2,000	240	1,450	160	1,800	170	1,450	120
10.0	2,500	600	2,500	600	2,500	600	2,350	400	1,600	240	1,200	160	1,450	170	1,200	120
12.0	2,100	600	2,100	600	2,100	600	2,000	400	1,350	240	1,000	160	1,200	170	1,000	120
16.0	1,500	500	1,500	500	1,500	500	1,450	320	1,000	210	750	130	900	140	750	90
20.0	1,200	460	1,200	460	1,200	460	1,150	290	800	200	600	110	700	120	600	75
Standard Depth-of-cut a_p	$1.5D_c$															
Standard Depth-of-cut a_e	Below $0.02D_c$															

GSX Series Solid Carbide Endmills



GSX End Mill-METRIC 3D Sharp Edge

ITEM	Stock	Type	Flutes	Diam. (mm)	Shank Diam. (mm)	Flute Length (mm)	Neck Length (mm)	OAL (mm)	Corner Radius (mm)
GSX40100S-3D	★	Square	4	1.0	4	3.0	4.0	40	-
GSX40200S-3D	★	Square	4	2.0	4	6.0	7.0	40	-
GSX40300S-3D	★	Square	4	3.0	6	9.0	10.5	50	-
GSX40400S-3D	★	Square	4	4.0	6	12.0	13.5	50	-
GSX40500S-3D	★	Square	4	5.0	6	15.0	17.0	50	-
GSX40600S-3D	★	Square	4	6.0	6	18.0	-	50	-
GSX40700S-3D	★	Square	4	7.0	8	21.0	23.0	70	-
GSX40800S-3D	★	Square	4	8.0	8	24.0	-	70	-
GSX41000S-3D	★	Square	4	10.0	10	30.0	-	90	-
GSX41200S-3D	★	Square	4	12.0	12	36.0	-	90	-
GSX41600S-3D	★	Square	4	16.0	16	48.0	-	110	-

★ - World Wide Warehouse Item

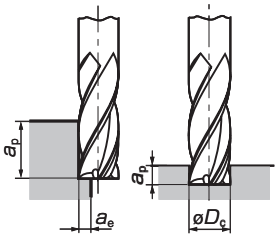
■ Endmill Identification (GSXMILL Series Only)

GSX 4 0100 S - 3D

1	2	3	4	5
Series Code	No. of Teeth	Diameter (10mm x 100 = 1000)	Cutting Edge	Cutting Edge Length

■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. In rare cases, chattering may occur in early milling stages, dissipating after 2m of cutting.
5. If chattering is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.

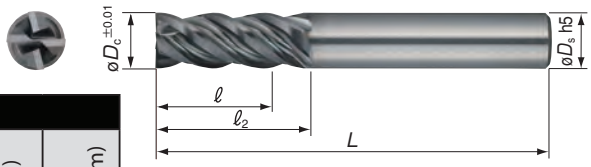


■ Side Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	18,500	250	18,500	250	18,500	250	17,000	150	11,500	100	8,000	65	9,400	65	8,000	45
2.0	9,400	250	9,400	250	9,400	250	8,500	200	6,700	130	4,000	65	4,600	90	4,000	60
4.0	4,500	350	4,500	350	4,500	350	4,300	250	3,500	210	2,000	110	2,300	110	2,000	70
6.0	3,100	400	3,100	400	3,100	400	2,800	300	2,400	220	1,300	120	1,500	120	1,300	90
8.0	2,300	380	2,300	380	2,300	380	2,100	300	1,800	220	950	120	1,100	120	900	90
10.0	1,800	350	1,800	350	1,800	350	1,700	300	1,400	220	700	120	900	120	800	90
12.0	1,500	350	1,500	350	1,500	350	1,400	300	1,200	220	650	110	750	120	650	90
16.0	1,100	300	1,100	300	1,100	300	1,000	240	900	190	480	90	550	100	490	70
20.0	900	280	900	280	900	280	850	210	700	170	400	80	440	90	400	60
Standard Depth-of-cut a_p	2.5D_c								2.0D_c							
Standard Depth-of-cut a_e	Below ø3: 0.02D_c From ø3 to below ø8: 0.05Dc ø8 and above: 0.07D_c								0.01D_c							

■ Groove Milling

Work Material / Cond.	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat Resistive Steel Titanium Alloy	
D_c (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	18,500	250	18,500	250	18,500	250	17,000	150	11,500	100	8,000	65	9,400	65	8,000	45
2.0	9,400	250	9,400	250	9,400	250	8,500	200	6,700	130	4,000	65	4,600	90	4,000	60
4.0	4,500	350	4,500	350	4,500	350	4,300	250	3,500	210	2,000	110	2,300	110	2,000	70
6.0	3,100	400	3,100	400	3,100	400	2,800	300	2,400	220	1,300	120	1,500	120	1,300	90
8.0	2,300	380	2,300	380	2,300	380	2,100	300	1,800	220	950	120	1,100	120	900	90
10.0	1,800	350	1,800	350	1,800	350	1,700	300	1,400	220	700	120	900	120	800	90
12.0	1,500	350	1,500	350	1,500	350	1,400	300	1,200	220	650	110	750	120	650	90
16.0	1,100	300	1,100	300	1,100	300	1,000	240	900	190	480	90	550	100	490	70
20.0	900	280	900	280	900	280	850	210	700	170	400	80	440	90	400	60
Standard Depth-of-cut a_p	0.02D_c Max.															



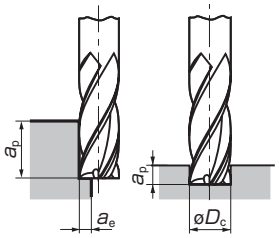
GSX End Mill-METRIC 2D Anti-vibration Type

ITEM	Stock	Type	Flutes	Diam. (mm)	Shank Diam. (mm)	Flute Length (mm)	Neck Length (mm)	OAL (mm)	Corner Radius (mm)
GSXVL4020-2.5D	★	Square	4	2.0	4	5.0	6.5	50	-
GSXVL4030-2.5D	★	Square	4	3.0	6	8.0	9.5	50	-
GSXVL4040-2.5D	★	Square	4	4.0	6	10.0	11.5	50	-
GSXVL4050-2.5D	★	Square	4	5.0	6	13.0	14.5	60	-
GSXVL4060-2.5D	★	Square	4	6.0	6	15.0	-	60	-
GSXVL4070-2.5D	★	Square	4	7.0	8	18.0	20.0	70	-
GSXVL4080-2.5D	★	Square	4	8.0	8	20.0	-	80	-
GSXVL4090-2.5D	★	Square	4	9.0	10	23.0	25.0	90	-
GSXVL4100-2.5D	★	Square	4	10.0	10	25.0	-	90	-
GSXVL4110-2.5D	★	Square	4	11.0	12	28.0	30.5	90	-
GSXVL4120-2.5D	★	Square	4	12.0	12	30.0	-	90	-
GSXVL4140-2.5D	★	Square	4	14.0	16	35.0	37.5	110	-
GSXVL4150-2.5D	★	Square	4	15.0	16	38.0	41.0	110	-
GSXVL4160-2.5D	★	Square	4	16.0	16	40.0	-	115	-
GSXVL4180-2.5D	★	Square	4	18.0	20	45.0	48.0	120	-
GSXVL4200-2.5D	★	Square	4	20.0	20	50.0	-	125	-
GSXVL4250-2.5D	★	Square	4	25.0	25	63.0	-	140	-

★ - World Wide Warehouse Item

■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



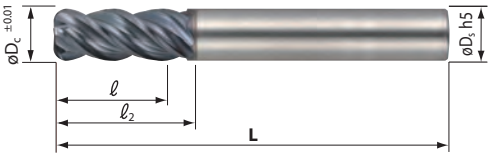
■ Side Milling

Work Material / Cond. / D_c (mm)	Carbon Steel Cast Iron SS, SC, FC (150 to 250HB)		Cast Iron (25 to 35HRC)		Tempered Steel Hardened Steel NAK HPM (40 to 50HRC)		Stainless Steel SUS304,SUS316		Titanium Alloy	
	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0	13,000	1,000	10,000	800	8,000	700	10,000	580	5,000	200
4.0	9,600	1,200	8,000	1,000	6,000	800	5,500	650	3,000	230
6.0	6,800	1,500	5,600	1,200	4,200	900	3,800	680	2,100	240
8.0	5,200	1,600	4,400	1,300	3,200	950	2,800	650	1,600	250
10.0	4,200	1,500	3,500	1,200	2,600	800	2,300	600	1,300	210
12.0	3,500	1,400	3,000	1,200	2,200	700	1,900	550	1,100	180
14.0	3,000	1,200	2,600	1,100	1,800	600	1,600	500	900	150
16.0	2,700	1,100	2,200	1,000	1,600	600	1,400	480	760	130
18.0	2,400	1,000	2,000	900	1,400	570	1,300	450	680	120
20.0	2,200	900	1,700	800	1,200	550	1,100	400	600	100
25.0	1,700	680	1,400	630	1,000	450	890	310	480	82
Standard Depth-of-cut a_p	$1.5D_c$									
Standard Depth-of-cut a_e	$0.2D_c$				$0.05D_c$		$0.1D_c$		$0.05D_c$	

■ Groove Milling

Work Material / Cond. / D_c (mm)	Carbon Steel Cast Iron SS, SC, FC (150 to 250HB)		Cast Iron (25 to 35HRC)		Tempered Steel Hardened Steel NAK HPM (40 to 50HRC)		Stainless Steel SUS304,SUS316		Titanium Alloy	
	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0	13,000	750	10,000	550	8,400	500	6,500	300	4,000	140
4.0	8,200	800	6,000	600	5,200	500	4,000	330	2,000	130
6.0	6,100	1,100	4,000	600	3,500	580	2,700	350	1,350	150
8.0	4,600	1,000	3,000	580	2,600	570	2,000	330	1,000	140
10.0	3,600	1,000	2,400	550	2,100	510	1,600	200	800	130
12.0	3,100	920	2,000	500	1,700	450	1,300	280	660	110
14.0	2,600	750	1,700	450	1,500	400	1,100	250	570	100
16.0	2,300	670	1,500	420	1,300	350	1,000	230	500	90
18.0	2,000	620	1,300	380	1,100	330	900	200	430	80
20.0	1,900	600	1,200	360	1,000	320	800	180	380	70
25.0	1,500	470	1,000	300	790	250	640	140	300	55
Standard Depth-of-cut a_p	$1.0D_c$				$0.2D_c$		$0.5D_c$		$0.2D_c$	

GSX Series Solid Carbide Endmills



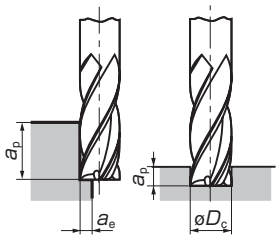
GSX End Mill-METRIC Anti-vibratrion Type

ITEM	Stock	Type	Flutes	Diam. (mm)	Shank Diam. (mm)	Flute Length (mm)	Neck Length (mm)	OAL (mm)	Corner Radius (mm)
GSXVL4030-R02-2.5D	★	Radius	4	3.0	6	8.0	9.5	50	0.2
GSXVL4030-R05-2.5D	★	Radius	4	3.0	6	8.0	9.5	50	0.5
GSXVL4040-R02-2.5D	★	Radius	4	4.0	6	10.0	11.5	50	0.2
GSXVL4040-R05-2.5D	★	Radius	4	4.0	6	10.0	11.5	50	0.5
GSXVL4040-R10-2.5D	★	Radius	4	4.0	6	10.0	11.5	50	1.0
GSXVL4050-R02-2.5D	★	Radius	4	5.0	6	13.0	14.5	60	0.2
GSXVL4050-R05-2.5D	★	Radius	4	5.0	6	13.0	14.5	60	0.5
GSXVL4050-R10-2.5D	★	Radius	4	5.0	6	13.0	14.5	60	1.0
GSXVL4060-R03-2.5D	★	Radius	4	6.0	6	15.0	-	60	0.3
GSXVL4060-R05-2.5D	★	Radius	4	6.0	6	15.0	-	60	0.5
GSXVL4060-R10-2.5D	★	Radius	4	6.0	6	15.0	-	60	1.0
GSXVL4060-R15-2.5D	★	Radius	4	6.0	6	15.0	-	60	1.5
GSXVL4080-R03-2.5D	★	Radius	4	8.0	8	20.0	-	80	0.3
GSXVL4080-R05-2.5D	★	Radius	4	8.0	8	20.0	-	80	0.5
GSXVL4080-R10-2.5D	★	Radius	4	8.0	8	20.0	-	80	1.0
GSXVL4080-R15-2.5D	★	Radius	4	8.0	8	20.0	-	80	1.5
GSXVL4080-R20-2.5D	★	Radius	4	8.0	8	20.0	-	80	2.0
GSXVL4100-R03-2.5D	★	Radius	4	10.0	10	25.0	-	90	0.3
GSXVL4100-R05-2.5D	★	Radius	4	10.0	10	25.0	-	90	0.5
GSXVL4100-R10-2.5D	★	Radius	4	10.0	10	25.0	-	90	1.0
GSXVL4100-R15-2.5D	★	Radius	4	10.0	10	25.0	-	90	1.5
GSXVL4100-R20-2.5D	★	Radius	4	10.0	10	25.0	-	90	2.0
GSXVL4120-R05-2.5D	★	Radius	4	12.0	12	30.0	-	90	0.5
GSXVL4120-R10-2.5D	★	Radius	4	12.0	12	30.0	-	90	1.0
GSXVL4120-R15-2.5D	★	Radius	4	12.0	12	30.0	-	90	1.5
GSXVL4120-R20-2.5D	★	Radius	4	12.0	12	30.0	-	90	2.0
GSXVL4120-R30-2.5D	★	Radius	4	12.0	12	30.0	-	90	3.0
GSXVL4160-R10-2.5D	★	Radius	4	16.0	16	40.0	-	115	1.0
GSXVL4160-R15-2.5D	★	Radius	4	16.0	16	40.0	-	115	1.5
GSXVL4160-R20-2.5D	★	Radius	4	16.0	16	40.0	-	115	2.0
GSXVL4160-R30-2.5D	★	Radius	4	16.0	16	40.0	-	115	3.0
GSXVL4200-R10-2.5D	★	Radius	4	20.0	20	50.0	-	125	1.0
GSXVL4200-R15-2.5D	★	Radius	4	20.0	20	50.0	-	125	1.5
GSXVL4200-R20-2.5D	★	Radius	4	20.0	20	50.0	-	125	2.0
GSXVL4200-R30-2.5D	★	Radius	4	20.0	20	50.0	-	125	3.0
GSXVL4250-R10-2.5D	★	Radius	4	25.0	25	63.0	-	140	1.0
GSXVL4250-R15-2.5D	★	Radius	4	25.0	25	63.0	-	140	1.5
GSXVL4250-R20-2.5D	★	Radius	4	25.0	25	63.0	-	140	2.0
GSXVL4250-R30-2.5D	★	Radius	4	25.0	25	63.0	-	140	3.0

★ - World Wide Warehouse Item

■ Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.



■ Side Milling

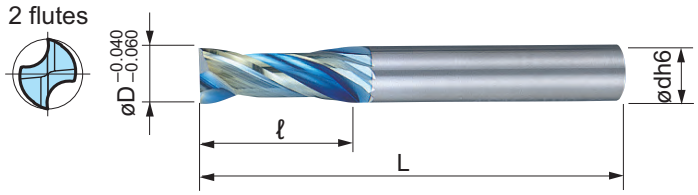
Work Material / Cond.	Carbon Steel , Cast Iron SS, SC, FC (150 to 250HB)		Cast Iron (25 to 35HRC)		Tempered Steel Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel SUS304,SUS316		Titanium Alloy	
D_c (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0	13,000	1,000	10,000	800	8,000	700	10,000	580	5,000	200
4.0	9,600	1,200	8,000	1,000	6,000	800	5,500	650	3,000	230
6.0	6,800	1,500	5,600	1,200	4,200	900	3,800	680	2,100	240
8.0	5,200	1,600	4,400	1,300	3,200	950	2,800	650	1,600	250
10.0	4,200	1,500	3,500	1,200	2,600	800	2,300	600	1,300	210
12.0	3,500	1,400	3,000	1,200	2,200	700	1,900	550	1,100	180
14.0	3,000	1,200	2,600	1,100	1,800	600	1,600	500	900	150
16.0	2,700	1,100	2,200	1,000	1,600	600	1,400	480	760	130
18.0	2,400	1,000	2,000	900	1,400	570	1,300	450	680	120
20.0	2,200	900	1,700	800	1,200	550	1,100	400	600	100
25.0	1,700	680	1,400	630	1,000	450	890	310	480	82
Standard Depth-of-cut a_p	$1.5D_c$									
Standard Depth-of-cut a_e	$0.2D_c$				$0.05D_c$		$0.1D_c$		$0.05D_c$	

■ Groove Milling

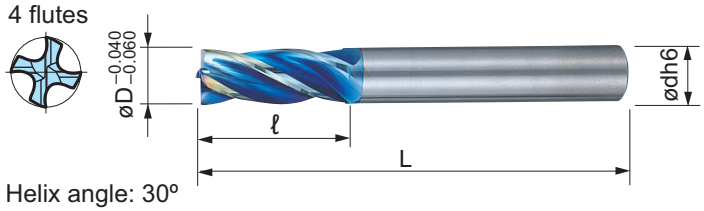
Work Material / Cond.	Carbon Steel , Cast Iron SS, SC, FC (150 to 250HB)		Cast Iron (25 to 35HRC)		Tempered Steel Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel SUS304,SUS316		Titanium Alloy	
D_c (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0	13,000	750	10,000	550	8,400	500	6,500	300	4,000	140
4.0	8,200	800	6,000	600	5,200	500	4,000	330	2,000	130
6.0	6,100	1,100	4,000	600	3,500	580	2,700	350	1,350	150
8.0	4,600	1,000	3,000	580	2,600	570	2,000	330	1,000	140
10.0	3,600	1,000	2,400	550	2,100	510	1,600	200	800	130
12.0	3,100	920	2,000	500	1,700	450	1,300	280	660	110
14.0	2,600	750	1,700	450	1,500	400	1,100	250	570	100
16.0	2,300	670	1,500	420	1,300	350	1,000	230	500	90
18.0	2,000	620	1,300	380	1,100	330	900	200	430	80
20.0	1,900	600	1,200	360	1,000	320	800	180	380	70
25.0	1,500	470	1,000	300	790	250	640	140	300	55
Standard Depth-of-cut a_p	$1.0D_c$				$0.2D_c$		$0.5D_c$		$0.2D_c$	

DLC (Diamond Like Carbon) AURORA COAT Series for Non-ferrous Materials

2 flutes



4 flutes



Helix angle: 30°
Corner: Sharp edge
Dia. Range: ø2~16mm

Features & Benefits

- Very smooth AURORA COAT provides low adhesion and good surface finish in non-ferrous alloys.
- With lower cutting forces and rigidity, this series is suitable for low rigidity machines.
- Available in two and four flutes in both square and ballnose type endmills *(see page 84 for SNB Series Ballnose.)*

Two Flutes - METRIC

Catalog No.	Stock	Cutter Dia.d ø	Shank Dia.Dø	Flute Length ℓ	Overall Length L
ASM2020DL	★	2.0mm	4.0mm	6.0mm	40.0mm
ASM2030DL	★	3.0mm	6.0mm	10.0mm	45.0mm
ASM2040DL	★	4.0mm	6.0mm	12.0mm	45.0mm
ASM2050DL	★	5.0mm	6.0mm	15.0mm	50.0mm
ASM2060DL	★	6.0mm	6.0mm	15.0mm	50.0mm
ASM2080DL	★	8.0mm	8.0mm	18.0mm	60.0mm
ASM2100DL	★	10.0mm	10.0mm	22.0mm	71.0mm
ASM2120DL	★	12.0mm	12.0mm	25.0mm	75.0mm
ASM2160DL	★	16.0mm	16.0mm	32.0mm	90.0mm

Grade: DL1000

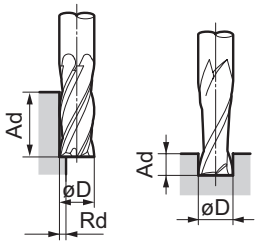
Four Flutes - METRIC

Catalog No.	Stock	Cutter Dia.d ø	Shank Dia.Dø	Flute Length ℓ	Overall Length L
ASM4020DL	★	2.0mm	4.0mm	6.0mm	40.0mm
ASM4030DL	★	3.0mm	6.0mm	10.0mm	45.0mm
ASM4040DL	★	4.0mm	6.0mm	12.0mm	45.0mm
ASM4050DL	★	5.0mm	6.0mm	15.0mm	50.0mm
ASM4060DL	★	6.0mm	6.0mm	15.0mm	50.0mm
ASM4080DL	★	8.0mm	8.0mm	18.0mm	60.0mm
ASM4100DL	★	10.0mm	10.0mm	22.0mm	71.0mm
ASM4120DL	★	12.0mm	12.0mm	25.0mm	75.0mm
ASM4160DL	★	16.0mm	16.0mm	32.0mm	90.0mm

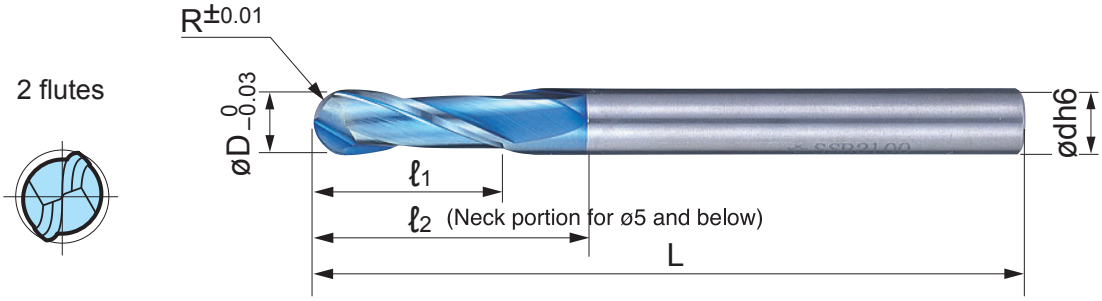
Grade: DL1000

Recommended Running Conditions

Radius mm		Aluminum Alloy							
		Wet (Emulsion)				Dry			
		Side Milling (4 flute)		Groove Milling (2 flute)		Side Milling (4 flute)		Groove Milling (2 flute)	
		RPM	Feed Rate mm/min. (ipt)	RPM	Feed Rate mm/min. (ipt)	RPM	Feed Rate mm/min. (ipt)	RPM	Feed Rate mm/min. (ipt)
2		40,000	1,400 (55)	28,000	280 (11)	40,000	980 (38)	28,000	200 (7)
3		32,000	2,000 (80)	22,000	400 (16)	32,000	1,400 (55)	22,000	280 (11)
4		26,000	2,600 (102)	18,000	520 (20)	26,000	1,800 (70)	18,000	360 (14)
5		20,000	2,600 (102)	14,000	520 (20)	20,000	1,800 (70)	14,000	360 (14)
6		17,000	2,700 (106)	12,000	540 (21)	17,000	1,900 (74)	12,000	370 (14)
8		13,000	2,700 (106)	9,000	540 (21)	13,000	1,900 (74)	9,000	370 (14)
10		11,000	2,800 (110)	7,200	560 (22)	11,000	2,000 (80)	7,200	390 (15)
12		8,500	2,800 (110)	6,000	560 (22)	8,500	2,000 (80)	6,000	390 (15)
16		6,400	2,800 (110)	4,500	560 (22)	6,400	2,000 (80)	4,500	390 (15)
D.O.C.	Ad	1.5D		1.0D		1.5D		0.5D	
	Pf	0.2D		1.0D		0.2D		1.0D	



- For groove milling of stainless steel, use 60% recommended RPM and 40% feed rate.
- If cutting noise and vibration occur, please reduce the cutting speed accordingly.



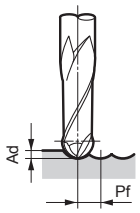
Helix angle :30°

Two Flutes - METRIC							
Sumitomo Catalog No.	Stock	R	øD	ℓ1	ℓ2	L	ød
SNB2020DL	★	1.0mm	2.0mm	3.0mm	5.0mm	60mm	6.0mm
SNB2030DL	★	1.5mm	3.0mm	4.5mm	8.0mm	80mm	6.0mm
SNB2040DL	★	2.0mm	4.0mm	6.0mm	12.0mm	80mm	6.0mm
SNB2050DL	★	2.5mm	5.0mm	7.5mm	14.0mm	90mm	6.0mm
SNB2060DL	★	3.0mm	6.0mm	9.0mm	-	100mm	6.0mm
SNB2080DL	★	4.0mm	8.0mm	12.0mm	-	100mm	8.0mm
SNB2100DL	★	5.0mm	10.0mm	15.0mm	-	120mm	10.0mm
SNB2120DL	★	6.0mm	12.0mm	18.0mm	-	120mm	12.0mm
SNB2160DL	★	8.0mm	16.0mm	24.0mm	-	160mm	16.0mm

Grade: DL1200

Recommended Running Conditions

Radius. mm		Aluminum Alloy			
		Wet (Emulsion)		Dry	
		RPM	Feed Rate mm/min. (ipt)	RPM	Feed Rate mm/min. (ipt)
2		48,000	1,500 (60)	48,000	1,000 (40)
3		38,000	2,100 (83)	38,000	1,500 (60)
4		31,000	2,800 (110)	31,000	2,000 (80)
5		24,000	2,800 (110)	24,000	2,000 (80)
6		20,000	2,800 (110)	20,000	2,000 (80)
8		15,000	2,800 (110)	15,000	2,000 (80)
10		13,000	3,000 (118)	13,000	2,100 (83)
12		10,000	3,000 (118)	10,000	2,100 (83)
16		7,700	3,000 (118)	7,700	2,100 (83)
D.O.C.	Ad	0.1D		0.1D	
	Pf	0.2D		0.2D	



- If cutting noise and vibration occur, please reduce the cutting speed accordingly.
- If the machine cannot reach recommended speed, use the maximum speed that can be achieved.

SUMITOMO

CARBIDE - CBN - DIAMOND

1-800-950-5202

www.sumicarbide.com

PCBN & PCD Milling

Pages 387-394

RM Type

High Speed SUMIBORON Mill for Cast Iron Roughing

Features & Benefits

- High speed, high efficiency milling of gray cast iron
- Solid CBN grade BNS800
- Cost effective 8 cornered regrindable insert
- Four corner insert design yields low tooling costs per part
- Simple design for direct insert mounting

Fig 1

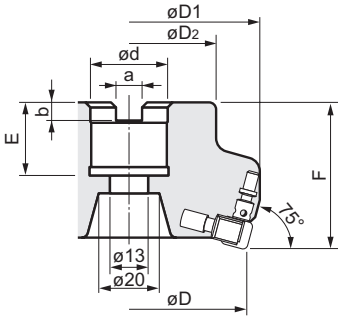
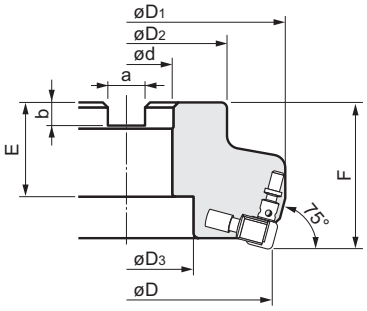


Fig 2

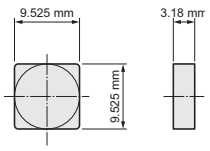


RM Mill Availability - METRIC

Sumitomo Cat. No.	Stock	Dimensions (*mm*)									No. of Teeth	Fig.
		D	D1	D2	D3	F	d	a	b	E		
RM3080R	•	80	90	60	-	50	25.40	9.5	6	25	6	1
RM3100R	•	100	110	70	46	50	31.75	12.7	8	32	8	2
RM3125R	•	125	135	80	59	63	38.10	15.9	10	38	10	2
RM3160R	•	160	170	100	80	63	50.80	19	11	38	12	2

• USA stocked item

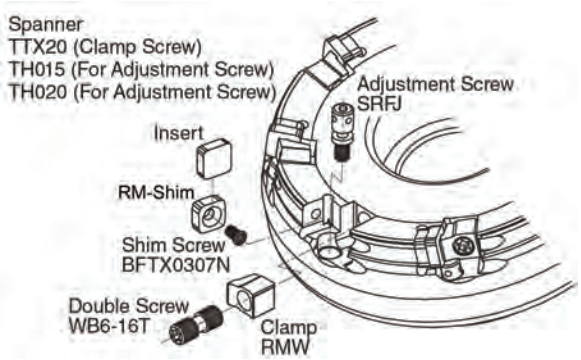
Inserts



Sumitomo Cat. No.	Stock	Grade	Dimensions (Inches)		
			I.C.	T	Cutting Edge
SNG322	•	BNS800	.375	.125	Standard
SNG323	•		.375	.125	Standard
SNEN090308-W	•		.375	.125	Wiper

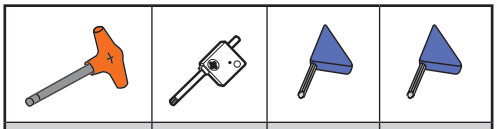
NOTES: 1) Do not use a mix of standard and wiper inserts on a single cutter setting.
2) Do not mix new and reground inserts on a single cutter setting.
3) Inserts can only be reground once (I.C. must be at least .360")

• USA stocked item



Hardware

Clamp	Double Screw	Shim	Shim Screw	Adjustment Screw
RMW	WB6-16T	RM-SHIM	BFTX0307N	SRFJ

			
Clamp Wrench	Shim Screw Wrench	Adjustment Screw Wrench	Adjustment Screw Wrench
TTX20	TRX10	TH015	TH020

SUMIBORON MILLS

FMU Type

Features & Benefits

- Removeable cartridges for easy insert run-out management.
- Uses BN700 with high CBN content, offering good wear and fracture resistance.
- Available in both shell and small diameter endmill types.
- High speed machining V=6500+ sfm
- Surface roughness Rz=3.2 (1Ra)

Fig 1

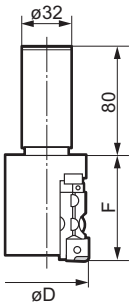


Fig 2

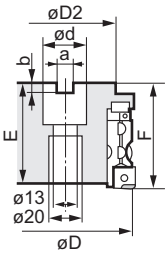
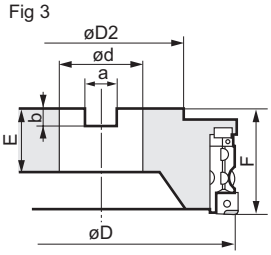


Fig 3

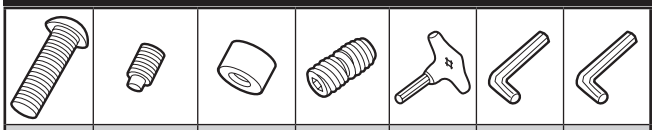


FMU Mill Availability - METRIC

Sumitomo Cat. No.	Stock	Dimensions (*mm*)								No. of Teeth	Fig.
		D	D1	D2	F	d	a	b	E		
FMU4040ER	★	37	40	-	63	-	-	-	-	2	1
FMU4050ER	★	47	50	-	63	-	-	-	-	3	1
FMU4063ER	★	60	63	60	63	25.40	9.5	6	25	4	2
FMU4080R	★	80	82.8	60	63	25.40	9.5	6	25	6	2
FMU4100R	★	100	102.8	75	63	31.75	12.7	8	38	8	3
FMU4125R	★	125	127.8	75	63	38.10	15.9	10	38	10	3
FMU4160R	★	160	162.8	100	63	50.80	19	11	38	12	3

★ Worldwide Warehouse item

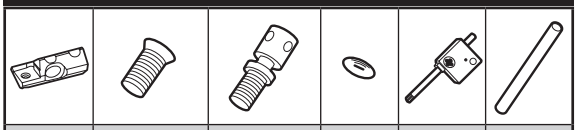
Hardware



Screw	Screw	Setting Clamp	Double Screw	Wrench	Wrench	Wrench
BH0620*	BTD0609	FMUE	WB5-10	TH040	LH030	LH025

* FMU4040ER/4050ER/4063ER use FMUUE type cartridge
* FMUU/FMUUE use similar screw (BFTX0509N), adjustment screw,(FMUJ) and O-ring (P3)

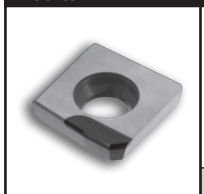
Hardware

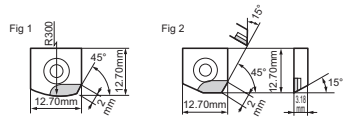


Cartridge	Screw	Adjustment Screw	O-Ring	Wrench	Wrench
FMUU*	BFTX0509N	FMUJ	P3	TRX20	1.8 x 45

* Screw for FMU4040ER/4050ER/4063ER is BH0615

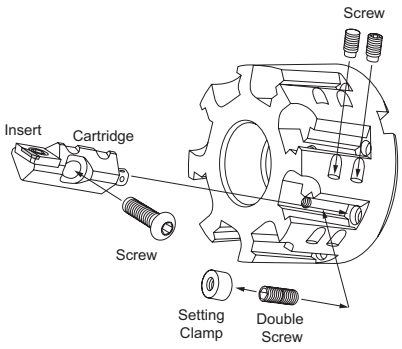
Inserts





Sumitomo Cat. No.	Stock	Grade	Dimensions (in.)		Fig.
			I.C.	T	
SNEW1203ADTR	•	BN700	.500	.125	1
SNEW1203ADTR-S*	•		.500	.125	2

• USA stocked item * Low cutting force insert



■ **Gauge**

Setting Gauge
FMU-SET

Gauge not included

FM Type

High Speed SUMIBORON Mill for Cast Iron Finishing

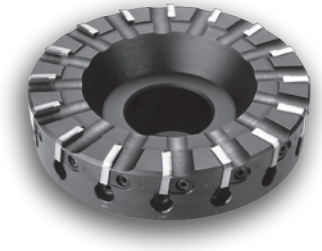


Fig 1

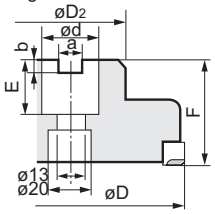
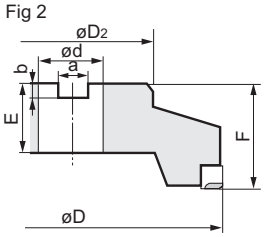


Fig 2

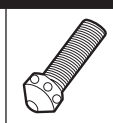
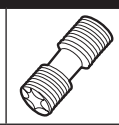
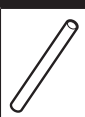


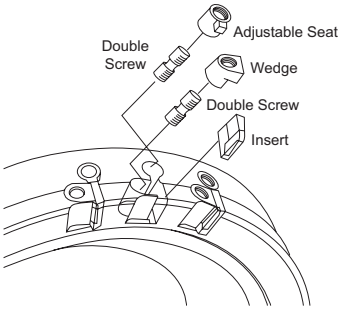
FM Mill Availability - METRIC

Sumitomo Cat. No.	Stock	Dimensions (*mm*)								No. of Teeth	Fig.
		D	D1	D2	F	d	a	b	E		
FM5080R	★	80	82.8	60	50	24.5	9.5	6	25	6	1
FM5100R	★	100	102.8	75	50	31.75	12.7	8	32	8	2
FM5125R	★	125	127.8	75	63	38.10	15.9	10	38	10	2
FM5160R	★	160	162.8	100	63	50.80	19	11	38	12	2

★ Worldwide Warehouse item

Hardware

 Wedge	 Adjustable Seat	 Adjustment Screw	 Double Screw	 Wrench	 Wrench	Applicable Cutter
FMW	FME	FMJ	WB7F-20TL	TT25	1.8 x 45	FM5080R FM5100R-FM5160R



Inserts

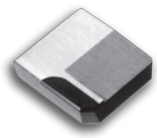


Fig 1

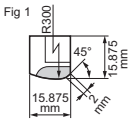
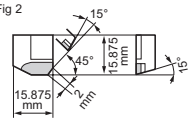


Fig 2

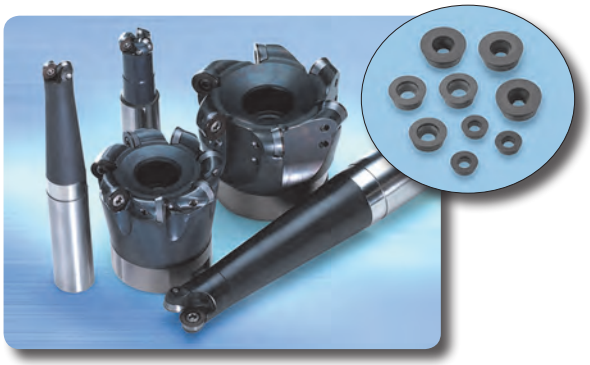


Sumitomo Cat. No.	Stock	Grade	Dimensions (in.)		Fig.
			I.C.	T	
SNEN1504ADTR	•	BN700	.625	.1875	1
SNEN1504ADTR-S*	•		.625	.1875	2

• USA stocked item * Low cutting force insert

SUMIBORON MILLS

BRC Type



Features & Benefits

- High speed, high efficiency milling of hardened mold material.
- Cost effective full-top CBN inserts, multiple corner usage
- Available in both shell and small diameter endmill types.
- Strong clamping with conical insert screw hole design.

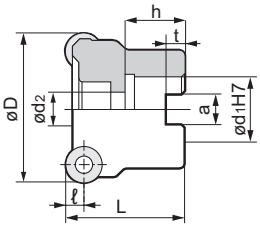


Fig 1

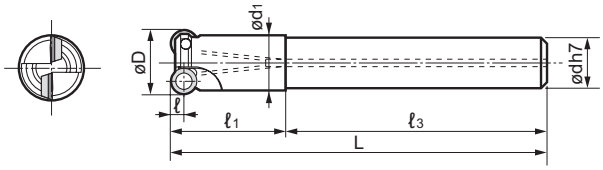


Fig 2

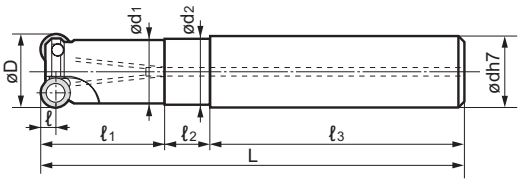
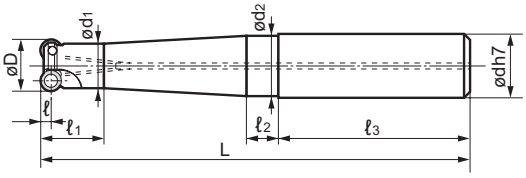


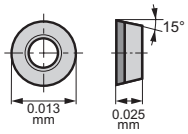
Fig 3



BRC Shell Mill Availability - METRIC

Sumitomo Cat. No.	Stock	Dimensions (mm) øD	ød1	ød2	ℓ	L	h	a	t	# of teeth	Group
BRC10042R	★	42	16	9	5	44	20	8	6	6	C
BRC10052R	★	52	22	11	5	50	30	10	7	7	
BRC12042R	★	42	16	9	6	42	20	8	6	5	D
BRC12052R	★	52	22	11	6	52	30	10	7	5	
BRC12066R	★	66	27	13	6	52	30	12	7	6	

Inserts



Sumitomo Cat. No.	Stock BN350	Stock BN700	Dimensions (in) I.C.	Dimensions (in) T	Applicable Holder (Grp.)
RDHX0701M0T	★	★	.276	.078	A
RDHX0702M0T	★	★	.276	.094	B
RDHX1003M0T	★	★	.394	.125	C
RDHX12T3M0T	★	★	.472	.156	D

Hardware

Screw	Wrench	Applicable Holder (Grp)
		
BFTB025048	TRD07	A
BFTB02505	TRD07	B
BFTB035074	TRD15	C,D

BRC Endmill Availability - METRIC

Sumitomo Cat. No.	Stock	Dimensions (mm) øD	ød	ød1	ød2	ℓ	ℓ1	ℓ2	ℓ3	L	# of teeth	Fig.	Group
BRC071207ES10	★	12	10	11	-	3.5	23	-	52	75	2	1	A
BRC071207ES12	★	12	12	11	11.5	3.5	22	8	45	75	2	2	
BRC071208ES16	★	12	16	11	15.5	3.5	16	8	48	88	2	3	
BRC071210ES16	★	12	16	11	15.5	3.5	16	8	48	108	2	3	
BRC071212ES16	★	12	16	11	15.5	3.5	16	8	48	128	2	3	
BRC071507ES12	★	15	12	12.5	-	3.5	16	-	59	75	3	1	
BRC071507ES16	★	15	16	12.5	13	3.5	19	11	48	78	3	2	
BRC071508ES16	★	15	16	13.5	15.5	3.5	20	8	48	88	2	3	B
BRC071510ES16	★	15	16	13.5	15.5	3.5	20	8	48	108	2		
BRC071513ES20	★	15	20	13.5	19.5	3.5	22	8	50	130	2		
BRC071515ES20	★	15	20	13.5	19.5	3.5	22	8	50	150	2		
BRC071517ES25	★	15	25	13.5	24.5	3.5	22	8	56	176	2		
BRC102009ES20	★	20	20	17	19.5	5	20	8	50	90	2		C
BRC102011ES20	★	20	20	17	19.5	5	22	8	50	110	2		
BRC102012ES25	★	20	25	17	24.5	5	24	8	56	136	2		
BRC102015ES25	★	20	25	17	24.5	5	24	8	56	156	2		
BRC102017ES25	★	20	25	17	24.5	5	24	8	56	176	2		

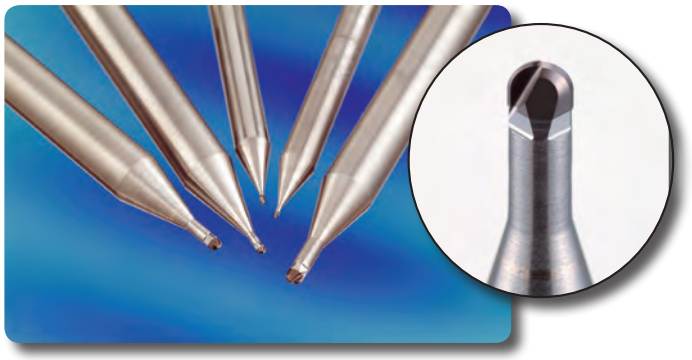
Recommended Running Conditions

Conditions	Steel 40~45HRC	Steel 47~55HRC	Steel 58~62HRC	Cast Iron
	BN700		BN350	BN700
V (sfm)	655~2625	490~1310	260~655	980~4920
f (ipt)	.004~.016	.004~.012	.004~.008	.004~.016
d (in)	.020	.020	.020	.020

Mold Finish Master BNBP Type

High Speed, High Precision SUMIBORON Mill for Pre-Hardened/Hardened Steel

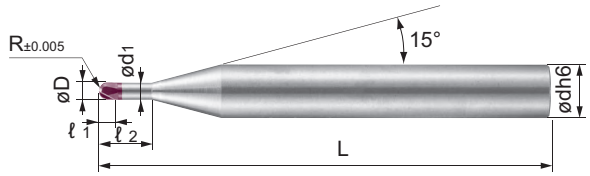
SUMIBORON MOLD FINISH MASTER



Features & Benefits

- Longer tool life in high speed, high precision machining of pre-hardened and hardened steel (~HRC70.)
- Uses SUMIBORON BN350 for excellent chipping resistance.
- High precision radial cutting edge profile accuracy of ± 0.0002 in. (0.005mm.)
- Excellent surface finish with a polishing process that is greatly reduced compared to solid carbide endmills.

BNBP Endmill Availability - METRIC



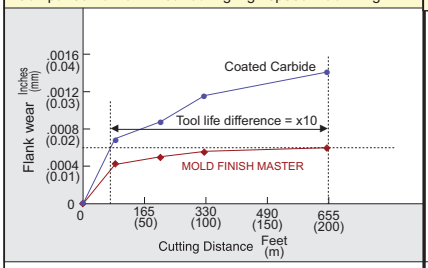
BNBP 2 R030-015 4

MOLD FINISH MASTER | # of flutes | Length from neck to tip (ℓ2) | Radius of ballnose (R) | Diameter of shank (ød)

Size	Sumitomo Cat. No.	Stock	Dimensions (mm)						
		BN350	R	øD	L	ød1	ød	ℓ1	ℓ2
ø4 Shank	BNBP2R020-0124	●	0.20	0.4	50	0.37	4.0	0.3	1.2
	BNBP2R030-0154	●	0.30	0.6	50	0.57	4.0	0.4	1.5
	BNBP2R050-0254	●	0.50	1.0	50	0.97	4.0	0.6	2.5
	BNBP2R075-0404	●	0.75	1.5	50	1.47	4.0	0.9	4.0
	BNBP2R100-0554	●	1.00	2.0	50	1.97	4.0	1.4	5.5
ø6 Shank	BNBP2R020-0126	●	0.20	0.4	50	0.37	4.0	0.3	1.2
	BNBP2R030-0156	●	0.30	0.6	50	0.57	4.0	0.4	1.5
	BNBP2R050-0256	●	0.50	1.0	50	0.97	4.0	0.6	2.5
	BNBP2R075-0406	●	0.75	1.5	50	1.47	4.0	0.9	4.0
	BNBP2R100-0556	●	1.00	2.0	50	1.97	4.0	1.4	5.5

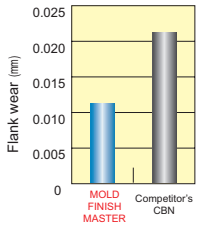
BNBP Performance

Comparison of flank wear during high speed machining

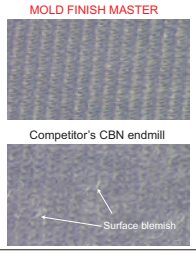


R1.0 Endmill Work: SKD11 (60HRC) N=40,000 min-1
f=0.002 ipt (0.05mm/tooth) F=157 ipm (F=4,000mm/min)
Ad=0.002 in. (0.05mm) Rd=0.002 in. (0.05mm) Oil mist

Wear amount at the ballnose tip



Machined surface



R1.0 Endmill Work: SKD11(60HRC)Milling length: 100m N=20,000 min-1
f=0.05mm/tooth (F=2,000mm/min) Ad=0.05mm Rd=0.05mm, Air blow

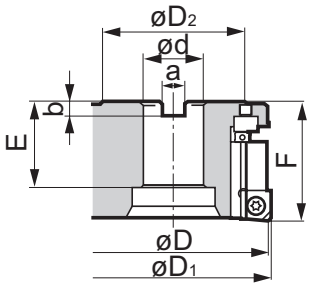
Recommended Running Conditions

Ballnose Radius mm (in)	STAVAX, NAK80, SKD61 (~52HRC)				SDK11 (~62HRC)				SKH (~70HRC)			
	RPM	Feedrate mm/tooth (ipt)	D.O.C. Ad mm (in)	D.O.C. Rd mm (in)	RPM	Feedrate mm/tooth (ipt)	D.O.C. Ad mm (in)	D.O.C. Rd mm (in)	RPM	Feedrate mm/tooth (ipt)	D.O.C. Ad mm (in)	D.O.C. Rd mm (in)
R0.2 (.008)	20,000~ 50,000	.02 (.0008)	.03 (.001)	.03 (.001)	20,000~ 50,000	.02 (.0008)	.01 (.0004)	.02 (.008)	20,000~ 50,000	.015 (.0006)	.01 (.0004)	.02 (.0008)
R0.3 (.012)	20,000~ 50,000	.02 (.0008)	.03 (.001)	.03 (.001)	20,000~ 50,000	.02 (.0008)	.01 (.0004)	.02 (.0008)	20,000~ 50,000	.015 (.0006)	.01 (.0004)	.02 (.0008)
R0.5 (.020)	20,000~ 50,000	.03 (.001)	.05 (.002)	.05 (.002)	20,000~ 50,000	.03 (.001)	.03 (.001)	.04 (.002)	20,000~ 50,000	.02 (.0008)	.02 (.0008)	.03 (.001)
R0.75 (.030)	20,000~ 50,000	.04 (.002)	.08 (.003)	0.1 (.004)	20,000~ 50,000	.04 (.002)	.05 (.002)	.05 (.002)	20,000~ 50,000	.03 (.001)	.02 (.0008)	.05 (.002)
R1.0 (.040)	20,000~ 50,000	.05 (.002)	0.1 (.004)	0.1 (.004)	17,000~ 50,000	.05 (.002)	.05 (.002)	.05 (.002)	17,000~ 50,000	.03 (.001)	.03 (.001)	.05 (.002)

NOTES:
- For stable machining, a more rigid machine is recommended.
- Air blow or oil mist coolant is recommended.
- Shorten overhang as much as possible.

SUMIDIA MILLS

RF Type



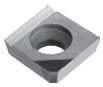
RF Endmill Availability - METRIC

Sumitomo Cat. No.	Stock	Dimensions (mm)								# of teeth
		øD	øD1	øD2	F	ød	a	b	E	
RF4080R	★	80.0	82.0	60.0	50.0	25.40	9.5	6.0	30.0	6
RF4100R	★	100.0	102.0	75.0	50.0	31.75	12.7	8.0	38.0	6
RF4125R	★	125.0	127.0	75.0	63.0	38.10	15.9	10.0	38.0	8
RF4160R	★	160.0	162.0	100.0	63.0	50.80	19.0	11.0	38.0	10

Recommended Running Conditions

Aluminum Alloy			
Si content		Less than 13%	13% and above
Cutting Speed m/min (sfm)	SUMIDIA	2,000~5,000 (6,560~16,404)	400~800 (1,310~2,625)
	Carbide	1,000~2,500 (3,280~8,200)	200~400 (655~1,310)
Feedrate mm/t (ipt)		0.05~0.2 (.002~.008)	0.05~0.2 (.002~.008)
D.O.C. mm (in)		below 3mm (below .118 in.)	below 3mm (below .118 in.)

Inserts

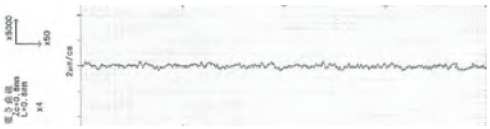
Description	Sumitomo Catalog No.	SUMIDIA DA1000	Appearance
SUMIDIA Insert	**NF-SNEW1204ADFR**	●	
Wiper Insert	**NF-SNEW1204ADFR-W**	●	

Parts

Description	Sumitomo Catalog No.	Stock	Appearance
Cartridge	**RFF**	●	
Coolant Through Arbor Bolt	RF-SCB80	●	
	RF-SCB100	●	
	RF-SCB125	●	
	RF-SCB160	●	

NOTES: Cartridges and inserts are sold separately.

Surface Finish

Conditions		
	Process: Finishing	V = 16,370 sfm
	Machine: Machining Center	F = 450 ipm
	Arbor: HSK63A	f = .005 ipt
	Work Piece: Si10 ~ 12% Al Alloy	d = .020 in.
	Cutter: RF4100R, 6 teeth	d/wiper = .001 in.
	Grade: SUMIDIA DA2200	Dry
Results		
	Rz: 0.69µm	Ra: 0.092µm

SRF Type

SUMIDIA Cutter for High Speed Finishing of Non-ferrous Metal

Fig 1

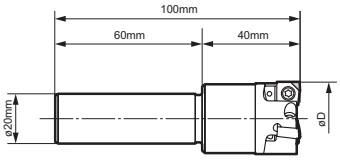


Fig 2

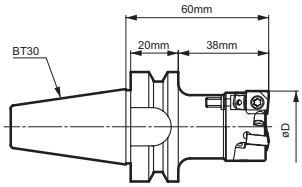


Fig 3

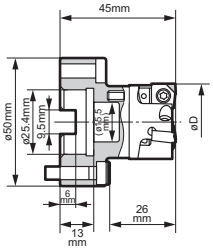
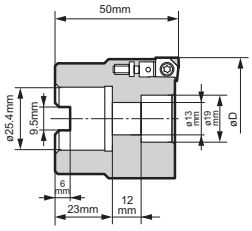
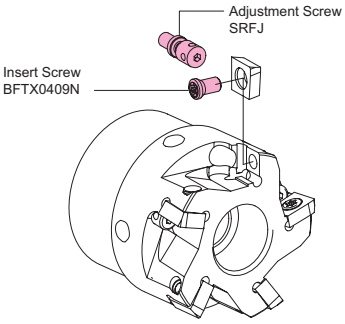


Fig 4



SRF Endmill Availability - METRIC				
Sumitomo Catalog No.	Stock	øD (mm)	# of Teeth	Fig.
SRF30R-ST	★	30.0	3	1
SRF40R-ST	★	40.0	4	1
SRF30R-BT30	★	30.0	3	2
SRF40R-BT30	★	40.0	4	2
SRF30R	★	30.0	3	3
SRF40R	★	40.0	4	3
SRF50R	★	50.0	5	4
SRF63R	★	63.0	6	4

■ Parts



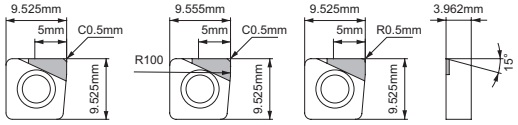
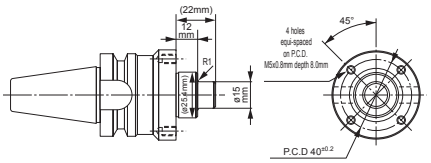


Fig.1 Fig.2 Fig.3

Inserts			
Sumitomo Catalog No.	Cutting Edge	SUMIDIA DA1000	Fig.
NF-SNEW09T3ADTR	Standard	●	1
NF-SNEW09T3ADTR-U	Wiper	●	2
NF-SNEW09T3ADTR-R	Nose Radius	●	3

- Standard inserts and wiper inserts can be used on the same cutter body.
- Standard inserts with nose radius should be used where vibration is present. Wiper inserts are not recommended.
- Inserts can be reground 3 times (up to I.C. diameter of 9.225 mm/0.3632 in.)
- When using reground inserts, it is recommended to reconfirm insert height and cutting diameter with a tool pre-setter.
- Do not mix new and reground inserts OR inserts with different regrind measurements on the same cutter.
- Standard inserts and wiper inserts can be used on the same cutter body.

■ Arbor *for SRF30R & SRF40R*



When using the SRF30R or SRF40R cutters, modification to the arbor is required, as shown above.

1) Reduce part of the arbor's adaptor shaft from ø25.4mm to ø15mm.
2) Add four tap holes for M5 cap screws.

■ Maximum D.O.C. Guide (SRF50R, 5 teeth)

Below are guidelines for maximum D.O.C. based on internal test results. '●' indicates possible application range. Actual cutting condtions should be set based on actual machine and work piece characteristics.

D.O.C. in (mm)	Feedrate, F: ipm (mm/min)		
	100 (2500)	160 (4000)	200 (5000)
	Feed per tooth, f: ipt (mm/tooth)		
	0.002 (0.05)	0.003 (0.08)	0.004 (0.10)
0.20 (0.5)	●	●	●
0.40 (1.0)	●	●	●
0.60 (1.5)	●	●	●
0.80 (2.0)	●	●	●
0.10 (2.5)	●	●	●
0.12 (3.0)	●	●	●
0.14 (3.5)	●	●	-
0.16 (4.0)	●	-	-
0.18 (4.5)	●	-	-
0.20 (5.0)	●	-	-

■ Cutting Conditions

Cutter: SRF50R
Insert: NF-SNEW09T3ADTR (DA2200)
Arbor: BT30 FMA25.4-45
Work: A-5052
Width: 35mm (1.40 in.) at D.O.C. indicated above

Drill Systems

Pages 395-502

DRILL TECHNICAL DATA **PAGES**

Drill Selection

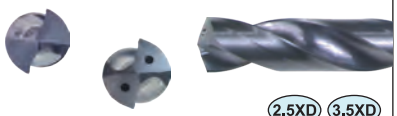
P Steel
M Stainless Steel
K Cast Iron
N Non-ferrous
S Exotic Materials
H Hardened Steel

Solid Carbide

GS Series *p. 404-414*

P M K H — 2XD 4XD

MDS-V/HV Series *p. 428-440*



P M K S H — 2.5XD 3.5XD 4XD 5XD

HGS Series *p. 415-426*

P M K N S H — 3XD 5XD 8XD

Brazed

KDS-AV Series *p. 457-462*

P K — 3XD 5XD

Indexable

WDX Series *p. 472-479*

P M K N S — 2XD 4XD 3XD 5XD

SMD Series *p. 464-470*

P M K N S H — 3XD 5XD 8XD

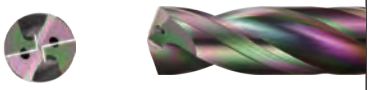
Deep Hole

XHV Series *p. 451-454*

P M K N H — 12XD 20XD

Precision

NHGS Series *p. 447*



K N — 5XD

Mini Drills

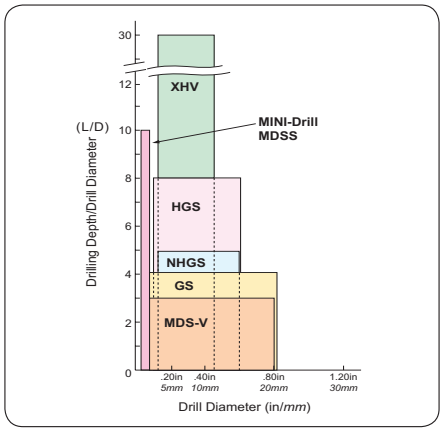
MDSS Series *p. 445-446*

P M K N S H — 5XD

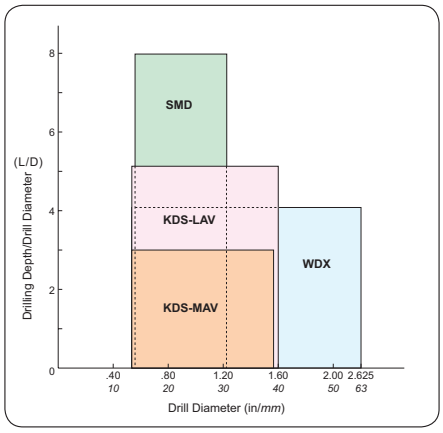
MDUS Series *p. 444*

P M N S — 8XD

■ Application Range - *Solid*



■ Application Range - *Indexable*



Drill Selection

P Steel **K** Cast Iron **S** Exotic Materials
M Stainless Steel **N** Non-ferrous **H** Hardened Steel

Type	Series	Coolant Internal	Coolant External	Coating/ Insert Grade	Dia. Min to Max (in / *mm*)	Drilling Depth	Catalog Number	P Soft Steel	P General Steel	H 45HRC	H 60HRC	M Stainless Steel	S Titanium Alloy	S Inconel	K Gray Cast Iron	K Ductile Cast Iron	N Aluminum Alloy	N Copper Alloy
Solid	GS		●	DEX	.1110-.6250 *2.00-16.00*	2XD	MDW□□□□□GS2	✓	✓	●		●			✓	✓		
					.2010-.6250 *2.00-16.00*	4XD	MDW□□□□□GS4											
	HGS	●		DEX	.1094-.6250 *1.50-16.00*	3XD	MDW□□□□□HGS3	✓	✓	●		✓	✓	✓	✓	✓	▲	●
					.1250-.6250 *2.00-16.00*	5XD	MDW□□□□□HGS5											
					.1250-.6250 *2.00-16.00*	8XD	MDW□□□□□HGS8											
	MDS-V		●	TiAlN	.1110-.7812 *2.80-19.50*	2.5XD	MDS□□□□V	✓	✓	●		●			✓	✓		
					.2460-.7812 *6.00-19.50*	3.5XD												
	MDS-HV	●		TiAlN	.1094-.7812 *1.50-20.00*	4XD	MDS□□□□MHV MDS□□□□LHV	✓	✓	●		✓	●	●	✓	✓	▲	●
					.1250-.7812 *4.00-20.00*	5XD												
	XHV	●		DEX	.1250-.7500 *3.00-14.00*	12XD	MDW□□□□XHV12	✓	✓	●		●			✓	✓	●	●
					.1250-.5310 *3.00-14.00*	20XD	MDW□□□□XHV20											
	MDUS		●	Special	*0.03-0.18*	10XD	MDUS□□□□-30C	✓	✓			✓	●					✓
	MDSS		●	Special	*0.20-1.00*	10XD	MDSS□□□□	✓	✓	✓	●	✓	●	●	✓	✓	●	●
	NHGS	●		DLC	*3.00-16.00*	5XD	MDW□□□□NHGS5								●	●	✓	✓
Indexable	WDX		●	ACP300	.5620-2.625 *13.00-68.00*	2XD	WDX□□□□D2S1□□	✓	✓			✓	●	●				
						3XD	WDX□□□□D3S1□□											
				ACK300		4XD	WDX□□□□D4S1□□								✓	✓		
	SMD (MTL, MEL, MTL-C)	●		DEX	.4688-1.2125 *12.00-30.80*	3XD	SMDH□□□M	✓	✓	●		●			●	✓		●
					.4688-1.2125 *12.00-30.80*	5XD	SMDH□□□L	✓	●			✓	●	●	✓	✓	●	●
					.4688-1.2125 *13.50-30.80*	8XD	SMDH□□□D								✓	✓		
Brazed	KDS	●		TiAlN	.3750-1.1875 *10.00-30.00*	3XD	KDS□□□□MAV	✓	✓	●		●			●	✓	▲	●
					.3750-1.1875 *14.00-26.00*	5XD	KDS□□□□LAV											

✓: Best ●: Good ▲: Requires sharp edge

■ Drill Identification

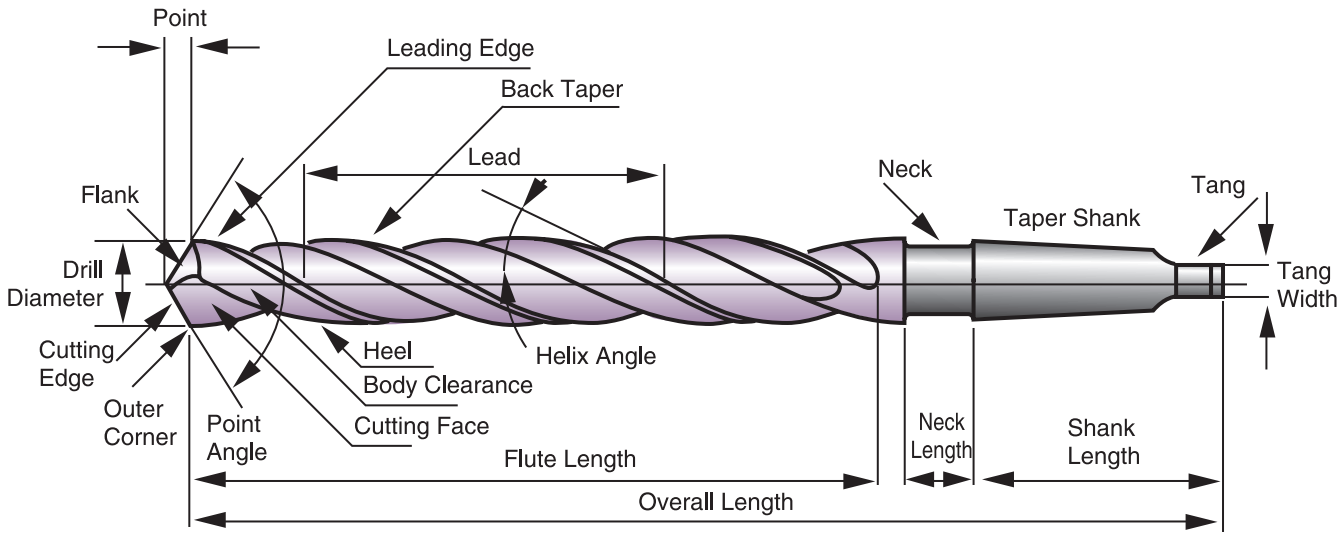
MDS 150 M HV

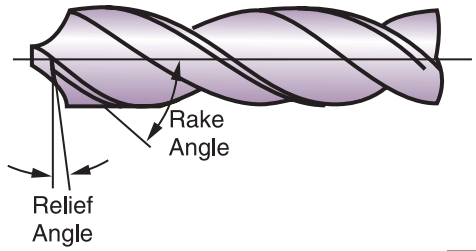
- MDS: Classification code
- 150: Drill dia. (φ15.0 mm)
- M: Length code (S,M,L,D)
- HV: Series name

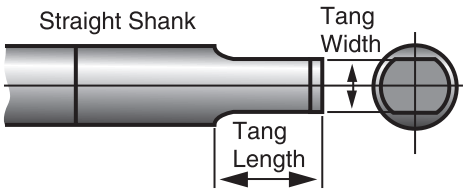
MDW 01250 GS 2

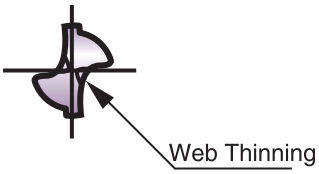
- MDW: Classification code
- 01250: Drill dia. (φ.125 in)
- GS: Series name
- 2: Length code (2,5,8,15,20,25)

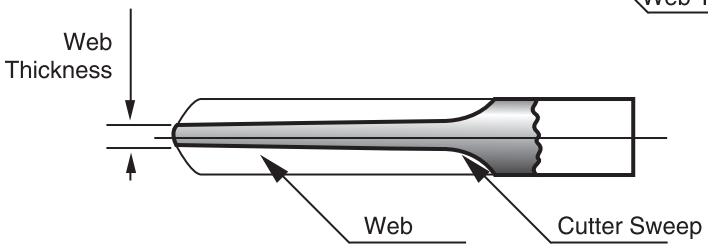
TECHNICAL TERMS OF TWIST DRILLS



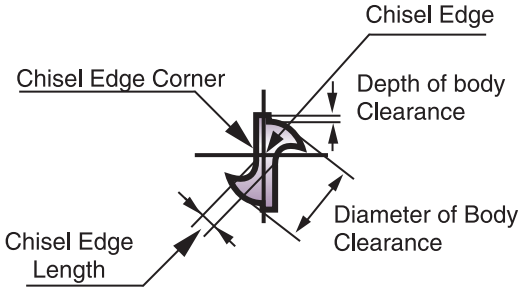


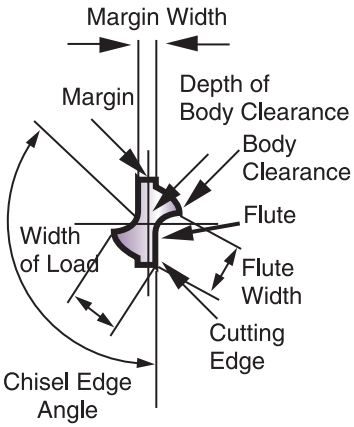






A:B or A/B=Flute Width Ratio





Drill Guidance

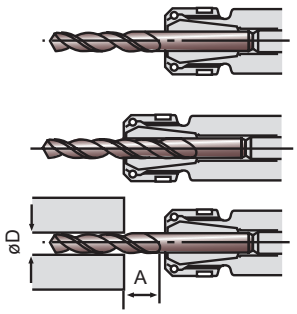
■ CHUCKING

Type of Chuck

- Collet type holders with thrust bearings are recommended.
- For KDS drills, when using an internal coolant supply, use a very rigid chuck with either an inducer or through spindle coolant source.
- Conventional holders such as keyless chucks cannot be used because the gripping strength is limited.
- Collet holders should be cleaned periodically with oil to remove small chips.

Chucking Position

- The entire flute length must protrude from the chuck.
- At maximum hole depth, the length of flute protruding from the hole must be at least 1 to 1.5 times the drill diameter.
- Radial run out at the drill tip must not exceed .001 in.



Correct chucking with spring collet.

Chips cannot be removed if the flute is chucked.

Dimension A should be 1 to 1.5 times drill diameter (D).

■ MACHINE

- Machine tools must have sufficient power and thrust resistance. Refer to the table below when selecting suitable machines.
- Rigid machines such as machining centers or NC turning machines are recommended.
- Machines designed for HSS drills or radial drilling machines are not recommended.

■ CUTTING FLUID

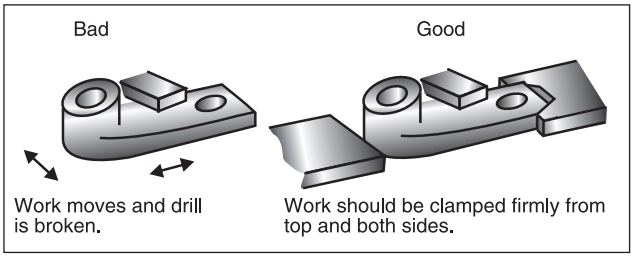
Type of Lubricant

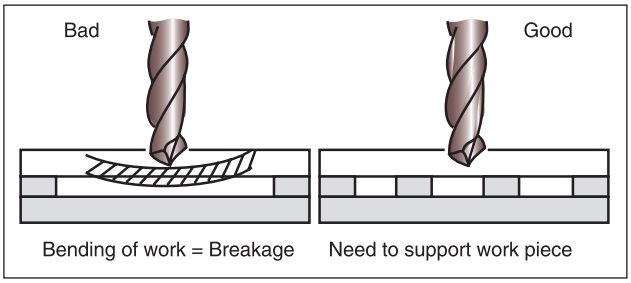
- For heavy duty cutting, emulsion type oil containing an extreme pressure additive is recommended.
- Other fluids may also be used with no difficulty.
- Neat oil can be used effectively with the solid carbide MDS drills for low speed drilling (up to 130 SFM).
- If the work surface becomes hard or blue in color, decrease the RPM and use neat oil.

Application of Lubricant

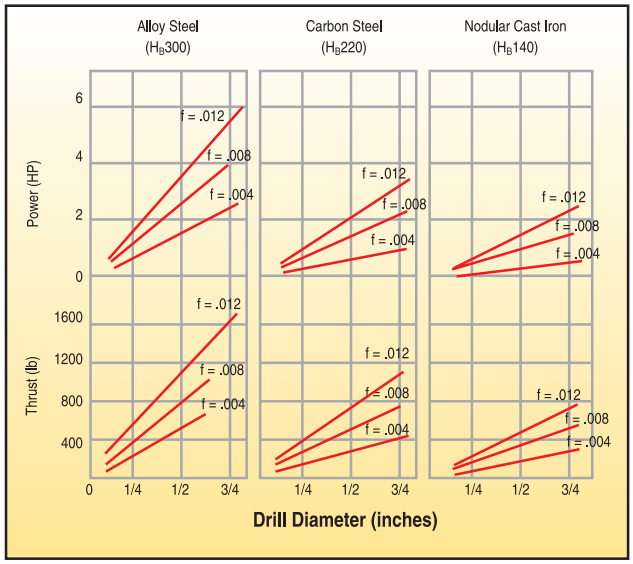
- Cutting fluid must be applied to the entrance of the hole when drilling.
- For internal coolant supply, coolant pressure should be at a minimum of 200 psi.
- A volume of 3.0 gal/min at a pressure of 50-75 psi is recommended for external coolant supply.
- A double stream supply of fluid is recommended.

■ WORK CLAMPING AND SUPPORT

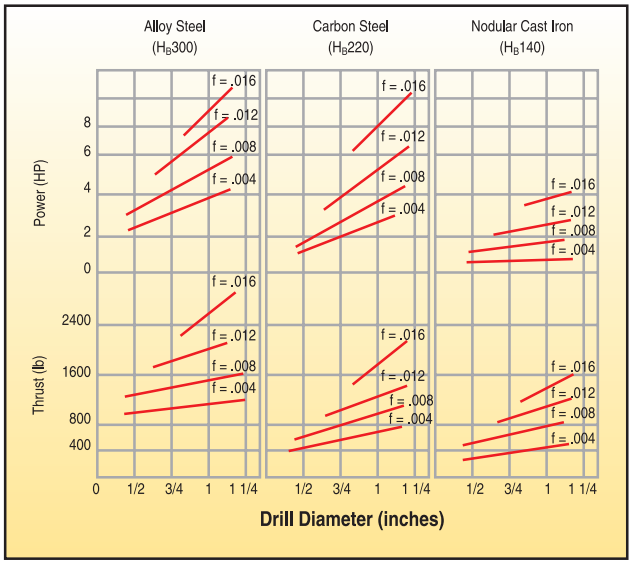




MDS

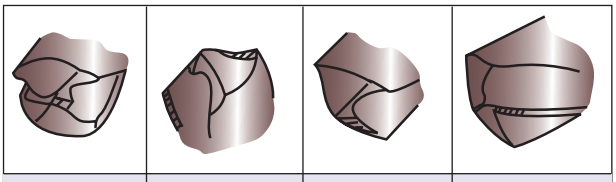


KDS



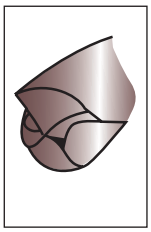
■ TROUBLE

A Drill Wear



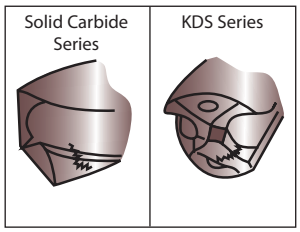
A1 Inner Cutting Edge | **A2** Outer Cutting Edges | **A3** Rake Face | **A4** Radial Land

B Drill Chipping

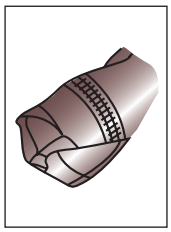


C Cracking

Solid Carbide Series | KDS Series



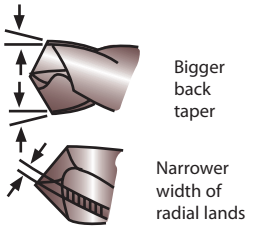
D Body Damage by Chips



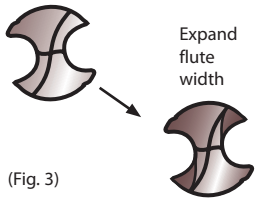
■ COUNTER MEASURE

A1	A2	A3	A4	B	C	D	E	F1	F2	G1	G2	G3	**Counter Measure**
•													Larger clearance angle near drill center.
•			•	•			•	•			•		The protruding length of drill should be shortened as much as possible without constricting chip flow.
	•												Increase clearance angle at the outer cutting edge.
	•	•	•		•								The interval between regrinding of drills should be shortened.
			•	•	•		•	•		•			Larger back taper and narrower width of radial land (Fig. 1).
			•	•		•	•				•		Lip height distance and run out of center cutting edges should be within .0008" ~ .001".
				•									Edge treatment should be larger.
				•									Clearance angle should be reduced.
						•	•		•				Expand the flute width (Fig. 2). Flute length should be maintained (target length is 1.5 L/D).
						•						•	Point angle should be increased (Fig. 3).
						•							The helical angle should be reduced (when it is used in horizontal machine).
						•							The diameter of body should be smaller (using in horizontal machine, A type drill) (Fig. 4).
												•	Edge treatment should be smaller.
•	•	•		•	•	•	•	•			•	•	The feed rate should be decreased.
	•				•	•		•	•		•		Cutting speed should be decreased.
									•				The feed rate should be increased.

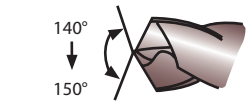
(Fig. 1)



(Fig. 2)



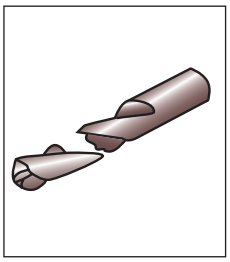
(Fig. 3)



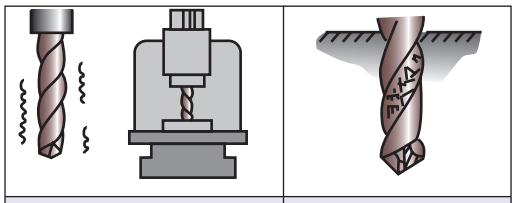
(Fig. 4)

Outside dia. of body should be .020" ~ .040" smaller than the drill dia.

E Breakage

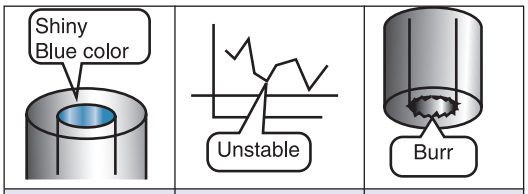


F Trouble During Operation



F1 Chattering or Odd Noises | **F2** Chip Packing

G Trouble With Hole Accuracy

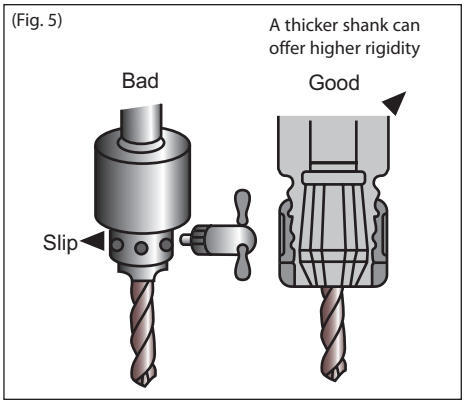


G1 Work Hardening | **G2** Unstable Accuracy | **G3** Burrs at the Exit

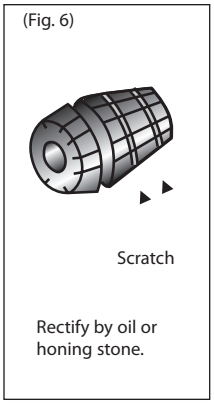
- **MACHINE**...A, B, C, E, F1
  Is there any excessive vibration or odd noise during operation?

- **CHUCKING OF DRILL**...A, B, C, E, F1
  Is the rigidity of the drill chuck enough? (Fig. 5)
  Is there any dust or scratches inside the drill chuck? (Fig. 6)
  Is the run out of the drill too great when it is held in the drill chuck? (Fig. 7)
  The drill point should be within 0.001" maximum of the center of the work piece (when the work rotates) (Fig. 8)

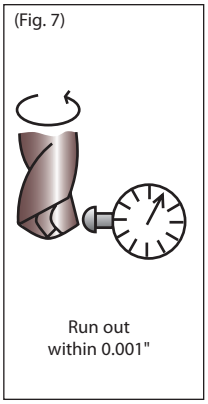
(Fig. 5)



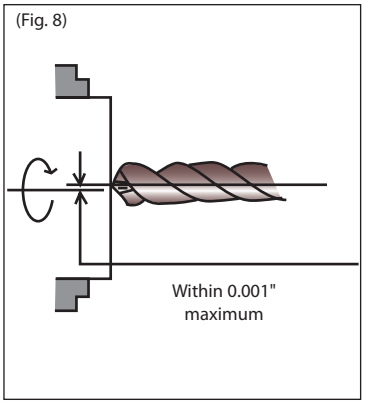
(Fig. 6)



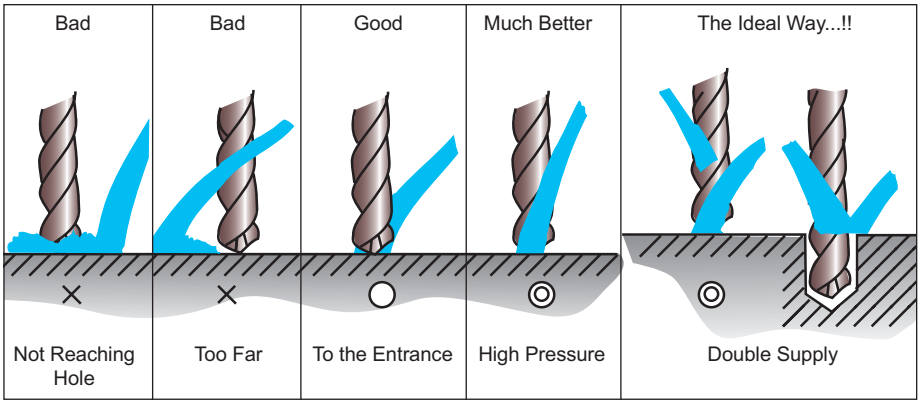
(Fig. 7)

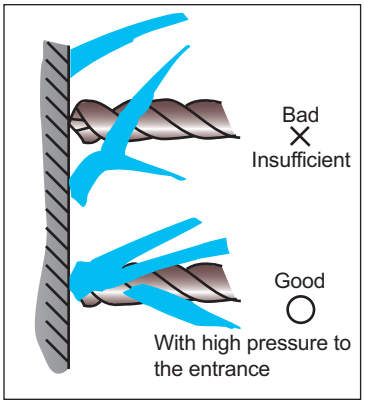


(Fig. 8)



- **CUTTING FLUID**...A, C, E, G1
  Make sure cutting fluid is supplied adequately to the entrance of drill hole.





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GS • HGS Series

MDS Series

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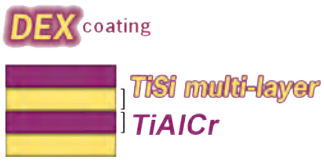
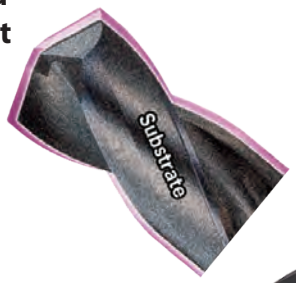
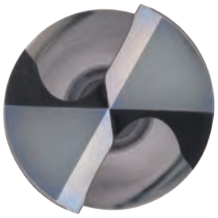
Longer flute lengths for deeper hole capability and more material available for regrinding.

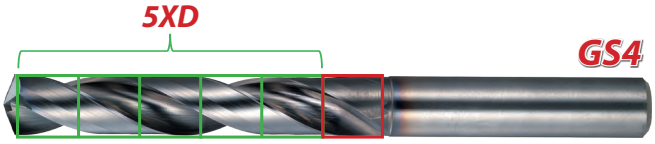
Newly developed PVD DEX coating provides improved heat and wear resistance at increased speeds.





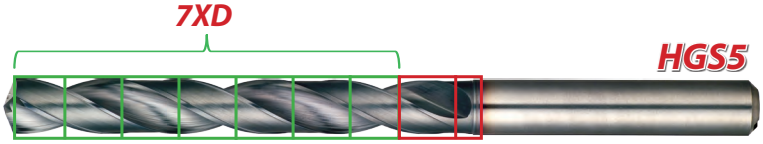


GS Series - *External Coolant*:
- GS2 (2XD) - Possible to drill to 3XD*
- GS4 (4XD) - Possible to drill to 5XD*

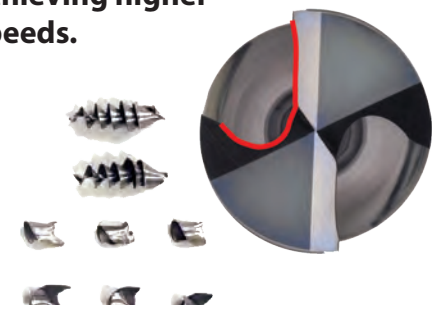


Unique thinning design promotes stable drilling performance.

HGS Series - *Internal Coolant*:
- HGS3 (3XD) - Possible to drill to 4XD*
- HGS5 (5XD) - Possible to drill to 7XD*
- HGS8 (8XD) - Possible to drill to 10XD*



J-Flute design offers a wide chip pocket, producing more compact chips while achieving higher speeds.



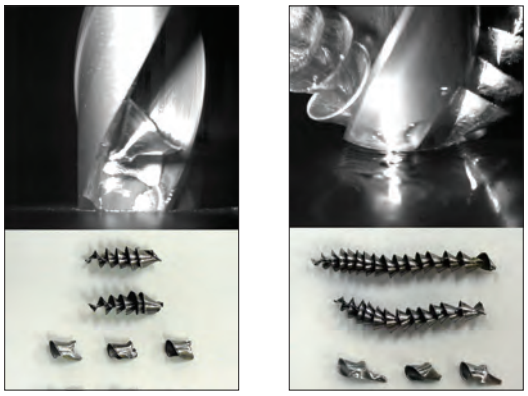
* Not all drills can achieve this depth and some drills may have even deeper capability. *Always check for sufficient flute length.*

■ Features & Benefits

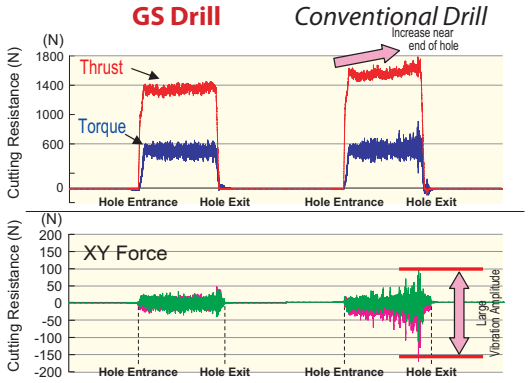
- **Long Tool Life**
  New cutting edge design and special DEX coating provide long tool life in a wide variety of work materials
- **Stable Chip Evacuation**
  New flute design and wide chip pocket allows for excellent chip management and evacuation
- **Quiet Cutting & Stable Cutting**
  Stable drilling with minimal vibration even in small machine applications
- **Environmentally Friendly**
  Compatible with MQL (Minimum Quantity Lubrication) Systems

■ Performance

Chip Control Comparison



Performance Comparison

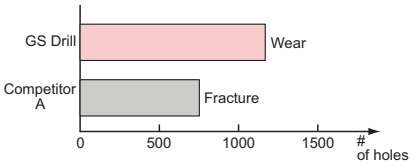


The GS Drill provides better stability throughout the drilling proccess.

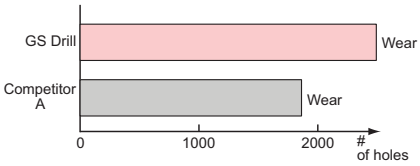
Tool: MDW0800GS4
Work Material: 1049 steel (200HB)
Cutting Conditions: V_c = 80m/min (262 sfm)
f = 0.25mm/rev (0.10 ipr)
H = 24mm (0.945 in)
External coolant (water soluble)

■ Application Examples

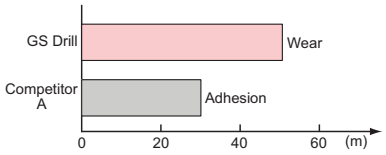
Automotive Component - 1043 Steel (250HB)
- Tool: MDW0970GS4
- Cutting Conditions:
  V_c = 80m/min f = 0.25mm/rev H = 25mm
  (262 sfm) (0.010 ipr) (0.945 in)
  External coolant (water soluble)



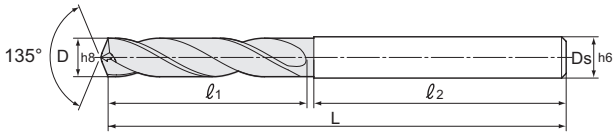
Machine Component - Boron Steel (30HRC)
- Tool: MDW0980GS2
- Cutting Conditions:
  V_c = 70m/min f = 0.15mm/rev H = 7mm
  (230 sfm) (0.006 ipr) (0.276 in)
  External coolant (water soluble)



Machine Component - 1018 Steel
- Tool: MDW0800HGS8
- Cutting Conditions:
  V_c = 80m/min f = 0.25mm/rev H = 64mm
  (262 sfm) (0.010 ipr) (2.520 in)
  External coolant (water soluble)



MDW-GS2 Series Solid Carbide Drills



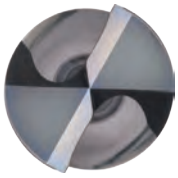
MDW-GS2 2XD drill for excellent chip management and long tool life (External coolant)

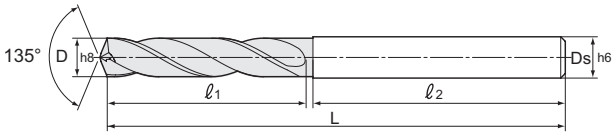
Catalog Number (inch/*metric*)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (*mm*)	Overall Length L (in/*mm*)	Flute Length ℓ_1 (in/*mm*)	Shank Length ℓ_2 (in/*mm*)	Shank Diameter D_s (in/*mm*)	Tap Size
MDW0200GS2	●		0.0787	*2.00*	*45.0*	*8.0*	*34.0*	*3.0*	
MDW0210GS2	●		0.0827	*2.10*	*45.0*	*10.0*	*32.0*	*3.0*	3-56
MDW0220GS2	●		0.0866	*2.20*	*45.0*	*10.0*	*32.0*	*3.0*	
MDW0230GS2	●		0.0906	*2.30*	*45.0*	*10.0*	*32.0*	*3.0*	
MDW00937GS2	●	3/32	0.0940	*2.38*	1.772	0.394	1.260	0.1250	
MDW0240GS2	●		0.0945	*2.40*	*45.0*	*10.0*	*32.0*	*3.0*	
MDW0250GS2	●		0.0984	*2.50*	*45.0*	*10.0*	*32.0*	*3.0*	
MDW0260GS2	●		0.1024	*2.60*	*45.0*	*13.0*	*30.0*	*3.0*	
MDW0270GS2	●		0.1063	*2.70*	*45.0*	*13.0*	*30.0*	*3.0*	6-32
MDW0280GS2	●		0.1102	*2.80*	*45.0*	*13.0*	*30.0*	*3.0*	
MDW01110GS2	●		0.1110	*2.82*	1.7717	0.5118	1.1811	0.1250	
MDW01130GS2	●		0.1130	*2.87*	1.7717	0.5118	1.1811	0.1250	6-40
MDW0290GS2	●		0.1142	*2.90*	*45.0*	*13.0*	*30.0*	*3.0*	3.5x.6
MDW01160GS2	●		0.1160	*2.95*	1.7717	0.5118	1.1811	0.1250	
MDW0300GS2	●		0.1181	*3.00*	*45.0*	*13.0*	*30.0*	*3.0*	
MDW01200GS2	●		0.1200	*3.05*	1.7717	0.5118	1.1811	0.1250	
MDW0310GS2	●		0.1220	*3.10*	*54.0*	*19.0*	*33.0*	*4.0*	
MDW01250GS2	●	1/8	0.1250	*3.18*	1.7717	0.5118	1.1811	0.1250	
MDW0320GS2	●		0.1260	*3.20*	*54.0*	*19.0*	*33.0*	*4.0*	
MDW01285GS2	●		0.1285	*3.26*	2.1260	0.7480	1.2992	0.1562	
MDW0330GS2	●		0.1299	*3.30*	*54.0*	*19.0*	*33.0*	*4.0*	M4x.7
MDW0340GS2	●		0.1339	*3.40*	*54.0*	*19.0*	*33.0*	*4.0*	
MDW01360GS2	●		0.1360	*3.45*	2.1260	0.7480	1.2992	0.1562	8-32/8-36
MDW0350GS2	●		0.1378	*3.50*	*54.0*	*19.0*	*33.0*	*4.0*	
MDW01405GS2	●		0.1405	*3.57*	2.1260	0.8268	1.2992	0.1562	
MDW01406GS2	●		0.1406	*3.57*	2.1260	0.8268	1.2992	0.1562	
MDW0360GS2	●		0.1417	*3.60*	*54.0*	*21.0*	*33.0*	*4.0*	
MDW01440GS2	●		0.1440	*3.66*	2.1260	0.8268	1.2992	0.1562	
MDW0370GS2	●		0.1457	*3.70*	*54.0*	*21.0*	*33.0*	*4.0*	M4.5x.7
MDW01470GS2	●		0.1470	*3.73*	2.1260	0.8268	1.2992	0.1562	
MDW01495GS2	●		0.1495	*3.797*	2.1260	0.8268	1.2992	0.1562	10-24
MDW0380GS2	●		0.1496	*3.80*	*54.0*	*21.0*	*33.0*	*4.0*	
MDW01520GS2	●		0.1520	*3.86*	2.1260	0.8268	1.2992	0.1562	
MDW0390GS2	●		0.1535	*3.90*	*54.0*	*21.0*	*33.0*	*4.0*	
MDW01540GS2	●		0.1540	*3.91*	2.1260	0.8268	1.2992	0.1562	
MDW01562GS2	●	5/32	0.1562	*3.97*	2.1260	0.8268	1.2992	0.1562	
MDW01570GS2	●		0.1570	*3.99*	2.4016	0.9055	1.4173	0.1875	
MDW0400GS2	●		0.1575	*4.00*	*54.0*	*21.0*	*33.0*	*4.0*	
MDW01590GS2	●	#21	0.1590	*4.04*	2.4016	0.9055	1.4173	0.1875	10-32
MDW01610GS2	●		0.1610	*4.09*	2.4016	0.9055	1.4173	0.1875	
MDW0410GS2	●		0.1614	*4.10*	*61.0*	*23.0*	*36.0*	*5.0*	
MDW0420GS2	●		0.1654	*4.20*	*61.0*	*23.0*	*36.0*	*5.0*	M5x.8
MDW01660GS2	●		0.1660	*4.22*	2.4016	0.9055	1.4173	0.1875	
MDW0430GS2	●		0.1693	*4.30*	*61.0*	*23.0*	*36.0*	*5.0*	
MDW01695GS2	●		0.1695	*4.31*	2.4016	0.9055	1.4173	0.1875	
MDW01719GS2	●	11/64	0.1719	*4.37*	2.4016	0.9055	1.4173	0.1875	
MDW01730GS2	●		0.1730	*4.39*	2.4016	0.9055	1.4173	0.1875	
MDW0440GS2	●		0.1732	*4.40*	*61.0*	*23.0*	*36.0*	*5.0*	
MDW01770GS2	●		0.1770	*4.49*	2.4016	0.9055	1.4173	0.1875	12-24

●=USA stocked item
Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

(continued on next page)

SERIES MDW-GS2



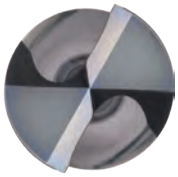


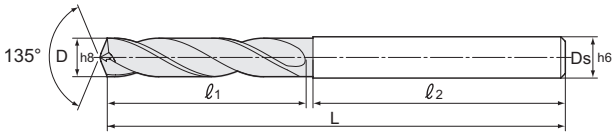
(continued from previous page)

MDW-GS2 2XD drill for excellent chip management and long tool life (External coolant)

Catalog Number (inch/*metric*)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (*mm*)	Overall Length L (in/*mm*)	Flute Length ℓ_1 (in/*mm*)	Shank Length ℓ_2 (in/*mm*)	Shank Diameter D_s (in/*mm*)	Tap Size
MDW0450GS2	●		0.1772	*4.50*	*61.0*	*23.0*	*36.0*	*5.0*	
MDW01800GS2	●		0.1800	*4.57*	2.4016	0.9843	1.4173	0.1875	
MDW0460GS2	●		0.1811	*4.60*	*61.0*	*25.0*	*36.0*	*5.0*	
MDW01820GS2	●		0.1820	*4.62*	2.4016	0.9843	1.4173	0.1875	12-28
MDW01850GS2	●		0.1850	*4.70*	2.4016	0.9843	1.4173	0.1875	
MDW0470GS2	●		0.1850	*4.70*	*61.0*	*25.0*	*36.0*	*5.0*	
MDW01875GS2	●	3/16	0.1875	*4.76*	2.4016	0.9843	1.4173	0.1875	
MDW0480GS2	●		0.1890	*4.80*	*61.0*	*25.0*	*36.0*	*5.0*	
MDW01890GS2	●		0.1890	*4.80*	2.5591	0.9843	1.4961	0.2344	
MDW01910GS2	●		0.1910	*4.85*	2.5591	0.9843	1.4961	0.2344	
MDW0490GS2	●		0.1929	*4.90*	*61.0*	*25.0*	*36.0*	*5.0*	
MDW01935GS2	●		0.1935	*4.91*	2.5591	0.9843	1.4961	0.2344	
MDW01960GS2	●		0.1960	*4.98*	2.5591	0.9843	1.4961	0.2344	
MDW0500GS2	●		0.1969	*5.00*	*61.0*	*25.0*	*36.0*	*5.0*	M6x1
MDW0510GS2	●		0.2008	*5.10*	*65.0*	*25.0*	*38.0*	*6.0*	
MDW02010GS2	●	#7	0.2010	*5.11*	2.5591	0.9843	1.4961	0.2344	1/4-20
MDW02031GS2	●	13/64	0.2031	*5.16*	2.5591	0.9843	1.4961	0.2344	
MDW02040GS2	●		0.2040	*5.18*	2.5591	0.9843	1.4961	0.2344	
MDW0520GS2	●		0.2047	*5.20*	*65.0*	*25.0*	*38.0*	*6.0*	
MDW02055GS2	●		0.2055	*5.22*	2.5591	0.9843	1.4961	0.2344	
MDW0530GS2	●		0.2087	*5.30*	*65.0*	*25.0*	*38.0*	*6.0*	
MDW02090GS2	●		0.2090	*5.31*	2.5591	0.9843	1.4961	0.2344	
MDW0540GS2	●		0.2126	*5.40*	*65.0*	*25.0*	*38.0*	*6.0*	
MDW02130GS2	●	#3	0.2130	*5.41*	2.5591	0.9843	1.4961	0.2344	
MDW0550GS2	●		0.2165	*5.50*	*65.0*	*25.0*	*38.0*	*6.0*	
MDW02188GS2	●	7/32	0.2188	*5.56*	2.5591	1.0630	1.4961	0.2344	1/4-28
MDW0560GS2	●		0.2205	*5.60*	*65.0*	*27.0*	*38.0*	*6.0*	
MDW02210GS2	●	#2	0.2210	*5.61*	2.5591	1.0630	1.4961	0.2344	
MDW0570GS2	●		0.2244	*5.70*	*65.0*	*27.0*	*38.0*	*6.0*	
MDW02280GS2	●		0.2280	*5.79*	2.5591	1.0630	1.4961	0.2344	
MDW0580GS2	●		0.2283	*5.80*	*65.0*	*27.0*	*38.0*	*6.0*	
MDW0590GS2	●		0.2323	*5.90*	*65.0*	*27.0*	*38.0*	*6.0*	
MDW02340GS2	●		0.2340	*5.94*	2.5591	1.0630	1.4961	0.2344	
MDW02344GS2	●	15/64	0.2344	*5.95*	2.5591	1.0630	1.4961	0.2344	
MDW0600GS2	●		0.2362	*6.00*	*65.0*	*27.0*	*38.0*	*6.0*	M7x1
MDW02380GS2	●		0.2380	*6.05*	2.8740	1.2205	1.5748	0.2812	
MDW0610GS2	●		0.2402	*6.10*	*73.0*	*31.0*	*40.0*	*7.0*	
MDW02420GS2	●	#C	0.2420	*6.15*	2.8740	1.2205	1.5748	0.2812	
MDW0620GS2	●		0.2441	*6.20*	*73.0*	*31.0*	*40.0*	*7.0*	
MDW02460GS2	●		0.2460	*6.25*	2.8740	1.2205	1.5748	0.2812	
MDW0630GS2	●		0.2480	*6.30*	*73.0*	*31.0*	*40.0*	*7.0*	
MDW02500GS2	●	1/4	0.2500	*6.35*	2.8740	1.2205	1.5748	0.2812	
MDW0640GS2	●		0.2520	*6.40*	*73.0*	*31.0*	*40.0*	*7.0*	
MDW0650GS2	●		0.2559	*6.50*	*73.0*	*31.0*	*40.0*	*7.0*	
MDW02570GS2	●	#F	0.2570	*6.53*	2.8740	1.2992	1.5748	0.2812	5/16-18
MDW0660GS2	●		0.2598	*6.60*	*73.0*	*33.0*	*40.0*	*7.0*	
MDW02600GS2	●		0.2600	*6.604*	2.8740	1.2992	1.5748	0.2812	
MDW02610GS2	●		0.2610	*6.63*	2.8740	1.2992	1.5748	0.2812	

● = USA stocked item ★ = Worldwide Warehouse item available in 10 business days
Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.





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MDW-GS2 2XD drill for excellent chip management and long tool life (External coolant)

Catalog Number (inch/*metric*)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (*mm*)	Overall Length L (in/*mm*)	Flute Length ℓ_1 (in/*mm*)	Shank Length ℓ_2 (in/*mm*)	Shank Diameter D_s (in/*mm*)	Tap Size
MDW0670GS2	●		0.2638	*6.70*	*73.0*	*33.0*	*40.0*	*7.0*	
MDW02656GS2	●	17/64	0.2656	*6.75*	2.8740	1.2992	1.5748	0.2812	
MDW02660GS2	●	#H	0.2660	*6.76*	2.8740	1.2992	1.5748	0.2812	
MDW02677GS2	●		0.2677	*6.80*	2.8740	1.2992	1.5748	0.2812	
MDW0680GS2	●		0.2677	*6.80*	*73.0*	*33.0*	*40.0*	*7.0*	
MDW0690GS2	●		0.2717	*6.90*	*73.0*	*33.0*	*40.0*	*7.0*	
MDW02720GS2	●	#I	0.2720	*6.91*	2.8740	1.2992	1.5748	0.2812	5/16-24
MDW0700GS2	●		0.2756	*7.00*	*73.0*	*33.0*	*40.0*	*7.0*	
MDW02756GS2	●		0.2756	*7.00*	2.8740	1.2992	1.5748	0.2812	
MDW02770GS2	●	#J	0.2770	*7.04*	2.8740	1.2992	1.5748	0.2812	
MDW0710GS2	●		0.2795	*7.10*	*78.0*	*33.0*	*43.0*	*8.0*	
MDW02810GS2	●		0.2810	*7.14*	2.8740	1.2992	1.5748	0.2812	
MDW02812GS2	●	9/32	0.2812	*7.142*	2.8740	1.2992	1.5748	0.2812	
MDW0720GS2	●		0.2835	*7.20*	*78.0*	*33.0*	*43.0*	*8.0*	
MDW0730GS2	●		0.2874	*7.30*	*78.0*	*33.0*	*43.0*	*8.0*	
MDW02900GS2	●		0.2900	*7.37*	3.0709	1.2992	1.6929	0.3125	
MDW0740GS2	●		0.2913	*7.40*	*78.0*	*33.0*	*43.0*	*8.0*	
MDW02950GS2	●		0.2950	*7.49*	3.0709	1.2992	1.6929	0.3125	
MDW0750GS2	●		0.2953	*7.50*	*78.0*	*33.0*	*43.0*	*8.0*	
MDW02969GS2	●	19/64	0.2969	*7.54*	3.0709	1.4173	1.6535	0.3125	
MDW0760GS2	●		0.2992	*7.60*	*78.0*	*36.0*	*42.0*	*8.0*	
MDW03020GS2	●		0.3020	*7.67*	3.0709	1.4173	1.6535	0.3125	
MDW0770GS2	●		0.3031	*7.70*	*78.0*	*36.0*	*42.0*	*8.0*	
MDW0780GS2	●		0.3071	*7.80*	*78.0*	*36.0*	*42.0*	*8.0*	M9x1.25
MDW0790GS2	●		0.3110	*7.90*	*78.0*	*36.0*	*42.0*	*8.0*	
MDW03125GS2	●	5/16	0.3125	*7.94*	3.0709	1.4173	1.6535	0.3125	3/8-16
MDW0800GS2	●		0.3150	*8.00*	*78.0*	*36.0*	*42.0*	*8.0*	
MDW03160GS2	●		0.3160	*8.03*	3.2283	1.4173	1.7323	0.3594	
MDW0810GS2	●		0.3189	*8.10*	*82.0*	*36.0*	*44.0*	*9.0*	
MDW0820GS2	●		0.3228	*8.20*	*82.0*	*36.0*	*44.0*	*9.0*	
MDW03230GS2	●	#P	0.3230	*8.204*	3.2283	1.4173	1.7323	0.3594	
MDW0830GS2	●		0.3268	*8.30*	*82.0*	*36.0*	*44.0*	*9.0*	
MDW03281GS2	●	21/64	0.3281	*8.33*	3.2283	1.4173	1.7323	0.3594	
MDW03307GS2	●		0.3307	*8.40*	3.2283	1.4173	1.7323	0.3594	
MDW0840GS2	●		0.3307	*8.40*	*82.0*	*36.0*	*44.0*	*9.0*	
MDW03320GS2	●	#Q	0.3320	*8.43*	3.2283	1.4173	1.7323	0.3594	
MDW0850GS2	●		0.3346	*8.50*	*82.0*	*36.0*	*44.0*	*9.0*	M10x1.5
MDW0860GS2	●		0.3386	*8.60*	*82.0*	*38.0*	*44.0*	*9.0*	
MDW03386GS2	●		0.3386	*8.60*	3.2283	1.4961	1.7323	0.3594	
MDW03390GS2	●		0.3390	*8.61*	3.2283	1.4961	1.7323	0.3594	3/8-24
MDW0870GS2	●		0.3425	*8.70*	*82.0*	*38.0*	*44.0*	*9.0*	
MDW03438GS2	●	11/32	0.3438	*8.73*	3.2283	1.4961	1.7323	0.3594	
MDW0880GS2	●		0.3465	*8.80*	*82.0*	*38.0*	*44.0*	*9.0*	
MDW03475GS2	●		0.3475	*8.83*	3.2283	1.4961	1.7323	0.3594	
MDW03480GS2	●		0.3480	*8.84*	3.2283	1.4961	1.7323	0.3594	
MDW0890GS2	●		0.3504	*8.90*	*82.0*	*38.0*	*44.0*	*9.0*	
MDW0900GS2	●		0.3543	*9.00*	*82.0*	*38.0*	*44.0*	*9.0*	
MDW03580GS2	●		0.3580	*9.09*	3.2283	1.4961	1.7323	0.3594	

●=USA stocked item
Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

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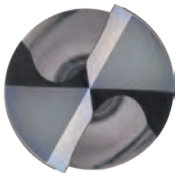
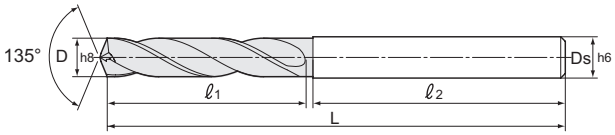
SERIES MDW-GS2





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MDW-GS2 2XD drill for excellent chip management and long tool life (External coolant)

Catalog Number (inch/*metric*)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (*mm*)	Overall Length L (in/*mm*)	Flute Length ℓ1 (in/*mm*)	Shank Length ℓ2 (in/*mm*)	Shank Diameter Ds (in/*mm*)	Tap Size
MDW0910GS2	●		0.3583	*9.10*	*87.0*	*38.0*	*47.0*	*10.0*	
MDW03594GS2	●	23/64	0.3594	*9.13*	3.2283	1.4961	1.7323	0.3594	
MDW0920GS2	●		0.3622	*9.20*	*87.0*	*38.0*	*47.0*	*10.0*	
MDW0930GS2	●		0.3661	*9.30*	*87.0*	*38.0*	*47.0*	*10.0*	
MDW03680GS2	●	#U	0.3680	*9.35*	3.4252	1.4961	1.8504	0.3906	7/16-14
MDW0940GS2	●		0.3701	*9.40*	*87.0*	*38.0*	*47.0*	*10.0*	
MDW0950GS2	●		0.3740	*9.50*	*87.0*	*38.0*	*47.0*	*10.0*	
MDW03750GS2	●	3/8	0.3750	*9.53*	3.4252	1.6142	1.8110	0.3906	
MDW03770GS2	●		0.3770	*9.58*	3.4252	1.6142	1.8110	0.3906	
MDW0960GS2	●		0.3780	*9.60*	*87.0*	*41.0*	*46.0*	*10.0*	
MDW03780GS2	●		0.3780	*9.60*	3.4252	1.6142	1.8110	0.3906	
MDW0970GS2	●		0.3819	*9.70*	*87.0*	*41.0*	*46.0*	*10.0*	
MDW0980GS2	●		0.3858	*9.80*	*87.0*	*41.0*	*46.0*	*10.0*	
MDW03860GS2	●		0.3860	*9.804*	3.4252	1.6142	1.8110	0.3906	
MDW0990GS2	●		0.3898	*9.90*	*87.0*	*41.0*	*46.0*	*10.0*	
MDW03906GS2	●	25/64	0.3906	*9.92*	3.4252	1.6142	1.8110	0.3906	7/16-20
MDW1000GS2	●		0.3937	*10.00*	*87.0*	*41.0*	*46.0*	*10.0*	
MDW03970GS2	●		0.3970	*10.08*	3.6614	1.6142	1.9685	0.4375	
MDW1010GS2	●		0.3976	*10.10*	*93.0*	*41.0*	*50.0*	*11.0*	
MDW1020GS2	●		0.4016	*10.20*	*93.0*	*41.0*	*50.0*	*11.0*	M12x1.75
MDW04040GS2	●		0.4040	*10.26*	3.6614	1.6142	1.9685	0.4375	
MDW1030GS2	●		0.4055	*10.30*	*93.0*	*41.0*	*50.0*	*11.0*	
MDW04062GS2	●	13/32	0.4062	*10.32*	3.6614	1.6142	1.9685	0.4375	
MDW1040GS2	●		0.4094	*10.40*	*93.0*	*41.0*	*50.0*	*11.0*	
MDW04130GS2	●		0.4130	*10.49*	3.6614	1.6142	1.9685	0.4375	
MDW1050GS2	●		0.4134	*10.50*	*93.0*	*41.0*	*50.0*	*11.0*	
MDW1060GS2	●		0.4173	*10.60*	*93.0*	*45.0*	*48.0*	*11.0*	
MDW1070GS2	●		0.4213	*10.70*	*93.0*	*45.0*	*48.0*	*11.0*	
MDW04219GS2	●	27/64	0.4219	*10.72*	3.6614	1.7717	1.8898	0.4375	1/2-13
MDW1080GS2	●		0.4252	*10.80*	*93.0*	*45.0*	*48.0*	*11.0*	
MDW1090GS2	●		0.4291	*10.90*	*93.0*	*45.0*	*48.0*	*11.0*	
MDW1100GS2	●		0.4331	*11.00*	*93.0*	*45.0*	*48.0*	*11.0*	
MDW1110GS2	●		0.4370	*11.10*	*100.0*	*45.0*	*53.0*	*12.0*	
MDW04375GS2	●	7/16	0.4375	*11.11*	3.6614	1.7717	1.8898	0.4375	
MDW1120GS2	●		0.4409	*11.20*	*100.0*	*45.0*	*53.0*	*12.0*	
MDW1130GS2	●		0.4449	*11.30*	*100.0*	*45.0*	*53.0*	*12.0*	
MDW1140GS2	●		0.4488	*11.40*	*100.0*	*45.0*	*53.0*	*12.0*	
MDW1150GS2	●		0.4528	*11.50*	*100.0*	*45.0*	*53.0*	*12.0*	
MDW04531GS2	●	29/64	0.4531	*11.51*	3.9370	1.8504	2.0866	0.4688	1/2-20
MDW1160GS2	●		0.4567	*11.60*	*100.0*	*47.0*	*53.0*	*12.0*	
MDW04570GS2	●		0.4570	*11.61*	3.9370	1.8504	2.0866	0.4688	
MDW1170GS2	●		0.4606	*11.70*	*100.0*	*47.0*	*53.0*	*12.0*	
MDW1180GS2	●		0.4646	*11.80*	*100.0*	*47.0*	*53.0*	*12.0*	
MDW1190GS2	●		0.4685	*11.90*	*100.0*	*47.0*	*53.0*	*12.0*	
MDW04688GS2	●	15/32	0.4688	*11.91*	3.9370	1.8504	2.0866	0.4688	
MDW1200GS2	●		0.4724	*12.00*	*100.0*	*47.0*	*53.0*	*12.0*	M14x2
MDW1210GS2	●		0.4764	*12.10*	*100.0*	*47.0*	*51.0*	*13.0*	
MDW1220GS2	●		0.4803	*12.20*	*100.0*	*47.0*	*51.0*	*13.0*	

●=USA stocked item

Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

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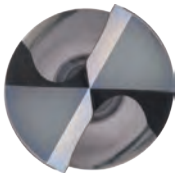

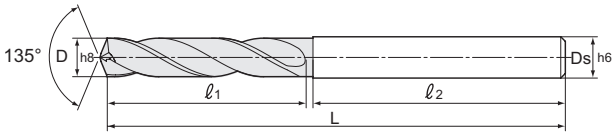

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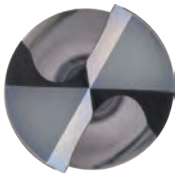
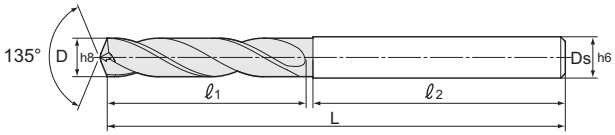
MDW-GS2 2XD drill for excellent chip management and long tool life (External coolant)

Catalog Number (inch/*metric*)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (*mm*)	Overall Length L (in/*mm*)	Flute Length ℓ_1 (in/*mm*)	Shank Length ℓ_2 (in/*mm*)	Shank Diameter D_s (in/*mm*)	Tap Size
MDW1230GS2	●		0.4843	*12.30*	*100.0*	*47.0*	*51.0*	*13.0*	9/16-12
MDW04844GS2	●	31/64	0.4844	*12.304*	3.9370	1.8504	2.0079	0.5156	
MDW1240GS2	●		0.4882	*12.40*	*100.0*	*47.0*	*51.0*	*13.0*	
MDW1250GS2	●		0.4921	*12.50*	*100.0*	*47.0*	*51.0*	*13.0*	
MDW1260GS2	●		0.4961	*12.60*	*100.0*	*49.0*	*51.0*	*13.0*	
MDW1270GS2	●	1/2	0.5000	*12.70*	*100.0*	*49.0*	*51.0*	*13.0*	
MDW05000GS2	●	1/2	0.5000	*12.70*	3.9370	1.9291	2.0079	0.5156	
MDW1280GS2	●		0.5039	*12.80*	*100.0*	*49.0*	*51.0*	*13.0*	
MDW05050GS2	●		0.5050	*12.83*	3.9370	1.9291	2.0079	0.5156	
MDW1290GS2	●		0.5079	*12.90*	*100.0*	*49.0*	*51.0*	*13.0*	
MDW1300GS2	●		0.5118	*13.00*	*100.0*	*49.0*	*51.0*	*13.0*	
MDW05156GS2	●	33/64	0.5156	*13.09*	3.9370	1.9291	2.0079	0.5156	9/16-18
MDW1310GS2	●		0.5157	*13.10*	*105.0*	*50.0*	*53.0*	*14.0*	
MDW1320GS2	●		0.5197	*13.20*	*105.0*	*50.0*	*53.0*	*14.0*	
MDW1330GS2	●		0.5236	*13.30*	*105.0*	*50.0*	*53.0*	*14.0*	
MDW1340GS2	●		0.5276	*13.40*	*105.0*	*50.0*	*53.0*	*14.0*	
MDW05312GS2	●	17/32	0.5312	*13.49*	4.1339	1.9685	2.0866	0.5469	5/8-11
MDW1350GS2	●		0.5315	*13.50*	*105.0*	*50.0*	*53.0*	*14.0*	
MDW1360GS2	●		0.5354	*13.60*	*105.0*	*52.0*	*53.0*	*14.0*	
MDW1370GS2	●		0.5394	*13.70*	*105.0*	*52.0*	*53.0*	*14.0*	
MDW1380GS2	●		0.5433	*13.80*	*105.0*	*52.0*	*53.0*	*14.0*	
MDW05469GS2	●	35/64	0.5469	*13.89*	4.1339	2.0472	2.0866	0.5469	M16x2
MDW1390GS2	●		0.5472	*13.90*	*105.0*	*52.0*	*53.0*	*14.0*	
MDW1400GS2	●		0.5512	*14.00*	*105.0*	*52.0*	*53.0*	*14.0*	
MDW1410GS2	●		0.5551	*14.10*	*108.0*	*52.0*	*55.0*	*15.0*	
MDW1420GS2	●		0.5591	*14.20*	*108.0*	*52.0*	*55.0*	*15.0*	
MDW05625GS2	●	9/16	0.5625	*14.29*	4.2520	2.0472	2.1654	0.5937	
MDW1430GS2	●		0.5630	*14.30*	*108.0*	*52.0*	*55.0*	*15.0*	
MDW1440GS2	●		0.5669	*14.40*	*108.0*	*52.0*	*55.0*	*15.0*	
MDW1450GS2	●		0.5709	*14.50*	*108.0*	*52.0*	*55.0*	*15.0*	
MDW1460GS2	●		0.5748	*14.60*	*108.0*	*53.0*	*55.0*	*15.0*	
MDW05781GS2	●	37/64	0.5781	*14.68*	4.2520	2.0866	2.1654	0.5937	5/8-18
MDW1470GS2	●		0.5787	*14.70*	*108.0*	*53.0*	*55.0*	*15.0*	
MDW1480GS2	●		0.5827	*14.80*	*108.0*	*53.0*	*55.0*	*15.0*	
MDW1490GS2	●		0.5866	*14.90*	*108.0*	*53.0*	*55.0*	*15.0*	
MDW1500GS2	●		0.5906	*15.00*	*108.0*	*53.0*	*55.0*	*15.0*	
MDW05937GS2	●	19/32	0.5937	*15.08*	4.2520	2.0866	2.1654	0.5937	
MDW1510GS2	●		0.5945	*15.10*	*112.0*	*53.0*	*57.0*	*16.0*	
MDW1520GS2	●		0.5984	*15.20*	*112.0*	*53.0*	*57.0*	*16.0*	
MDW1530GS2	●		0.6024	*15.30*	*112.0*	*53.0*	*57.0*	*16.0*	
MDW1540GS2	●		0.6063	*15.40*	*112.0*	*53.0*	*57.0*	*16.0*	
MDW06094GS2	●	39/64	0.6094	*15.48*	4.4094	2.0866	2.2441	0.6250	11/16-12
MDW1550GS2	●		0.6102	*15.50*	*112.0*	*53.0*	*57.0*	*16.0*	M18x2.5
MDW1560GS2	●		0.6142	*15.60*	*112.0*	*55.0*	*57.0*	*16.0*	
MDW1570GS2	●		0.6181	*15.70*	*112.0*	*55.0*	*57.0*	*16.0*	
MDW1580GS2	●		0.6220	*15.80*	*112.0*	*55.0*	*57.0*	*16.0*	
MDW06250GS2	●	5/8	0.6250	*15.88*	4.4094	2.1654	2.2441	0.6250	11/16-16
MDW1590GS2	●		0.6260	*15.90*	*112.0*	*55.0*	*57.0*	*16.0*	
MDW1600GS2	●		0.6299	*16.00*	*112.0*	*55.0*	*57.0*	*16.0*	

●=USA stocked item
Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

SERIES MDW-GS4





MDW-GS4 4XD drill for excellent chip management and long tool life (External coolant)

Catalog Number (inch/*metric*)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (*mm*)	Overall Length L (in/*mm*)	Flute Length ℓ1 (in/*mm*)	Shank Length ℓ2 (in/*mm*)	Shank Diameter Ds (in/*mm*)	Tap Size
MDW0200GS4	●		0.0787	*2.00*	*49.0*	*15.0*	*31.0*	*3.0*	
MDW0210GS4	●		0.0827	*2.10*	*49.0*	*17.0*	*30.0*	*3.0*	3-56
MDW0220GS4	●		0.0866	*2.20*	*49.0*	*17.0*	*30.0*	*3.0*	
MDW0230GS4	●		0.0906	*2.30*	*49.0*	*17.0*	*30.0*	*3.0*	
MDW00937GS4	●	3/32	0.0937	2.38	1.9291	0.6693	1.1811	0.125	
MDW0240GS4	●		0.0945	*2.40*	*49.0*	*17.0*	*30.0*	*3.0*	
MDW0250GS4	●		0.0984	*2.50*	*49.0*	*17.0*	*30.0*	*3.0*	
MDW0260GS4	●		0.1024	*2.60*	*49.0*	*19.0*	*30.0*	*3.0*	
MDW0270GS4	●		0.1063	*2.70*	*49.0*	*19.0*	*30.0*	*3.0*	6-32
MDW0280GS4	●		0.1102	*2.80*	*49.0*	*19.0*	*30.0*	*3.0*	
MDW0290GS4	●		0.1142	*2.90*	*49.0*	*19.0*	*30.0*	*3.0*	3.5x.6
MDW0300GS4	●		0.1181	*3.00*	*49.0*	*19.0*	*30.0*	*3.0*	
MDW0310GS4	●		0.1220	*3.10*	*60.0*	*24.0*	*34.0*	*4.0*	
MDW0320GS4	●		0.1260	*3.20*	*60.0*	*24.0*	*34.0*	*4.0*	
MDW0330GS4	●		0.1299	*3.30*	*60.0*	*24.0*	*34.0*	*4.0*	M4x.7
MDW0340GS4	●		0.1339	*3.40*	*60.0*	*24.0*	*34.0*	*4.0*	
MDW0350GS4	●		0.1378	*3.50*	*60.0*	*24.0*	*34.0*	*4.0*	
MDW0360GS4	●		0.1417	*3.60*	*60.0*	*27.0*	*33.0*	*4.0*	
MDW0370GS4	●		0.1457	*3.70*	*60.0*	*27.0*	*33.0*	*4.0*	M4.5x.7
MDW0380GS4	●		0.1496	*3.80*	*60.0*	*27.0*	*33.0*	*4.0*	
MDW0390GS4	●		0.1535	*3.90*	*60.0*	*27.0*	*33.0*	*4.0*	
MDW0400GS4	●		0.1575	*4.00*	*60.0*	*27.0*	*33.0*	*4.0*	
MDW0410GS4	●		0.1614	*4.10*	*76.0*	*31.0*	*43.0*	*5.0*	
MDW0420GS4	●		0.1654	*4.20*	*76.0*	*31.0*	*43.0*	*5.0*	M5x.8
MDW0430GS4	●		0.1693	*4.30*	*76.0*	*31.0*	*43.0*	*5.0*	
MDW0440GS4	●		0.1732	*4.40*	*76.0*	*31.0*	*43.0*	*5.0*	
MDW0450GS4	●		0.1772	*4.50*	*76.0*	*31.0*	*43.0*	*5.0*	
MDW0460GS4	●		0.1811	*4.60*	*76.0*	*38.0*	*38.0*	*5.0*	
MDW0470GS4	●		0.1850	*4.70*	*76.0*	*38.0*	*38.0*	*5.0*	
MDW0480GS4	●		0.1890	*4.80*	*76.0*	*38.0*	*38.0*	*5.0*	
MDW0490GS4	●		0.1929	*4.90*	*76.0*	*38.0*	*38.0*	*5.0*	
MDW0500GS4	●		0.1969	*5.00*	*76.0*	*38.0*	*38.0*	*5.0*	M6x1
MDW0510GS4	●		0.2008	*5.10*	*81.0*	*39.0*	*40.0*	*6.0*	
MDW02010GS4	●	#7	0.2010	*5.11*	3.1890	1.5354	1.5748	0.2344	1/4-20
MDW0520GS4	●		0.2047	*5.20*	*81.0*	*39.0*	*40.0*	*6.0*	
MDW0530GS4	●		0.2087	*5.30*	*81.0*	*39.0*	*40.0*	*6.0*	
MDW0540GS4	●		0.2126	*5.40*	*81.0*	*39.0*	*40.0*	*6.0*	
MDW0550GS4	●		0.2165	*5.50*	*81.0*	*39.0*	*40.0*	*6.0*	
MDW0560GS4	●		0.2205	*5.60*	*81.0*	*41.0*	*40.0*	*6.0*	
MDW0570GS4	●		0.2244	*5.70*	*81.0*	*41.0*	*40.0*	*6.0*	
MDW0580GS4	●		0.2283	*5.80*	*81.0*	*41.0*	*40.0*	*6.0*	
MDW0590GS4	●		0.2323	*5.90*	*81.0*	*41.0*	*40.0*	*6.0*	
MDW0600GS4	●		0.2362	*6.00*	*81.0*	*41.0*	*40.0*	*6.0*	M7x1
MDW0610GS4	●		0.2402	*6.10*	*83.0*	*42.0*	*40.0*	*7.0*	
MDW0620GS4	●		0.2441	*6.20*	*83.0*	*42.0*	*40.0*	*7.0*	
MDW02460GS4	●		0.2460	*6.25*	3.2677	1.6535	1.5748	0.2812	
MDW0630GS4	●		0.2480	*6.30*	*83.0*	*42.0*	*40.0*	*7.0*	
MDW02500GS4	●	1/4	0.2500	*6.35*	3.2677	1.6535	1.5748	0.2812	
MDW0640GS4	●		0.2520	*6.40*	*83.0*	*42.0*	*40.0*	*7.0*	
MDW0650GS4	●		0.2559	*6.50*	*83.0*	*42.0*	*40.0*	*7.0*	
MDW02570GS4	●	#F	0.2570	*6.53*	3.2677	1.6929	1.5748	0.2812	5/16-18
MDW0660GS4	●		0.2598	*6.60*	*83.0*	*43.0*	*40.0*	*7.0*	
MDW02610GS4	●		0.2610	*6.63*	3.2677	1.6929	1.5748	0.2812	
MDW0670GS4	●		0.2638	*6.70*	*83.0*	*43.0*	*40.0*	*7.0*	

● = USA stocked item

Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

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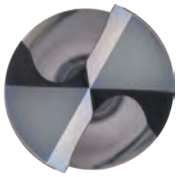

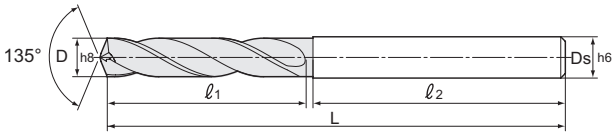

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MDW-GS4 4XD drill for excellent chip management and long tool life (External coolant)

Catalog Number (inch/*metric*)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (*mm*)	Overall Length L (in/*mm*)	Flute Length ℓ_1 (in/*mm*)	Shank Length ℓ_2 (in/*mm*)	Shank Diameter D_s (in/*mm*)	Tap Size
MDW02656GS4	●	17/64	0.2656	*6.75*	3.2677	1.6929	1.5748	0.2812	
MDW02660GS4	●	#H	0.2660	*6.76*	3.2677	1.6929	1.5748	0.2812	
MDW0680GS4	●		0.2677	*6.80*	*83.0*	*43.0*	*40.0*	*7.0*	
MDW0690GS4	●		0.2717	*6.90*	*83.0*	*43.0*	*40.0*	*7.0*	
MDW02720GS4	●	#I	0.2720	*6.91*	3.2677	1.6929	1.5748	0.2812	5/16-24
MDW0700GS4	●		0.2756	*7.00*	*83.0*	*43.0*	*40.0*	*7.0*	
MDW02770GS4	●	#J	0.2770	*7.04*	3.2677	1.6929	1.5748	0.2812	
MDW0710GS4	●		0.2795	*7.10*	*90.0*	*45.0*	*43.0*	*8.0*	
MDW02810GS4	●		0.2810	*7.14*	3.2677	1.6929	1.5748	0.2812	
MDW02812GS4	●	9/32	0.2812	*7.142*	3.2677	1.6929	1.5748	0.2812	
MDW0720GS4	●		0.2835	*7.20*	*90.0*	*45.0*	*43.0*	*8.0*	
MDW0730GS4	●		0.2874	*7.30*	*90.0*	*45.0*	*43.0*	*8.0*	
MDW02900GS4	●		0.2900	*7.37*	3.5433	1.7717	1.6929	0.3125	
MDW0740GS4	●		0.2913	*7.40*	*90.0*	*45.0*	*43.0*	*8.0*	
MDW02950GS4	●		0.2950	*7.49*	3.5433	1.7717	1.6929	0.3125	
MDW0750GS4	●		0.2953	*7.50*	*90.0*	*45.0*	*43.0*	*8.0*	
MDW02969GS4	●	19/64	0.2969	*7.54*	3.5433	1.8898	1.6535	0.3125	
MDW0760GS4	●		0.2992	*7.60*	*90.0*	*48.0*	*42.0*	*8.0*	
MDW03020GS4	●		0.3020	*7.67*	3.5433	1.8898	1.6535	0.3125	
MDW0770GS4	●		0.3031	*7.70*	*90.0*	*48.0*	*42.0*	*8.0*	
MDW0780GS4	●		0.3071	*7.80*	*90.0*	*48.0*	*42.0*	*8.0*	M9x1.25
MDW0790GS4	●		0.3110	*7.90*	*90.0*	*48.0*	*42.0*	*8.0*	
MDW03125GS4	●	5/16	0.3125	*7.94*	3.5433	1.8898	1.6535	0.3125	3/8-16
MDW0800GS4	●		0.3150	*8.00*	*90.0*	*48.0*	*42.0*	*8.0*	
MDW03160GS4	●		0.3160	*8.03*	3.8583	2.0866	1.6929	0.3594	
MDW0810GS4	●		0.3189	*8.10*	*98.0*	*53.0*	*43.0*	*9.0*	
MDW0820GS4	●		0.3228	*8.20*	*98.0*	*53.0*	*43.0*	*9.0*	
MDW03230GS4	●	#P	0.3230	*8.204*	3.8583	2.0866	1.6929	0.3594	
MDW0830GS4	●		0.3268	*8.30*	*98.0*	*53.0*	*43.0*	*9.0*	
MDW03281GS4	●	21/64	0.3281	*8.33*	3.8583	2.0866	1.6929	0.3594	
MDW0840GS4	●		0.3307	*8.40*	*98.0*	*53.0*	*43.0*	*9.0*	
MDW03320GS4	●	#Q	0.3320	*8.43*	3.8583	2.0866	1.6929	0.3594	
MDW0850GS4	●		0.3346	*8.50*	*98.0*	*53.0*	*43.0*	*9.0*	M10x1.5
MDW0860GS4	●		0.3386	*8.60*	*98.0*	*55.0*	*43.0*	*9.0*	
MDW03390GS4	●		0.3390	*8.61*	3.8583	2.1654	1.6929	0.3594	3/8-24
MDW0870GS4	●		0.3425	*8.70*	*98.0*	*55.0*	*43.0*	*9.0*	
MDW03438GS4	●	11/32	0.3438	*8.73*	3.8583	2.1654	1.6929	0.3594	
MDW0880GS4	●		0.3465	*8.80*	*98.0*	*55.0*	*43.0*	*9.0*	
MDW03480GS4	●		0.3480	*8.84*	3.8583	2.1654	1.6929	0.3594	
MDW0890GS4	●		0.3504	*8.90*	*98.0*	*55.0*	*43.0*	*9.0*	
MDW0900GS4	●		0.3543	*9.00*	*98.0*	*55.0*	*43.0*	*9.0*	
MDW03580GS4	●		0.3580	*9.09*	3.8583	2.1654	1.6929	0.3594	
MDW0910GS4	●		0.3583	*9.10*	*105.0*	*58.0*	*45.0*	*10.0*	
MDW03594GS4	●	23/64	0.3594	*9.13*	3.8583	2.1654	1.6929	0.3594	
MDW0920GS4	●		0.3622	*9.20*	*105.0*	*58.0*	*45.0*	*10.0*	
MDW0930GS4	●		0.3661	*9.30*	*105.0*	*58.0*	*45.0*	*10.0*	
MDW03680GS4	●	#U	0.3680	*9.35*	4.1339	2.2835	1.7717	0.3906	7/16-14
MDW0940GS4	●		0.3701	*9.40*	*105.0*	*58.0*	*45.0*	*10.0*	
MDW0950GS4	●		0.3740	*9.50*	*105.0*	*58.0*	*45.0*	*10.0*	
MDW03750GS4	●	3/8	0.3750	*9.53*	4.1339	2.3622	1.7717	0.3906	
MDW03770GS4	●		0.3770	*9.58*	4.1339	2.3622	1.7717	0.3906	
MDW0960GS4	●		0.3780	*9.60*	*105.0*	*60.0*	*45.0*	*10.0*	

●=USA stocked item
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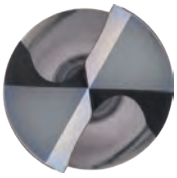
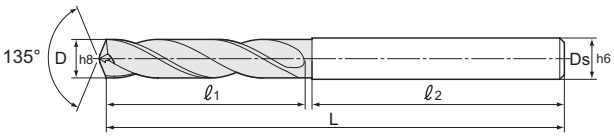
SERIES MDW-GS4





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MDW-GS4 4XD drill for excellent chip management and long tool life (External coolant)

Catalog Number (inch/*metric*)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (*mm*)	Overall Length L (in/*mm*)	Flute Length ℓ1 (in/*mm*)	Shank Length ℓ2 (in/*mm*)	Shank Diameter Ds (in/*mm*)	Tap Size
MDW0970GS4	●		0.3819	*9.70*	*105.0*	*60.0*	*45.0*	*10.0*	
MDW0980GS4	●		0.3858	*9.80*	*105.0*	*60.0*	*45.0*	*10.0*	
MDW03860GS4	●		0.3860	*9.804*	4.1339	2.3622	1.7717	0.3906	
MDW0990GS4	●		0.3898	*9.90*	*105.0*	*60.0*	*45.0*	*10.0*	
MDW03906GS4	●	25/64	0.3906	*9.92*	4.1339	2.3622	1.7717	0.3906	7/16-20
MDW1000GS4	●		0.3937	*10.00*	*105.0*	*60.0*	*45.0*	*10.0*	
MDW03970GS4	●		0.3970	*10.08*	4.4882	2.5984	1.8110	0.4375	
MDW1010GS4	●		0.3976	*10.10*	*114.0*	*66.0*	*46.0*	*11.0*	
MDW1020GS4	●		0.4016	*10.20*	*114.0*	*66.0*	*46.0*	*11.0*	M12x1.75
MDW04040GS4	●		0.4040	*10.26*	4.4882	2.5984	1.8110	0.4375	
MDW1030GS4	●		0.4055	*10.30*	*114.0*	*66.0*	*46.0*	*11.0*	
MDW04062GS4	●	13/32	0.4062	*10.32*	4.4882	2.5984	1.8110	0.4375	
MDW1040GS4	●		0.4094	*10.40*	*114.0*	*66.0*	*46.0*	*11.0*	
MDW04130GS4	●		0.4130	*10.49*	4.4882	2.5984	1.8110	0.4375	
MDW1050GS4	●		0.4134	*10.50*	*114.0*	*66.0*	*46.0*	*11.0*	
MDW1060GS4	●		0.4173	*10.60*	*114.0*	*68.0*	*46.0*	*11.0*	
MDW1070GS4	●		0.4213	*10.70*	*114.0*	*68.0*	*46.0*	*11.0*	
MDW04219GS4	●	27/64	0.4219	*10.72*	4.4882	2.6772	1.8110	0.4375	1/2-13
MDW1080GS4	●		0.4252	*10.80*	*114.0*	*68.0*	*46.0*	*11.0*	
MDW1090GS4	●		0.4291	*10.90*	*114.0*	*68.0*	*46.0*	*11.0*	
MDW1100GS4	●		0.4331	*11.00*	*114.0*	*68.0*	*46.0*	*11.0*	
MDW1110GS4	●		0.4370	*11.10*	*121.0*	*71.0*	*48.0*	*12.0*	
MDW04375GS4	●	7/16	0.4375	*11.11*	4.4882	2.6772	1.8110	0.4375	
MDW1120GS4	●		0.4409	*11.20*	*121.0*	*71.0*	*48.0*	*12.0*	
MDW1130GS4	●		0.4449	*11.30*	*121.0*	*71.0*	*48.0*	*12.0*	
MDW1140GS4	●		0.4488	*11.40*	*121.0*	*71.0*	*48.0*	*12.0*	
MDW1150GS4	●		0.4528	*11.50*	*121.0*	*71.0*	*48.0*	*12.0*	
MDW04531GS4	●	29/64	0.4531	*11.51*	4.7638	2.8740	1.8898	0.4688	1/2-20
MDW1160GS4	●		0.4567	*11.60*	*121.0*	*73.0*	*48.0*	*12.0*	
MDW1170GS4	●		0.4606	*11.70*	*121.0*	*73.0*	*48.0*	*12.0*	
MDW1180GS4	●		0.4646	*11.80*	*121.0*	*73.0*	*48.0*	*12.0*	
MDW1190GS4	●		0.4685	*11.90*	*121.0*	*73.0*	*48.0*	*12.0*	
MDW04688GS4	●	15/32	0.4688	*11.91*	4.7638	2.8740	1.8898	0.4688	
MDW1200GS4	●		0.4724	*12.00*	*121.0*	*73.0*	*48.0*	*12.0*	M14x2
MDW1210GS4	●		0.4764	*12.10*	*137.0*	*76.0*	*59.0*	*13.0*	
MDW1220GS4	●		0.4803	*12.20*	*137.0*	*76.0*	*59.0*	*13.0*	
MDW1230GS4	●		0.4843	*12.30*	*137.0*	*76.0*	*59.0*	*13.0*	9/16-12
MDW04844GS4	●	31/64	0.4844	*12.308*	5.3937	2.9921	2.3228	0.5156	
MDW1240GS4	●		0.4882	*12.40*	*137.0*	*76.0*	*59.0*	*13.0*	
MDW1250GS4	●		0.4921	*12.50*	*137.0*	*76.0*	*59.0*	*13.0*	
MDW1260GS4	●		0.4961	*12.60*	*137.0*	*78.0*	*59.0*	*13.0*	
MDW1270GS4	●	1/2	0.5000	*12.70*	*137.0*	*78.0*	*59.0*	*13.0*	
MDW05000GS4	●	1/2	0.5000	*12.70*	5.3937	3.0709	2.3228	0.5156	
MDW1280GS4	●		0.5039	*12.80*	*137.0*	*78.0*	*59.0*	*13.0*	
MDW05050GS4	●		0.5050	*12.83*	5.3937	3.0709	2.3228	0.5156	
MDW1290GS4	●		0.5079	*12.90*	*137.0*	*78.0*	*59.0*	*13.0*	
MDW1300GS4	●		0.5118	*13.00*	*137.0*	*78.0*	*59.0*	*13.0*	
MDW05156GS4	●	33/64	0.5156	*13.09*	5.3937	3.0709	2.3228	0.5156	9/16-18
MDW1310GS4	●		0.5157	*13.10*	*147.0*	*84.0*	*61.0*	*14.0*	
MDW1320GS4	●		0.5197	*13.20*	*147.0*	*84.0*	*61.0*	*14.0*	
MDW1330GS4	●		0.5236	*13.30*	*147.0*	*84.0*	*61.0*	*14.0*	
MDW1340GS4	●		0.5276	*13.40*	*147.0*	*84.0*	*61.0*	*14.0*	

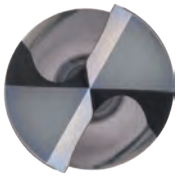
●=USA stocked item

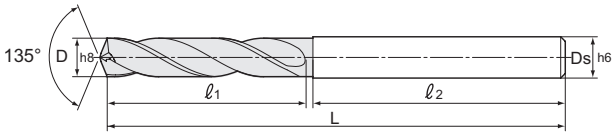
Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

(continued on next page)

MDW-GS4 Series Solid Carbide Drills

Coolant Through Drills





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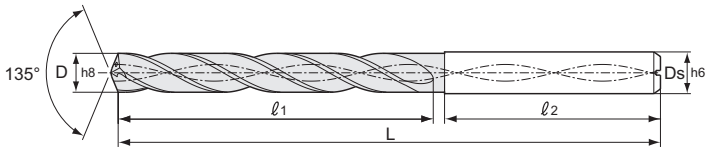
MDW-GS4 4XD drill for excellent chip management and long tool life (External coolant)

Catalog Number (inch/*metric*)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (*mm*)	Overall Length L (in/*mm*)	Flute Length ℓ_1 (in/*mm*)	Shank Length ℓ_2 (in/*mm*)	Shank Diameter D_s (in/*mm*)	Tap Size
MDW05312GS4	●	17/32	0.5312	*13.49*	5.7874	3.3071	2.4016	0.5469	5/8-11
MDW1350GS4	●		0.5315	*13.50*	*147.0*	*84.0*	*61.0*	*14.0*	
MDW1360GS4	●		0.5354	*13.60*	*147.0*	*86.0*	*61.0*	*14.0*	
MDW1370GS4	●		0.5394	*13.70*	*147.0*	*86.0*	*61.0*	*14.0*	
MDW1380GS4	●		0.5433	*13.80*	*147.0*	*86.0*	*61.0*	*14.0*	
MDW05469GS4	●	35/64	0.5469	*13.89*	5.7874	3.3858	2.4016	0.5469	M16x2
MDW1390GS4	●		0.5472	*13.90*	*147.0*	*86.0*	*61.0*	*14.0*	
MDW1400GS4	●		0.5512	*14.00*	*147.0*	*86.0*	*61.0*	*14.0*	
MDW1410GS4	●		0.5551	*14.10*	*153.0*	*89.0*	*62.0*	*15.0*	
MDW1420GS4	●		0.5591	*14.20*	*153.0*	*89.0*	*62.0*	*15.0*	
MDW05625GS4	●	9/16	0.5625	*14.29*	6.0236	3.5039	2.4409	0.5937	
MDW1430GS4	●		0.5630	*14.30*	*153.0*	*89.0*	*62.0*	*15.0*	
MDW1440GS4	●		0.5669	*14.40*	*153.0*	*89.0*	*62.0*	*15.0*	
MDW1450GS4	●		0.5709	*14.50*	*153.0*	*89.0*	*62.0*	*15.0*	
MDW1460GS4	●		0.5748	*14.60*	*153.0*	*91.0*	*62.0*	*15.0*	
MDW05781GS4	●	37/64	0.5781	*14.68*	6.0236	3.5827	2.4409	0.5937	5/8-18
MDW1470GS4	●		0.5787	*14.70*	*153.0*	*91.0*	*62.0*	*15.0*	
MDW1480GS4	●		0.5827	*14.80*	*153.0*	*91.0*	*62.0*	*15.0*	
MDW1490GS4	●		0.5866	*14.90*	*153.0*	*91.0*	*62.0*	*15.0*	
MDW1500GS4	●		0.5906	*15.00*	*153.0*	*91.0*	*62.0*	*15.0*	
MDW05937GS4	●	19/32	0.5937	*15.08*	6.0236	3.5827	2.4409	0.5937	
MDW1510GS4	●		0.5945	*15.10*	*160.0*	*94.0*	*64.0*	*16.0*	
MDW1520GS4	●		0.5984	*15.20*	*160.0*	*94.0*	*64.0*	*16.0*	
MDW1530GS4	●		0.6024	*15.30*	*160.0*	*94.0*	*64.0*	*16.0*	
MDW1540GS4	●		0.6063	*15.40*	*160.0*	*94.0*	*64.0*	*16.0*	
MDW06094GS4	●	39/64	0.6094	*15.48*	6.2992	3.7008	2.5197	0.6250	11/16-12
MDW1550GS4	●		0.6102	*15.50*	*160.0*	*94.0*	*64.0*	*16.0*	M18x2.5
MDW1560GS4	●		0.6142	*15.60*	*160.0*	*96.0*	*64.0*	*16.0*	
MDW1570GS4	●		0.6181	*15.70*	*160.0*	*96.0*	*64.0*	*16.0*	
MDW1580GS4	●		0.6220	*15.80*	*160.0*	*96.0*	*64.0*	*16.0*	
MDW06250GS4	●	5/8	0.6250	*15.88*	6.2992	3.7795	2.5197	0.6250	11/16-16
MDW1590GS4	●		0.6260	*15.90*	*160.0*	*96.0*	*64.0*	*16.0*	
MDW1600GS4	●		0.6299	*16.00*	*160.0*	*96.0*	*64.0*	*16.0*	

●=USA stocked item
Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

SERIES MDW-HGS3



MDW-HGS3 3XD drill for excellent chip management and long tool life (Internal coolant)

Catalog Number (inch/metric)	Stock	Fractional Wire & Letters	Diameter	Diameter D (mm)	Shank Diameter Ds (in/mm)	HGS3S	HGS3S Shank Diameter Ds	Overall Length L (in/mm)	Flute Length ℓ1 (in/mm)	Shank Length ℓ2 (in/mm)	Tap Size
MDW0150HGS3	●		0.059	1.50	3.0			63.0	10	50	
MDW0160HGS3	●		0.063	1.60	3.0			63.0	12	50	M2x.4
MDW0170HGS3	●		0.067	1.70	3.0			63.0	12	50	
MDW0180HGS3	●		0.071	1.80	3.0			63.0	12	50	
MDW0190HGS3	●		0.075	1.90	3.0			63.0	12	50	
MDW0200HGS3	●		0.079	2.00	3.0			63.0	12.5	48	
MDW0210HGS3	●		0.083	2.10	3.0			68.0	15	51	3-56
MDW0220HGS3	●		0.087	2.20	3.0			68.0	15	51	
MDW0230HGS3	●		0.091	2.30	3.0			68.0	15	51	
MDW00937HGS3	●	3/32	0.094	2.38	0.125	●	3.0	2.677	0.689	1.929	
MDW0240HGS3	●		0.095	2.40	3.0			68.0	15	51	
MDW0250HGS3	●		0.098	2.50	3.0			68.0	15.	51	
MDW0260HGS3	●		0.102	2.60	3.0			68.0	17.5	49	
MDW0270HGS3	●		0.106	2.70	3.0			68.0	17.5	49	6-32
MDW01094HGS3	●	7/64	0.109	2.78	0.125	●	3.0	2.677	0.689	1.929	
MDW0280HGS3	●		0.110	2.80	3.0			68.0	17.5	49	
MDW0290HGS3	●		0.114	2.90	3.0			68.0	17.5	49	3.5x.6
MDW0300HGS3	●		0.118	3.00	3.0	●	6.0	68.0	17.5	49	
MDW0310HGS3	●		0.122	3.10	4.0	●	6.0	72.0	20.0	50	
MDW01250HGS3	●	1/8	0.125	3.18	0.125	●	6.0	2.677	0.689	1.929	
MDW0320HGS3	●		0.126	3.20	4.0	●	6.0	72.0	20	50	
MDW0330HGS3	●		0.130	3.30	4.0	●	6.0	72.0	20	50	M4x.7
MDW0340HGS3	●		0.134	3.40	4.0	●	6.0	72.0	20	50	
MDW0350HGS3	●		0.138	3.50	4.0	●	6.0	72.0	20	50	
MDW0360HGS3	●		0.142	3.60	4.0	●	6.0	72.0	22.5	48	
MDW0370HGS3	●		0.146	3.70	4.0	●	6.0	72.0	22.5	48	M4.5x.7
MDW0380HGS3	●		0.150	3.80	4.0	●	6.0	72.0	22.5	48	
MDW0390HGS3	●		0.154	3.90	4.0	●	6.0	72.0	22.5	48	
MDW01562HGS3	●	5/32	0.156	3.97	0.156	●	6.0	2.835	0.886	1.890	
MDW0400HGS3	●		0.158	4.00	4.0	●	6.0	72.0	22.5	48	
MDW01590HGS3	●	#21	0.159	4.04	0.188	●	6.0	3.150	0.984	2.087	10-32
MDW0410HGS3	●		0.161	4.10	5.0	●	6.0	80.0	25	53	
MDW0420HGS3	●		0.165	4.20	5.0	●	6.0	80.0	25	53	M5x.8
MDW0430HGS3	●		0.169	4.30	5.0	●	6.0	80.0	25	53	
MDW01719HGS3	●	11/64	0.172	4.37	0.188	●	6.0	3.1	0.984	2.087	
MDW0440HGS3	●		0.173	4.40	5.0	●	6.0	80.0	25	53	
MDW0450HGS3	●		0.177	4.50	5.0	●	6.0	80.0	25	53	
MDW0460HGS3	●		0.181	4.60	5.0	●	6.0	80.0	27.5	51	
MDW0470HGS3	●		0.185	4.70	5.0	●	6.0	80.0	27.5	51	
MDW01875HGS3	●	3/16	0.188	4.76	0.188	●	6.0	3.1	1.083	2.008	
MDW0480HGS3	●		0.189	4.80	5.0	●	6.0	80.0	27.5	51	
MDW0490HGS3	●		0.193	4.90	5.0	●	6.0	80.0	27.5	51	
MDW0500HGS3	●		0.197	5.00	5.0	●	6.0	80.0	27.5	51	M6x1
MDW0510HGS3	●		0.201	5.10	6.0			82.0	27.5	53	
MDW02010HGS3	●	#7	0.201	5.11	0.234	●	6.0	3.228	1.083	2.087	1/4-2020
MDW02031HGS3	●	13/64	0.203	5.16	0.234	●	6.0	3.228	1.083	2.087	
MDW0520HGS3	●		0.205	5.20	6.0			82.0	27.5	53	
MDW0530HGS3	●		0.209	5.30	6.0			82.0	27.5	53	
MDW0540HGS3	●		0.213	5.40	6.0			82.0	27.5	53	
MDW02130HGS3	●	#3	0.213	5.41	0.234	●	6.0	3.228	1.083	2.087	
MDW0550HGS3	●		0.217	5.50	6.0			82.0	27.5	53	
MDW02188HGS3	●	7/32	0.219	5.56	0.234	●	6.0	3.228	1.181	2.047	1/4-2028

●=USA stocked item ★ = Worldwide Warehouse item available in 10 business days
Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

Items labeled in purple represent Shrink Fit Shank Drills

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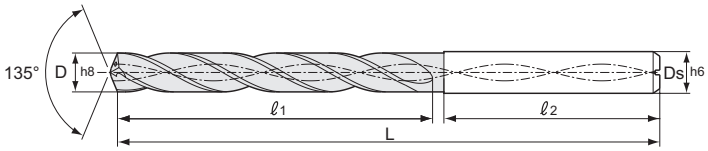
MDW-HGS3 Series Solid Carbide Drills

Coolant Through Drills



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MDW-HGS3 3XD drill for excellent chip management and long tool life (Internal coolant)

Catalog Number (inch/metric)	Stock	Fractional Wire & Letters	Diameter	Diameter D (mm)	Shank Diameter Ds (in/mm)	HGS3S	HGS3S Shank Diameter Ds	Overall Length L (in/mm)	Flute Length ℓ1 (in/mm)	Shank Length ℓ2 (in/mm)	Tap Size
MDW0560HGS3	●		0.221	5.6	6.0			82	30	52	
MDW02210HGS3	●	#2	0.221	5.61	0.234	●	6.0	3.228	1.181	2.047	
MDW0570HGS3	●		0.224	5.7	6.0			82	30	52	
MDW0580HGS3	●		0.228	5.8	6.0			82	30	52	
MDW0590HGS3	●		0.232	5.9	6.0			82	30	52	
MDW02344HGS3	●	15/64	0.234	5.95	0.234	●	6.0	3.228	1.181	2.047	
MDW0600HGS3	●		0.236	6	6.0			82	30	52	M7x1
MDW0610HGS3	●		0.240	6.1	7.0	●	8.0	88	32.5	53	
MDW02420HGS3	●	#C	0.242	6.15	0.281	●	8.0	3.465	1.280	2.087	
MDW0620HGS3	●		0.244	6.2	7.0	●	8.0	88	32.5	53	
MDW0630HGS3	●		0.248	6.3	7.0	●	8.0	88	32.5	53	
MDW02500HGS3	●	1/4	0.25	6.35	0.281	●	8.0	3.465	1.280	2.087	
MDW0640HGS3	●		0.252	6.4	7.0	●	8.0	88	32.5	53	
MDW0650HGS3	●		0.256	6.5	7.0	●	8.0	88	32.5	53	
MDW02570HGS3	●	#F	0.257	9.68	0.281	●	8.0	3.465	1.378	2.087	5/16-18
MDW0653HGS3	●		0.257	6.53	7.0	●	8.0	88	35	53	
MDW0660HGS3	●		0.260	6.6	7.0	●	8.0	88	35	53	
MDW0670HGS3	●		0.264	6.7	7.0	●	8.0	88	35	53	
MDW02656HGS3	●	17/64	0.266	6.75	0.281	●	8.0	3.465	1.378	2.087	
MDW02660HGS3	●		0.266	6.76	0.281	●	8.0	3.465	1.378	2.087	
MDW0680HGS3	●		0.268	6.8	7.0	●	8.0	88	35	53	
MDW0690HGS3	●		0.272	6.9	7.0	●	8.0	88	35	53	
MDW02720HGS3	●	#I	0.272	6.91	0.281	●	8.0	3.465	1.378	2.087	5/16-24
MDW0700HGS3	●		0.276	7	7.0	●	8.0	88	35	53	
MDW02770HGS3	●	#J	0.277	7.04	0.281	●	8.0	3.465	1.378	2.087	
MDW0710HGS3	●		0.280	7.1	8.0			94	37.5	54	
MDW02812HGS3	●	9/32	0.281	7.14	0.281	●	8.0	3.465	1.378	2.087	
MDW0720HGS3	●		0.284	7.2	8.0			94	37.5	54	
MDW0730HGS3	●		0.287	7.3	8.0			94	37.5	54	
MDW0740HGS3	●		0.291	7.4	8.0			94	37.5	54	
MDW0750HGS3	●		0.295	7.5	8.0			94	37.5	54	
MDW02969HGS3	●	19/64	0.297	7.54	0.313	●	8.0	3.701	1.575	2.126	
MDW0760HGS3	●		0.299	7.6	8.0			94	40	54	
MDW0770HGS3	●		0.303	7.7	8.0			94	40	54	
MDW0780HGS3	●		0.307	7.8	8.0			94	40	54	M9x1.25
MDW0790HGS3	●		0.311	7.9	8.0			94	40	54	
MDW03125HGS3	●	5/16	0.313	7.94	0.313	●	8.0	3.701	1.575	2.126	3/8-16
MDW0800HGS3	●		0.315	8	8.0			94	40	54	
MDW0810HGS3	●		0.319	8.1	9.0	●	10.0	100	42.5	55	
MDW0820HGS3	●		0.323	8.2	9.0	●	10.0	100	42.5	55	
MDW03230HGS3	●	#P	0.323	8.204	0.359	●	10.0	3.937	1.673	2.165	
MDW0830HGS3	●		0.327	8.3	9.0	●	10.0	100	42.5	55	
MDW03281HGS3	●	21/64	0.328	8.33	0.359	●	10.0	3.937	1.673	2.165	
MDW0840HGS3	●		0.331	8.4	9.0	●	10.0	100	42.5	55	
MDW03320HGS3	●	#Q	0.332	8.43	0.359	●	10.0	3.937	1.673	2.165	
MDW0850HGS3	●		0.335	8.5	9.0	●	10.0	100	42.5	55	M10x1.5
MDW0860HGS3	●		0.339	8.6	9.0	●	10.0	100	45	55	

●=USA stocked item ★ = Worldwide Warehouse item available in 10 business days
Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

Items labeled in purple represent Shrink Fit Shank Drills

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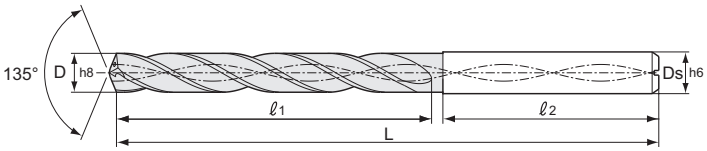
SERIES MDW-HGS3



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MDW-HGS3 3XD drill for excellent chip management and long tool life (Internal coolant)

Catalog Number (inch/metric)	Stock	Fractional Wire & Letters	Diameter	Diameter D (mm)	Shank Diameter Ds (in/mm)	HGS3S	HGS3S Shank Diameter Ds	Overall Length L (in/mm)	Flute Length ℓ1 (in/mm)	Shank Length ℓ2 (in/mm)	Tap Size
MDW0870HGS3	●		0.343	8.7	9.0	●	10.0	100	45	55	
MDW03438HGS3	●	11/32	0.344	8.73	0.359	●	10.0	3.937	1.772	2.165	
MDW0880HGS3	●		0.347	8.8	9.0	●	10.0	100	45	55	
MDW0890HGS3	●		0.350	8.9	9.0	●	10.0	100	45	55	
MDW0900HGS3	●		0.354	9	9.0	●	10.0	100	45	55	
MDW0910HGS3	●		0.358	9.1	10.0			106	47.5	56	
MDW03594HGS3	●	23/64	0.359	9.13	0.359	●	10.0	3.937	1.772	2.165	
MDW0920HGS3	●		0.362	9.2	10.0			106	47.5	56	
MDW0930HGS3	●		0.366	9.3	10.0			106	47.5	56	
MDW03680HGS3	●	#U	0.368	9.35	0.391	●	10.0	4.173	1.870	2.205	7/16-14
MDW0940HGS3	●		0.370	9.4	10.0			106	47.5	56	
MDW0950HGS3	●		0.374	9.5	10.0			106	47.5	56	
MDW03750HGS3	●	3/8	0.375	9.53	0.391	●	10.0	4.173	1.969	2.205	
MDW0960HGS3	●		0.378	9.6	10.0			106	50	56	
MDW0970HGS3	●		0.382	9.7	10.0			106	50	56	
MDW0980HGS3	●		0.386	9.8	10.0			106	50	56	
MDW0990HGS3	●		0.390	9.9	10.0			106	50	56	
MDW03906HGS3	●	25/64	0.391	9.92	0.391	●	10.0	4.173	1.969	2.205	7/16-20
MDW1000HGS3	●		0.394	10	10.0			106	50	56	
MDW1010HGS3	●		0.398	10.1	11.0	●	12.0	116	52.5	61	
MDW1020HGS3	●		0.402	10.2	11.0	●	12.0	116	52.5	61	M12x1.75
MDW1030HGS3	●		0.406	10.3	11.0	●	12.0	116	52.5	61	
MDW04062HGS3	●	13/32	0.406	10.32	0.438	●	12.0	4.567	2.067	2.402	
MDW1040HGS3	●		0.409	10.4	11.0	●	12.0	116	52.5	61	
MDW1050HGS3	●		0.413	10.5	11.0	●	12.0	116	52.5	61	
MDW1060HGS3	●		0.417	10.6	11.0	●	12.0	116	55	61	
MDW1070HGS3	●		0.421	10.7	11.0	●	12.0	116	55	61	
MDW04219HGS3	●	27/64	0.422	10.72	0.438	●	12.0	4.567	2.165	2.402	1/2-13
MDW1080HGS3	●		0.425	10.8	11.0	●	12.0	116	55	61	
MDW1090HGS3	●		0.429	10.9	11.0	●	12.0	116	55	61	
MDW1100HGS3	●		0.433	11	11.0	●	12.0	116	55	61	
MDW1110HGS3	●		0.437	11.1	12.0			122	57.5	62	
MDW04375HGS3	●	7/16	0.438	11.11	0.438	●	12.0	4.567	2.165	2.402	
MDW1120HGS3	●		0.441	11.2	12.0			122	57.5	62	
MDW1130HGS3	●		0.445	11.3	12.0			122	57.5	62	
MDW1140HGS3	●		0.449	11.4	12.0			122	57.5	62	
MDW1150HGS3	●		0.453	11.5	12.0			122	57.5	62	
MDW04531HGS3	●	29/64	0.453	11.51	0.469	●	12.0	4.803	2.362	2.441	1/2-20
MDW1160HGS3	●		0.457	11.6	12.0			122	60	62	
MDW1170HGS3	●		0.461	11.7	12.0			122	60	62	
MDW1180HGS3	●		0.465	11.8	12.0			122	60	62	
MDW1190HGS3	●		0.469	11.9	12.0			122	60	62	
MDW04688HGS3	●	15/32	0.469	11.91	0.469	●	12.0	4.803	2.362	2.441	
MDW1200HGS3	●		0.472	12	12.0			122	60	62	M14x2
MDW1210HGS3	●		0.476	12.1	13.0	●	14.0	128	62.5	63	
MDW1220HGS3	●		0.480	12.2	13.0	●	14.0	128	62.5	63	
MDW1230HGS3	●		0.484	12.3	13.0	●	14.0	128	62.5	63	9/16-12

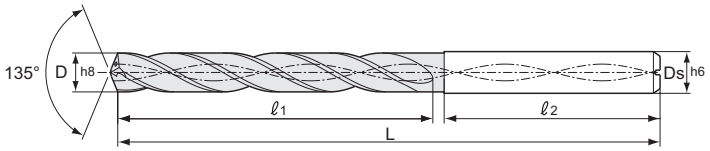
●=USA stocked item ★ = Worldwide Warehouse item available in 10 business days
Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.
Items labeled in purple represent Shrink Fit Shank Drills

(continued on next page)

MDW-HGS3

MDW-HGS3 Series Solid Carbide Drills

Coolant Through Drills



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MDW-HGS3 3XD drill for excellent chip management and long tool life (Internal coolant)

Catalog Number (inch/metric)	Stock	Fractional Wire & Letters	Diameter	Diameter D (mm)	Shank Diameter Ds (in/mm)	HGS3S	HGS3S Shank Diameter Ds	Overall Length L (in/mm)	Flute Length ℓ1 (in/ mm)	Shank Length ℓ2 (in/mm)	Tap Size
MDW04844HGS3	●	31/64	0.484	12.304	0.516	●	14.0	5.039	2.461	2.480	
MDW1240HGS3	●		0.488	12.4	13.0	●	14.0	128	62.5	63	
MDW1250HGS3	●		0.492	12.5	13.0	●	14.0	128	62.5	63	
MDW1260HGS3	●		0.496	12.6	13.0	●	14.0	128	65	63	
MDW1270HGS3	●	1/2	0.5	12.7	13.0	●	14.0	128	65	63	
MDW05000HGS3	●	1/2	0.5	12.7	0.516	●	14.0	5.039	2.559	2.480	
MDW1280HGS3	●		0.504	12.8	13.0	●	14.0	128	65	63	
MDW1290HGS3	●		0.508	12.9	13.0	●	14.0	128	65	63	
MDW1300HGS3	●		0.512	13	13.0	●	14.0	128	65	63	
MDW05156HGS3	●	33/64	0.516	13.09	0.516	●	14.0	5.039	2.559	2.480	9/16-18
MDW1310HGS3	●		0.516	13.1	14.0			134	67.5	64	
MDW1320HGS3	●		0.520	13.2	14.0			134	67.5	64	
MDW1330HGS3	●		0.524	13.3	14.0			134	67.5	64	
MDW1340HGS3	●		0.528	13.4	14.0			134	67.5	64	
MDW05312HGS3	●	17/32	0.531	13.49	0.547	●	14.0	5.276	2.658	2.520	5/8-11
MDW1350HGS3	●		0.532	13.5	14.0			134	67.5	64	
MDW1360HGS3	●		0.535	13.6	14.0			134	70	64	
MDW1370HGS3	●		0.539	13.7	14.0			134	70	64	
MDW1380HGS3	●		0.543	13.8	14.0			134	70	64	
MDW05469HGS3	●	35/64	0.547	13.89	0.547	●	14.0	5.276	2.756	2.520	M16x2
MDW1390HGS3	●		0.547	13.9	14.0			134	70	64	
MDW1400HGS3	●		0.551	14	14.0			134	70	64	
MDW1410HGS3	●		0.555	14.1	15.0	●	16.0	140	72.5	65	
MDW1420HGS3	●		0.559	14.2	15.0	●	16.0	140	72.5	65	
MDW05625HGS3	●	9/16	0.563	14.29	0.594	●	16.0	5.512	2.854	2.559	
MDW1430HGS3	●		0.563	14.3	15.0	●	16.0	140	72.5	65	
MDW1440HGS3	●		0.567	14.4	15.0	●	16.0	140	72.5	65	
MDW1450HGS3	●		0.571	14.5	15.0	●	16.0	140	72.5	65	
MDW1460HGS3	●		0.575	14.6	15.0	●	16.0	140	75	65	
MDW05781HGS3	●	37/64	0.578	14.68	0.594	●	16.0	5.512	2.953	2.559	5/8-18
MDW1470HGS3	●		0.579	14.7	15.0	●	16.0	140	75	65	
MDW1480HGS3	●		0.583	14.8	15.0	●	16.0	140	75	65	
MDW1490HGS3	●		0.587	14.9	15.0	●	16.0	140	75	65	
MDW1500HGS3	●		0.591	15	15.0	●	16.0	140	75	65	
MDW05937HGS3	●	19/32	0.594	15.08	0.594	●	16.0	5.512	2.953	2.559	
MDW1510HGS3	●		0.595	15.1	16.0			146	77.5	66	
MDW1520HGS3	●		0.598	15.2	16.0			146	77.5	66	
MDW1530HGS3	●		0.602	15.3	16.0			146	77.5	66	
MDW1540HGS3	●		0.606	15.4	16.0			146	77.5	66	
MDW06094HGS3	●	39/64	0.609	15.48	0.625	●	16.0	5.748	3.051	2.598	11/16-12
MDW1550HGS3	●		0.610	15.5	16.0			146	77.5	66	M18x2.5
MDW1560HGS3	●		0.614	15.6	16.0			146	80	66	
MDW1570HGS3	●		0.618	15.7	16.0			146	80	66	
MDW1580HGS3	●		0.622	15.8	16.0			146	80	66	
MDW06250HGS3	●	5/8	0.625	15.88	0.625	●	16.0	5.748	3.150	2.598	11/16-16
MDW1590HGS3	●		0.626	15.9	16.0			146	80	66	
MDW1600HGS3	●		0.630	16	16.0			146	80	66	
MDW1650HGS3	★		0.650	16.5	17.0			152	82.5	70	M18x1.5
MDW1700HGS3	★		0.669	17	17.0			152	85	70	
MDW1750HGS3	★		0.689	17.5	17.0			158	87.5	70	M20x2.5
MDW1800HGS3	★		0.709	18	18.0			158	90	70	
MDW1850HGS3	★		0.728	18.5	18.0			164	92.5	70	M20x1.5
MDW1900HGS3	★		0.748	19	19.0			164	95	70	
MDW1950HGS3	★		0.768	19.5	19.0			170	97.5	70	
MDW2000HGS3	★		0.787	20	20.0			170	100	70	

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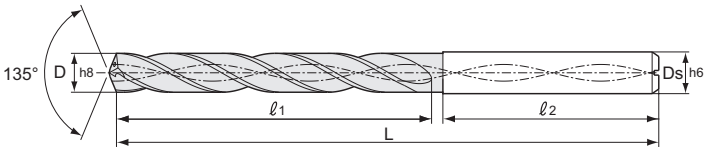
Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

Items labeled in purple represent Shrink Fit Shank Drills

SERIES MDW-HGS5



MDW-HGS5 5XD drill for excellent chip management and long tool life (Internal coolant)

Catalog Number (inch/metric)	Stock	Fractional Wire & Letters	Diameter	Diameter D (mm)	Shank Diameter Ds (in/mm)	HGS5S	HGS5S Shank Diameter Ds	Overall Length L (in/mm	Flute Length ℓ1 (in/mm)	Shank Length ℓ2 (in/mm)	Tap Size
MDW0150HGS5	●		0.0591	1.5	3.0			70	14	56	
MDW0160HGS5	●		0.063	1.6	3.0			70	19	51	
MDW0170HGS5	●		0.067	1.7	3.0			70	19	51	
MDW0180HGS5	●		0.0709	1.8	3.0			70	19	51	
MDW0190HGS5	●		0.0748	1.9	3.0			70	19	51	
MDW0200HGS5	●		0.0787	2	3.0			70	19	49	
MDW0210HGS5	●		0.0827	2.1	3.0			78	24	52	
MDW0220HGS5	●		0.0866	2.2	3.0			78	24	52	
MDW0230HGS5	●		0.0906	2.3	3.0			78	24	52	
MDW00937HGS5	●	3/32	0.0937	2.38	0.125	●	3.0	3.0709	0.9449	1.8898	
MDW0240HGS5	●		0.0945	2.4	3.0			78	24	52	
MDW0250HGS5	●		0.0984	2.5	3.0			78	24	52	
MDW0260HGS5	●		0.1024	2.6	3.0			78	28	48	
MDW0270HGS5	●		0.1063	2.7	3.0			78	28	48	
MDW01094HGS5	●	7/64	0.1094	2.78	0.125	●	3.0	3.0709	1.1024	1.8898	
MDW0280HGS5	●		0.1102	2.8	3.0			78	28	48	
MDW0290HGS5	●		0.1142	2.9	3.0			78	28	48	
MDW0300HGS5	●		0.1181	3	3.0	●	6.0	78	28	48	
MDW0310HGS5	●		0.122	3.1	4.0	●	6.0	86	32	52	
MDW01250HGS5	●	1/8	0.125	3.18	0.125	●	3.0	3.0709	1.1024	1.8898	
MDW0320HGS5	●		0.126	3.2	4.0	●	6.0	86	32	52	
MDW0330HGS5	●		0.1299	3.3	4.0	●	6.0	86	32	52	
MDW0340HGS5	●		0.1339	3.4	4.0	●	6.0	86	32	52	
MDW0350HGS5	●		0.1378	3.5	4.0	●	6.0	86	32	52	
MDW01406HGS5	●		0.1406	3.57	0.1562	●	6.0	3.3858	1.4173	1.8898	
MDW0360HGS5	●		0.1417	3.6	4.0	●	6.0	86	36	48	
MDW0370HGS5	●		0.1457	3.7	4.0	●	6.0	86	36	48	
MDW0380HGS5	●		0.1496	3.8	4.0	●	6.0	86	36	48	
MDW0390HGS5	●		0.1535	3.9	4.0	●	6.0	86	36	48	
MDW01562HGS5	●	5/32	0.1562	3.97	0.1562	●	6.0	3.3858	1.4173	1.8898	
MDW0400HGS5	●		0.1575	4	4.0	●	6.0	86	36	48	
MDW01590HGS5	●	#21	0.159	4.04	0.1875	●	6.0	3.8583	1.5748	2.2047	
MDW0410HGS5	●		0.1614	4.1	5.0	●	6.0	98	40	56	
MDW0420HGS5	●		0.1654	4.2	5.0	●	6.0	98	40	56	
MDW0430HGS5	●		0.1693	4.3	5.0	●	6.0	98	40	56	
MDW01719HGS5	●	11/64	0.1719	4.37	0.1875	●	6.0	3.8583	1.5748	2.2047	
MDW0440HGS5	●		0.1732	4.4	5.0	●	6.0	98	40	56	
MDW0450HGS5	●		0.1772	4.5	5.0	●	6.0	98	40	56	
MDW0460HGS5	●		0.1811	4.6	5.0	●	6.0	98	44	52	
MDW0470HGS5	●		0.185	4.7	5.0	●	6.0	98	44	52	
MDW01875HGS5	●	3/16	0.1875	4.76	0.1875	●	6.0	3.8583	1.7323	2.0472	
MDW0480HGS5	●		0.189	4.8	5.0	●	6.0	98	44	52	
MDW0490HGS5	●		0.1929	4.9	5.0	●	6.0	98	44	52	
MDW0500HGS5	●		0.1969	5	5.0	●	6.0	98	44	52	
MDW0510HGS5	●		0.2008	5.1	6.0			100	44	54	
MDW02031HGS5	●	13/64	0.2031	5.16	0.2344	●	6.0	3.937	1.7323	2.126	
MDW0520HGS5	●		0.2047	5.2	6.0			100	44	54	
MDW0530HGS5	●		0.2087	5.3	6.0			100	44	54	
MDW0540HGS5	●		0.2126	5.4	6.0			100	44	54	
MDW02130HGS5	●	#3	0.213	5.41	0.2344	●	6.0	3.937	1.7323	2.126	
MDW0550HGS5	●		0.2165	5.5	6.0			100	44	54	
MDW02188HGS5	●	7/32	0.2188	5.56	0.2344	●	6.0	3.937	1.8898	2.0472	
MDW0560HGS5	●		0.2205	5.6	6.0			100	48	52	
MDW02210HGS5	●	#2	0.221	5.61	0.2344	●	6.0	3.937	1.8898	2.0472	
MDW0570HGS5	●		0.2244	5.7	6.0			100	48	52	
MDW0580HGS5	●		0.2283	5.8	6.0			100	48	52	

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Items labeled in purple represent Shrink Fit Shank Drills

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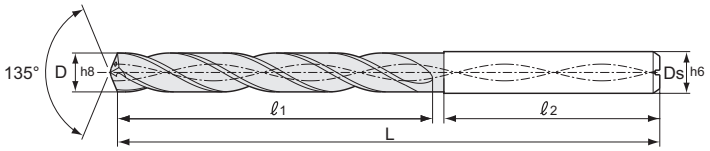
MDW-HGS5 Series Solid Carbide Drills

Coolant Through Drills



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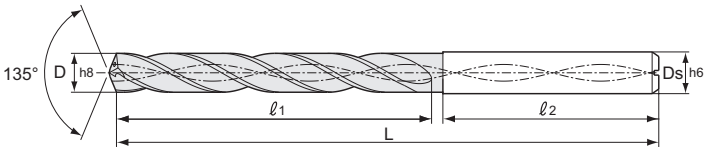
MDW-HGS5 5XD drill for excellent chip management and long tool life (Internal coolant)

Catalog Number (inch/*metric*)	Stock	Fractional Wire & Letters	Diameter	Diameter D (*mm*)	Shank Diameter Ds (in/*mm*)	HGS5S	HGS5S Shank Diameter Ds	Overall Length L (in/*mm*)	Flute Length ℓ1 (in/*mm*)	Shank Length ℓ2 (in/*mm*)	Tap Size
MDW0590HGS5	●		0.2323	*5.9*	*6.0*			*100*	*48*	*52*	
MDW02344HGS5	●	15/64	0.2344	*5.95*	0.2344	●	6.0	3.937	1.8898	2.0472	
MDW0600HGS5	●		0.2362	*6.0*	*6.0*			*100*	*48*	*52*	
MDW0610HGS5	●		0.2402	*6.1*	*7.0*	●	*8.0*	*109*	*52*	*53*	
MDW0620HGS5	●		0.2441	*6.2*	*7.0*	●	*8.0*	*109*	*52*	*53*	
MDW0630HGS5	●		0.248	*6.3*	*7.0*	●	*8.0*	*109*	*52*	*53*	
MDW02500HGS5	●	1/4	0.25	*6.35*	0.2812	●	8.0	4.2913	2.0472	2.0866	
MDW0640HGS5	●		0.252	*6.4*	*7.0*	●	*8.0*	*109*	*52*	*53*	
MDW0650HGS5	●		0.2559	*6.5*	*7.0*	●	*8.0*	*109*	*52*	*53*	
MDW02570HGS5	●	#F	0.257	*6.53*	0.2812	●	8.0	4.2913	2.2047	2.0866	
MDW0653HGS5	●		0.2571	*6.53*	*7.0*	●	*8.0*	*109*	*56*	*53*	
MDW0660HGS5	●		0.2598	*6.6*	*7.0*	●	*8.0*	*109*	*56*	*53*	
MDW0670HGS5	●		0.2638	*6.7*	*7.0*	●	*8.0*	*109*	*56*	*53*	
MDW02656HGS5	●	17/64	0.2656	*6.75*	0.2812	●	8.0	4.2913	2.2047	2.0866	
MDW02660HGS5	●	#H	0.266	*6.76*	0.2812	●	8.0	4.2913	2.2047	2.0866	
MDW0680HGS5	●		0.2677	*6.8*	*7.0*	●	*8.0*	*109*	*56*	*53*	
MDW0690HGS5	●		0.2717	*6.9*	*7.0*	●	*8.0*	*109*	*56*	*53*	
MDW02720HGS5	●	#I	0.272	*6.91*	0.2812	●	8.0	4.2913	2.2047	2.0866	
MDW0700HGS5	●		0.2756	*7*	*7.0*	●	*8.0*	*109*	*56*	*53*	
MDW02770HGS5	●	#J	0.277	*7.04*	0.2812	●	8.0	4.2913	2.2047	2.0866	
MDW0710HGS5	●		0.2795	*7.1*	*8.0*			*118*	*60*	*54*	
MDW02812HGS5	●	9/32	0.2812	*7.14*	0.2812	●	8.0	4.2913	2.2047	2.0866	
MDW0720HGS5	●		0.2835	*7.2*	*8.0*			*118*	*60*	*54*	
MDW0730HGS5	●		0.2874	*7.3*	*8.0*			*118*	*60*	*54*	
MDW0740HGS5	●		0.2913	*7.4*	*8.0*			*118*	*60*	*54*	
MDW0750HGS5	●		0.2953	*7.5*	*8.0*			*118*	*60*	*54*	
MDW02969HGS5	●	19/64	0.2969	*7.54*	0.3125	●	8.0	4.6457	2.5197	2.126	
MDW0760HGS5	●		0.2992	*7.6*	*8.0*			*118*	*64*	*54*	
MDW0770HGS5	●		0.3031	*7.7*	*8.0*			*118*	*64*	*54*	
MDW0780HGS5	●		0.3071	*7.8*	*8.0*			*118*	*64*	*54*	
MDW0790HGS5	●		0.311	*7.9*	*8.0*			*118*	*64*	*54*	
MDW03125HGS5	●	5/16	0.3125	*7.94*	0.3125	●	8.0	4.6457	2.5197	2.126	
MDW0800HGS5	●		0.315	*8*	*8.0*			*118*	*64*	*54*	
MDW0810HGS5	●		0.3189	*8.1*	*9.0*	●	*10.0*	*127*	*68*	*55*	
MDW0820HGS5	●		0.3228	*8.2*	*9.0*	●	*10.0*	*127*	*68*	*55*	
MDW03230HGS5	●	#P	0.323	*8.204*	0.3594	●	10.0	5	2.6772	2.1654	
MDW0830HGS5	●		0.3268	*8.3*	*9.0*	●	*10.0*	*127*	*68*	*55*	
MDW03281HGS5	●	21/64	0.3281	*8.33*	0.3594	●	10.0	5	2.6772	2.1654	
MDW0840HGS5	●		0.3307	*8.4*	*9.0*	●	*10.0*	*127*	*68*	*55*	
MDW03320HGS5	●	#Q	0.332	*8.43*	0.3594	●	10.0	5	2.6772	2.1654	
MDW0850HGS5	●		0.3346	*8.5*	*9.0*	●	*10.0*	*127*	*68*	*55*	
MDW0860HGS5	●		0.3386	*8.6*	*9.0*	●	*10.0*	*127*	*72*	*55*	
MDW0870HGS5	●		0.3425	*8.7*	*9.0*	●	*10.0*	*127*	*72*	*55*	
MDW03438HGS5	●	11/32	0.3438	*8.73*	0.3594	●	10.0	5	2.8346	2.1654	
MDW0880HGS5	●		0.3465	*8.8*	*9.0*	●	*10.0*	*127*	*72*	*55*	
MDW0890HGS5	●		0.3504	*8.9*	*9.0*	●	*10.0*	*127*	*72*	*55*	
MDW0900HGS5	●		0.3543	*9*	*9.0*	●	*10.0*	*127*	*72*	*55*	
MDW0910HGS5	●		0.3583	*9.1*	*10.0*			*136*	*76*	*56*	
MDW03594HGS5	●	23/64	0.3594	*9.13*	0.3594	●	10.0	5	2.8346	2.1654	
MDW0920HGS5	●		0.3622	*9.2*	*10.0*			*136*	*76*	*56*	
MDW0930HGS5	●		0.3661	*9.3*	*10.0*			*136*	*76*	*56*	
MDW03680HGS5	●	#U	0.368	*9.35*	0.3906	●	10.0	5.3543	2.9921	2.2047	

●=USA stocked item ★ = Worldwide Warehouse item available in 10 business days
Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.
Items labeled in purple represent Shrink Fit Shank Drills

(continued on next page)

SERIES MDW-HGS5



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MDW-HGS5 5XD drill for excellent chip management and long tool life (Internal coolant)

Catalog Number (inch/*metric*)	Stock	Fractional Wire & Letters	Diameter	Diameter D (*mm*)	Shank Diameter Ds (in/*mm*)	HGS5S	HGS5S Shank Diameter Ds	Overall Length L (in/*mm*)	Flute Length ℓ1 (in/*mm*)	Shank Length ℓ2(in/*mm*)	Tap Size
MDW0940HGS5	●		0.3701	*9.4*	*10.0*			*136*	*76*	*56*	
MDW0950HGS5	●		0.374	*9.5*	*10.0*			*136*	*76*	*56*	
MDW03750HGS5	●	3/8	0.375	*9.53*	0.3906	●	10.0	5.3543	3.1496	2.2047	
MDW0960HGS5	●		0.378	*9.6*	*10.0*			*136*	*80*	*56*	
MDW0970HGS5	●		0.3819	*9.7*	*10.0*			*136*	*80*	*56*	
MDW0980HGS5	●		0.3858	*9.8*	*10.0*			*136*	*80*	*56*	
MDW0990HGS5	●		0.3898	*9.9*	*10.0*			*136*	*80*	*56*	
MDW03906HGS5	●	25/64	0.3906	*9.92*	0.3906	●	10.0	5.3543	3.1496	2.2047	
MDW1000HGS5	●		0.3937	*10*	*10.0*			*136*	*80*	*56*	
MDW1010HGS5	●		0.3976	*10.1*	*11.0*	●	*12.0*	*149*	*84*	*61*	
MDW1020HGS5	●		0.4016	*10.2*	*11.0*	●	*12.0*	*149*	*84*	*61*	
MDW1030HGS5	●		0.4055	*10.3*	*11.0*	●	*12.0*	*149*	*84*	*61*	
MDW04062HGS5	●	13/32	0.4062	*10.32*	0.4375	●	12.0	5.8661	3.3071	2.4016	
MDW1040HGS5	●		0.4094	*10.4*	*11.0*	●	*12.0*	*149*	*84*	*61*	
MDW1050HGS5	●		0.4134	*10.5*	*11.0*	●	*12.0*	*149*	*84*	*61*	
MDW1060HGS5	●		0.4173	*10.6*	*11.0*	●	*12.0*	*149*	*88*	*61*	
MDW1070HGS5	●		0.4213	*10.7*	*11.0*	●	*12.0*	*149*	*88*	*61*	
MDW04219HGS5	●	27/64	0.4219	*10.72*	0.4375	●	12.0	5.8661	3.4646	2.4016	
MDW1080HGS5	●		0.4252	*10.8*	*11.0*	●	*12.0*	*149*	*88*	*61*	
MDW1090HGS5	●		0.4291	*10.9*	*11.0*	●	*12.0*	*149*	*88*	*61*	
MDW1100HGS5	●		0.4331	*11*	*11.0*	●	*12.0*	*149*	*88*	*61*	
MDW1110HGS5	●		0.437	*11.1*	*12.0*			*158*	*92*	*62*	
MDW04375HGS5	●	7/16	0.4375	*11.11*	0.4375	●	12.0	5.8661	3.4646	2.4016	
MDW1120HGS5	●		0.4409	*11.2*	*12.0*			*158*	*92*	*62*	
MDW1130HGS5	●		0.4449	*11.3*	*12.0*			*158*	*92*	*62*	
MDW1140HGS5	●		0.4488	*11.4*	*12.0*			*158*	*92*	*62*	
MDW1150HGS5	●		0.4528	*11.5*	*12.0*			*158*	*92*	*62*	
MDW04531HGS5	●	29/64	0.4531	*11.51*	0.4688	●	12.0	6.2205	3.7795	2.4409	
MDW1160HGS5	●		0.4567	*11.6*	*12.0*			*158*	*96*	*62*	
MDW1170HGS5	●		0.4606	*11.7*	*12.0*			*158*	*96*	*62*	
MDW1180HGS5	●		0.4646	*11.8*	*12.0*			*158*	*96*	*62*	
MDW1190HGS5	●		0.4685	*11.9*	*12.0*			*158*	*96*	*62*	
MDW04688HGS5	●	15/32	0.4688	*11.91*	0.4688	●	12.0	6.2205	3.7795	2.4409	
MDW1200HGS5	●		0.4724	*12*	*12.0*			*158*	*96*	*62*	
MDW1210HGS5	●		0.4764	*12.1*	*13.0*	●	*14.0*	*167*	*100*	*63*	
MDW1220HGS5	●		0.4803	*12.2*	*13.0*	●	*14.0*	*167*	*100*	*63*	
MDW1230HGS5	●		0.4843	*12.3*	*13.0*	●	*14.0*	*167*	*100*	*63*	
MDW04844HGS5	●	31/64	0.4844	*12.304*	0.5156	●	14.0	6.5748	3.937	2.4803	
MDW1240HGS5	●		0.4882	*12.4*	*13.0*	●	*14.0*	*167*	*100*	*63*	
MDW1250HGS5	●		0.4921	*12.5*	*13.0*	●	*14.0*	*167*	*100*	*63*	
MDW1260HGS5	●		0.4961	*12.6*	*13.0*	●	*14.0*	*167*	*104*	*63*	
MDW1270HGS5	●	*1/2*	0.5	*12.7*	*13.0*	●	*14.0*	*167*	*104*	*63*	
MDW05000HGS5	●	1/2	0.5	*12.7*	0.5156	●	14.0	6.5748	4.0945	2.4803	
MDW1280HGS5	●		0.5039	*12.8*	*13.0*	●	*14.0*	*167*	*104*	*63*	
MDW1283HGS5	●		0.5051	*12.83*	*13.0*	●	*14.0*	*167*	*104*	*63*	
MDW1290HGS5	●		0.5079	*12.9*	*13.0*	●	*14.0*	*167*	*104*	*63*	
MDW1300HGS5	●		0.5118	*13*	*13.0*	●	*14.0*	*167*	*104*	*63*	
MDW05156HGS5	●	33/64	0.5156	*13.09*	0.5156	●	14.0	6.5748	4.0945	2.4803	
MDW1310HGS5	●		0.5157	*13.1*	*14.0*			*176*	*108*	*64*	
MDW1320HGS5	●		0.5197	*13.2*	*14.0*			*176*	*108*	*64*	
MDW1330HGS5	●		0.5236	*13.3*	*14.0*			*176*	*108*	*64*	
MDW1340HGS5	●		0.5276	*13.4*	*14.0*			*176*	*108*	*64*	
MDW05312HGS5	●	17/32	0.5312	*13.49*	0.5469	●	14.0	6.9291	4.252	2.5197	
MDW1350HGS5	●		0.5315	*13.5*	*14.0*			*176*	*108*	*64*	

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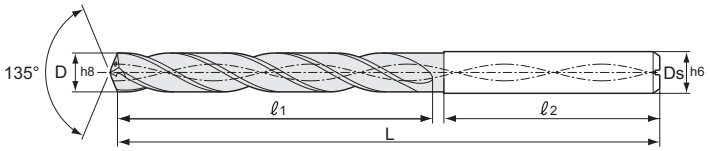
Items labeled in purple represent Shrink Fit Shank Drills

(continued on next page)

MDW-HGS5 Series Solid Carbide Drills

Coolant Through Drills



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MDW-HGS5 5XD drill for excellent chip management and long tool life (Internal coolant)

Catalog Number (inch/*metric*)	Stock	Fractional Wire & Letters	Diameter	Diameter D (*mm*)	Shank Diameter Ds (in/*mm*)	HGS5S	HGS5S Shank Diameter Ds	Overall Length L (in/*mm*)	Flute Length ℓ1 (in/*mm*)	Shank Length ℓ2 (in/*mm*)	Tap Size
MDW1360HGS5	●		0.5354	*13.6*	*14.0*			*176*	*112*	*64*	
MDW1370HGS5	●		0.5394	*13.7*	*14.0*			*176*	*112*	*64*	
MDW1380HGS5	●		0.5433	*13.8*	*14.0*			*176*	*112*	*64*	
MDW05469HGS5	●	35/64	0.5469	*13.89*	0.5469	●	14.0	6.9291	4.4094	2.5197	
MDW1390HGS5	●		0.5472	*13.9*	*14.0*			*176*	*112*	*64*	
MDW1400HGS5	●		0.5512	*14*	*14.0*			*176*	*112*	*64*	
MDW1410HGS5	●		0.5551	*14.1*	*15.0*	●	*16.0*	*185*	*116*	*65*	
MDW1420HGS5	●		0.5591	*14.2*	*15.0*	●	*16.0*	*185*	*116*	*65*	
MDW05625HGS5	●	9/16	0.5625	*14.29*	0.5937	●	16.0	7.2835	4.5669	2.5591	
MDW1430HGS5	●		0.563	*14.3*	*15.0*	●	*16.0*	*185*	*116*	*65*	
MDW1440HGS5	●		0.5669	*14.4*	*15.0*	●	*16.0*	*185*	*116*	*65*	
MDW1450HGS5	●		0.5709	*14.5*	*15.0*	●	*16.0*	*185*	*116*	*65*	
MDW1460HGS5	●		0.5748	*14.6*	*15.0*	●	*16.0*	*185*	*120*	*65*	
MDW05781HGS5	●	37/64	0.5781	*14.68*	0.5937	●	16.0	7.2835	4.7244	2.5591	5/8-18
MDW1470HGS5	●		0.5787	*14.7*	*15.0*	●	*16.0*	*185*	*120*	*65*	
MDW1480HGS5	●		0.5827	*14.8*	*15.0*	●	*16.0*	*185*	*120*	*65*	
MDW1490HGS5	●		0.5866	*14.9*	*15.0*	●	*16.0*	*185*	*120*	*65*	
MDW1500HGS5	●		0.5906	*15*	*15.0*	●	*16.0*	*185*	*120*	*65*	
MDW05937HGS5	●	19/32	0.5937	*15.08*	0.5937	●	16.0	7.2835	4.7244	2.5591	
MDW1510HGS5	●		0.5945	*15.1*	*16.0*			*194*	*124*	*66*	
MDW1520HGS5	●		0.5984	*15.2*	*16.0*			*194*	*124*	*66*	
MDW1530HGS5	●		0.6024	*15.3*	*16.0*			*194*	*124*	*66*	
MDW1540HGS5	●		0.6063	*15.4*	*16.0*			*194*	*124*	*66*	
MDW06094HGS5	●	39/64	0.6094	*15.48*	0.625	●	16.0	7.6378	4.8819	2.5984	11/16-12
MDW1550HGS5	●		0.6102	*15.5*	*16.0*			*194*	*124*	*66*	*M18x2.5*
MDW1560HGS5	●		0.6142	*15.6*	*16.0*			*194*	*128*	*66*	
MDW1570HGS5	★		0.6181	*15.7*	*16.0*			*194*	*128*	*66*	
MDW1580HGS5	●		0.622	*15.8*	*16.0*			*194*	*128*	*66*	
MDW06250HGS5	●	5/8	0.625	*15.88*	0.625	●	16.0	7.6378	5.0394	2.5984	11/16-16
MDW1590HGS5	●		0.626	*15.9*	*16.0*			194	*128*	*66*	
MDW1600HGS5	●		0.6299	*16*	*16.0*			194	*128*	*66*	
MDW1650HGS5	★		0.6496	*16.5*	*17.0*			*203*	*136*	*67*	
MDW1700HGS5	★		0.6693	*17*	*17.0*			*203*	*136*	*67*	
MDW1750HGS5	★		0.689	*17.5*	*18.0*			*214*	*140*	*74*	
MDW1800HGS5	★		0.7087	*18*	*18.0*			*214*	*144*	*70*	
MDW1850HGS5	★		0.7284	*18.5*	*19.0*			*221*	*148*	*73*	
MDW1900HGS5	★		0.748	*19*	*19.0*			*221*	*152*	*69*	
MDW1950HGS5	★		0.7677	*19.5*	*20.0*			*230*	*156*	*74*	
MDW2000HGS5	★		0.7874	*20*	*20.0*			*230*	*160*	*70*	

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Items labeled in purple represent Shrink Fit Shank Drills

SERIES MDW-HGS8

h8 Manufacturing Tolerances

Tolerances of Diameters (in.)		Tolerances of Diameters (in.)		Tolerances of Diameters (in.)	
D ≤ .118	+0 -.00055	.236 < D ≤ .394	+0 -.00087	.709 < D ≤ .768	+0 -.00130
.118 < D ≤ .236	+0 -.00071	.394 < D ≤ .709	+0 -.00106		

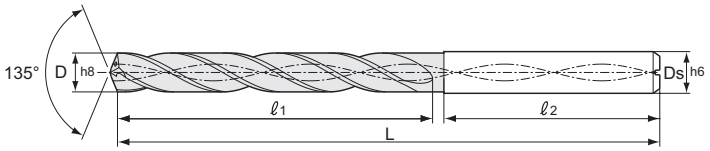
MDW-HGS8 8XD drill for excellent chip management and long tool life (Internal coolant)

Catalog Number (inch/*metric*)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (*mm*)	Overall Length L (in/*mm*)	Flute Length ℓ_1 (in/*mm*)	Shank Length ℓ_2 (in/*mm*)	Shank Diameter D_s (in/*mm*)	Tap Size
MDW0150HGS8	●		0.0591	*1.50*	*70.0*	*18.5*		*3.00*	
MDW0200HGS8	●		0.0787	*2.00*	*76.00*	*24.00*	*50.00*	*3.00*	
MDW0210HGS8			0.0827	*2.10*	*81.00*	*27.50*	*52.00*	*3.00*	3-56
MDW0220HGS8			0.0866	*2.20*	*81.00*	*27.50*	*52.00*	*3.00*	
MDW0230HGS8			0.0906	*2.30*	*81.00*	*27.50*	*52.00*	*3.00*	
MDW00937HGS8	●	3/32	0.0937	2.38	3.1890	1.0827	2.0472	0.1250	
MDW0240HGS8			0.0945	*2.40*	*81.00*	*27.50*	*52.00*	*3.00*	
MDW0250HGS8	●		0.0984	*2.50*	*81.00*	*27.50*	*52.00*	*3.00*	
MDW0260HGS8			0.1024	*2.60*	*81.00*	*33.00*	*48.00*	*3.00*	
MDW0270HGS8			0.1063	*2.70*	*81.00*	*33.00*	*48.00*	*3.00*	6-32
MDW0280HGS8			0.1102	*2.80*	*81.00*	*33.00*	*48.00*	*3.00*	
MDW0290HGS8			0.1142	*2.90*	*81.00*	*33.00*	*48.00*	*3.00*	3.5x6
MDW0300HGS8	●		0.1181	*3.00*	*81.00*	*33.00*	*48.00*	*3.00*	
MDW0310HGS8			0.1220	*3.10*	*92.00*	*38.50*	*52.00*	*4.00*	
MDW01250HGS8	●	1/8	0.1250	*3.18*	3.1890	1.2992	1.8898	0.1250	
MDW0320HGS8			0.1260	*3.20*	*92.00*	*38.50*	*52.00*	*4.00*	
MDW0330HGS8	●		0.1299	*3.30*	*92.00*	*38.50*	*52.00*	*4.00*	M4x.7
MDW0340HGS8			0.1339	*3.40*	*92.00*	*38.50*	*52.00*	*4.00*	
MDW0350HGS8	●		0.1378	*3.50*	*92.00*	*38.50*	*52.00*	*4.00*	
MDW01406HGS8	●		0.1406	*3.57*	3.6220	1.7323	1.8898	0.1562	
MDW0360HGS8			0.1417	*3.60*	*92.00*	*44.00*	*48.00*	*4.00*	
MDW0370HGS8			0.1457	*3.70*	*92.00*	*44.00*	*48.00*	*4.00*	M4.5x.7
MDW0380HGS8	●		0.1496	*3.80*	*92.00*	*44.00*	*48.00*	*4.00*	
MDW0390HGS8			0.1535	*3.90*	*92.00*	*44.00*	*48.00*	*4.00*	
MDW01562HGS8	●	5/32	0.1562	*3.97*	3.6220	1.7323	1.8898	0.1562	
MDW0400HGS8	●		0.1575	*4.00*	*92.00*	*44.00*	*48.00*	*4.0*	
MDW01590HGS8	●	#21	0.1590	*4.04*	4.1339	1.9488	2.1260	0.1875	10-32
MDW0410HGS8			0.1614	*4.10*	*105.00*	*49.50*	*54.00*	*5.00*	
MDW0420HGS8	●		0.1654	*4.20*	*105.00*	*49.50*	*54.00*	*5.00*	M5x.8
MDW0430HGS8			0.1693	*4.30*	*105.00*	*49.50*	*54.00*	*5.00*	
MDW01719HGS8	●	11/64	0.1719	*4.37*	4.1339	1.9488	2.1260	0.1875	
MDW0440HGS8			0.1732	*4.40*	*105.00*	*49.50*	*54.00*	*5.00*	
MDW0450HGS8	●		0.1772	*4.50*	*105.00*	*49.50*	*54.00*	*5.00*	
MDW0460HGS8			0.1811	*4.60*	*105.00*	*55.00*	*50.00*	*5.00*	
MDW0470HGS8			0.1850	*4.70*	*105.00*	*55.00*	*50.00*	*5.00*	
MDW01875HGS8	●	3/16	0.1875	*4.76*	4.1339	2.1654	1.9685	0.1875	
MDW0480HGS8			0.1890	*4.80*	*105.00*	*55.00*	*50.00*	*5.00*	
MDW0490HGS8			0.1929	*4.90*	*105.00*	*55.00*	*50.00*	*5.00*	
MDW0500HGS8	●		0.1969	*5.00*	*105.00*	*55.00*	*50.00*	*5.00*	M6x1
MDW0510HGS8			0.2008	*5.10*	*118.00*	*60.50*	*56.00*	*6.00*	
MDW02010HGS8	●	#7	0.2010	*5.11*	4.6457	2.3819	2.2047	0.2344	1/4-20
MDW02031HGS8	●	13/64	0.2031	*5.16*	4.6457	2.3819	2.2047	0.2344	
MDW0520HGS8			0.2047	*5.20*	*118.00*	*60.50*	*56.00*	*6.00*	
MDW0530HGS8			0.2087	*5.30*	*118.00*	*60.50*	*56.00*	*6.00*	
MDW0540HGS8			0.2126	*5.40*	*118.00*	*60.50*	*56.00*	*6.00*	
MDW02130HGS8	●	#3	0.2130	*5.41*	4.6457	2.3819	2.2047	0.2344	
MDW0550HGS8	●		0.2165	*5.50*	*118.00*	*60.50*	*56.00*	*6.00*	
MDW02188HGS8	●	7/32	0.2188	*5.56*	4.6457	2.5984	2.0472	0.2344	1/4-28
MDW0560HGS8	●		0.2205	*5.60*	*118.00*	*66.00*	*52.00*	*6.00*	

●=USA stocked item ★ = Worldwide Warehouse item available in 10 business days
Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

(continued on next page)

MDW-HGS8 Series Solid Carbide Coolant Through Drills



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MDW-HGS8 8XD drill for excellent chip management and long tool life (Internal coolant)

Catalog Number (inch/*metric*)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (*mm*)	Overall Length L (in/*mm*)	Flute Length ℓ1 (in/*mm*)	Shank Length ℓ2 (in/*mm*)	Shank Diameter Ds (in/*mm*)	Tap Size
MDW02210HGS8	●	#2	0.2210	*5.61*	4.6457	2.5984	2.0472	0.2344	
MDW0570HGS8			0.2244	*5.70*	*118.00*	*66.00*	*52.00*	*6.0*	
MDW0580HGS8			0.2283	*5.80*	*118.00*	*66.00*	*52.00*	*6.0*	
MDW0590HGS8			0.2323	*5.90*	*118.00*	*66.00*	*52.00*	*6.0*	
MDW02344HGS8	●	15/64	0.2344	*5.95*	4.6457	2.5984	2.0472	0.2344	
MDW0600HGS8	●		0.2362	*6.00*	*118.00*	*66.00*	*52.00*	*6.00*	M7x1
MDW0610HGS8			0.2402	*6.10*	*130.00*	*71.50*	*53.00*	*7.00*	
MDW0620HGS8			0.2441	*6.20*	*130.00*	*71.50*	*53.00*	*7.00*	
MDW0630HGS8			0.2480	*6.30*	*130.00*	*71.50*	*53.00*	*7.00*	
MDW02500HGS8	●	1/4	0.2500	*6.35*	5.1181	2.8150	2.0866	0.2812	
MDW0640HGS8			0.2520	*6.40*	*130.00*	*71.50*	*53.00*	*7.00*	
MDW0650HGS8	●		0.2559	*6.50*	*130.00*	*71.50*	*53.00*	*7.00*	
MDW02570HGS8	●	#F	0.2570	*6.53*	5.1181	3.0315	2.0866	0.2812	5/16-18
MDW0653HGS8			0.2571	*6.53*	*130.00*	*77.00*	*53.00*	*7.00*	
MDW0660HGS8			0.2598	*6.60*	*130.00*	*77.00*	*53.00*	*7.00*	
MDW0670HGS8			0.2638	*6.70*	*130.00*	*77.00*	*53.00*	*7.00*	
MDW02656HGS8	●	17/64	0.2656	*6.75*	5.1181	3.0315	2.0866	0.2812	
MDW02660HGS8	●	#H	0.2660	*6.76*	5.1181	3.0315	2.0866	0.2812	
MDW0680HGS8	●		0.2677	*6.80*	*130.00*	*77.00*	*53.00*	*7.00*	
MDW0690HGS8			0.2717	*6.90*	*130.00*	*77.00*	*53.00*	*7.00*	
MDW02720HGS8	●	#I	0.2720	*6.91*	5.1181	3.0315	2.0866	0.2812	5/16-24
MDW0700HGS8	●		0.2756	*7.00*	*130.00*	*77.00*	*53.00*	*7.00*	
MDW02770HGS8	●	#J	0.2770	*7.04*	5.1181	3.0315	2.0866	0.2812	
MDW0710HGS8			0.2795	*7.10*	*142.00*	*82.50*	*54.00*	*8.00*	
MDW02812HGS8	●	9/32	0.2812	*7.14*	5.1181	3.0315	2.0866	0.2812	
MDW0720HGS8			0.2835	*7.20*	*142.00*	*82.50*	*54.00*	*8.00*	
MDW0730HGS8			0.2874	*7.30*	*142.00*	*82.50*	*54.00*	*8.00*	
MDW0740HGS8			0.2913	*7.40*	*142.00*	*82.50*	*54.00*	*8.00*	
MDW0750HGS8	●		0.2953	*7.50*	*142.00*	*82.50*	*54.00*	*8.00*	
MDW02969HGS8	●	19/64	0.2969	*7.54*	5.5906	3.4646	2.1260	0.3125	
MDW0760HGS8			0.2992	*7.60*	*142.00*	*88.00*	*54.00*	*8.00*	
MDW0770HGS8			0.3031	*7.70*	*142.00*	*88.00*	*54.00*	*8.00*	
MDW0780HGS8			0.3071	*7.80*	*142.00*	*88.00*	*54.00*	*8.00*	M9x1.25
MDW0790HGS8			0.3110	*7.90*	*142.00*	*88.00*	*54.00*	*8.00*	
MDW03125HGS8	●	5/16	0.3125	*7.94*	5.5906	3.4646	2.1260	0.3125	3/8-16
MDW0800HGS8	●		0.3150	*8.00*	*142.00*	*88.00*	*54.00*	*8.00*	
MDW0810HGS8			0.3189	*8.10*	*154.00*	*93.50*	*55.00*	*9.00*	
MDW0820HGS8			0.3228	*8.20*	*154.00*	*93.50*	*55.00*	*9.00*	
MDW03230HGS8	●	#P	0.3230	*8.20*	6.0630	3.6811	2.1654	0.3594	
MDW0830HGS8			0.3268	*8.30*	*154.00*	*93.50*	*55.00*	*9.00*	
MDW03281HGS8	●	21/64	0.3281	*8.33*	6.0630	3.6811	2.1654	0.3594	
MDW0840HGS8			0.3307	*8.40*	*154.00*	*93.50*	*55.00*	*9.00*	
MDW03320HGS8	●	#Q	0.3320	*8.43*	6.0630	3.6811	2.1654	0.3594	
MDW0850HGS8	●		0.3346	*8.50*	*154.00*	*93.50*	*55.00*	*9.00*	M10x1.5
MDW0860HGS8			0.3386	*8.60*	*154.00*	*99.00*	*55.00*	*9.00*	
MDW0870HGS8			0.3425	*8.70*	*154.00*	*99.00*	*55.00*	*9.00*	
MDW03438HGS8	●	11/32	0.3438	*8.73*	6.0630	3.8976	2.1654	0.3594	

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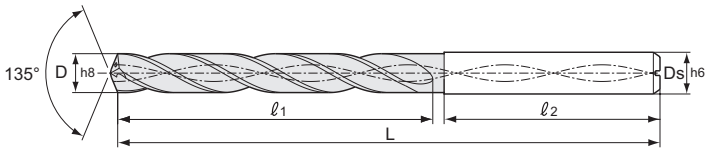
SERIES MDW-HGS8



(continued from previous page)

MDW-HGS8 8XD drill for excellent chip management and long tool life (Internal coolant)

Catalog Number (inch/*metric*)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (*mm*)	Overall Length L (in/*mm*)	Flute Length ℓ1 (in/*mm*)	Shank Length ℓ2 (in/*mm*)	Shank Diameter Ds (in/*mm*)	Tap Size
MDW0880HGS8			0.3465	*8.80*	*154.00*	*99.00*	*55.00*	*9.00*	
MDW0890HGS8			0.3504	*8.90*	*154.00*	*99.00*	*55.00*	*9.00*	
MDW0900HGS8	●		0.3543	*9.00*	*154.00*	*99.00*	*55.00*	*9.00*	
MDW0910HGS8			0.3583	*9.10*	*166.00*	*104.50*	*56.00*	*10.00*	
MDW03594HGS8	●	23/64	0.3594	*9.13*	6.0630	3.8976	2.1654	0.3594	
MDW0920HGS8			0.3622	*9.20*	*166.00*	*104.50*	*56.00*	*10.00*	
MDW0930HGS8			0.3661	*9.30*	*166.00*	*104.50*	*56.00*	*10.00*	
MDW03680HGS8	●	#U	0.3680	*9.35*	6.5354	4.1142	2.2047	0.3906	7/16-14
MDW0940HGS8			0.3701	*9.40*	*166.00*	*104.50*	*56.00*	*10.00*	
MDW0950HGS8	●		0.3740	*9.50*	*166.00*	*104.50*	*56.00*	*10.00*	
MDW03750HGS8	●	3/8	0.3750	*9.53*	6.5354	4.3307	2.2047	0.3906	
MDW0960HGS8			0.3780	*9.60*	*166.00*	*110.00*	*56.00*	*10.00*	
MDW0970HGS8			0.3819	*9.70*	*166.00*	*110.00*	*56.00*	*10.00*	
MDW0980HGS8			0.3858	*9.80*	*166.00*	*110.00*	*56.00*	*10.00*	
MDW0990HGS8			0.3898	*9.90*	*166.00*	*110.00*	*56.00*	*10.00*	
MDW03906HGS8	●	25/64	0.3906	*9.92*	6.5354	4.3307	2.2047	0.3906	
MDW1000HGS8	●		0.3937	*10.00*	*166.00*	*110.00*	*56.00*	*10.00*	
MDW1010HGS8			0.3976	*10.10*	*182.00*	*115.50*	*61.00*	*11.00*	
MDW1020HGS8			0.4016	*10.20*	*182.00*	*115.50*	*61.00*	*11.00*	M12x1.75
MDW1030HGS8	●		0.4055	*10.30*	*182.00*	*115.50*	*61.00*	*11.00*	
MDW04062HGS8	●	13/32	0.4062	*10.32*	7.1654	4.5472	2.4016	0.4375	
MDW1040HGS8			0.4094	*10.40*	*182.00*	*115.50*	*61.00*	*11.00*	
MDW1050HGS8	●		0.4134	*10.50*	*182.00*	*115.50*	*61.00*	*11.00*	
MDW1060HGS8			0.4173	*10.60*	*182.00*	*121.00*	*61.00*	*11.00*	
MDW1070HGS8			0.4213	*10.70*	*182.00*	*121.00*	*61.00*	*11.00*	
MDW04219HGS8	●	27/64	0.4219	*10.72*	7.1654	4.7638	2.4016	0.4375	1/2-13
MDW1080HGS8			0.4252	*10.80*	*182.00*	*121.00*	*61.00*	*11.00*	
MDW1090HGS8			0.4291	*10.90*	*182.00*	*121.00*	*61.00*	*11.00*	
MDW1100HGS8	●		0.4331	*11.00*	*182.00*	*121.00*	*61.00*	*11.00*	
MDW1110HGS8			0.4370	*11.10*	*194.00*	*126.50*	*62.0*	*12.00*	
MDW04375HGS8	●	7/16	0.4375	*11.11*	7.1654	4.7638	2.4016	0.4375	
MDW1120HGS8			0.4409	*11.20*	*194.00*	*126.50*	*62.00*	*12.00*	
MDW1130HGS8			0.4449	*11.30*	*194.00*	*126.50*	*62.00*	*12.00*	
MDW1140HGS8			0.4488	*11.40*	*194.00*	*126.50*	*62.00*	*12.00*	
MDW1150HGS8	●		0.4528	*11.50*	*194.00*	*126.50*	*62.00*	*12.00*	
MDW04531HGS8	●	29/64	0.4531	*11.51*	7.6378	5.1969	2.4409	0.4688	1/2-20
MDW1160HGS8			0.4567	*11.60*	*194.00*	*132.00*	*62.00*	*12.00*	
MDW1170HGS8			0.4606	*11.70*	*194.00*	*132.00*	*62.00*	*12.00*	
MDW1180HGS8			0.4646	*11.80*	*194.00*	*132.00*	*62.00*	*12.00*	
MDW1190HGS8			0.4685	*11.90*	*194.00*	*132.00*	*62.00*	*12.00*	
MDW04688HGS8	●	15/32	0.4688	*11.91*	7.6378	5.1969	2.4409	0.4688	
MDW1200HGS8	●		0.4724	*12.00*	*194.00*	*132.00*	*62.00*	*12.00*	M14x2
MDW1210HGS8			0.4764	*12.10*	*206.00*	*137.50*	*63.00*	*13.00*	
MDW1220HGS8			0.4803	*12.20*	*206.00*	*137.50*	*63.00*	*13.00*	
MDW1230HGS8			0.4843	*12.30*	*206.00*	*137.50*	*63.00*	*13.00*	9/16-12
MDW04844HGS8	●	31/64	0.4844	*12.30*	8.1102	5.4134	2.4803	0.5156	
MDW1240HGS8			0.4882	*12.40*	*206.00*	*137.50*	*63.00*	*13.00*	

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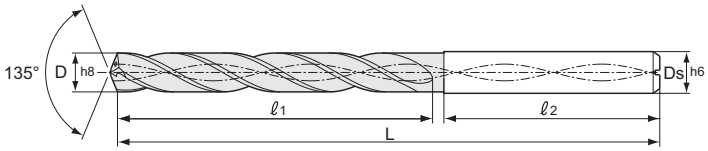
MDW-HGS8 Series Solid Carbide Drills

Coolant Through Drills



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MDW-HGS8 8XD drill for excellent chip management and long tool life (Internal coolant)

Catalog Number (inch/*metric*)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (*mm*)	Overall Length L (in/*mm*)	Flute Length ℓ1 (in/*mm*)	Shank Length ℓ2 (in/*mm*)	Shank Diameter Ds (in/*mm*)	Tap Size
MDW1250HGS8	●		0.4921	*12.50*	*206.00*	*137.50*	*63.00*	*13.00*	
MDW1260HGS8			0.4961	*12.60*	*206.00*	*143.00*	*63.00*	*13.00*	
MDW1270HGS8		1/2	0.5000	*12.70*	*206.00*	*143.00*	*63.00*	*13.00*	
MDW05000HGS8	●	1/2	0.5000	*12.70*	8.1102	5.6299	2.4803	0.5156	
MDW1280HGS8			0.5039	*12.80*	*206.00*	*143.00*	*63.00*	*13.00*	
MDW1283HGS8			0.5051	*12.83*	*206.00*	*143.00*	*63.00*	*13.00*	
MDW1290HGS8			0.5079	*12.90*	*206.00*	*143.00*	*63.00*	*13.00*	
MDW1300HGS8	●		0.5118	*13.00*	*206.00*	*143.00*	*63.00*	*13.00*	
MDW05156HGS8	●	33/64	0.5156	*13.10*	8.1102	5.6299	2.4803	0.5156	9/19-18
MDW1310HGS8			0.5157	*13.10*	*218.00*	*148.50*	*64.00*	*14.00*	
MDW1320HGS8			0.5197	*13.20*	*218.00*	*148.50*	*64.00*	*14.00*	
MDW1330HGS8			0.5236	*13.30*	*218.00*	*148.50*	*64.00*	*14.00*	
MDW1340HGS8			0.5276	*13.40*	*218.00*	*148.50*	*64.00*	*14.00*	
MDW05312HGS8	●	17/32	0.5312	*13.49*	8.5827	5.8465	2.5197	0.5469	5/8-11
MDW1350HGS8	●		0.5315	*13.50*	*218.00*	*148.50*	*64.00*	*14.00*	
MDW1360HGS8			0.5354	*13.60*	*218.00*	*154.00*	*64.00*	*14.00*	
MDW1370HGS8			0.5394	*13.70*	*218.00*	*154.00*	*64.00*	*14.00*	
MDW1380HGS8			0.5433	*13.80*	*218.00*	*154.00*	*64.00*	*14.00*	
MDW05469HGS8	●	35/64	0.5469	*13.89*	8.5827	6.0630	2.5197	0.5469	M16x2
MDW1390HGS8			0.5472	*13.90*	*218.00*	*154.00*	*64.00*	*14.00*	
MDW1400HGS8	●		0.5512	*14.00*	*218.00*	*154.00*	*64.00*	*14.00*	
MDW1410HGS8			0.5551	*14.10*	*230.00*	*159.50*	*65.00*	*15.00*	
MDW1420HGS8			0.5591	*14.20*	*230.00*	*159.50*	*65.00*	*15.00*	
MDW05625HGS8	●	9/16	0.5625	*14.29*	9.0551	6.2795	2.5591	0.5937	
MDW1430HGS8			0.5630	*14.30*	*230.00*	*159.50*	*65.00*	*15.00*	
MDW1440HGS8			0.5669	*14.40*	*230.00*	*159.50*	*65.00*	*15.00*	
MDW1450HGS8	●		0.5709	*14.50*	*230.00*	*159.50*	*65.00*	*15.00*	
MDW1460HGS8			0.5748	*14.60*	*230.00*	*165.00*	*65.00*	*15.00*	
MDW05781HGS8	●	37/64	0.5781	*14.68*	9.0551	6.4961	2.5591	0.5937	5/8-18
MDW1470HGS8			0.5787	*14.70*	*230.00*	*165.00*	*65.00*	*15.00*	
MDW1480HGS8			0.5827	*14.80*	*230.00*	*165.00*	*65.00*	*15.00*	
MDW1490HGS8			0.5866	*14.90*	*230.00*	*165.00*	*65.00*	*15.00*	
MDW1500HGS8	●		0.5906	*15.00*	*230.00*	*165.00*	*65.00*	*15.00*	
MDW05937HGS8	●	19/32	0.5937	*15.08*	9.0551	6.4961	2.5591	0.5937	
MDW1510HGS8			0.5945	*15.10*	*242.00*	*170.50*	*66.00*	*16.00*	
MDW1520HGS8			0.5984	*15.20*	*242.00*	*170.50*	*66.00*	*16.00*	
MDW1530HGS8			0.6024	*15.30*	*242.00*	*170.50*	*66.00*	*16.00*	
MDW1540HGS8			0.6063	*15.40*	*242.00*	*170.50*	*66.00*	*16.00*	
MDW06094HGS8	●	39/64	0.6094	*15.48*	9.5276	6.7126	2.5984	0.6250	11/16-12
MDW1550HGS8	●		0.6102	*15.50*	*242.00*	*170.50*	*66.00*	*16.00*	M18x2.5
MDW1560HGS8			0.6142	*15.60*	*242.00*	*176.00*	*66.00*	*16.00*	
MDW1570HGS8			0.6181	*15.70*	*242.00*	*176.00*	*66.00*	*16.00*	
MDW1580HGS8			0.6220	*15.80*	*242.00*	*176.00*	*66.00*	*16.00*	
MDW06250HGS8	●	5/8	0.6250	*15.88*	9.5276	6.9291	2.5984	0.6250	11/16-16
MDW1590HGS8			0.6260	*15.90*	*242.00*	*176.00*	*66.00*	*16.00*	
MDW1600HGS8	●		0.6299	*16.00*	*242.00*	*176.00*	*66.00*	*16.00*	

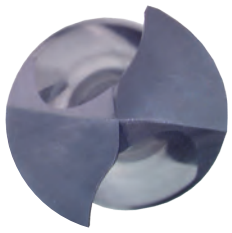
●=USA stocked item ★ = Worldwide Warehouse item available in 10 business days
Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

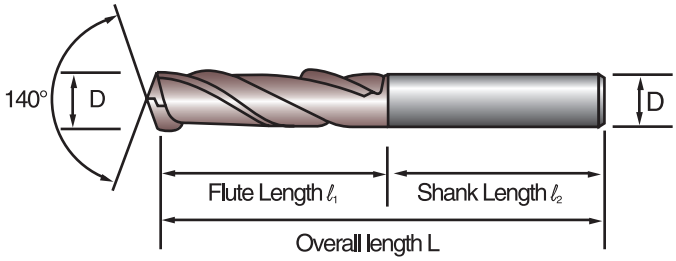
Recommended Parameters for GS/HGS Series

MDW		Work Material	Hardness HB	Speed = SFM Feed = IPR	Drill Diameter (inch)		
					ø < - ø0.196	ø0.197 - ø0.394	ø0.395 - ø0.630
GS 2D 4D	P	Low Carbon Steel	<190	SFM	110 - 250	160 - 275	210 - 360
				IPR	.004 - .008	.006 - .010	.008 - .012
			190 ~ 250	SFM	110 - 250	160 - 275	210 - 360
				IPR	.004 - .008	.006 - .010	.008 - .012
			250 ~ 300	SFM	100 - 225	140 - 250	190 - 325
				IPR	.003 - .006	.004 - .008	.006 - .010
		Medium Carbon Steel	180 ~ 275	SFM	110 - 250	160 - 275	210 - 360
				IPR	.004 - .008	.006 - .010	.008 - .012
			275 ~ 350	SFM	100 - 225	140 - 250	190 - 325
				IPR	.003 - .006	.004 - .008	.006 - .010
		Alloy Steel	200	SFM	110 - 250	160 - 275	210 - 360
				IPR	.004 - .008	.006 - .010	.008 - .012
			350	SFM	80 - 210	115 - 220	115 - 250
				IPR	.003 - .006	.004 - .008	.006 - .010
	M	300 Austenitic Stainless Steel	160 ~ 280	SFM	50 -115	60 - 160	80 - 210
				IPR	.002 - .006	.003 - .008	.004 - .010
		400 Martensitic Stainless Steel	160 ~ 240	SFM	60 - 120	75 - 180	90 - 225
				IPR	.002 - .006	.003 - .008	.006 - .010
	K	Cast Iron		SFM	115 - 300	195 - 390	250 -415
				IPR	.006 - .010	.006 - .014	.006 - .014
		Ductile Iron		SFM	115 - 185	160 - 300	210 - 375
				IPR	.006 - .010	.006 - .014	.006 - .014
	H	Hardened Steel	45-60 Rc	SFM	40 - 60	40 - 80	50 - 100
				IPR	.002 - .004	.003 - .006	.004 - .008
	S	Titanium Alloy Ti-6Al-4V		SFM	40 - 80	40 - 100	50 - 110
				IPR	.003 - .004	.003 - .005	.003 - .006
		Exotics - Inconel, Monel		SFM	30 - 60	30 - 60	40 - 80
				IPR	.002 - .003	.003 - .005	.003 - .006
	N	Aluminum alloy		SFM	300 - 700	400 - 800	400 - 800
				IPR	.003 - .006	.004 - .008	.006 - .012
		Copper Alloy		SFM	300 - 700	400 - 800	400 - 800
				IPR	.003 - .006	.004 - .008	.006 - .010

MDW		Work Material	Hardness HB	Speed = SFM Feed = IPR	Drill Diameter (inch)		
					ø < - ø0.196	ø0.197 - ø0.394	ø0.395 - ø0.630
HGS 3D 5D 8D	P	Low Carbon Steel	<190	SFM	300 - 475	400 - 550	450 - 650
				IPR	.004 - .008	.006 - .010	.008 - .014
			190 ~ 250	SFM	225 - 425	265 - 530	425 - 625
				IPR	.004 - .008	.006 - .010	.008 - .014
			250 ~ 300	SFM	175 - 375	225 - 495	250 - 525
				IPR	.003 - .006	.004 - .008	.006 - .012
		Medium Carbon Steel	180 ~ 275	SFM	225 - 425	265 - 530	350 - 575
				IPR	.004 - .008	.006 - .010	.008 - .014
			275 ~ 350	SFM	175 - 375	225 - 495	305 - 525
				IPR	.003 - .006	.004 - .008	.006 - .012
		Alloy Steel	200	SFM	190 - 380	225 - 475	275 - 525
				IPR	.003 - .008	.006 - .010	.008 - .014
			350	SFM	125 - 300	155 - 325	155 - 350
				IPR	.003 - .006	.004 - .008	.006 - .010
	M	300 Austenitic Stainless Steel	160 ~ 280	SFM	120 - 225	150 - 325	150 - 325
				IPR	.002 - .006	.004 - .010	.006 - .012
		400 Martensitic Stainless Steel	160 ~ 240	SFM	120 - 250	175 - 350	175 - 350
				IPR	.002 - .006	.004 - .010	.006 - .012
	K	Cast Iron		SFM	150 - 380	250 - 475	275 - 530
				IPR	.006 - .010	.006 - .014	.006 - .014
		Ductile Iron		SFM	150 - 350	225 - 450	250 - 500
				IPR	.006 - .010	.006 - .014	.006 - .014
	H	Hardened Steel	45-60 Rc	SFM	60 - 190	80 - 225	80 - 225
				IPR	.002 - .004	.003 - .006	.004 - .008
	S	Titanium Alloy Ti-6Al-4V		SFM	65 - 130	80 - 130	80 - 160
				IPR	.003 - .004	.003 - .005	.003 - .006
		Exotics - Inconel, Monel		SFM	40 - 85	40 - 100	50 - 120
				IPR	.002 - .003	.003 - .005	.003 - .006
	N	Aluminum alloy		SFM	500 - 800	600 - 1000	600 - 1000
				IPR	.003 - .006	.004 - .008	.006 - .012
		Copper Alloy		SFM	400 - 800	500 - 800	500 - 800
				IPR	.003 - .006	.004 - .008	.006 - .010

MDS-SV Series Solid Carbide Drills





MDS-SV 2.5XD drill for excellent chip management and long tool life (External coolant)

Catalog Number (inch/*metric*)	Stock	Cutting Diameter			Dimensions		
		Fractional Wire & Letters	*Metric*	Decimal D	Overall Length L	Flute Length ℓ_1	Shank Length ℓ_2
MDS028SV	▲		*2.80*	.1102	1.766	.594	1.188
MDS1110SV	▲	#34	*2.82*	.1110			
MDS1130SV	▲	#33	*2.87*	.1130			
MDS1160SV	▲	#32	*2.95*	.1160			
MDS030SV	●		*3.00*	.1181			
MDS1200SV	▲	#31	*3.05*	.1200	1.891	.672	1.281
MDS1250SV	●	1/8	*3.18*	.1250			
MDS032SV	▲		*3.20*	.1260			
MDS1285SV	▲	#30	*3.26*	.1285			
MDS1360SV	▲	#29	*3.45*	.1360	2.000	.750	1.266
MDS035SV	●		*3.50*	.1378			
MDS1405SV	▲	#28	*3.568*	.1405			
MDS1406SV	●	9/64	*3.57*	.1406			
MDS036SV	▲		*3.60*	.1417			
MDS1440SV	▲	#27	*3.66*	.1440			
MDS1470SV	▲	#26	*3.73*	.1470	2.125	.828	1.297
MDS1495SV	▲	#25	*3.80*	.1495			
MDS1520SV	▲	#24	*3.86*	.1520			
MDS039SV	▲		*3.90*	.1535			
MDS1540SV	▲	#23	*3.91*	.1540			
MDS1562SV	●	5/32	*3.97*	.1562			
MDS1570SV	▲	#22	*3.99*	.1570			
MDS040SV	●		*4.00*	.1575			
MDS1590SV	▲	#21	*4.04*	.1590			
MDS1610SV	▲	#20	*4.09*	.1610			
MDS041SV	▲		*4.10*	.1614			
MDS1660SV	▲	#19	*4.22*	.1660	2.250	.906	1.344
MDS1695SV	▲	#18	*4.31*	.1695			
MDS1719SV	●	11/64	*4.37*	.1719			
MDS1730SV	▲	#17	*4.39*	.1730			
MDS044SV	▲		*4.40*	.1732			
MDS1770SV	▲	#16	*4.49*	.1770			
MDS045SV	●		*4.50*	.1772			
MDS1800SV	▲	#15	*4.57*	.1800			
MDS046SV	▲		*4.60*	.1811			
MDS1820SV	▲	#14	*4.62*	.1820			
MDS1850SV	▲	#13	*4.70*	.1850			
MDS1875SV	●	3/16	*4.76*	.1875	2.406	.984	1.422
MDS1890SV	▲	#12	*4.80*	.1890			
MDS048SV	▲		*4.80*	.1890			
MDS1910SV	▲	#11	*4.85*	.1910			
MDS1935SV	▲	#10	*4.91*	.1935			

●=USA stocked item ▲ : U.S.A. Limited Availabilty Item

(continued on next page)

SERIES MDS-SV

Tolerances of Diameters (in.)	
D ≦ .118	+0 -.00055
.118 < D ≦ .236	+0 -.00071
.236 < D ≦ .394	+0 -.00087
.394 < D ≦ .709	+0 -.00106
.709 < D ≦ .768	+0 -.00130

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MDS-SV 2.5XD drill for excellent chip management and long tool life (External coolant)

Catalog Number (inch/*metric*)	Stock	Cutting Diameter			Dimensions		
		Fractional Wire & Letters	*Metric*	Decimal D	Overall Length L	Flute Length ℓ_1	Shank Length ℓ_2
MDS1960SV	▲	#9	*4.98*	.1960	2.406	.984	1.422
MDS2010SV	▲	#7	*5.11*	.2010			
MDS2031SV	●	13/64	*5.16*	.2031			
MDS2040SV	▲	#6	*5.18*	.2040			
MDS052SV	▲		*5.20*	.2047			
MDS2055SV	▲	#5	*5.22*	.2055			
MDS2090SV	▲	#4	*5.31*	.2090	2.563	1.063	1.500
MDS054SV	▲		*5.40*	.2126			
MDS2130SV	●	#3	*5.41*	.2130			
MDS055SV	●		*5.50*	.2165			
MDS2188SV	●	7/32	*5.56*	.2188			
MDS056SV	▲		*5.60*	.2205			
MDS2210SV	▲	#2	*5.61*	.2210			
MDS2280SV	▲	#1	*5.79*	.2280			
MDS2340SV	▲	#A	*5.94*	.2340			
MDS2344SV	▲	15/64	*5.95*	.2344			
MDS060SV	●		*6.00*	.2362			
MDS2380SV	▲	#B	*6.05*	.2380	2.719	1.188	1.531
MDS2420SV	▲	#C	*6.15*	.2420			
MDS2460SV	▲	#D	*6.25*	.2460			
MDS2500SV	●	1/4	*6.35*	.2500			
MDS065SV	●		*6.50*	*.2559*			
MDS2570SV	●	#F	*6.53*	.2570			
MDS2600SV	▲	.2600	*6.60*	.2600			
MDS2610SV	▲	#G	*6.63*	.2610			
MDS2656SV	●	17/64	*6.75*	.2656	2.875	1.297	1.578
MDS2660SV	▲	#H	*6.76*	.2660			
MDS2720SV	▲	#I	*6.91*	.2720			
MDS070SV	●		*7.00*	*.2756*			
MDS2756SV	▲	.2756	*7.00*	.2756			
MDS2770SV	▲	#J	*7.04*	.2770			
MDS2810SV	▲	#K	*7.14*	.2810			
MDS2812SV	●	9/32	*7.142*	.2812			
MDS072SV	▲		*7.20*	*.2835*			
MDS2900SV	▲	#L	*7.37*	.2900			
MDS2950SV	▲	#M	*7.49*	.2950			
MDS075SV	●		*7.50*	*.2953*			
MDS2969SV	●	19/64	*7.54*	.2969	3.078	1.422	1.656
MDS3020SV	▲	#N	*7.67*	.3020			
MDS078SV	▲		*7.80*	.3071			
MDS3125SV	●	5/16	*7.94*	.3125			

●=USA stocked item ▲ : U.S.A. Limited Availabilty Item

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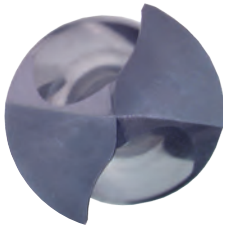
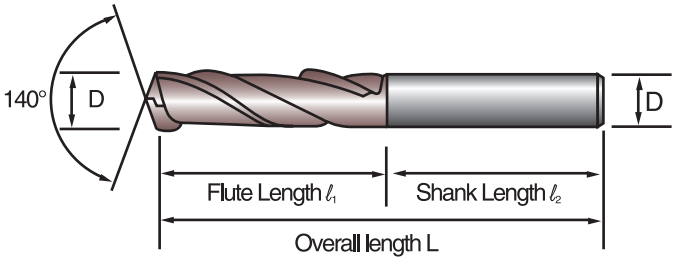
MDS-SV Series Solid Carbide Drills





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MDS-SV 2.5XD drill for excellent chip management and long tool life (External coolant)

Catalog Number (inch/*metric*)	Stock	Cutting Diameter			Dimensions		
		Fractional Wire & Letters	*Metric*	Decimal D	Overall Length L	Flute Length ℓ_1	Shank Length ℓ_2
MDS080SV	●		*8.00*	.3150	3.078	1.422	1.656
MDS3160SV	▲	#O	*8.03*	.3160			
MDS3230SV	▲	#P	*8.20*	.3230			
MDS3281SV	▲	21/64	*8.33*	.3281			
MDS3320SV	●	#Q	*8.43*	.3320			
MDS085SV	●		*8.50*	.3346			
MDS3390SV	▲	#R	*8.61*	.3390	3.234	1.500	1.734
MDS3438SV	●	11/32	*8.73*	.3438			
MDS3480SV	▲	#S	*8.84*	.3480			
MDS090SV	●		*9.00*	.3543			
MDS3580SV	▲	#T	*9.09*	.3580			
MDS3594SV	●	23/64	*9.13*	.3594			
MDS3680SV	▲	#U	*9.35*	.3680			
MDS095SV	●		*9.50*	.3740			
MDS3750SV	●	3/8	*9.53*	.3750	3.422	1.609	1.813
MDS3770SV	▲	#V	*9.58*	.3770			
MDS097SV	▲		*9.70*	.3819			
MDS3860SV	▲	#W	*9.80*	.3860			
MDS3906SV	●	25/64	*9.92*	.3906			
MDS100SV	●		*10.00*	.3937			
MDS3970SV	▲	#X	*10.08*	.3970			
MDS4040SV	▲	#Y	*10.26*	.4040			
MDS4062SV	●	13/32	*10.32*	.4062			
MDS104SV	▲		*10.40*	.4094			
MDS4130SV	▲	*#Z*	*10.49*	.4130			
MDS105SV	●		*10.50*	.4134			
MDS106SV	▲		*10.60*	.4173			
MDS4219SV	●	27/64	*10.72*	.4219	3.656	1.781	1.891
MDS110SV	●		*11.00*	.4331			
MDS4375SV	●	7/16	*11.11*	.4375			
MDS115SV	●		*11.50*	.4528			
MDS4531SV	●	29/64	*11.51*	.4531			
MDS4688SV	●	15/32	*11.91*	.4688	3.938	1.922	2.000
MDS120SV	●		*12.00*	.4724			
MDS4844SV	●	31/64	*12.30*	.4844			
MDS125SV	●		*12.50*	.4921			
MDS5000SV	●	1/2	*12.70*	.5000			
MDS5050SV	▲		*12.83*	.5050			
MDS130SV	●		*13.00*	.5118			
MDS5156SV	▲	33/64	*13.10*	.5156			

●=USA stocked item ▲ : U.S.A. Limited Availabilty Item

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SERIES MDS-SV

Tolerances of Diameters (in.)	
D ≤ .118	+0 -.00055
.118 < D ≤ .236	+0 -.00071
.236 < D ≤ .394	+0 -.00087
.394 < D ≤ .709	+0 -.00106
.709 < D ≤ .768	+0 -.00130

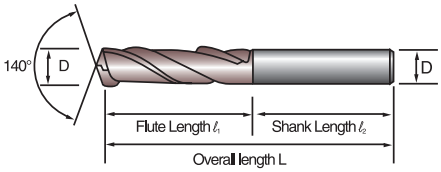
(continued from previous page)

MDS-SV 2.5XD drill for excellent chip management and long tool life (External coolant)

Catalog Number (inch/*metric*)	Stock	Cutting Diameter			Dimensions		
		Fractional Wire & Letters	*Metric*	Decimal D	Overall Length L	Flute Length ℓ_1	Shank Length ℓ_2
MDS5312SV	●	17/32	*13.49*	.5312	4.141	2.047	2.094
MDS135SV	▲		*13.50*	.5315			
MDS5469SV	▲	35/64	*13.89*	.5469			
MDS140SV	●		*14.00*	.5512			
MDS5625SV	●	9/16	*14.29*	.5625	4.250	2.094	2.172
MDS145SV	▲		*14.50*	.5709			
MDS5781SV	▲	37/64	*14.68*	.5781			
MDS150SV	▲		*15.00*	.5906			
MDS5937SV	▲	19/32	*15.08*	.5937	4.406	2.172	2.250
MDS6094SV	▲	39/64	*15.48*	.6094			
MDS155SV	▲		*15.50*	.6102			
MDS158SV	▲		*15.80*	.6220			
MDS6250SV	●	5/8	*15.88*	.6250			
MDS160SV	▲		*16.00*	.6299			
MDS6330SV			*16.08*	.6330	4.563	2.250	2.328
MDS6406SV		41/64	*16.27*	.6406			
MDS163SV	▲		*16.30*	.6417			
MDS165SV	▲		*16.50*	.6496			
MDS6562SV	▲	21/32	*16.67*	.6562			
MDS170SV	▲		*17.00*	.6693			
MDS171SV	▲		*17.10*	.6732	4.719	2.328	2.406
MDS6875SV	▲	11/16	*17.46*	.6875			
MDS175SV	▲		*17.50*	.6890			
MDS7031SV	▲	45/64	*17.86*	.7031			
MDS180SV	▲		*18.00*	.7087			
MDS182SV	▲		*18.20*	.7165	4.844	2.359	2.484
MDS7187SV	▲	23/32	*18.26*	.7187			
MDS185SV	▲		*18.50*	.7283			
MDS7344SV	▲	47/64	*18.65*	.7344			
MDS190SV	▲		*19.00*	.7480			
MDS7500SV	●	3/4	*19.05*	.7500	5.000	2 .438	2.563
MDS7590SV	▲		*19.28*	.7590			
MDS195SV	▲		*19.50*	.7677			
MDS7812SV	▲	25/32	*19.84*	.7812			

●=USA stocked item ▲ : U.S.A. Limited Availabilty Item

MDS-MV Series Solid Carbide Drills



MDS-MV 3.5XD drill for excellent chip management and long tool life (External coolant)

Catalog Number (inch/*metric*)	Stock	Cutting Diameter: Fractional Wire & Letters	Cutting Diameter: *Metric*	Cutting Diameter: Decimal D	Dimensions: Overall Length L	Dimensions: Flute Length ℓ_1	Dimensions: Shank Length ℓ_2
MDS060MV	▲		*6.00*	.2362	3.188	1.609	1.578
MDS2460MV	▲	#D	*6.25*	.2460			
MDS2500MV	▲	1/4	*6.35*	.2500			
MDS065MV	▲		*6.50*	.2559			
MDS2570MV	▲	#F	*6.53*	.2570	3.266	1.688	
MDS2610MV	▲	#G	*6.63*	.2610			
MDS2656MV	▲	17/64	*6.75*	.2656			
MDS2660MV	▲	#H	*6.76*	.2660			
MDS2720MV	▲	#I	*6.91*	.2720			
MDS070MV	▲		*7.00*	.2756			
MDS2770MV	▲	#J	*7.04*	.2770	3.438	1.781	1.656
MDS2810MV	▲	#K	*7.14*	.2810			
MDS2812MV	▲	9/32	*7.142*	.2812			
MDS072MV	▲		*7.20*	.2835			
MDS2900MV	▲	#L	*7.37*	.2900			
MDS2950MV	▲	#M	*7.49*	.2950			
MDS075MV	▲		*7.50*	.2953			
MDS2969MV	▲	19/64	*7.54*	.2969	3.547	1.891	
MDS3020MV	▲	#N	*7.67*	.3020			
MDS078MV	▲		*7.80*	.3071			
MDS3125MV	▲	5/16	*7.94*	.3125			
MDS080MV	▲		*8.00*	.3150			
MDS3160MV	▲	#O	*8.03*	.3160	3.781	2.094	1.688
MDS3230MV	▲	#P	*8.20*	.3230			
MDS3281MV	▲	21/64	*8.33*	.3281			
MDS3320MV	▲	#Q	*8.43*	.3320			
MDS085MV	▲		*8.50*	.3346			
MDS3390MV	▲	#R	*8.61*	.3390	3.859	2.156	
MDS3438MV	▲	11/32	*8.73*	.3438			
MDS3480MV	▲	#S	*8.84*	.3480			
MDS090MV	▲		*9.00*	.3543			
MDS3580MV	▲	#T	*9.09*	.3580	4.016	2.281	1.734
MDS3594MV	▲	23/64	*9.13*	.3594			
MDS3680MV	▲	#U	*9.35*	.3680			
MDS095MV	▲		*9.50*	.3740			
MDS3750MV	▲	3/8	*9.53*	.3750	4.125	2.359	1.766
MDS3770MV	▲	#V	*9.58*	.3770			
MDS096MV	▲		*9.60*	.3780			
MDS097MV	▲		*9.70*	.3819			
MDS3860MV	▲	#W	*9.80*	.3860			
MDS3906MV	▲	25/64	*9.92*	.3906			
MDS100MV	▲		*10.00*	.3937			
MDS3970MV	▲	#X	*10.08*	.3970	4.406	2.594	1.813
MDS4040MV	▲	#Y	*10.26*	.4040			
MDS4062MV	▲		*10.32*	.4062			
MDS4130MV	▲	#Z	*10.49*	.4130			

▲ : U.S.A. Limited Availabilty Item

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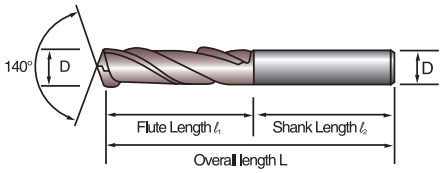
SERIES MDS-MV



(continued from previous page)

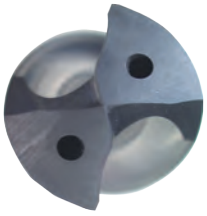
MDS-MV 3.5XD drill for excellent chip management and long tool life (External coolant)

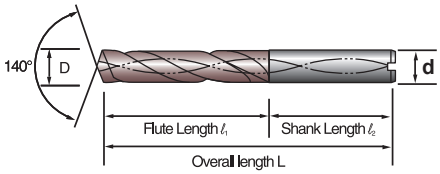
Catalog Number (inch/*metric*)	Stock	Cutting Diameter			Dimensions		
		Fractional Wire & Letters	*Metric*	Decimal D	Overall Length L	Flute Length ℓ_1	Shank Length ℓ_2
MDS105MV	▲		*10.50*	.4134	4.406	2.594	1.813
MDS4219MV	▲	27/64	*10.72*	.4219	4.484	2.688	
MDS110MV	▲		*11.00*	.4331			
MDS4375MV	▲	7/16	*11.11*	.4375	4.641	2.797	1.844
MDS115MV	▲		*11.50*	.4528			
MDS4531MV	▲	29/64	*11.51*	.4531	4.766	2.875	1.891
MDS4688MV	▲	15/32	*11.91*	.4688			
MDS120MV	▲		*12.00*	.4724			
MDS4844MV	▲	31/64	*12.30*	.4844	5.313	3.000	2.328
MDS125MV	▲		*12.50*	.4921			
MDS5000MV	▲	1/2	*12.70*	.5000	5.391	3.078	
MDS5050MV	▲		*12.83*	.5050			
MDS130MV	▲		*13.00*	.5118			
MDS5156MV	▲	33/64	*13.10*	.5156	5.672	3.313	2.359
MDS5312MV	▲	17/32	*13.49*	.5312			
MDS135MV	▲		*13.50*	.5315			
MDS138MV	▲		*13.80*	.5433	5.781	3.391	2.406
MDS5469MV	▲	35/64	*13.89*	.5469			
MDS140MV	▲		*14.00*	.5512			
MDS5625MV	▲	9/16	*14.29*	.5625	5.938	3.500	2.438
MDS145MV	▲		*14.50*	.5709			
MDS5781MV	▲	37/64	*14.68*	.5781	6.031	3.578	
MDS150MV	▲		*15.00*	.5906			
MDS5937MV	▲	19/32	*15.08*	.5937	6.188	3.703	2.484
MDS6094MV	▲	39/64	*15.48*	.6094			
MDS155MV	▲		*15.50*	.6102			
MDS158MV	▲		*15.80*	.6220	6.297	3.781	2.516
MDS6250MV	▲	5/8	*15.88*	.6250			
MDS160MV	▲		*16.00*	.6299			
MDS6330MV	▲		*16.08*	.6330	6.578	4.016	2.563
MDS6406MV	▲	41/64	*16.27*	.6406			
MDS163MV	▲		*16.30*	.6417			
MDS165MV	▲		*16.50*	.6496			
MDS6562MV	▲	21/32	*16.67*	.6562			
MDS170MV	▲		*17.00*	.6693			
MDS6875MV	▲	11/16	*17.46*	.6875			
MDS175MV	▲		*17.50*	.6890			
MDS7031MV	▲	45/64	*17.86*	.7031			
MDS180MV	▲		*18.00*	.7087			
MDS182MV	▲		*18.20*	.7165	7.203	4.484	
MDS7187MV	▲	23/32	*18.26*	.7187			
MDS185MV	▲		*18.50*	.7283			
MDS7344MV	▲	47/64	*18.65*	.7344			
MDS190MV	▲		*19.00*	.7480			
MDS7500MV	▲	3/4	*19.05*	.7500			
MDS7590MV	▲		*19.28*	.7590			
MDS195MV	▲		*19.50*	.7677			
MDS7812MV	▲	25/32	*19.84*	.7812			

▲ : U.S.A. Limited Availabilty Item

MDS-MHV Series Solid Carbide Drills

Coolant Through Drills





MDS-MHV 4XD drill with internal coolant holes for smooth chip flow at high speeds.

Catalog Number (inch/*metric*)	Stock	Cutting Diameter: Fractional Wire & Letters	Cutting Diameter: *Metric*	Cutting Diameter: Decimal D	Dimensions: Shank Diameter d	Dimensions: Flute Length ℓ_1	Dimensions: Shank Length ℓ_2	Dimensions: Overall Length L
MDS015MHV	▲		*1.50*	.0591	.1181	.594		2.484
MDS020MHV	▲		*2.00*	.0787	.1181			
MDS025MHV	▲		*2.50*	.0984	.1181			
MDS1094MHV	▲	7/64	*2.78*	.1094	.1250			
MDS028MHV	▲		*2.80*	.1102	.1181	.703	1.891	2.672
MDS030MHV	▲		*3.00*	.1181	.1181			
MDS1250MHV	▲	1/8	*3.18*	.1250	.1562			
MDS1562MHV	▲	5/32	*3.97*	.1562	.1562	.891		2.828
MDS040MHV	▲		*4.00*	.1575	.1575			
MDS1590MHV	▲	#21	*4.04*	.1590	.1875			
MDS041MHV	▲		*4.10*	.1614	.1969			
MDS042MHV	▲		*4.20*	.1654	.1969	.984		
MDS1719MHV	▲	11/64	*4.37*	.1719	.1875			
MDS044MHV	▲		*4.40*	.1732	.1969		1.969	3.156
MDS045MHV	▲		*4.50*	.1772	.1969			
MDS1875MHV	▲	3/16	*4.76*	.1875	.1875			
MDS048MHV	▲		*4.80*	.1890	.1969			
MDS050MHV	▲		*5.00*	.1969	.1969			
MDS051MHV	▲		*5.10*	.2008	.2362			
MDS2010MHV	▲	#7	*5.11*	.2010	.2344			
MDS2031MHV	▲	13/64	*5.16*	.2031	.2344	1.078		
MDS052MHV	▲		*5.20*	.2047	.2362			
MDS053MHV	▲		*5.30*	.2087	.2362			
MDS2130MHV	▲	#3	*5.41*	.2130	.2344			
MDS055MHV	▲		*5.50*	.2165	.2362		2.047	3.234
MDS2188MHV	▲	7/32	*5.56*	.2188	.2344			
MDS056MHV	▲		*5.60*	.2204	.2362			
MDS2210MHV	▲	#2	*5.61*	.2210	.2344			
MDS057MHV	▲		*5.70*	.2244	.2362	1.188		
MDS058MHV	▲		*5.80*	.2283	.2362			
MDS2344MHV	▲	15/64	*5.95*	.2344	.2344			
MDS060MHV	▲		*6.00*	.2362	.2362			
MDS061MHV	▲		*6.10*	.2402	.2756			
MDS2420MHV	▲	#C	*6.15*	.2420	.2812			
MDS062MHV	▲		*6.20*	.2441	.2756			
MDS063MHV	▲		*6.30*	.2480	.2756	1.281		
MDS2500MHV	▲	1/4	*6.35*	.2500	.2812			
MDS064MHV	▲		*6.40*	.2520	.2756			
MDS065MHV	▲		*6.50*	.2559	.2756			
MDS2570MHV	▲	#F	*6.53*	.2570	.2812			
MDS06.53MHV	▲		*6.527*	.2571	.2756			
MDS066MHV	▲		*6.60*	.2598	.2756		2.094	3.469
MDS067MHV	▲		*6.70*	.2638	.2756			
MDS2656MHV	▲	17/64	*6.75*	.2656	.2812			
MDS2660MHV	▲	#H	*6.76*	.2660	.2812	1.375		
MDS068MHV	▲		*6.80*	.2677	.2756			
MDS069MHV	▲		*6.90*	.2717	.2756			
MDS2720MHV	▲	#I	*6.91*	.2720	.2812			
MDS070MHV	▲		*7.00*	.2756	.2756			
MDS2770MHV	▲	#J	*7.04*	.2770	.2812			

▲ : U.S.A. Limited Availabilty Item

(continued on next page)

SERIES MDS-MHV

Tolerances of Diameters (in.)		Tolerances of Diameters (in.)		Tolerances of Diameters (in.)	
D ≦ .118	+0 -.00055	.236 < D ≦ .394	+0 -.00087	.709 < D ≦ .768	+0 -.00130
.118 < D ≦ .236	+0 -.00071	.394 < D ≦ .709	+0 -.00106		

(continued from previous page)

MDS-MHV 4XD drill with internal coolant holes for smooth chip flow at high speeds.

Catalog Number (inch/*metric*)	Stock	Cutting Diameter: Fractional Wire & Letters	Cutting Diameter: *Metric*	Cutting Diameter: Decimal D	Dimensions: Shank Diameter d	Dimensions: Flute Length ℓ_1	Dimensions: Shank Length ℓ_2	Dimensions: Overall Length L
MDS071MHV	▲		*7.10*	.2795	.3150	1.484	2.125	3.703
MDS2812MHV	▲	9/32	*7.14*	.2812	.2812			
MDS072MHV	▲		*7.20*	.2835	.3150			
MDS074MHV	▲		*7.40*	.2913	.3150			
MDS075MHV	▲		*7.50*	.2953	.3150			
MDS2969MHV	▲	19/64	*7.54*	.2969	.3125			
MDS078MHV	▲		*7.80*	.3071	.3150	1.578		
MDS3125MHV	▲	5/16	*7.94*	.3125	.3125			
MDS080MHV	▲		*8.00*	.3150	.3150			
MDS081MHV	▲		*8.10*	.3189	.3543	1.672	2.156	3.938
MDS082MHV	▲		*8.20*	.3228	.3543			
MDS3230MHV	▲	#P	*8.204*	.3230	.3594			
MDS083MHV	▲		*8.30*	.3268	.3543			
MDS3281MHV	▲	21/64	*8.33*	.3281	.3594			
MDS3320MHV	▲	#Q	*8.43*	.3320	.3594			
MDS085MHV	▲		*8.50*	.3346	.3543			
MDS086MHV	▲		*8.60*	.3386	.3543	1.766		
MDS087MHV	▲		*8.70*	.3425	.3543			
MDS3438MHV	▲	11/32	8.73	.3438	.3594			
MDS088MHV	▲		*8.80*	.3465	.3543			
MDS089MHV	▲		*8.90*	.3504	.3543			
MDS090MHV	▲		*9.00*	.3543	.3543			
MDS3594MHV	▲	23/64	*9.13*	.3594	.3594			
MDS092MHV	▲		*9.20*	.3622	.3937	1.875	2.203	4.172
MDS093MHV	▲		*9.30*	.3661	.3937			
MDS3680MHV	▲	#U	*9.35*	.3680	.3906			
MDS094MHV	▲		*9.40*	.3700	.3937			
MDS095MHV	▲		*9.50*	.3740	.3937			
MDS3750MHV	▲	3/8	*9.53*	.3750	.3906			
MDS096MHV	▲		*9.60*	.3780	.3937	1.969		
MDS097MHV	▲		*9.70*	.3819	.3937			
MDS098MHV	▲		*9.80*	.3858	.3937			
MDS099MHV	▲		*9.90*	.3898	.3937			
MDS3906MHV	▲	25/64	*9.92*	.3906	.3906			
MDS100MHV	▲		*10.00*	.3937	.3937			
MDS102MHV	▲		*10.20*	.4016	.4331	2.047	2.406	4.563
MDS103MHV	▲		*10.30*	.4055	.4331			
MDS4062MHV	▲	13/32	*10.32*	.4062	.4375			
MDS104MHV	▲		*10.40*	.4094	.4331			
MDS105MHV	▲		*10.50*	.4134	.4331			
MDS106MHV	▲		*10.60*	.4173	.4331	2.172		
MDS107MHV	▲		*10.70*	.4213	.4331			
MDS4219MHV	▲	27/64	*10.72*	.4219	.4375			
MDS108MHV	▲		*10.80*	.4252	.4331			
MDS110MHV	▲		*11.00*	.4331	.4331			
MDS4375MHV	▲	7/16	*11.11*	.4375	.4375			
MDS112MHV	▲		*11.20*	.4409	.4724	2.281	2.438	4.813
MDS115MHV	▲		*11.50*	.4528	.4724			
MDS4531MHV	▲	29/64	*11.51*	.4531	.4688			
MDS117MHV	▲		*11.70*	.4606	.4724	2.359		
MDS118MHV	▲		*11.80*	.4646	.4724			

▲ : U.S.A. Limited Availabilty Item

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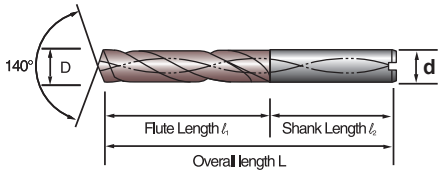
MDS-MHV Series Solid Carbide Drills

Coolant Through Drills



Tolerances of Diameters (in.)		Tolerances of Diameters (in.)		Tolerances of Diameters (in.)	
D ≦ .118	+0 -.00055	.236 < D ≦ .394	+0 -.00087	.709 < D ≦ .768	+0 -.00130
.118 < D ≦ .236	+0 -.00071	.394 < D ≦ .709	+0 -.00106		

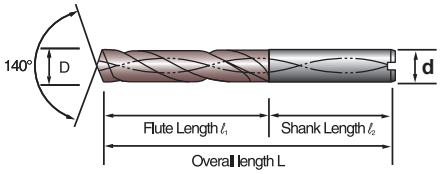
(continued from previous page)

MDS-MHV 4XD drill with internal coolant holes for smooth chip flow at high speeds.

Catalog Number (inch/*metric*)	Stock	Cutting Diameter: Fractional Wire & Letters	Cutting Diameter: *Metric*	Cutting Diameter: Decimal D	Dimensions: Shank Diameter d	Dimensions: Flute Length ℓ_1	Dimensions: Shank Length ℓ_2	Dimensions: Overall Length L
MDS4688MHV	▲	15/32	*11.91*	.4688	.4688	2.359	2.438	4.813
MDS120MHV	▲		*12.00*	.4724	.4724			
MDS122MHV	▲		*12.20*	.4803	.5118	2.469	2.484	5.032
MDS4844MHV	▲	31/64	*12.30*	.4844	.5156			
MDS125MHV	▲		*12.50*	.4921	.5118			
MDS126MHV	▲		*12.60*	.4961	.5118	2.562		
MDS127MHV	▲		*12.697*	.4999	.5118			
MDS5000MHV	▲	1/2	*12.70*	.5000	.5156			
MDS128MHV	▲		*12.80*	.5039	.5118			
MDS130MHV	▲		*13.00*	.5118	.5118			
MDS5156MHV	▲	33/64	*13.10*	.5156	.5156			
MDS5312MHV	▲	17/32	*13.49*	.5312	.5469	2.656	2.516	5.281
MDS135MHV	▲		*13.50*	.5315	.5512			
MDS138MHV	▲		*13.80*	.5433	.5512	2.750		
MDS5469MHV	▲	35/64	*13.89*	.5469	.5469			
MDS140MHV	▲		*14.00*	.5512	.5512			
MDS141MHV	▲		*14.10*	.5551	.5906	2.859	2.562	5.516
MDS5625MHV	▲	9/16	*14.29*	.5625	.5937			
MDS145MHV	▲		*14.50*	.5709	.5906			
MDS5781MHV	▲	37/64	*14.68*	.5781	.5937			
MDS148MHV	▲		*14.80*	.5827	.5906	2.953		
MDS150MHV	▲		*15.00*	.5906	.5906			
MDS5937MHV	▲	19/32	*15.08*	.5937	.5937			
MDS6094MHV	▲	39/64	*15.48*	.6094	.6250	3.047	2.594	5.750
MDS155MHV	▲		*15.50*	.6102	.6299			
MDS158MHV	▲		*15.80*	.6220	.6299	3.156		
MDS6250MHV	▲	5/8	*15.88*	.6250	.6250			
MDS160MHV	▲		*16.00*	.6299	.6299			
MDS16.08MHV	▲		*16.08*	.6331	.6693	3.250	2.641	5.984
MDS162MHV	▲		*16.20*	.6378	.6693			
MDS6406MHV	▲	41/64	*16.27*	.6406	.6718			
MDS165MHV	▲		*16.50*	.6496	.6693			
MDS6562MHV	▲	21/32	*16.67*	.6562	.6718	3.344		
MDS170MHV	▲		*17.00*	.6693	.6693			
MDS6718MHV	▲	43/64	*17.06*	.6718	.6718			
MDS6875MHV	▲	11/16	*17.46*	.6875	.7031	3.438	2.672	6.219
MDS175MHV	▲		*17.50*	.6890	.7087			
MDS178MHV	▲		*17.80*	.7008	.7087	3.547		
MDS7031MHV	▲	45/64	*17.86*	.7031	.7031			
MDS180MHV	▲		*18.00*	.7087	.7087			
MDS7187MHV	▲	23/32	*18.26*	.7187	.7500	3.641	2.719	6.453
MDS185MHV	▲		*18.50*	.7283	.7480			
MDS7344MHV	▲	47/64	*18.65*	.7344	.7500			
MDS190MHV	▲		*19.00*	.7480	.7480	3.750		
MDS7500MHV	▲	3/4	*19.05*	.7500	.7500			
MDS19.15MHV	▲		*19.15*	.7539	.7874	3.844	2.750	6.688
MDS19.25MHV	▲		*19.25*	.7579	.7874			
MDS19.3MHV	▲		*19.30*	.7598	.7874			
MDS7656MHV	▲	49/64	*19.45*	.7656	.7812			
MDS195MHV	▲		*19.50*	.7677	.7874			
MDS198MHV	▲		*19.80*	.7795	.7874	3.938		
MDS7812MHV	▲	25/32	*19.84*	.7812	.7812			
MDS200MHV	▲		*20.00*	.7874	.7874			

▲ : U.S.A. Limited Availabilty Item

SERIES MDS-LHV



MDS-LHV 5XD drill with internal coolant holes for smooth chip flow at high speeds.

Catalog Number (inch/*metric*)	Stock	Cutting Diameter: Fractional Wire & Letters	Cutting Diameter: *Metric*	Cutting Diameter: Decimal D	Dimensions: Shank Diameter d	Dimensions: Flute Length ℓ_1	Dimensions: Shank Length ℓ_2	Dimensions: Overall Length L
MDS1250LHV	▲	1/*83.18*	.1250	.1562		1.266	1.891	3.391
MDS1406LHV	▲	9/64	*3.57*	.1406	.1562	1.422		
MDS1562LHV	▲	5/32	*3.97*	.1562	.1562			
MDS040LHV	▲		*4.00*	.1575	.1575			
MDS1590LHV	▲	#21	*4.04*	.1590	.1875	1.578	1.969	3.859
MDS041LHV	▲		*4.10*	.1614	.1969			
MDS042LHV	▲		*4.20*	.1654	.1969			
MDS1719LHV	▲	11/64	*4.37*	.1719	.1875			
MDS044LHV	▲		*4.40*	.1732	.1969			
MDS045LHV	▲		*4.50*	.1772	.1969			
MDS1875LHV	▲	3/16	*4.76*	.1875	.1875	1.734		
MDS048LHV	▲		*4.80*	.1890	.1969			
MDS050LHV	▲		*5.00*	.1969	.1969			
MDS051LHV	▲		*5.10*	.2008	.2362		2.047	3.938
MDS2031LHV	▲	13/64	*5.16*	.2031	.2344			
MDS052LHV	▲		*5.20*	.2047	.2362			
MDS053LHV	▲		*5.30*	.2087	.2362			
MDS2130LHV	▲	#3	*5.41*	.2130	.2344			
MDS055LHV	▲		*5.50*	.2165	.2362			
MDS2188LHV	▲	7/32	*5.56*	.2188	.2344			
MDS056LHV	▲		*5.60*	.2204	.2362	1.891		
MDS2210LHV	▲	#2	*5.61*	.2210	.2344			
MDS057LHV	▲		*5.70*	.2244	.2362			
MDS058LHV	▲		*5.80*	.2283	.2362			
MDS2344LHV	▲	15/64	*5.95*	.2344	.2344			
MDS060LHV	▲		*6.00*	.2362	.2362			
MDS061LHV	▲		*6.10*	.2402	.2756	2.047	2.094	4.297
MDS062LHV	▲		*6.20*	.2441	.2756			
MDS063LHV	▲		*6.30*	.2480	.2756			
MDS2500LHV	▲	1/4	*6.35*	.2500	.2812			
MDS064LHV	▲		*6.40*	.2520	.2756			
MDS065LHV	▲		*6.50*	.2559	.2756			
MDS2570LHV	▲	#F	*6.527*	.2570	.2812	2.203		
MDS6.53LHV	▲		*6.53*	.2571	.2756			
MDS066LHV	▲		*6.60*	.2598	.2756			
MDS067LHV	▲		*6.70*	.2638	.2756			
MDS2656LHV	▲	17/64	*6.75*	.2656	.2812			
MDS2660LHV	▲	#H	*6.76*	.2660	.2812			
MDS068LHV	▲		*6.80*	.2677	.2756			
MDS069LHV	▲		*6.90*	.2717	.2756			
MDS2720LHV	▲	#I	*6.91*	.2720	.2812			
MDS070LHV	▲		*7.00*	.2756	.2756			
MDS2770LHV	▲	#J	*7.04*	.2770	.2812			
MDS071LHV	▲		*7.10*	*.2795*	*.3150*	2.359	2.125	4.641
MDS2812LHV	▲	9/32	*7.14*	.2812	.2812			
MDS072LHV	▲		*7.20*	.2835	.3150			
MDS074LHV	▲		*7.40*	.2913	.3150			
MDS075LHV	▲		*7.50*	.2953	.3150			
MDS2969LHV	▲	19/64	*7.54*	.2969	.3125			
MDS078LHV	▲		*7.80*	.3071	.3150	2.516		
MDS3125LHV	▲	5/16	*7.94*	.3125	.3125			
MDS080LHV	▲		*8.00*	.3150	.3150			

▲ : U.S.A. Limited Availabilty Item

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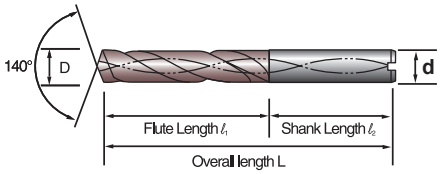
MDS-LHV Series Solid Carbide Drills

Coolant Through Drills



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MDS-LHV 5XD drill with internal coolant holes for smooth chip flow at high speeds.

Catalog Number (inch/*metric*)	Stock	Cutting Diameter: Fractional Wire & Letters	Cutting Diameter: *Metric*	Cutting Diameter: Decimal D	Dimensions: Shank Diameter d	Dimensions: Flute Length ℓ_1	Dimensions: Shank Length ℓ_2	Dimensions: Overall Length L
MDS081LHV	▲		*8.10*	.3189	.3543	2.672	2.172	5.000
MDS082LHV	▲		*8.20*	.3228	.3543			
MDS3230LHV	▲	#P	*8.204*	.3230	.3594			
MDS083LHV	▲		*8.30*	.3268	.3543			
MDS3281LHV	▲	21/64	*8.33*	.3281	.3594			
MDS3320LHV	▲	#Q	*8.43*	.3320	.3594			
MDS085LHV	▲		*8.50*	.3346	.3543			
MDS086LHV	▲		*8.60*	.3386	.3543	2.828		
MDS087LHV	▲		*8.70*	.3425	.3543			
MDS3438LHV	▲	11/32	*8.73*	.3438	.3594			
MDS088LHV	▲		*8.80*	.3465	.3543			
MDS089LHV	▲		*8.90*	.3504	.3543			
MDS090LHV	▲		*9.00*	.3543	.3543			
MDS3594LHV	▲	23/64	*9.13*	.3594	.3594			
MDS092LHV	▲		*9.20*	.3622	.3937	3.000	2.203	5.359
MDS093LHV	▲		*9.30*	.3661	.3937			
MDS3680LHV	▲	#U	*9.35*	.3680	.3906			
MDS094LHV	▲		*9.40*	.3700	.3937			
MDS095LHV	▲		*9.50*	.3740	.3937			
MDS3750LHV	▲	3/8	*9.53*	.3750	.3906			
MDS096LHV	▲		*9.60*	.3780	.3937	3.156		
MDS097LHV	▲		*9.70*	.3819	.3937			
MDS098LHV	▲		*9.80*	.3858	.3937			
MDS099LHV	▲		*9.90*	.3898	.3937			
MDS3906LHV	▲	25/64	*9.92*	.3906	.3906			
MDS100LHV	▲		*10.00*	.3937	.3937			
MDS102LHV	▲		*10.20*	.4016	.4331	3.313	2.406	5.859
MDS103LHV	▲		*10.30*	.4055	.4331			
MDS4062LHV	▲	13/32	*10.32*	.4062	.4375			
MDS104LHV	▲		*10.40*	.4094	.4331			
MDS105LHV	▲		*10.50*	.4134	.4331			
MDS106LHV	▲		*10.60*	.4173	.4331			
MDS107LHV	▲		*10.70*	.4213	.4331			
MDS4219LHV	▲	27/64	*10.72*	.4219	.4375			
MDS108LHV	▲		*10.80*	.4252	.4331	3.469		
MDS110LHV	▲		*11.00*	.4331	.4331			
MDS4375LHV	▲	7/16	*11.11*	.4375	.4375			
MDS112LHV	▲		*11.20*	.4409	.4724	3.625	2.438	6.219
MDS115LHV	▲		*11.50*	.4528	.4724			
MDS4531LHV	▲	29/64	*11.51*	.4531	.4688			
MDS117LHV	▲		*11.70*	.4606	.4724	3.781		
MDS118LHV	▲		*11.80*	.4646	.4724			
MDS4688LHV	▲	15/32	*11.91*	.4688	.4688			
MDS120LHV	▲		*12.00*	.4724	.4724			
MDS122LHV	▲		*12.20*	.4803	.5118	4.000	2.484	6.578
MDS4844LHV	▲	31/64	*12.30*	.4844	.5156			
MDS125LHV	▲		*12.50*	.4921	.5118			
MDS126LHV	▲		*12.60*	.4961	.5118	4.093		
MDS127LHV	▲		*12.70*	.4999	.5118			
MDS5000LHV	▲	1/2	*12.70*	.5000	.5156			
MDS128LHV	▲		*12.80*	.5039	.5118			

▲ : U.S.A. Limited Availabilty Item

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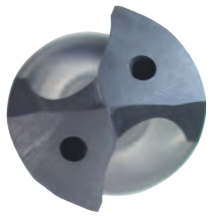
SERIES MDS-LHV



Tolerances of Diameters (in.)		Tolerances of Diameters (in.)		Tolerances of Diameters (in.)	
D ≦ .118	+0 -.00055	.236 < D ≦ .394	+0 -.00087	.709 < D ≦ .768	+0 -.00130
.118 < D ≦ .236	+0 -.00071	.394 < D ≦ .709	+0 -.00106		

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MDS-LHV 5XD drill with internal coolant holes for smooth chip flow at high speeds.

Catalog Number (inch/*metric*)	Stock	Cutting Diameter			Dimensions			
		Fractional Wire & Letters	*Metric*	Decimal D	Shank Diameter d	Flute Length ℓ_1	Shank Length ℓ_2	Overall Length L
MDS12.83LHV	▲		*12.83*	.5051	.5118	4.093	2.484	6.578
MDS130LHV	▲		*13.00*	.5118	.5118			
MDS5156LHV	▲	33/64	*13.10*	.5156	.5156			
MDS5312LHV	▲	17/32	*13.49*	.5312	.5469	4.312	2.516	6.938
MDS135LHV	▲		*13.50*	.5315	.5512			
MDS138LHV	▲		*13.80*	.5433	.5512	4.406		
MDS5469LHV	▲	35/64	*13.89*	.5469	.5469			
MDS140LHV	▲		*14.00*	.5512	.5512			
MDS141LHV	▲		*14.10*	.5551	.5906	4.625	2.563	7.281
MDS5625LHV	▲	9/16	*14.29*	.5625	.5937			
MDS145LHV	▲		*14.50*	.5709	.5906			
MDS5781LHV	▲	37/64	*14.68*	.5781	.5937			
MDS148LHV	▲		*14.80*	.5827	.5906			
MDS150LHV	▲		*15.00*	.5906	.5906	4.734		
MDS5937LHV	▲	19/32	*15.08*	.5937	.5937			
MDS6094LHV	▲	39/64	*15.48*	.6094	.6250	4.922	2.594	7.641
MDS155LHV	▲		*15.50*	.6102	.6299			
MDS158LHV	▲		*15.80*	.6220	.6299	5.031		
MDS6250LHV	▲	5/8	*15.88*	.6250	.6250			
MDS160LHV	▲		*16.00*	.6299	.6299			
MDS16.08LHV	▲		*16.08*	.6331	.6693	5.203	2.641	8.000
MDS162LHV	▲		*16.20*	.6378	.6693			
MDS6406LHV	▲	41/64	*16.27*	.6406	.6718			
MDS165LHV	▲		*16.50*	.6496	.6693			
MDS6562LHV	▲	21/32	*16.67*	.6562	.6718	5.359		
MDS170LHV	▲		*17.00*	.6693	.6693			
MDS6718LHV	▲	43/64	*17.06*	.6718	.6718			
MDS6875LHV	▲	11/16	*17.46*	.6875	.7031	5.515	2.672	8.344
MDS175LHV	▲		*17.50*	.6890	.7087			
MDS178LHV	▲		*17.80*	.7008	.7087	5.672		
MDS7031LHV	▲	45/64	*17.86*	.7031	.7031			
MDS180LHV	▲		*18.00*	.7087	.7087			
MDS7187LHV	▲	23/32	*18.26*	.7187	.7500	5.828	2.719	8.703
MDS185LHV	▲		*18.50*	.7283	.7480			
MDS7344LHV	▲	47/64	*18.65*	.7344	.7500			
MDS190LHV	▲		*19.00*	.7480	.7480	5.984		
MDS7500LHV	▲	3/4	*19.05*	.7500	.7500			
MDS19.15LHV	▲		*19.15*	.7539	.7874	6.140	2.750	9.062
MDS19.25LHV	▲		*19.25*	.7579	.7874			
MDS193LHV	▲		*19.30*	.7598	.7874			
MDS7656LHV	▲	49/64	*19.45*	.7656	.7812			
MDS195LHV	▲		*19.50*	.7677	.7874			
MDS198LHV	▲		*19.80*	.7795	.7874	6.297		
MDS7812LHV	▲	25/32	*19.84*	.7812	.7812			
MDS200LHV	▲		*20.00*	.7874	.7874			

▲ : U.S.A. Limited Availabilty Item

■ RECOMMENDED SPEEDS & FEEDS (INCH)

MDS-V (external coolant)

Speed: v=SFM Feed: f=IPR

Drill Dia. (inch)		Steels <HB250	Steels >HB250	Nodular Cast Iron	Die Steel	Stainless Steels*	Exotic Alloys	Titanium Alloy	Aluminum	Gray Cast Iron
.110 ~ .197	v	100 ~ 220	100 ~ 220	100 ~ 160	50 ~ 120	40 ~ 100	35 ~ 75	40 ~ 100	120 ~ 600	100 ~ 260
	f	.006 ~ .010	.004 ~ .010	.006 ~ .010	.002 ~ .006	.002 ~ .006	.002 ~ .003	.002 ~ .006	.008 ~ .016	.006 ~ .012
.197 ~ .315	v	140~ 240	120 ~ 220	140 ~ 260	50 ~ 160	50 ~ 120	35 ~ 85	50 ~ 120	120 ~ 600	120 ~ 290
	f	.006 ~ .012	.006 ~ .010	.008 ~ .012	.004 ~ .008	.003 ~ .008	.003 ~ .004	.003 ~ .008	.008 ~ .016	.006 ~ .014
.315 ~ .394	v	140~ 240	120 ~ 220	140 ~ 260	70 ~ 180	50 ~ 140	35 ~ 85	50 ~ 140	240 ~ 720	170 ~ 340
	f	.008 ~ .012	.006 ~ .012	.008 ~ .014	.004 ~ .010	.003 ~ .008	.003 ~ .004	.003 ~ .008	.008 ~ .016	.008 ~ .016
.394 ~ .472	v	180~ 280	140 ~ 250	180 ~ 290	70 ~ 180	70 ~ 180	35 ~ 100	70 ~ 180	300 ~ 720	190 ~ 340
	f	.008 ~ .012	.006 ~ .012	.008 ~ .014	.004 ~ .010	.004 ~ .008	.003 ~ .008	.008 ~ .018	.008 ~ .018	.010 ~ .018
.472 ~ .551	v	180 ~ 310	140 ~ 280	180 ~ 310	100 ~ 190	70 ~ 180	35 ~ 100	70 ~ 180	300 ~ 720	220 ~ 360
	f	.010 ~ .014	.006 ~ .012	.008 ~ .014	.004 ~ .010	.004 ~ .010	.004 ~ .008	.004 ~ .010	.008 ~ .028	.010 ~ .024
.551 ~ .787	v	190 ~ 340	170 ~ 280	220 ~ 360	100 ~ 220	70 ~ 180	40 ~ 120	70 ~ 180	300 ~ 720	220 ~ 380
	f	.010 ~ .018	.008 ~ .014	.008 ~ .018	.004 ~ .012	.004 ~ .010	.004 ~ .008	.004 ~ .010	.008 ~ .028	.010 ~ .024

MDS-HV (internal coolant)

Drill Dia. (inch)		Steels <HB200	Steels HB200-300	Alloy Steels >HB300	Prehard Steels HRC45	Die Steels (Annealed)	Stainless Steels*	Ductile Cast Iron	Gray Cast Iron	Titanium Alloy Ti-6Al-4V	Inconel, Monel, etc.
<.196	v	250 ~ 400	165 ~ 330	135 ~ 265	65 ~ 165	100 ~ 185	100 ~ 195	130 ~ 330	265 ~ 395	65 ~ 130	40 ~ 100
	f	.006 ~ .010	.006 ~ .010	.004 ~ .008	.003 ~ .004	.003 ~ .006	.004 ~ .008	.006 ~ .010	.006 ~ .012	.003 ~ .004	.002 ~ .006
.197 ~ .394	v	360 ~ 480	230 ~ 460	135 ~ 265	100 ~ 195	160 ~ 240	165 ~ 280	265 ~ 470	330 ~ 470	80 ~ 130	50 ~ 140
	f	.008 ~ .014	.008 ~ .014	.004 ~ .010	.004 ~ .006	.004 ~ .008	.004 ~ .010	.008 ~ .014	.008 ~ .014	.003 ~ .005	.003 ~ .008
.395 ~ .630	v	430 ~ 550	265 ~ 495	135 ~ 330	100 ~ 195	160 ~ 240	165 ~ 310	280 ~ 400	400 ~ 550	80 ~ 130	70 ~ 180
	f	.010 ~ .014	.010 ~ .014	.006 ~ .012	.005 ~ .008	.005 ~ .009	.006 ~ .012	.010 ~ .014	.010 ~ .016	.004 ~ .006	.004 ~ .010
.631 ~ .787	v	430 ~ 600	265 ~ 525	165 ~ 395	100 ~ 195	160 ~ 240	165 ~ 325	310 ~ 430	400 ~ 550	80 ~ 130	35 ~ 115
	f	.012 ~.016	.010 ~.016	.006 ~.012	.006 ~.010	.006 ~.010	.006 ~.012	.010 ~.016	.010 ~.016	.004 ~.006	.003 ~.008

*For difficult-to-machine stainless steels, (316, 302, 304, 17-4ph, etc.) adjust speeds & feeds accordingly

■ RECOMMENDED SPEEDS & FEEDS *(METRIC)*

MDS-V (external coolant)

Speed: v=m/min Feed: f=mm/rev

Drill Dia. *(mm)*		Steels <HB250	Steels >HB250	Nodular Cast Iron	Die Steel	Stainless Steels*	Exotic Alloys	Titanium Alloy	Aluminum	Gray Cast Iron
2.8 ~ 5.0	v	*29 ~ 66*	*29 ~ 59*	*29 ~ 48*	*14 ~ 36*	*11 ~ 29*	*11 ~ 23*	*11 ~ 29*	*36 ~ 184*	*29 ~ 80*
	f	*.15 ~ .25*	*.10 ~ .25*	*.15 ~ .25*	*.05 ~ .15*	*.05 ~ .15*	*.05 ~ .08*	*.05 ~ .15*	*.20 ~ .41*	*.15 ~ .30*
5.0 ~ 8.0	v	*44 ~ 73*	*36 ~ 66*	*44 ~ 80*	*14 ~ 48*	*14 ~ 36*	*11 ~ 26*	*14 ~ 36*	*36 ~ 184*	*36 ~ 88*
	f	*.15 ~ .30*	*.15 ~ .25*	*.20 ~ .30*	*.10 ~ .20*	*.08 ~ .20*	*.08 ~ .20*	*.08 ~ .20*	*.20 ~ .41*	*.15 ~ .36*
8.0 ~ 10.0	v	*44 ~ 73*	*36 ~ 66*	*44 ~ 80*	*22 ~ 55*	*14 ~ 44*	*14 ~ 44*	*14 ~ 44*	*73 ~ 220*	*52 ~ 102*
	f	*.20 ~ .30*	*.15 ~ .30*	*.20 ~ .36*	*.10 ~ .25*	*.08 ~ .20*	*.08 ~ .20*	*.08 ~ .20*	*.20 ~ .41*	*.20 ~ .41*
10.0 ~ 12.0	v	*55 ~ 84*	*44 ~ 77*	*55 ~ 88*	*22 ~ 55*	*22 ~ 55*	*22 ~ 55*	*22 ~ 55*	*91 ~ 220*	*59 ~ 102*
	f	*.20 ~ .30*	*.15 ~ .30*	*.20 ~ .36*	*.10 ~ .25*	*.10 ~ .20*	*.10 ~ .20*	*.10 ~ .20*	*.20 ~ .46*	*.25 ~ .46*
12.0 ~ 14.0	v	*55 ~ 95*	*44 ~ 84*	*55 ~ 95*	*29 ~ 59*	*22 ~ 55*	*22 ~ 55*	*22 ~ 55*	*91 ~ 240*	*66 ~ 109*
	f	*.25 ~ .36*	*.15 ~ .30*	*.20 ~ .36*	*.10 ~ .25*	*.10 ~ .25*	*.10 ~ .25*	*.10 ~ .25*	*.20 ~ .71*	*.25 ~ .61*
14.0 ~ 20.0	v	*55 ~ 95*	*44 ~ 84*	*55 ~ 95*	*29 ~ 59*	*22 ~ 55*	*22 ~ 55*	*22 ~ 55*	*91 ~ 240*	*66 ~ 109*
	f	*.25 ~ .36*	*.15 ~ .30*	*.20 ~ .36*	*.10 ~ .25*	*.10 ~ .25*	*.10 ~ .25*	*.10 ~ .25*	*.20 ~ .71*	*.25 ~ .61*

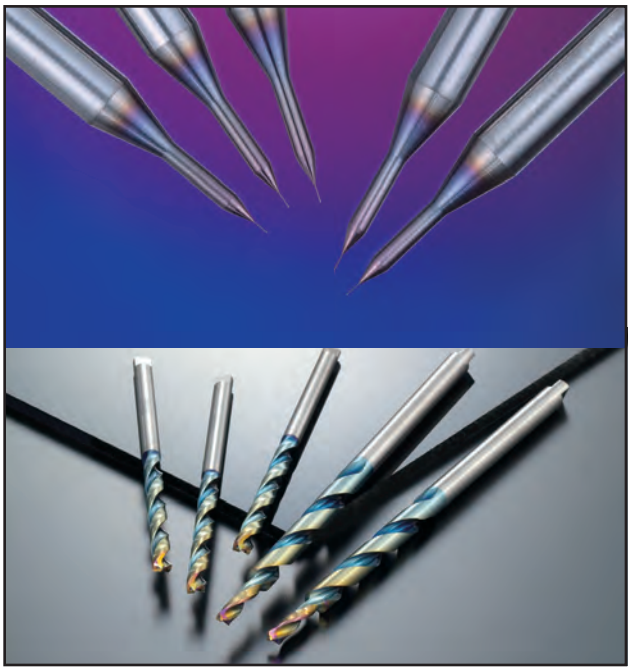
MDS-HV (internal coolant)

Drill Dia. *(mm)*		Steels <HB200	Steels HB200-300	Alloy Steels >HB300	Prehard Steels HRC45	Die Steels (Annealed)	Stainless Steels*	Ductile Cast Iron	Gray Cast Iron	Titanium Alloy Ti-6Al-4V	Inconel, Monel, etc.
<4.9	v	*76 ~ 122*	*50 ~ 100*	*41 ~ 81*	*20 ~ 50*	*31 ~ 56*	*31 ~ 60*	*39 ~ 100*	*81 ~ 120*	*20 ~ 40*	*11 ~ 29*
	f	*.15 ~ .25*	*.15 ~ .25*	*.10 ~ .20*	*.08 ~ .10*	*.08 ~ .15*	*.10 ~ .20*	*.15 ~ .25*	*.15 ~ .30*	*.08 ~ .10*	*.05 ~ .15*
5.0 ~ 10.0	v	*110 ~ 146*	*70 ~ 40*	*41 ~ 81*	*31 ~ 60*	*49 ~ 73*	*50 ~ 85*	*81 ~ 122*	*100 ~ 143*	*24 ~ 40*	*14 ~ 44*
	f	*.20 ~ .35*	*.20 ~ .35*	*.10 ~ .25*	*.10 ~ .15*	*.10 ~ .20*	*.10 ~ .25*	*.20 ~ .25*	*.20 ~ .35*	*.08 ~ .13*	*.08 ~ .20*
10.1 ~ 16.0	v	*131 ~ 168*	*81 ~ 151*	*41 ~ 100*	*31 ~ 60*	*49 ~ 73*	*50 ~ 95*	*85 ~ 122*	*122 ~ 168*	*24 ~ 40*	*22 ~ 55*
	f	*.25 ~ .35*	*.25 ~ .35*	*.15 ~ .30*	*.13 ~ .20*	*.13 ~ .23*	*.15 ~ .30*	*.25 ~ .36*	*.25 ~ .41*	*.10 ~ .15*	*.10 ~ .25*
16.1 ~ 20.0	v	*131 ~183*	*81 ~ 160*	*51 ~ 120*	*31 ~ 60*	*49 ~ 73*	*50 ~ 99*	*94 ~ 131*	*122 ~ 168*	*24 ~ 40*	*11 ~ 35*
	f	*.30 ~ .40*	*.25 ~ .40*	*.15 ~ .30*	*.15 ~ .25*	*.15 ~ .25*	*.15 ~ .30*	*.25 ~ .40*	*.25 ~ .40*	*.10 ~ .15*	*.07 ~ .20*

*For difficult-to-machine stainless steels, (316, 302, 304, 17-4ph, etc.) adjust speeds & feeds accordingly

Small Diameter & DLC Coated Drills

Pages 441-447



SMALL DIA. & DLC COATED DRILLS **PAGES**

Small Diameter Drills

DLC Coated Drills

MLDH-L / MLDH-P Type

New

■ General Features

Micro Long Drills are oil-hole drills for high efficiency drilling that were developed for drilling deep, small-diameter holes. These next-generation, small-diameter hole drills feature improved strength - often a problem area with small-diameter drills.

■ Characteristics and Applications

● Deep-hole drilling

New groove shape ensures good drill rigidity and chip evacuation.
High efficiency drilling to depths of over 20x drill diameter at over v_f=500mm/min (drill diameter 1.3mm, SUS416 equivalent).
Optimal thinning and edge balance for stable chip control.

● Long tool life

Special coating provides long tool life with a wide variety of work materials.
Improved chip evacuation makes it possible to reduce spindle load fluctuation, ensuring stable tool life.

■ Series

Application	Series	Diameter Range (mm)	Hole Depth ($^L/_D$)	Remarks
Deep Hole Drilling	MLDH□□□□L5 Type	ø0.8 to 2.0	Up to 5	41 Models Stocked
	MLDH□□□□L12 Type	ø0.8 to 2.0	Up to 12	41 Models Stocked
	MLDH□□□□L20 Type	ø0.8 to 2.0	Up to 20	41 Models Stocked
	MLDH□□□□L30 Type	ø0.8 to 2.0	Up to 30	41 Models Stocked
Guide Hole Drilling	MLDH□□□□P Type	ø0.8 to 2.0	Up to 2	41Models Stocked

■ Recommended Cutting Conditions

MLDH-P Type/MLDH-L5 Type

(v_c: Cutting Speed m/min f: Feed Rate mm/rev)

Drill Diameter øD_c (mm)	Cutting Conditions	Soft Steel Up to 200HB	General Steel Up to 250HB	Alloy Steel Up to 300HB	Stainless Steel Up to 200HB	Cast Iron FC/FCD	Aluminium Alloy	Heat-resistant steels
Up to 1.0	v_c	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.02 - **0.03** - 0.04	0.03 - **0.04** - 0.06	0.005 - **0.01** - 0.02
Up to 1.5	v_c	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.04 - **0.08** - 0.12	0.04 - **0.08** - 0.12	0.04 - **0.08** - 0.12	0.02 - **0.05** - 0.10	0.04 - **0.08** - 0.12	0.05 - **0.10** - 0.15	0.01 - **0.03** - 0.05
Up to 2.0	v_c	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.06 - **0.08** - 0.12	0.06 - **0.08** - 0.12	0.06 - **0.08** - 0.12	0.04 - **0.06** - 0.10	0.06 - **0.08** - 0.12	0.08 - **0.12** - 0.15	0.01 - **0.03** - 0.05

Min. - **Optimum** - Max.

MLDH-L12 Type/MLDH-L20 Type/MLDH-L30 Type

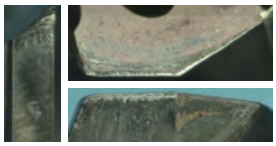
Drill Diameter øD_c (mm)	Cutting Conditions	Soft Steel Up to 200HB	General Steel Up to 250HB	Alloy Steel Up to 300HB	Stainless Steel Up to 200HB	Cast Iron FC/FCD	Aluminium Alloy	Heat-resistant steels
Up to 1.0	v_c	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.02 - **0.03** - 0.04	0.03 - **0.04** - 0.06	0.005 - **0.01** - 0.02
Up to 1.5	v_c	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.03 - **0.05** - 0.07	0.03 - **0.05** - 0.07	0.03 - **0.05** - 0.07	0.02 - **0.04** - 0.07	0.04 - **0.07** - 0.10	0.05 - **0.08** - 0.12	0.01 - **0.02** - 0.03
Up to 2.0	v_c	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.07** - 0.10	0.05 - **0.08** - 0.12	0.01 - **0.02** - 0.03

Min. - **Optimum** - Max.

■ Application Examples

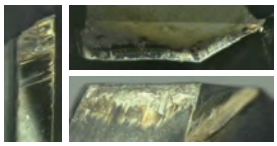
● Automotive Component Mould (Equivalent to SUS416)

Tool : MLDH1400L20 (Guide : MLDH1400P)
Equipment : Vertical Machining Centre (HSKA63)
Coolant Supply : Internal Coolant (Emulsion Type, Pump Pressure : 4MPa)
Cutting Conditions : v_c=60m/min f=0.03mm/rev H=21mm
Tool Life : 600 Units (11.4m/reg)



● Tooling Component (Equivalent to SKD11)

Tool : MLDH1900L20 (Guide : MLDH1900P)
Equipment : Vertical Machining Centre (HSKA63)
Coolant Supply : Internal Coolant (Emulsion Type, Pump Pressure : 4MPa)
Cutting Conditions : v_c=60m/min f=0.10mm/rev H=27mm
Tool Life : 600 Units (18m/reg)



MLDH-L / MLDH-P Type

New

MLDH-P Type

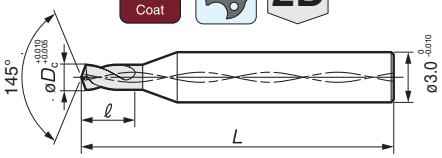
MLDH-L Type

Internal Coolant Supply (MLDH-P Type / MLDH-L Type)

Carbon Steel, Alloy Steel Up to 0.28%	Carbon Steel, Alloy Steel From 0.29%	Tempered Steel	Hardened Steel Up to 45HRC	Hardened Steel From 46HRC	Stainless steel	Ti Alloy	Heat-resistant steels	Cast Iron	Ductile Cast Iron	Aluminium Alloy	Copper alloy	Composite CFRP
◎	◎	○	○		◎			◎	◎	○		

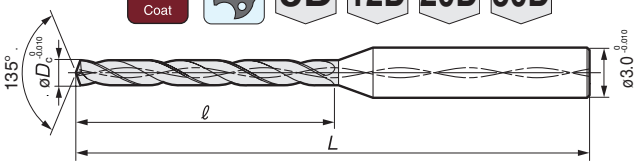
● MLDH-P Type

PVD Coat | W/ Oil Hole | 2D



● MLDH-L Type

PVD Coat | W/ Oil Hole | 5D | 12D | 20D | 30D



● MLDH-P Type/MLDH-L Type Dimensions and Stock Availability

Diameter øDc (mm)	Dedicated Guide Hole MLDH-P Type: Cat. No.	Stock	Dimensions (mm) L	Dimensions (mm) ℓ	Micro Long Drill MLDH-L Type: Cat. No. 5,12,20,30	Hole Depth: 5D Stock 5	Hole Depth: 5D Dimensions (mm) L	Hole Depth: 5D Dimensions (mm) ℓ	Hole Depth: 12D Stock 12	Hole Depth: 12D Dimensions (mm) L	Hole Depth: 12D Dimensions (mm) ℓ	Hole Depth: 20D Stock 20	Hole Depth: 20D Dimensions (mm) L	Hole Depth: 20D Dimensions (mm) ℓ	Hole Depth: 30D Stock 30	Hole Depth: 30D Dimensions (mm) L	Hole Depth: 30D Dimensions (mm) ℓ
0.80	MLDH 0800P	★	45	3.2	MLDH 0800L□□	★	50	8	★	55	14	★	60	19	★	70	28
0.81	0810P	★			0810L□□	★		9	★			★			★		
0.82	MLDH 0820P	★		3.3	MLDH 0820L□□	★			★			★		20	★		
0.83	0830P	★			0830L□□	★			★			★			★		
0.84	MLDH 0840P	★		3.4	MLDH 0840L□□	★			★			★			★		29
0.85	0850P	★			0850L□□	★			★			★			★		
0.86	0860P	★			0860L□□	★			★		15	★	65	21	★		
0.87	MLDH 0870P	★		3.5	MLDH 0870L□□	★			★			★			★		30
0.88	0880P	★			0880L□□	★			★			★			★		
0.89	MLDH 0890P	★		3.6	MLDH 0890L□□	★			★			★			★		
0.90	0900P	★			0900L□□	★		10	★	60		★		22	★	75	31
0.91	0910P	★			0910L□□	★			★			★			★		
0.92	MLDH 0920P	★		3.7	MLDH 0920L□□	★			★		16	★			★		
0.93	0930P	★			0930L□□	★			★			★			★		32
0.94	MLDH 0940P	★		3.8	MLDH 0940L□□	★			★			★		23	★		
0.95	0950P	★			0950L□□	★			★			★			★		
0.96	0960P	★			0960L□□	★			★			★			★		33
0.97	MLDH 0970P	★		3.9	MLDH 0970L□□	★			★			★			★		
0.98	0980P	★			0980L□□	★			★		17	★		24	★		
0.99	MLDH 0990P	★		4.0	MLDH 0990L□□	★			★			★			★		34
1.00	1000P	★			1000L□□	★			★			★			★		
1.05	MLDH 1050P	★		4.2	MLDH 1050L□□	★	55	12	★	65	18	★		25	★	80	36
1.10	MLDH 1100P	★		4.4	MLDH 1100L□□	★			★		19	★	70	26	★		37
1.15	MLDH 1150P	★		4.6	MLDH 1150L□□	★			★		20	★		28	★		39
1.20	MLDH 1200P	★		4.8	MLDH 1200L□□	★			★			★		29	★	85	41
1.25	MLDH 1250P	★		5.0	MLDH 1250L□□	★		14	★		21	★		30	★		43
1.30	MLDH 1300P	★		5.2	MLDH 1300L□□	★			★		22	★	75	31	★		44
1.35	MLDH 1350P	★		5.4	MLDH 1350L□□	★			★		23	★		32	★	90	46
1.40	MLDH 1400P	★		5.6	MLDH 1400L□□	★			★		24	★		34	★		48
1.45	MLDH 1450P	★		5.8	MLDH 1450L□□	★		16	★		25	★		35	★		49
1.50	MLDH 1500P	★		6.0	MLDH 1500L□□	★			★		26	★		36	★		51
1.55	MLDH 1550P	★		6.2	MLDH 1550L□□	★			★			★	80	37	★	95	53
1.60	MLDH 1600P	★		6.4	MLDH 1600L□□	★			★	70	27	★		38	★		54
1.65	MLDH 1650P	★	50	6.6	MLDH 1650L□□	★	60	18	★		28	★		40	★		56
1.70	MLDH 1700P	★		6.8	MLDH 1700L□□	★			★		29	★		41	★	100	58
1.75	MLDH 1750P	★		7.0	MLDH 1750L□□	★			★		30	★	85	42	★		60
1.80	MLDH 1800P	★		7.2	MLDH 1800L□□	★			★		31	★		43	★		61
1.85	MLDH 1850P	★		7.4	MLDH 1850L□□	★		20	★			★		44	★	103	63
1.90	MLDH 1900P	★		7.6	MLDH 1900L□□	★			★	75	32	★		46	★		65
1.95	MLDH 1950P	★		7.8	MLDH 1950L□□	★			★		33	★		47	★		66
2.00	MLDH 2000P	★		8.0	MLDH 2000L□□	★			★		34	★	90	48	★		68

Grade: ACV70

Please indicate 5, 12, 20 or 30 in the □□ when ordering.
(Example: MLDH 1000L20)

■ Made to Order Items: Inquire about production of drills in tool diameters and lengths not listed above or not in stock.

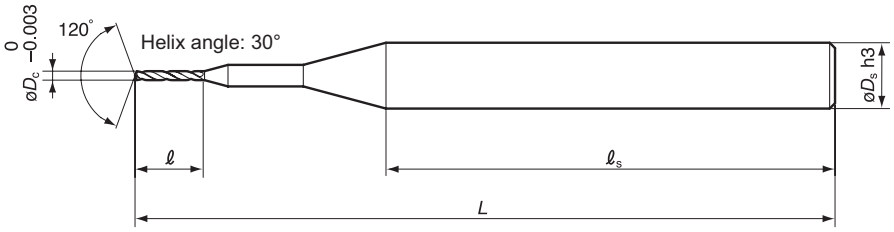
Micro MultiDrills MDUS Type

■ MDUS-Features & Benefits

- **High precision shank**
  Shank tolerance: h3
  Concentricity: 0.3µm or less
  Roundness: 0.5µm or less

- **New ultra-thin TiAlN coating**
  Provides improved wear resistance

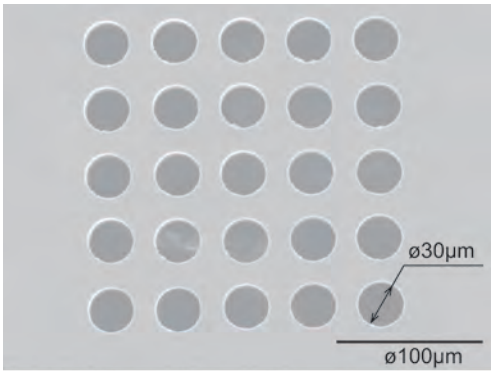
- **Wide material range**
  Ideal for machining steel, stainless steel, and copper



ø0.030 to ø0.180mm

Catalog Number	øDc (mm)	øDs (mm)	Stock	Dimensions (mm)		
				ℓ	ℓs	L
MDUS0030-30C	0.030	3.0	★	0.3	28	38
MDUS0040-30C	0.040		★	0.4		
MDUS0050-30C	0.050		★	0.5		
MDUS0080-30C	0.080		★	0.8		
MDUS0100-30C	0.100		★	1.0		
MDUS0120-30C	0.120		★	1.2		
MDUS0150-30C	0.150		★	1.5		
MDUS0180-30C	0.180		★	1.8		

★ = Worldwide Warehouse item available in 10 business days



Material: 304 Stainless Steel
Drill: MDUS0030-30C (ø0.03mm)

Mini MultiDrills MDSS Type

■ Features & Benefits

- High breakage resistance due to a combination of tough, stable carbide substrate and a highly rigid design
- Long tool life is achieved as a result of the PVD coating created especially for small diameter drills
- Wide variety of applications including carbon steel, alloy steel, die steel, and stainless steel

Fig 1

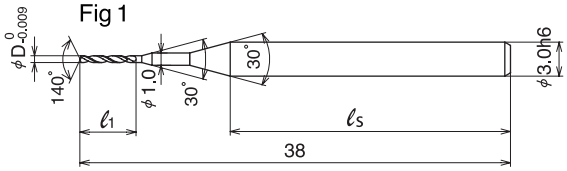
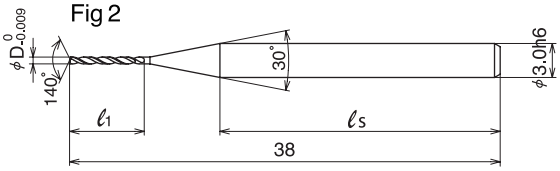


Fig 2



ø0.20 to ø0.49mm

Catalog Number	Stock	øDc (mm)	Dimensions (mm) ℓ	Dimensions (mm) ℓs	Style
MDSS0020	★	0.20	2.5	28	Fig1
MDSS0021	★	0.21			
MDSS0022	★	0.22			
MDSS0023	★	0.23			
MDSS0024	★	0.24			
MDSS0025	★	0.25			
MDSS0026	★	0.26			
MDSS0027	★	0.27			
MDSS0028	★	0.28			
MDSS0029	★	0.29			
MDSS0030	★	0.30	3		
MDSS0031	★	0.31			
MDSS0032	★	0.32			
MDSS0033	★	0.33			
MDSS0034	★	0.34			
MDSS0035	★	0.35	4		Fig2
MDSS0036	★	0.36			
MDSS0037	★	0.37			
MDSS0038	★	0.38			
MDSS0039	★	0.39			
MDSS0040	★	0.40	5		
MDSS0041	★	0.41			
MDSS0042	★	0.42			
MDSS0043	★	0.43			
MDSS0044	★	0.44			
MDSS0045	★	0.45			
MDSS0046	★	0.46			
MDSS0047	★	0.47			
MDSS0048	★	0.48			
MDSS0049	★	0.49			

★ = Worldwide Warehouse item available in 10 business days

ø0.50 to ø0.79mm

Catalog Number	Stock	øDc (mm)	Dimensions (mm) ℓ	Dimensions (mm) ℓs	Style
MDSS0050	★	0.50	6	27	Fig2
MDSS0051	★	0.51			
MDSS0052	★	0.52			
MDSS0053	★	0.53			
MDSS0054	★	0.54			
MDSS0055	★	0.55			
MDSS0056	★	0.56			
MDSS0057	★	0.57			
MDSS0058	★	0.58			
MDSS0059	★	0.59			
MDSS0060	★	0.60	7	26	
MDSS0061	★	0.61			
MDSS0062	★	0.62			
MDSS0063	★	0.63			
MDSS0064	★	0.64			
MDSS0065	★	0.65			
MDSS0066	★	0.66			
MDSS0067	★	0.67			
MDSS0068	★	0.68			
MDSS0069	★	0.69			
MDSS0070	★	0.70	9	24	
MDSS0071	★	0.71			
MDSS0072	★	0.72			
MDSS0073	★	0.73			
MDSS0074	★	0.74			
MDSS0075	★	0.75			
MDSS0076	★	0.76			
MDSS0077	★	0.77			
MDSS0078	★	0.78			
MDSS0079	★	0.79			

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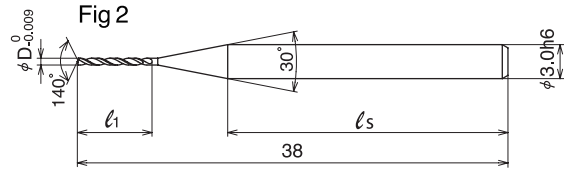
ø0.80 to ø1.00mm

Catalog Number	Stock	øDc (mm)	Dimensions (mm) ℓ	Dimensions (mm) ℓs	Style
MDSS0080	★	0.80	10	23	Fig2
MDSS0081	★	0.81			
MDSS0082	★	0.82			
MDSS0083	★	0.83			
MDSS0084	★	0.84			
MDSS0085	★	0.85			
MDSS0086	★	0.86			
MDSS0087	★	0.87			
MDSS0088	★	0.88			
MDSS0089	★	0.89			
MDSS0090	★	0.90	11	22	
MDSS0091	★	0.91			
MDSS0092	★	0.92			
MDSS0093	★	0.93			
MDSS0094	★	0.94			
MDSS0095	★	0.95			
MDSS0096	★	0.96			
MDSS0097	★	0.97			
MDSS0098	★	0.98			
MDSS0099	★	0.99			
MDSS0100	★	1.00	12	21	

★ = Worldwide Warehouse item available in 10 business days

Fig 2



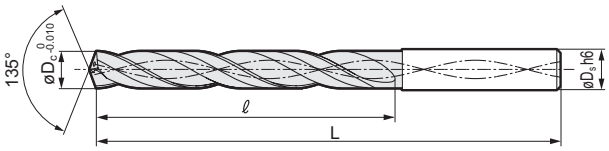
■ Recommended Cutting Conditions (Wet)

Feed Rate=ipm / *mm/min*		Structural Steel Carbon Steel Gray Cast Iron	Alloy Steel Pre-hardened Steel	Die Steel Tempered Steel	Hardened Steel 40-50 HRc	Hardened Steel 50-55 HRc	Ductile Cast Iron	Stainless Steel
~ø.20 - ø.29 mm	RPM	31,800	26,500	21,200	12,700	10,600	31,800	10,600
	Feed Rate	2.362 / *60*	1.969 / *50*	1.575 / *40*	1.181 / *30*	0.787 / *20*	2.362 / *60*	0.787 / *20*
	Step Feed	0.1XD	0.1XD	0.1XD	0.1XD	0.1XD	0.1XD	0.1XD
~ø.30 - .39 mm	RPM	31,800	26,500	21,200	12,700	10,600	31,800	10,600
	Feed Rate	3.937 / *100*	3.150 / *80*	2.362 / *60*	1.575 / *40*	1.181 / *30*	3.937 / *100*	1.181 / *30*
	Step Feed	0.1XD	0.1XD	0.1XD	0.1XD	0.1XD	0.1XD	0.1XD
~ø.40 - .49 mm	RPM	31,800	25,900	19,900	12,700	9,900	31,800	9,500
	Feed Rate	5.118 / *130*	3.937 / *100*	3.150 / *80*	1.969 / *50*	1.575 / *40*	5.118 / *130*	1.575 / *40*
	Step Feed	0.1XD	0.1XD	0.1XD	0.1XD	0.1XD	0.1XD	0.1XD
~ø.50 - .59 mm	RPM	31,800	25,500	19,100	12,700	9,500	31,800	9,500
	Feed Rate	7.480 / *190*	5.906 / *150*	4.330 / *110*	2.362 / *60*	1.969 / *50*	7.480 / *190*	1.969 / *50*
	Step Feed	0.1XD	0.1XD	0.1XD	0.1XD	0.1XD	0.1XD	0.1XD
~ø.60 - 1.00 mm	RPM	23,900	15,900	12,700	8,000	5,600	19,100	5,600
	Feed Rate	14.173 / *360*	9.449 / *240*	3.543 / *90*	3.937 / *100*	2.362 / *60*	11.417 / *290*	3.150 / *80*
	Step Feed	0.2XD - .5XD*	0.2XD - .5XD*	0.2XD - .5XD*	0.1XD	0.1XD	0.2XD - .5XD*	0.1XD

* Step feed is recommended for drilling of holes deeper than 3XD

1) The conditions above are recommended under wet conditions, using water-soluble coolant.
2) If machine noises and vibrations are present, adjust the cutting conditions accordingly.
3) If the machine cannot achieve the recommended spindle speed, use the maximum spindle speed available.

DLC Coated Drills NHGS Type



Diameter ø3.00 to 8.00mm (5XD)

Catalog Number	øDc (mm)	øDs (mm)	Stock	Dimensions (mm) ℓ	Dimensions (mm) L
MDW0300NHGS5	3.00	3.0	★	28	78
MDW0340NHGS5	3.40	4.0	★	32	86
MDW0350NHGS5	3.50		★		
MDW0365NHGS5	3.65		★	36	
MDW0380NHGS5	3.80		★		
MDW0400NHGS5	4.00		★		
MDW0430NHGS5	4.30	5.0	★	40	98
MDW0450NHGS5	4.50		★		
MDW0460NHGS5	4.60		★	44	
MDW0500NHGS5	5.00		★		
MDW0510NHGS5	5.10	6.0	★	44	100
MDW0550NHGS5	5.50		★		
MDW0600NHGS5	6.00		★	48	
MDW0610NHGS5	6.10	7.0	★	52	109
MDW0650NHGS5	6.50		★		
MDW0680NHGS5	6.80		★	56	
MDW0700NHGS5	7.00		★		
MDW0735NHGS5	7.35	8.0	★	60	118
MDW0750NHGS5	7.50		★		
MDW0780NHGS5	7.80		★	64	
MDW0800NHGS5	8.00		★		

Diameter ø8.50 to 16.00mm (5XD)

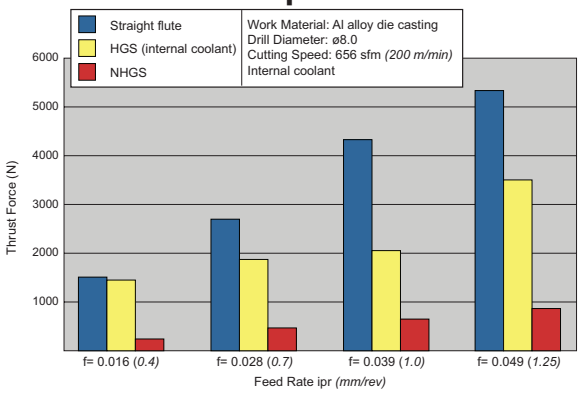
Catalog Number	øDc (mm)	øDs (mm)	Stock	Dimensions (mm) ℓ	Dimensions (mm) L
MDW0850NHGS5	8.50	9.0	★	68	127
MDW0860NHGS5	8.60		★	72	
MDW0900NHGS5	9.00		★		
MDW0921NHGS5	9.21	10.0	★	76	136
MDW0950NHGS5	9.50		★		
MDW0960NHGS5	9.60		★	80	
MDW1000NHGS5	10.00		★		
MDW1040NHGS5	10.40	11.0	★	84	149
MDW1050NHGS5	10.50		★		
MDW1100NHGS5	11.00		★	88	
MDW1110NHGS5	11.10	12.0	★	92	158
MDW1150NHGS5	11.50		★		
MDW1200NHGS5	12.00		★	96	
MDW1210NHGS5	12.10	13.0	★	100	167
MDW1250NHGS5	12.50		★		
MDW1300NHGS5	13.00		★	104	
MDW1350NHGS5	13.50	14.0	★	108	176
MDW1400NHGS5	14.00		★	112	
MDW1410NHGS5	14.10	15.0	★	116	185
MDW1450NHGS5	14.50		★		
MDW1490NHGS5	14.90		★	120	
MDW1500NHGS5	15.00		★		
MDW1550NHGS5	15.50	16.0	★	124	194
MDW1600NHGS5	16.00		★	128	

★ = Worldwide Warehouse item available in 10 business days

■ Features & Benefits

- **High efficiency drilling**
  DLC or "diamond like carbon" coating along with special web thinning drastically reduce cutting resistance
- **Precision drilling**
  Special cutting edge design improves hole quality
- **Longer tool life**
  DLC coating and cutting edge design provide long and stable tool life
- **For a wide variety of work material**
  Die cast aluminum, aluminum casting, wrought aluminum alloy, brass casting, and bronze casting

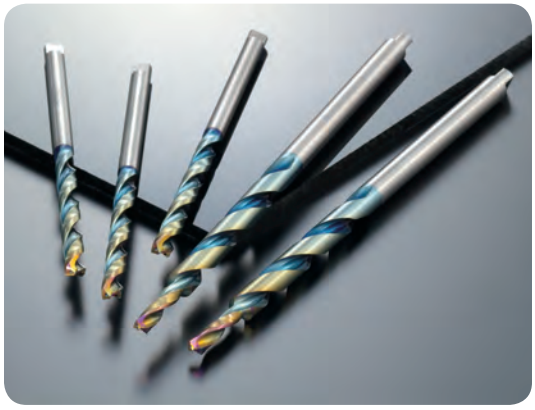
■ Thrust Force Comparison



■ Recommended Running Conditions

Speed: v (m/min)
Feed: f (mm/rev)

Drill Diameter		Aluminum Casting/ Die Cast Aluminum	Wrought Aluminum Alloy
Up to ø6.00	v	80 - 200	80 - 200
	f	0.2 - 0.5	0.2 - 0.3
Up to ø10.00	v	100 - 250	100 - 250
	f	0.4 - 0.8	0.2 - 0.4
Up to ø16.00	v	120 - 250	120 - 250
	f	0.4 - 1.0	0.3 - 0.5



SUMITOMO

CARBIDE - CBN - DIAMOND

1-800-950-5202

www.sumicarbide.com

Deep Hole Carbide Drills

Pages 449-455

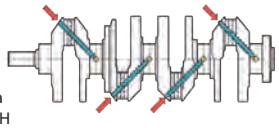
■ Features & Benefits

- **Deep hole drilling**
  New flute shape with improved chip evacuation during deep drilling. High-efficiency drilling to depths of over 30 times drill diameter (V_f = 28 IPM). Stable deep hole drilling with double margin design.
- **Longer tool life**
  Special DEX coating provides long tool life in a variety of work material.
- **Eco-friendly**
  Compatible with the MQL (Minimum Quantity Lubrication) system.

■ Application Examples

- ***Automotive Component***
  1045 steel (250HB)

Machine: Horizontal single axis NC machine
Coolant: MQL Air pressure 0.9MPa
MQL Volume Approx. 1cc/H

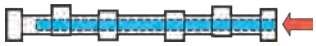


Pilot hole:
- ø0.23 x 0.47in *(ø5.73 x 12mm)*
- Drill point angle: 150°
- V_c = 262.5 SFM *(80m/min)*
- f = 0.008 IPR *(0.20mm/min)*

Deep hole:
- ø0.22 x 3.27in *(ø5.7 x 83mm)*
- V_c = 262.5 SFM *(80m/min)*
- f = 0.010 IPR *(0.25mm/min)*
- V_f = 44 IPM *(1117mm/min)*

⇒ **Tool Life: 250 parts**

- ***Automotive Component***
  Gray cast iron



Machine: Horizontal single axis NC machine
Coolant: MQL (volume 3cc/H) Air discharge 0.45 MPa

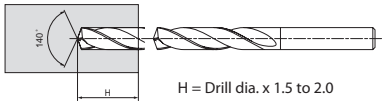
Pilot hole:
- ø0.30 x 0.51in *(ø7.63 x 13mm)*
- Drill point angle: 150°
- V_c = 262.5 SFM *(80m/min)*
- f = 0.010 IPR *(0.25mm/min)*

Deep hole:
- ø0.30 x 9.10in *(ø7.60 x 230mm)*
- V_c = 197 SFM *(60m/min)*
- f = 0.011 IPR *(0.30mm/min)*
- V_f = 29.70 IPM *(754mm/min)*

⇒ **Tool Life: 500 parts**

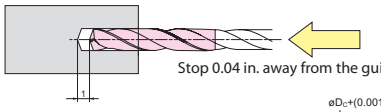
■ Recommended Drilling Method

1. **Make a guide hole using the MDS-V type drill**
   - Use a guide hole MDS-V style drill with diameter the same as the MDW-XHV type



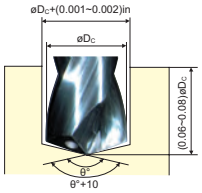
H = Drill dia. x 1.5 to 2.0

2. Feed the MDW-XHV type throught he guide hole at low rotation speed
   - Rotation: 500 rpm Feed Rate: 40 - 80 ipm



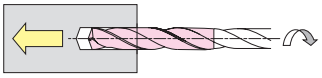
Stop 0.04 in. away from the guide hole depth

OTHER NOTES
- A flat base should be prepared when the surface for the guide tool is slanted
- When drilling through a slanted surface, reduce the drill feed to 0.002 ipm before the drill exits



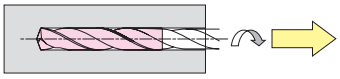
Recommended Guide Hole Values

3. Increase rotation speed until the set rotation speed is reached and start normal drilling



Increase rotation speed

4. After drilling, rotation speed is reduced and the drill is retracted from the work material
   - Rotation: 500 rpm Feed Rate: 40 - 80 ipm



Change rotation speed to 500 rpm

COOLANT
- Internal Coolant
  (Water Soluble): Pump Pressure Steel: 200-300 PSI
  Cast Iron or Aluminum: 500-1000 PSI
- Internal MQL: Air Pressure: 50-100 PSI or above
  Volume (Edge)

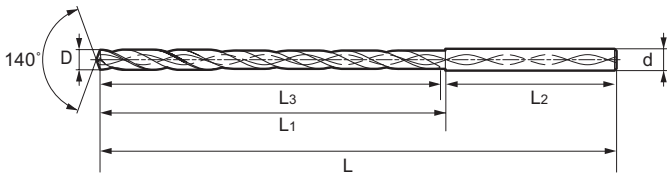
■ Recommended Cutting Conditions

Vc=sfm / *m/min*
f=ipr / *mm/rev*

		General Steel (>300HB)	Hardened Steel (>45HrC)	Stainless Steel (>200HB)	Gray Cast Iron	Ductile Iron
~ø.125 in *~ø3.0 mm*	Vc	165~330 / *50~100*	65~130 / *20~40*	100~165 / *30~50*	165~295 / *50~90*	130~260 / *40~80*
	f	0.003~0.006 / *0.08~0.15*	0.002~0.003 / *0.06~0.05*	0.002~0.005 / *0.06~0.12*	0.006~0.010 / *0.15~0.25*	0.005~0.008 / *0.12~0.20*
ø.125~ø.203 in *ø3.1~ø5.0 mm*	Vc	260~395 / *80~120*	65~130 / *20~40*	100~195 / *30~60*	165~295 / *50~90*	130~260 / *40~80*
	f	0.006~0.010 / *0.15~0.25*	0.003~0.004 / *0.08~0.10*	0.003~0.006 / *0.08~0.15*	0.006~0.012 / *0.15~0.30*	0.006~0.010 / *0.15~0.25*
ø.203~ø.406 in *ø5.1~ø10.0 mm*	Vc	260~395 / *80~120*	65~130 / *20~40*	130~260/ *40~80*	195~330 / *60~100*	165~295 / *50~90*
	f	0.008~0.014 / *0.20~0.35*	0.004~0.006 / *0.10~0.15*	0.004~0.008 / *0.10~0.20*	0.008~0.014 / *0.20~0.35*	0.008~0.014 / *0.20~0.35*
ø.406~ø0.625 in *ø10.1~ø16.0 mm*	Vc	260~425/ *80~130*	65~130 / *20~40*	165~260/ *50~80*	230~395/ *70~120*	195~330 / *60~100*
	f	0.010~0.014 / *0.25~0.35*	0.004~0.006 / *0.10~0.15*	0.004~0.008 / *0.10~0.20*	0.010~0.014 / *0.25~0.35*	0.010~0.014 / *0.25~0.35*

12XD-INCH
MDW-XHV

Tolerance of Diameters	
øD	Tolerance
.1181 < øD ≤ .2362	-.00080 -.00145
.2362 < øD ≤ .3937	-.00080 -.00165
.3937 < øD ≤ .7087	-.00080 -.00185



12XD-INCH

Catalog Number	Stock	Cutting Dia.		L	L1	L2	L3	d
		Fraction	Decimal					
MDW1250XHV12	●	1/8″	0.125	3.780	1.890	1.890	1.772	0.157
MDW1406XHV12	●	9/64″	0.141	4.134	2.244	1.890	2.126	0.157
MDW1563XHV12	●	5/32″	0.156	4.370	2.480	1.890	2.362	0.157
MDW1719XHV12	●	11/64″	0.172	4.607	2.638	1.969	2.520	0.236
MDW1875XHV12	●	3/16″	0.188	5.158	3.189	1.969	3.071	0.236
MDW2031XHV12	●	13/64″	0.203	5.158	3.189	1.969	3.071	0.236
MDW2131XHV12	●	#3	0.213	5.158	3.189	1.969	3.071	0.236
MDW2187XHV12	●	7/32″	0.219	5.433	3.465	1.969	3.346	0.236
MDW2500XHV12	●	1/4″	0.250	6.102	4.055	2.047	3.937	0.315
MDW2570XHV12	●	#F	0.257	6.102	4.055	2.047	3.937	0.315
MDW2656XHV12	●	17/64″	0.266	6.102	4.055	2.047	3.937	0.315
MDW2813XHV12	●	9/32″	0.281	6.496	4.449	2.047	4.331	0.315
MDW2969XHV12	●	19/64″	0.297	6.496	4.449	2.047	4.331	0.315
MDW3125XHV12	●	5/16″	0.313	6.496	4.449	2.047	4.331	0.315
MDW3320XHV12	●	#Q	0.332	7.677	5.551	2.126	5.433	0.394
MDW3438XHV12	●	11/32″	0.344	7.677	5.551	2.126	5.433	0.394
MDW3594XHV12	●	23/64″	0.359	7.677	5.551	2.126	5.433	0.394
MDW3750XHV12	●	3/8″	0.375	7.677	5.551	2.126	5.433	0.394
MDW3906XHV12	●	25/64″	0.391	7.677	5.551	2.126	5.433	0.394
MDW4063XHV12	●	13/32″	0.406	8.543	6.339	2.205	6.220	0.472
MDW4219XHV12	●	27/64″	0.422	8.543	6.339	2.205	6.220	0.472
MDW4375XHV12	●	7/16″	0.438	8.543	6.339	2.205	6.220	0.472
MDW4531XHV12	●	29/64″	0.453	8.543	6.339	2.205	6.220	0.472
MDW4688XHV12	●	15/32″	0.469	8.543	6.339	2.205	6.220	0.472
MDW4844XHV12	●	31/64″	0.484	9.566	7.283	2.283	7.165	0.551
MDW5000XHV12	●	1/2″	0.500	9.566	7.283	2.283	7.165	0.551
MDW5312XHV12	●	17/32″	0.531	9.566	7.283	2.283	7.165	0.551
MDW5625XHV12	●	9/16″	0.563	10.669	8.307	2.362	8.189	0.630
MDW6250XHV12	●	5/8″	0.625	10.669	8.307	2.362	8.189	0.630
MDW7500XHV12	●	3/4″	0.750	12.709	10.268	2.441	10.157	0.787

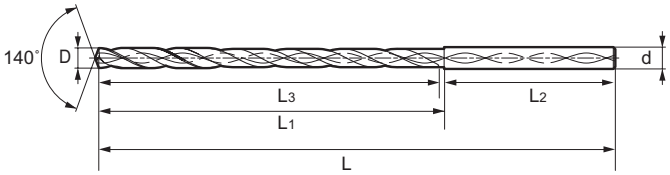
● = USA Stocked item

NOTE: MDS-V is the stocked recommended guide drill for the XHV series. Use a guide hole drill with diameter the same as that of the MDW-XHV type.

MDW-XHV

MDW-XHV Deep Hole Carbide Coolant Through Drills

Tolerance of Diameters	
øD	Tolerance
.1181 < øD ≤ .2362	-.00080 -.00145
.2362 < øD ≤ .3937	-.00080 -.00165
.3937 < øD ≤ .7087	-.00080 -.00185



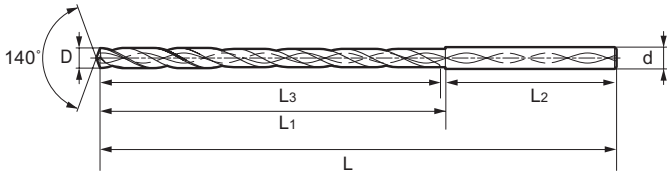
12XD-*METRIC*

Catalog Number	Stock	D	L	L1	L2	L3	d
MDW030XHV12	●	3.0	96	48	48	45	4
MDW035XHV12	●	3.5	105	57	48	54	4
MDW040XHV12	●	4.0	111	63	48	60	4
MDW045XHV12	●	4.5	117	67	50	64	6
MDW050XHV12	●	5.0	131	81	50	78	6
MDW051XHV12	●	5.1	131	81	50	78	6
MDW055XHV12	●	5.5	138	88	50	85	6
MDW060XHV12	●	6.0	138	88	50	85	6
MDW065XHV12	●	6.5	155	103	52	100	8
MDW069XHV12	●	6.9	165	113	52	110	8
MDW070XHV12	●	7.0	165	113	52	110	8
MDW075XHV12	●	7.5	165	113	52	110	8
MDW080XHV12	●	8.0	165	113	52	110	8
MDW085XHV12	●	8.5	195	141	54	138	10
MDW090XHV12	●	9.0	195	141	54	138	10
MDW093XHV12	●	9.3	195	141	54	138	10
MDW095XHV12	●	9.5	195	141	54	138	10
MDW100XHV12	●	10.0	195	141	54	138	10
MDW105XHV12	●	10.5	217	161	56	158	12
MDW110XHV12	●	11.0	217	161	56	158	12
MDW115XHV12	●	11.5	217	161	56	158	12
MDW120XHV12	●	12.0	217	161	56	158	12
MDW125XHV12	●	12.5	243	185	58	182	14
MDW130XHV12	●	13.0	243	185	58	182	14
MDW140XHV12	●	14.0	243	185	58	182	14

● = USA Stocked item

20XD-INCH
MDW-XHV

Tolerance of Diameters	
øD	Tolerance
.1181 < øD ≤ .2362	-.00080 -.00145
.2362 < øD ≤ .3937	-.00080 -.00165
.3937 < øD ≤ .7087	-.00080 -.00185



20XD-INCH

Catalog Number	Stock	Cutting Dia.		L	L1	L2	L3	d
		Fraction	Decimal					
MDW1250XHV20	●	1/8″	0.125	4.842	2.952	1.890	2.834	0.157
MDW1406XHV20	●	9/64″	0.141	5.472	3.582	1.890	3.464	0.157
MDW1563XHV20	●	5/32″	0.156	5.472	3.582	1.890	3.464	0.157
MDW1719XHV20	●	11/64″	0.172	6.418	4.449	1.969	4.331	0.236
MDW1875XHV20	●	3/16″	0.188	6.614	4.645	1.969	4.527	0.236
MDW2031XHV20	●	13/64″	0.203	6.614	4.645	1.969	4.527	0.236
MDW2130XHV20	●	#3	0.213	7.520	5.551	1.969	5.433	0.236
MDW2187XHV20	●	7/32″	0.219	7.520	5.551	1.969	5.433	0.236
MDW2500XHV20	●	1/4″	0.250	7.913	5.866	2.047	5.748	0.315
MDW2570XHV20	●	#F	0.257	7.913	5.866	2.047	5.748	0.315
MDW2656XHV20	●	17/64″	0.266	7.913	5.866	2.047	5.748	0.315
MDW2813XHV20	●	9/32″	0.281	9.094	7.047	2.047	6.929	0.315
MDW2969XHV20	●	19/64″	0.297	9.094	7.047	2.047	6.929	0.315
MDW3125XHV20	●	5/16″	0.313	9.094	7.047	2.047	6.929	0.315
MDW3320XHV20	●	#Q	0.332	10.905	8.779	2.126	8.661	0.394
MDW3438XHV20	●	11/32″	0.344	10.905	8.779	2.126	8.661	0.394
MDW3594XHV20	●	23/64″	0.359	10.905	8.779	2.126	8.661	0.394
MDW3750XHV20	●	3/8″	0.375	10.905	8.779	2.126	8.661	0.394
MDW3906XHV20	●	25/64″	0.391	10.905	8.779	2.126	8.661	0.394
MDW4063XHV20	●	13/32″	0.406	12.713	10.508	2.205	10.394	0.472
MDW4219XHV20	●	27/64″	0.422	12.713	10.508	2.205	10.394	0.472
MDW4375XHV20	●	7/16″	0.438	12.713	10.508	2.205	10.394	0.472
MDW4531XHV20	●	29/64″	0.453	12.713	10.508	2.205	10.394	0.472
MDW4688XHV20	●	15/32″	0.469	12.713	10.508	2.205	10.394	0.472
MDW4844XHV20	●	31/64″	0.484	14.521	12.238	2.283	12.126	0.551
MDW5000XHV20	●	1/2″	0.500	14.521	12.238	2.283	12.126	0.551
MDW5312XHV20	●	17/32″	0.531	14.521	12.238	2.283	12.126	0.551

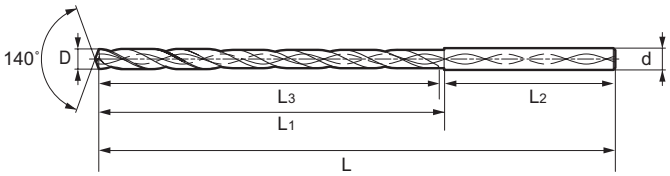
● = USA Stocked item

NOTE: MDS-V is the stocked recommended guide drill for the XHV series. Use a guide hole drill with diameter the same as that of the MDW-XHV type.

MDW-XHV

MDW-XHV Deep Hole Carbide Coolant Through Drills

Tolerance of Diameters	
øD	Tolerance
.1181 < øD ≤ .2362	-.00080 -.00145
.2362 < øD ≤ .3937	-.00080 -.00165
.3937 < øD ≤ .7087	-.00080 -.00185



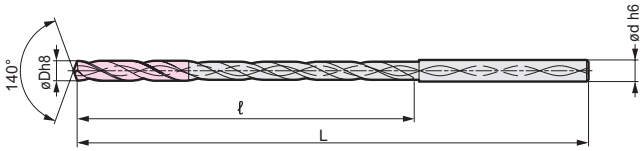
20XD-*METRIC*

Catalog Number	Stock	D	L	L1	L2	L3	d
MDW030XHV20	●	*3.0*	*123.0*	*75*	*48*	*72.0*	*4*
MDW035XHV20	●	*3.5*	*139.0*	*91*	*48*	*88.0*	*4*
MDW040XHV20	●	*4.0*	*139.0*	*91*	*48*	*88.0*	*4*
MDW045XHV20	●	*4.5*	*163.0*	*113*	*50*	*110.0*	*6*
MDW050XHV20	●	*5.0*	*168.0*	*118*	*50*	*115.0*	*6*
MDW051XHV20	●	*5.1*	*168.0*	*118*	*50*	*115.0*	*6*
MDW055XHV20	●	*5.5*	*191.0*	*141*	*50*	*138.0*	*6*
MDW060XHV20	●	*6.0*	*191.0*	*141*	*50*	*138.0*	*6*
MDW065XHV20	●	*6.5*	*201.0*	*149*	*52*	*146.0*	*8*
MDW069XHV20	●	*6.9*	*231.0*	*179*	*52*	*176.0*	*8*
MDW070XHV20	●	*7.0*	*231.0*	*179*	*52*	*176.0*	*8*
MDW075XHV20	●	*7.5*	*231.0*	*179*	*52*	*176.0*	*8*
MDW080XHV20	●	*8.0*	*231.0*	*179*	*52*	*176.0*	*8*
MDW085XHV20	●	*8.5*	*277.0*	*223*	*54*	*220.0*	*10*
MDW090XHV20	●	*9.0*	*277.0*	*223*	*54*	*220.0*	*10*
MDW093XHV20	●	*9.3*	*277.0*	*223*	*54*	*220.0*	*10*
MDW095XHV20	●	*9.5*	*277.0*	*223*	*54*	*220.0*	*10*
MDW100XHV20	●	*10.0*	*277.0*	*223*	*54*	*220.0*	*10*
MDW105XHV20	●	*10.5*	*322.9*	*267*	*56*	*264.0*	*12*
MDW110XHV20	●	*11.0*	*322.9*	*267*	*56*	*264.0*	*12*
MDW115XHV20	●	*11.5*	*322.9*	*267*	*56*	*264.0*	*12*
MDW120XHV20	●	*12.0*	*322.9*	*267*	*56*	*264.0*	*12*
MDW125XHV20	●	*12.5*	*368.8*	*311*	*58*	*308.0*	*14*
MDW130XHV20	●	*13.0*	*368.8*	*311*	*58*	*308.0*	*14*
MDW140XHV20	●	*14.0*	*368.8*	*311*	*58*	*308.0*	*14*

● = USA Stocked item

NOTE: MDS-V is the stocked recommended guide drill for the XHV series. Use a guide hole drill with diameter the same as that of the MDW-XHV type.

15, 25 & 30XD-*METRIC*
MDW-XHT/PHT

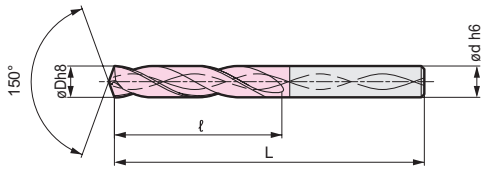


MDW-XHT-*METRIC*

Tool Dia. $øD_c$ (mm)	Shank Dia. $øD_s$ (mm)	Catalog Number	15XD			25XD			30XD		
			Stock	Dimensions (mm)		Stock	Dimensions (mm)		Stock	Dimensions (mm)	
			15	L	ℓ	25	L	ℓ	30	L	ℓ
2.97	3.0	MDW0297XHT□□	★	108	60	★	138	90	★	153	105
3.47	4.0	MDW0347XHT□□	★	118	70	★	153	105	★	171	123
3.97	4.0	MDW0397XHT□□	★	128	80	★	168	120	★	188	140
4.47	5.0	MDW0447XHT□□	★	140	90	★	185	135	★	208	158
4.97	5.0	MDW0497XHT□□	★	150	100	★	200	150	★	225	175
5.47	6.0	MDW0547XHT□□	★	162	110	★	217	165	★	245	193
5.97	6.0	MDW0597XHT□□	★	172	120	★	232	180	★	262	210
6.47	7.0	MDW0647XHT□□	★	183	130	★	248	195	★	281	228
6.97	7.0	MDW0697XHT□□	★	193	140	★	263	210	★	298	245
7.47	8.0	MDW0747XHT□□	★	204	150	★	279	225	★	317	263
7.97	8.0	MDW0797XHT□□	★	214	160	★	294	240	★	334	280

★ = Worldwide Warehouse item available in 10 business days

NOTE: MDW-PHT is the recommended guide drill for the XHT series. Use a guide hole drill with a diameter +0.001 to +0.002 inch larger than that of the MDW-XHT type.



MDW-PHT-*METRIC*

Tool Dia. $øD_c$ (mm)	Shank Dia. $øD_s$ (mm)	Catalog Number	Guide Hole Drill		
			Stock	Dimensions (mm)	
				L	ℓ
3.0	3.0	MDW0300PHT□□	★	68	17.5
3.5	4.0	MDW0350PHT□□	★	72	20.0
4.0	4.0	MDW0400PHT□□	★	72	22.5
4.5	5.0	MDW0450PHT□□	★	80	25.0
5.0	5.0	MDW0500PHT□□	★	80	27.5
5.5	6.0	MDW0550PHT□□	★	82	27.5
6.0	6.0	MDW0600PHT□□	★	82	30.0
6.5	7.0	MDW0650PHT□□	★	88	32.5
7.0	7.0	MDW0700PHT□□	★	88	35.0
7.5	8.0	MDW0750PHT□□	★	94	37.5
8.0	8.0	MDW0800PHT□□	★	94	40.0

★ = Worldwide Warehouse item available in 10 business days

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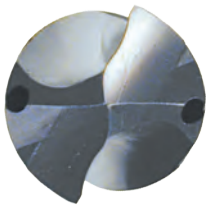
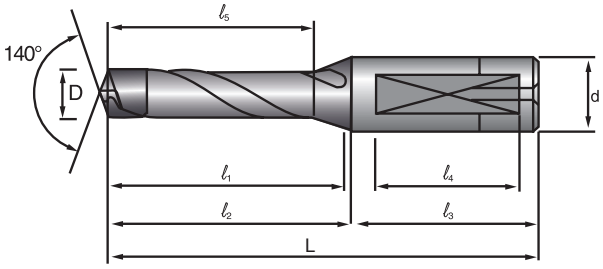
Brazed Tip Drills

Pages 457-462

KDS-MAV Series

Brazed Carbide-Tipped Drills





KDS-MAV 3XD drill with internal coolant holes for smooth chip flow and deeper hole drilling.

Catalog Number (inch/*metric*)	Stock	Cutting Diameter (D) Fractional	*Metric*	Decimal	Dimensions d Shank Diameter (in/*mm*)	L Overall Length (in/*mm*)	ℓ_1 Flute Length (in/*mm*)	ℓ_2 Body Length (in/*mm*)	ℓ_3 Shank Length (in/*mm*)	ℓ_4 Shank Flat (in/*mm*)	ℓ_5 Flute Length (less taper) (in/*mm*)
KDS03750MAV	▲	3/8	*9.53*	.3750	.625	3.750	1.797	1.875	1.875	1.375	1.391
KDS03906MAV	▲	25/64	*9.92*	.3906							
KDS100MAV	▲		*10.00*	.3937	*16.00*	*95.00*	*45.00*	*47.00*	*48.00*	*35.00*	*37.00*
KDS04063MAV	▲	13/32	*10.32*	.4063	.625	3.750	1.797	1.875	1.875	1.375	1.391
KDS105MAV	▲		*10.50*	.4134	*16.00*	*95.00*	*45.00*	*47.00*	*48.00*	*35.00*	*37.00*
KDS04219MAV	▲	27/64	*10.72*	.4219	.625	3.938	1.984	2.063	1.875	1.375	1.578
KDS110MAV	▲		*11.00*	.4331	*16.00*	*100.00*	*50.00*	*52.00*	*48.00*	*35.00*	*40.00*
KDS04375MAV	▲	7/16	*11.11*	.4375	.625	3.938	1.984	2.063	1.875	1.375	1.578
KDS115MAV	▲		*11.50*	.4528	*16.00*	*100.00*	*50.00*	*52.00*	*48.00*	*35.00*	*40.00*
KDS04531MAV	▲	29/64	*11.51*	.4531	.625	4.141	2.188	2.266	1.875	1.375	1.764
KDS116MAV	▲		*11.60*	.4567	*16.00*	*105.00*	*55.00*	*57.00*	*48.00*	*35.00*	*44.00*
KDS04688MAV	▲	15/32	*11.91*	.4688	.625	4.141	2.188	2.266	1.875	1.375	1.734
KDS120MAV	▲		*12.00*	.4724	*16.00*	*105.00*	*55.00*	*57.00*	*48.00*	*35.00*	*44.00*
KDS04843MAV	▲	31/64	*12.30*	.4843	.625	4.141	2.188	2.266	1.875	1.375	1.734
KDS126MAV	▲		*12.60*	.4961	*16.00*	*110.00*	*60.00*	*62.00*	*48.00*	*35.00*	*44.00*
KDS05000MAV	▲	1/2	*12.70*	.5000	.625	4.344	2.391	2.469	1.875	1.375	1.859
KDS129MAV	▲		*12.90*	.5079	*16.00*	*110.00*	*60.00*	*62.00*	*48.00*	*35.00*	*47.00*
KDS130MAV	▲		*13.00*	.5118							
KDS05156MAV	▲	33/64	*13.10*	.5156	.625	4.344	2.391	2.469	1.875	1.375	1.859
KDS05313MAV	▲	17/32	*13.50*	.5313							
KDS05469MAV	▲	35/64	*13.89*	.5469		4.531	2.578	2.656			2.016
KDS140MAV	▲		*14.00*	.5512	*16.00*	*115.00*	*65.00*	*67.00*	*48.00*	*35.00*	*51.00*
KDS05625MAV	▲	9/16	*14.29*	.5625	.625	4.531	2.578	2.656	1.875	1.375	2.016
KDS145MAV	▲		*14.50*	.5709	*16.00*	*115.00*	*65.00*	*67.00*	*48.00*	*35.00*	*51.00*
KDS05781MAV	▲	37/64	*14.68*	.5781	.750	4.922	2.844	2.922	2.000	1.500	2.125
KDS147MAV	▲		*14.70*	.5787	*20.00*	*125.00*	*73.00*	*75.00*	*50.00*	*40.00*	*54.00*
KDS150MAV	▲		*15.00*	.5906			*73.00*				
KDS05938MAV	▲	19/32	*15.08*	.5938	.750	4.922	2.844	2.922	2.000	1.500	2.125
KDS06094MAV	▲	39/64	*15.48*	.6094							2.125
KDS155MAV	▲		*15.50*	.6102	*20.00*	*125.00*	*73.00*	*75.00*	*50.00*	*40.00*	*54.00*
KDS06250MAV	▲	5/8	*15.88*	.6250	.750	5.125	3.047	3.125	2.000	1.500	2.281
KDS160MAV	▲		*16.00*	.6300	*20.00*	*130.00*	*78.00*	*80.00*	*50.00*	*40.00*	*58.00*
KDS06406MAV	▲	41/64	*16.27*	.6406	.750	5.125	3.047	3.125	2.000	1.500	2.281
KDS165MAV	▲		*16.50*	.6496	*20.00*	130.00	*78.00*	*80.00*	*50.00*	*40.00*	*58.00*
KDS06563MAV	▲	21/32	*16.72*	.6563	.750	5.328	3.250	3.328	2.000	1.500	2.406
KDS170MAV	▲		*17.00*	.6693	*20.00*	*135.00*	*83.00*	*85.00*	*50.00*	*40.00*	*61.00*
KDS06719MAV	▲	43/64	*17.07*	.6719	.750	5.328	3.250	3.328	2.000	1.500	2.406
KDS06875MAV	▲	11/16	*17.46*	.6875							
KDS175MAV	▲		*17.50*	.6890	*20.00*	*135.00*	*83.00*	*85.00*	*50.00*	*40.00*	*61.00*
KDS176MAV	▲		*17.60*	.6929	.750	*140.00*	*88.00*	*90.00*	2.000	1.500	*65.00*
KDS07031MAV	▲	45/64	*17.86*	.7031		5.516	3.484	3.516			2.563

▲ : U.S.A. Limited Availabilty Item
Note: Special diameters available upon request

(continued on next page)

SERIES KDS-MAV

- TiAlN Coating
- Patented V-Point Geometry
- Brazed Carbide-Tip Offers Multiple Regrinds

Tolerances of Diameters (in.)		
Size	Cutting Dia.	Shank Dia.
D ≦ .3937	+0 -.00059	+0 -.00035
.3937 < D ≦ .709	+0 -.00071	+0 -.00043
.709 < D ≦ 1.181	+0 -.00083	+0 -.00051
1.181 < D	+0 -.00098	+0 -.00063

(continued from previous page)

KDS-MAV 3XD drill with internal coolant holes for smooth chip flow and deeper hole drilling.

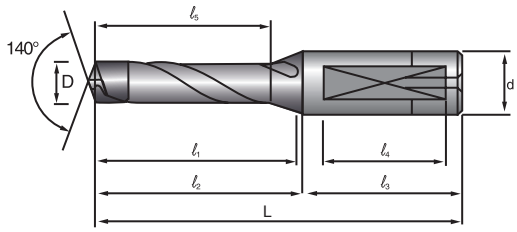
Catalog Number (inch/*metric*)	Stock	Cutting Diameter (D)			Dimensions						
					d	L	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5
		Fractional	*Metric*	Decimal	Shank Diameter (in/*mm*)	Overall Length (in/*mm*)	Flute Length (in/*mm*)	Body Length (in/*mm*)	Shank Length (in/*mm*)	Shank Flat (in/*mm*)	Flute Length (less taper) (in/*mm*)
KDS180MAV	▲		*18.00*	.7087	*20.00*	*140.00*	*88.00*	*90.00*	*50.00*	*40.00*	*65.00*
KDS07188MAV	▲	23/32	*18.26*	.7188	.750	5.516	3.484	3.516	2.000	1.500	2.563
KDS185MAV	▲		*18.50*	.7283	*20.00*	*140.00*	*88.00*	*90.00*	*50.00*	*40.00*	*65.00*
KDS07344MAV	▲	47/64	*18.65*	.7344	1.000	6.125	3.797	3.875	2.250	1.750	2.688
KDS190MAV	▲		*19.00*	.7480	*25.00*	*155.00*	*97.00*	*99.00*	*56.00*	*45.00*	*68.00*
KDS07500MAV	▲	3/4	*19.05*	.7500	1.000	6.125	3.797	3.875	2.250	1.750	2.688
KDS07656MAV	▲	49/64	*19.45*	.7656							
KDS195MAV	▲		*19.50*	.7677	*25.00*	*155.00*	97.00	*99.00*	*56.00*	*45.00*	*68.00*
KDS196MAV	▲		*19.60*	.7717							*72.00*
KDS07813MAV	▲	25/32	*19.85*	.7813	1.000	6.125	3.797	3.875	2.250	1.750	2.844
KDS200MAV	▲		*20.00*	.7874	*25.00*	*155.00*	*97.00*	*99.00*	*56.00*	*45.00*	*72.00*
KDS07969MAV	▲	51/64	*20.24*	.7969	1.000	6.125	3.797	3.875	2.250	1.750	2.844
KDS205MAV	▲		*20.50*	.8071	*25.00*	*155.00*	*97.00*	*99.00*	*56.00*	*45.00*	*72.00*
KDS08125MAV	▲	13/16	*20.64*	.8125	1.000	6.125	3.797	3.875	2.250	1.750	2.953
KDS210MAV	▲		*21.00*	.8268	*25.00*	*155.00*	*97.00*	*99.00*	*56.00*	*45.00*	*75.00*
KDS08281MAV	▲	53/64	*21.03*	.8281	1.000	6.125	3.797	3.875	2.250	1.750	2.953
KDS211MAV	▲		*21.10*	.8307	*25.00*	*155.00*	*97.00*	*99.00*	*56.00*	*45.00*	*75.00*
KDS08438MAV	▲	27/32	*21.43*	.8438	1.000	6.125	3.797	3.875	2.250	1.750	2.953
KDS215MAV	▲		*21.50*	.8465	*25.00*	*155.00*	*97.00*	*99.00*	*56.00*	*45.00*	*75.00*
KDS216MAV	▲		*21.60*	.8504	*25.00*	160.00	*102.00*	*104.00*	*56.00*	*45.00*	*79.00*
KDS08594MAV	▲	55/64	*21.83*	.8594	1.000	6.625	4.297	4.375	2.250	1.750	3.109
KDS220MAV	▲		*22.00*	.8661	*25.00*	*160.00*	*102.00*	*104.00*	*56.00*	*45.00*	*79.00*
KDS08750MAV	▲	7/8	*22.23*	.8750	1.000	6.625	4.297	4.375	2.250	1.750	3.109
KDS225MAV	▲		*22.50*	.8858	*25.00*	*160.00*	*102.00*	*104.00*	*56.00*	*45.00*	*79.00*
KDS08906MAV	▲	57/64	*22.62*	.8906	1.000	6.625	4.297	4.375	2.250	1.750	3.234
KDS230MAV	▲		*23.00*	.9055	*25.00*	*160.00*	*102.00*	*104.00*	*56.00*	*45.00*	*82.00*
KDS09063MAV	▲	29/32	*23.02*	.9063	1.000	6.625	4.297	4.375	2.250	1.750	3.234
KDS09219MAV	▲	59/64	*23.42*	.9219	1.000	6.625	4.297	4.375	2.250	1.750	3.234
KDS235MAV	▲		*23.50*	.9252	*25.00*	*160.00*	*102.00*	*104.00*	*56.00*	*45.00*	*82.00*
KDS09375MAV	▲	15/16	*23.81*	.9375	1.250	6.703	4.250	4.328	2.375	1.875	3.391
KDS240MAV	▲		*24.00*	.9449	*32.00*	*170.00*	*108.00*	*110.00*	*60.00*	*50.00*	*86.00*
KDS09531MAV	▲	61/64	*21.21*	.9531	1.250	6.703	4.250	4.328	2.375	1.875	3.391
KDS245MAV	▲		*24.50*	.9646	*32.00*	*170.00*	*108.00*	*110.00*	*60.00*	*50.00*	*86.00*

▲ : U.S.A. Limited Availabilty Item
Note: Special diameters available upon request

(continued on next page)

KDS-MAV Series

Brazed Carbide-Tipped Drills



Tolerances of Diameters (in.)		
Size	Cutting Dia.	Shank Dia.
D ≤ .3937	+0 -.00059	+0 -.00035
.3937 < D ≤ .709	+0 -.00071	+0 -.00043
.709 < D ≤ 1.181	+0 -.00083	+0 -.00051
1.181 < D	+0 -.00098	+0 -.00063

- TiAlN Coating
- Patented V-Point Geometry
- Brazed Carbide-Tip Offers Multiple Regrinds

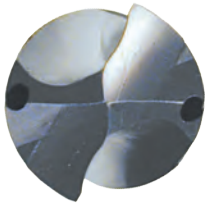
(continued from previous page)

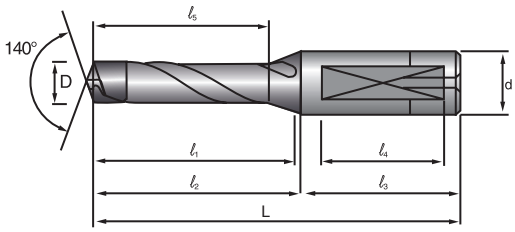
KDS-MAV 3XD drill with internal coolant holes for smooth chip flow and deeper hole drilling.

Catalog Number (inch/*metric*)	Stock	Cutting Diameter (D)			Dimensions						
					d	L	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5
		Fractional	*Metric*	Decimal	Shank Diameter (in/*mm*)	Overall Length (in/*mm*)	Flute Length (in/*mm*)	Body Length (in/*mm*)	Shank Length (in/*mm*)	Shank Flat (in/*mm*)	Flute Length (less taper) (in/*mm*)
KDS09688MAV	▲	31/32	*24.61*	.9688	1.250	6.703	4.250	4.328	2.375	1.875	3.469
KDS250MAV	▲		*25.00*	.9843	*32.00*	*170.00*	*108.00*	*110.00*	*60.00*	*50.00*	*88.00*
KDS09844MAV	▲	63/64	*25.003*	.9844	1.250	6.703	4.250	4.328	2.375	1.875	3.469
KDS10000MAV	▲	1	*25.40*	1.0000							
KDS10156MAV	▲	1 1/64	*25.80*	1.0156		6.906	4.453	4.531			3.391
KDS260MAV	▲		*26.00*	1.0236	*32.00*	*175.00*	*113.00*	*115.00*	*60.00*	*50.00*	*92.00*
KDS10313MAV	▲	1 1/32	*26.20*	1.0313	1.250	6.906	4.609	4.531	2.375	1.875	3.625
KDS265MAV	▲		*26.50*	1.0433	*32.00*	*175.00*	*113.00*	*115.00*	*60.00*	*50.00*	*92.00*
KDS10469MAV	▲	1 3/64	*26.59*	1.0469	1.250	6.906	4.453	4.531	2.375	1.875	3.703
KDS10625MAV	▲	1 1/16	*26.99*	1.0625							
KDS270MAV	▲		*27.00*	1.0630	*32.00*	*175.00*	*113.00*	*115.00*	*60.00*	*50.00*	*94.00*
KDS10781MAV	▲	1 5/64	*27.38*	1.0781	1.250	6.906	4.453	4.531	2.375	1.875	3.703
KDS10938MAV	▲	1 3/32	*27.78*	1.0938		7.063	4.609	4.688			3.828
KDS280MAV	▲		*28.00*	1.1024	*32.00*	*180.00*	*118.00*	*120.00*	*60.00*	*50.00*	*97.00*
KDS11094MAV	▲	1 7/64	*28.18*	1.1094	1.250	7.063	4.609	4.688	2.375	1.875	3.828
KDS285MAV	▲		*28.50*	1.1220	*32.00*	*180.00*	*118.00*	*120.00*	*60.00*	*50.00*	*97.00*
KDS11250MAV	▲	1 1/8	*28.58*	1.1250	1.250	7.297	4.859	4.922	2.375	1.875	3.938
KDS11406MAV	▲	1 9/64	*28.97*	1.1406							
KDS290MAV	▲		*29.00*	1.1417	*32.00*	*185.00*	*123.00*	*125.00*	*60.00*	*50.00*	*100.00*
KDS11563MAV	▲	1 5/32	*29.37*	1.1563	1.250	7.297	4.859	4.922	2.375	1.875	3.938
KDS11719MAV	▲	1 11/64	*29.77*	1.1719							4.094
KDS300MAV	▲		*30.00*	1.1811	*32.00*	*185.00*	*123.00*	*125.00*	*60.00*	*50.00*	*104.00*
KDS11875MAV	▲	1 3/16	*30.16*	1.1875	1.250	7.297	4.859	4.922	2.375	1.875	4.094

▲ : U.S.A. Limited Availabilty Item
Note: Special diameters available upon request

SERIES KDS-LAV





KDS-LAV 5XD drill with internal coolant holes for smooth chip flow and deeper hole drilling.

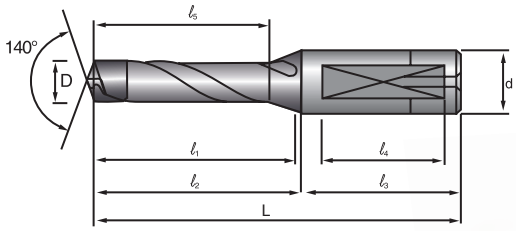
Catalog Number (inch/*metric*)	Stock	Cutting Diameter (D) Fractional	*Metric*	Decimal	Dimensions d Shank Diameter (in/*mm*)	L Overall Length (in/*mm*)	ℓ_1 Flute Length (in/*mm*)	ℓ_2 Body Length (in/*mm*)	ℓ_3 Shank Length (in/*mm*)	ℓ_4 Shank Flat (in/*mm*)	ℓ_5 Flute Length (less taper) (in/*mm*)
KDS03750LAV	▲	3/8	*9.53*	.3750	.625	4.531	2.563	2.656	1.875	1.375	2.250
KDS03906LAV	▲	25/64	*9.92*	.3906							
KDS04063LAV	▲	13/32	*10.32*	.4063							
KDS04219LAV	▲	27/64	*10.72*	.4219		4.906	2.953	3.031			2.484
KDS04375LAV	▲	7/16	*11.11*	.4375							
KDS04531LAV	▲	29/64	*11.51*	.4531		5.109	3.141	3.234			2.672
KDS04688LAV	▲	15/32	*11.91*	.4688							
KDS04843LAV	▲	31/64	*12.30*	.4843							
KDS05000LAV	▲	1/2	*12.70*	.5000		5.500	3.547	3.625			2.906
KDS05156LAV	▲	33/64	*13.10*	.5156							
KDS05313LAV	▲	17/32	*13.50*	.5313							
KDS05469LAV	▲	35/64	*13.89*	.5469		5.688	3.734	3.813			3.141
KDS140LAV	▲		*14.00*	.5512	*16.00*	*145.00*	*95.00*	*97.00*	*48.00*	*35.00*	*80.00*
KDS05625LAV	▲	9/16	*14.29*	.5625	.625	5.688	3.734	3.813	1.875	1.375	3.141
KDS145LAV	▲		*14.50*	.5709	*16.00*	*145.00*	*95.00*	*97.00*	*48.00*	*35.00*	*80.00*
KDS05781LAV	▲	37/64	*14.68*	.5781	.750	6.141	4.047	4.141	2.000	1.500	3.344
KDS05938LAV	▲	19/32	*15.08*	.5938							
KDS06094LAV	▲	39/64	*15.48*	.6094	.750	6.141	4.047	4.141	2.000	1.500	3.344
KDS155LAV	▲		*15.50*	.6102	*20.00*	*155.00*	103.0	*105.00*	*50.00*	*40.00*	*91.00*
KDS06250LAV	▲	5/8	*15.88*	.6250	.750	6.531	4.438	4.531	2.000	1.500	3.578
KDS06310LAV	▲	–	*16.03*	.6310							
KDS06406LAV	▲	41/64	*16.27*	.6406							
KDS165LAV	▲		*16.50*	.6496	*20.00*	*165.00*	*113.00*	*115.00*	*50.00*	*40.00*	*91.00*
KDS06563LAV	▲	21/32	*16.67*	.6563	.750	6.719	4.641	4.719	2.000	1.500	3.766
KDS06719LAV	▲	43/64	*17.07*	.6719							
KDS06875LAV	▲	11/16	*17.46*	.6875							
KDS07031LAV	▲	45/64	*17.86*	.7031		6.922	4.844	4.922			4.000
KDS180LAV	▲		*18.00*	.7087	*20.00*	*175.00*	*123.00*	*125.00*	*50.00*	*40.00*	*102.00*
KDS07188LAV	▲	23/32	*18.26*	.7188	.750	6.922	4.844	4.922	2.000	1.500	4.000
KDS07344LAV	▲	47/64	*18.65*	.7344	1.000	7.531	5.203	5.281	2.250	1.750	4.203
KDS07500LAV	▲	3/4	*19.05*	.7500							
KDS07656LAV	▲	49/64	*19.45*	.7656							
KDS07813LAV	▲	25/32	*19.85*	.7813		7.672	5.328	5.422			4.438
KDS200LAV	▲		*20.00*	.7874	*25.00*	*195.00*	*137.00*	*139.00*	*56.00*	*45.00*	*113.00*
KDS07969LAV	▲	51/64	*20.24*	.7969	1.000	7.672	5.328	5.422	2.250	1.750	4.438
KDS08125LAV	▲	13/16	*20.64*	.8125		7.719	5.328	5.469			
KDS08281LAV	▲	53/64	*21.03*	.8281							
KDS08438LAV	▲	27/32	*21.43*	.8438							
KDS08594LAV	▲	55/64	*21.83*	.8594		7.921	5.594	5.672			4.875

▲ : U.S.A. Limited Availabilty Item
Note: Special diameters available upon request

(continued on next page)

KDS-LAV Series

Brazed Carbide-Tipped Drills



Tolerances of Diameters (in.)		
Size	Cutting Dia.	Shank Dia.
D ≤ .3937	+0 -.00059	+0 -.00035
.3937 < D ≤ .709	+0 -.00071	+0 -.00043
.709 < D ≤ 1.181	+0 -.00083	+0 -.00051
1.181 < D	+0 -.00098	+0 -.00063

(continued from previous page)

KDS-LAV 5XD drill with internal coolant holes for smooth chip flow and deeper hole drilling.

Catalog Number (inch/*metric*)	Stock	Cutting Diameter (D)			Dimensions						
					d	L	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5
		Fractional	*Metric*	Decimal	Shank Diameter (in/*mm*)	Overall Length (in/*mm*)	Flute Length (in/*mm*)	Body Length (in/*mm*)	Shank Length (in/*mm*)	Shank Flat (in/*mm*)	Flute Length (less taper) (in/*mm*)
KDS220LAV	▲		*22.00*	.8661	*25.00*	*200.00*	*142.00*	*144.00*	*56.00*	*45.00*	*124.00*
KDS08750LAV	▲	7/8	*22.23*	.8750	1.000	7.922	5.594	5.672	2.250	1.750	4.875
KDS08906LAV	▲	57/64	*22.62*	.8906		8.313	5.984	6.063			5.078
KDS09063LAV	▲	29/32	*23.02*	.9063							
KDS09219LAV	▲	59/64	*23.42*	.9219							
KDS09375LAV	▲	15/16	*23.81*	.9375	1.250	8.641	6.219	6.266			5.313
KDS09531LAV	▲	61/64	*24.21*	.9531					2.375	1.875	5.516
KDS09688LAV	▲	31/32	*24.61*	.9688		8.875	6.422	6.500			
KDS09844LAV	▲	63/64	*25.00*	.9844							
KDS10000LAV	▲	1	*25.40*	1.0000							
KDS10156LAV	▲	1 1/64	*25.80*	1.0156		9.063	6.609	6.688			5.750
KDS260LAV	▲		*26.00*	1.0236	*32.00*	*230.00*	*168.00*	*170.00*	*60.00*	*50.00*	*146.00*
KDS10313LAV	▲	1 1/32	*26.20*	1.0313	1.250	9.063	6.609	6.688	2.375	1.875	5.750
KDS10469LAV	▲	1 3/64	*26.59*	1.0469		9.266	6.813	6.891			5.938
KDS10625LAV	▲	1 1/16	*29.99*	1.0625							
KDS10781LAV	▲	1 5/64	*27.38*	1.0781							
KDS10938LAV	▲	1 3/32	*27.78*	1.0938		9.438	7.000	7.063			6.172
KDS11094LAV	▲	1 7/64	*28.18*	1.1094							
KDS11250LAV	▲	1 1/8	*28.58*	1.1250		9.656	7.203	7.281			6.375
KDS11406LAV	▲	1 9/64	*28.97*	1.1406							
KDS11563LAV	▲	1 5/32	*29.37*	1.1563							
KDS11719LAV	▲	1 11/64	*29.77*	1.1719		10.047	7.594	7.672			6.578
KDS11875LAV	▲	1 3/16	*30.16*	1.1875							

▲ : U.S.A. Limited Availabilty Item
Note: Special diameters available upon request

Recommended Speeds and Feeds

Speed: v (sfm) / Feed: f (ipr)

Material		Low Carbon Steel	Medium Carbon Steel	Hardened	Stainless	Gray Cast Iron	Ductile Iron	Die Steel	Ti Alloy	Inconel
Drill Dia. (inch)		<HB200	<HB300	<HRC45	<HB200	AISI35	60/48/8	–	6Al-4V-Ti	Inconel 718
.375 ~ .591	v	165 - 300	165 - 300	115 - 165	115 - 165	200 - 330	180 - 250	130 - 230	65 - 115	35 - 100
	f	.006 - .012	.005 - .010	.004 - .008	.004 - .008	.008 - .012	.006 - .012	.004 - .010	.004 - .006	.003 - .004
.591 ~ .787	v	165 - 300	165 - 300	115 - 165	115 - 165	200 - 330	200 - 265	130 - 230	65 - 130	35 - 100
	f	.008 - .016	.006 - .014	.005 - .009	.005 - .009	.008 - .014	.007 - .013	.006 - .012	.004 - .006	.003 - .004
.787 ~ 1.181	v	180 - 300	180 - 300	115 - 165	115 - 165	200 - 360	200 - 295	130 - 230	80 - 130	50 - 115
	f	.008 - .018	.008 - .016	.006 - .010	.006 - .010	.010 - .016	.008 - .015	.008 - .014	.004 - .008	.003 - .005
1.181 ~ 1.575	v	195 - 300	195 - 300	115 - 165	115 - 165	200 - 360	200 - 330	130 - 230	80 - 130	50 - 115
	f	.010 - .020	.008 - .018	.006 - .010	.006 - .010	.010 - .018	.008 - .016	.010 - .016	.004 - .008	.003 - .005

Replaceable Tip Drills

Pages 463-470

Features & Benefits

- Available in metric and inch diameters ranging from 0.4688" - 1.2008" (30.5mm)
- Available in 3X, 5X and 8X diameter hardened steel bodies that can accept multiple diameters
- Three styles of drill tips to maximize performance
  - **SMDT-MTL** - standard edge preparation for steel applications
  - **SMDT-MEL** - light edge preparation for super alloys, stainless steels, and cast irons
  - **SMDT-MTL-C** - chamfered edges to eliminate break out in cast iron
- SMD carbide tips have Sumitomo's patented wear resistant DEX™ coatings
- Ground serrations on back of drill tip allow for precise assembly and superior repeatability
- Every drill tip is made with the famous Sumitomo Point
- Drill tips are capable of being reground
- Coolant through drill bodies

3X Diameter

5X Diameter

8X Diameter

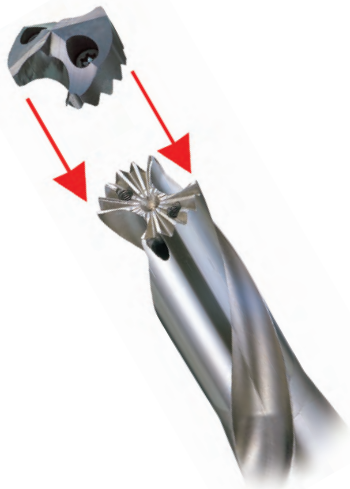
Easy Assembly

1.) Confirm drill tip is compatible with drill body by checking diameter range listed on shank.

2.) Place SMD replaceable carbide head on SMD drill body so that the screw mounting holes line up.

3.) Insert assembly screws and tighten securely after screw mounting holes are lined up.

Note: Mounting screws will only engage when the SMD replaceable carbide head is in the correct position.



Recommended Speeds and Feeds

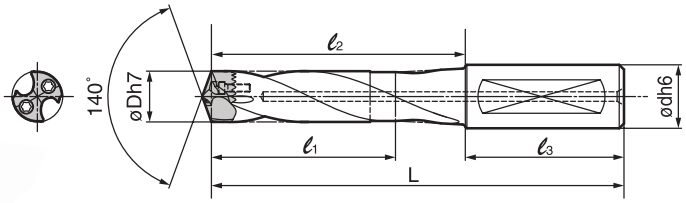
Speed: v (sfm) / Feed: f (ipr)

		MTL	MTL	MTL	MTL	MTL-C / MEL		MEL	MEL	MEL
Material		Steels	Steels	Prehard Steels	Die Steels	Ductile cast irons	Gray cast irons	Titanium	Inconel	Stainless Steels*
Drill Dia. (inch)		<HB250	HB250-300	HRC45	–	–	–	–	–	–
~ .4688	v	260 - 400	260 - 360	160 - 260	130 - 230	230 - 330	260 - 430	65 - 130	35 - 100	125 - 230
	f	.006 - .012	.006 - .012	.004 - .008	.005 - .009	.006 - .012	.008 - .012	.004 - .008	.003 - .004	.004 - .008
~ .844	v	260 - 400	260 - 360	195 - 295	130 - 230	230 - 330	260 - 430	85 - 150	50 - 115	145 - 240
	f	.006 - .014	.006 - .014	.006 - .010	.006 - .010	.006 - .014	.008 - .014	.004 - .008	.003 - .005	.004 - .009
~ 1.250	v	260 - 430	260 - 400	195 - 295	130 - 230	260 - 360	300 - 460	85 - 150	50 - 115	160 - 250
	f	.008 - .016	.008 - .014	.006 - .010	.006 - .010	.008 - .015	.008 - .018	.004 - .008	.003 - .006	.006 - .010

* For difficult to machine stainless steels (316, 302, 304, 17-4ph, etc.) adjust speeds & feeds accordingly.

3X Diameter

5X Diameter



■ SMD BODIES (3X Diameter)

Catalog Number	Drill Tip Diameter (inch/*mm*)		Stock	ød	L	ℓ1 max depth	ℓ2	ℓ3	Screw	Wrench
SMDH047M	0.4688 - 0.4917	*12.00mm - 12.49mm*	●	0.625	4.141	1.734	2.266	1.875	BXD02208IP	TRDR08IP
SMDH049M	0.4921 - 0.5114	*12.50mm - 12.99mm*	●	0.625	4.334	1.859	2.459	1.875	BXD02208IP	TRDR08IP
SMDH051M	0.5118 - 0.5311	*13.00mm - 13.49mm*	●	0.625	4.334	1.859	2.459	1.875	BXD02208IP	TRDR08IP
SMDH055M	0.5315 - 0.5709	*13.50mm - 14.50mm*	●	0.750	4.527	2.008	2.527	2.000	BXD02208IP	TRDR08IP
SMDH059M	0.5713 - 0.6102	*14.51mm - 15.50mm*	●	0.750	4.921	2.126	2.921	2.000	BXD02208IP	TRDR08IP
SMDH063M	0.6106 - 0.6496	*15.51mm - 16.50mm*	●	0.750	5.118	2.283	3.118	2.000	BXD02509IP	TRDR10IP
SMDH067M	0.6500 - 0.6890	*16.51mm - 17.50mm*	●	0.750	5.315	2.401	3.315	2.000	BXD02509IP	TRDR10IP
SMDH071M	0.6894 - 0.7283	*17.51mm - 18.50mm*	●	0.750	5.512	2.559	3.512	2.000	BXD02509IP	TRDR10IP
SMDH075M	0.7287 - 0.7677	*18.51mm - 19.50mm*	●	1.000	6.102	2.677	3.852	2.250	BXD03011IP	TRDR15IP
SMDH079M	0.7681 - 0.8070	*19.51mm - 20.50mm*	●	1.000	6.102	2.834	3.852	2.250	BXD03011IP	TRDR15IP
SMDH083M	0.8074 - 0.8465	*20.51mm - 21.50mm*	●	1.000	6.102	2.953	3.852	2.250	BXD03011IP	TRDR15IP
SMDH087M	0.8469 - 0.8976	*21.51mm - 22.80mm*	●	1.000	6.299	3.110	4.049	2.250	BXD03512IP	TRDR15IP
SMDH091M	0.8980 - 0.9370	*22.81mm - 23.80mm*	●	1.000	6.299	3.228	4.049	2.250	BXD03512IP	TRDR15IP
SMDH096M	0.9374 - 0.9764	*23.81mm - 24.80mm*	●	1.000	6.693	3.385	4.443	2.250	BXD03512IP	TRDR15IP
SMDH100M	0.9768 - 1.0157	*24.81mm - 25.80mm*	●	1.250	6.693	3.465	4.318	2.375	BXD04014IP	TRDR20IP
SMDH104M	1.0161 - 1.0551	*25.81mm - 26.80mm*	●	1.250	6.890	3.622	4.517	2.375	BXD04014IP	TRDR20IP
SMDH107M	1.0555 - 1.0945	*26.81mm - 27.80mm*	●	1.250	6.890	3.701	4.517	2.375	BXD04014IP	TRDR20IP
SMDH112M	1.0949 - 1.1339	*27.81mm - 28.80mm*	●	1.250	7.086	3.819	4.711	2.375	BXD04515IP	TRDR25IP
SMDH115M	1.1343 - 1.1732	*28.81mm - 29.80mm*	●	1.250	7.283	3.937	4.908	2.375	BXD04515IP	TRDR25IP
SMDH118M	1.1736 - 1.2125	*29.81mm - 30.80mm*	●	1.250	7.283	4.094	4.908	2.375	BXD04515IP	TRDR25IP
SMDH1250M	1.2130 - 1.2600	*30.81mm - 32.00mm*	●	1.250	8.315	4.331	5.315	3.000	BXD04515IP	TRDR25IP
SMDH1319M	1.2602 - 1.3189	*32.01 mm - 33.50mm*	●	1.250	8.512	4.528	5.512	3.000	BXD04515IP	TRDR25IP

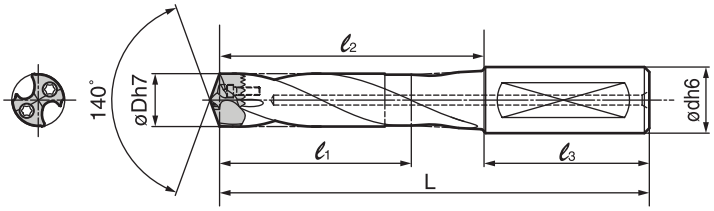
● = USA Stocked item

■ SMD BODIES (5X Diameter)

Catalog Number	Drill Tip Diameter (inch/*mm*)		Stock	ød	L	ℓ1 max depth	ℓ2	ℓ3	Screw	Wrench
SMDH047L	0.4688 - 0.4917	*12.00mm - 12.49mm*	●	0.625	5.109	2.672	3.234	1.875	BXD02208IP	TRDR08IP
SMDH049L	0.4921 - 0.5114	*12.50mm - 12.99mm*	●	0.625	5.500	2.906	3.625	1.875	BXD02208IP	TRDR08IP
SMDH051L	0.5118 - 0.5311	*13.00mm - 13.49mm*	●	0.625	5.500	2.906	3.625	1.875	BXD02208IP	TRDR08IP
SMDH055L	0.5315 - 0.5709	*13.50mm - 14.50mm*	●	0.750	5.708	3.150	3.708	2.000	BXD02208IP	TRDR08IP
SMDH059L	0.5713 - 0.6102	*14.51mm - 15.50mm*	●	0.750	6.102	3.346	4.102	2.000	BXD02208IP	TRDR08IP
SMDH063L	0.6106 - 0.6496	*15.51mm - 16.50mm*	●	0.750	6.496	3.582	4.496	2.000	BXD02509IP	TRDR10IP
SMDH067L	0.6500 - 0.6890	*16.51mm - 17.50mm*	●	0.750	6.693	3.780	4.693	2.000	BXD02509IP	TRDR10IP
SMDH071L	0.6894 - 0.7283	*17.51mm - 18.50mm*	●	0.750	6.890	4.015	4.890	2.000	BXD02509IP	TRDR10IP
SMDH075L	0.7287 - 0.7677	*18.51mm - 19.50mm*	●	1.000	7.480	4.212	5.230	2.250	BXD03011IP	TRDR15IP
SMDH079L	0.7681 - 0.8070	*19.51mm - 20.50mm*	●	1.000	7.677	4.449	5.427	2.250	BXD03011IP	TRDR15IP
SMDH083L	0.8074 - 0.8465	*20.51mm - 21.50mm*	●	1.000	7.677	4.645	5.427	2.250	BXD03011IP	TRDR15IP
SMDH087L	0.8469 - 0.8976	*21.51mm - 22.80mm*	●	1.000	7.874	4.882	5.624	2.250	BXD03512IP	TRDR15IP
SMDH091L	0.8980 - 0.9370	*22.81mm - 23.80mm*	●	1.000	8.268	5.078	6.018	2.250	BXD03512IP	TRDR15IP
SMDH096L	0.9374 - 0.9764	*23.81mm - 24.80mm*	●	1.000	8.661	5.315	6.411	2.250	BXD03512IP	TRDR15IP
SMDH100L	0.9768 - 1.0157	*24.81mm - 25.80mm*	●	1.250	8.858	5.512	6.483	2.375	BXD04014IP	TRDR20IP
SMDH104L	1.0161 - 1.0551	*25.81mm - 26.80mm*	●	1.250	9.005	5.748	6.680	2.375	BXD04014IP	TRDR20IP
SMDH107L	1.0555 - 1.0945	*26.81mm - 27.80mm*	●	1.250	9.252	5.945	6.877	2.375	BXD04014IP	TRDR20IP
SMDH112L	1.0949 - 1.1339	*27.81mm - 28.80mm*	●	1.250	9.449	6.181	7.074	2.375	BXD04515IP	TRDR25IP
SMDH115L	1.1343 - 1.1732	*28.81mm - 29.80mm*	●	1.250	9.645	6.378	7.270	2.375	BXD04515IP	TRDR25IP
SMDH118L	1.1736 - 1.2125	*29.81mm - 30.80mm*	●	1.250	10.039	6.575	7.664	2.375	BXD04515IP	TRDR25IP
SMDH1250L	1.2130 - 1.2600	*30.81mm - 32.00mm*	●	1.250	10.874	6.890	7.874	3.000	BXD04515IP	TRDR25IP
SMDH1319L	1.2602 - 1.3189	*32.01 mm - 33.50mm*	●	1.250	11.268	7.284	8.268	3.000	BXD04515IP	TRDR25IP

● = USA Stocked item

8X Diameter

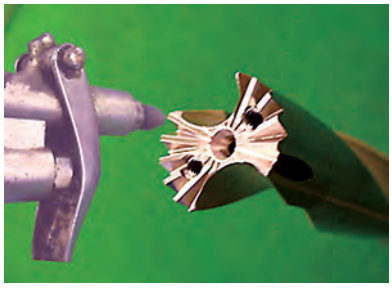


■ SMD BODIES (8X Diameter)

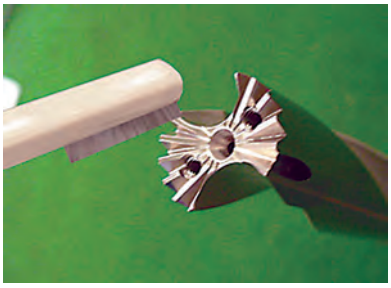
Catalog Number	Drill Tip Diameter (inch/*mm*)		Stock	ød	L	ℓ_1 max depth	ℓ_2	ℓ_3	Screw	Wrench
SMDH055D	0.5315 - 0.5709	*13.50mm - 14.50mm*	•	0.750	7.480	4.961	5.480	2.000	BXD02208IP	TRDR08IP
SMDH059D	0.5713 - 0.6102	*14.51mm - 15.50mm*	•	0.750	7.874	5.315	5.874	2.000	BXD02208IP	TRDR08IP
SMDH063D	0.6106 - 0.6496	*15.51mm - 16.50mm*	•	0.750	8.307	5.630	6.307	2.000	BXD02509IP	TRDR10IP
SMDH067D	0.6500 - 0.6890	*16.51mm - 17.50mm*	•	0.750	8.701	5.984	6.701	2.000	BXD02509IP	TRDR10IP
SMDH071D	0.6894 - 0.7283	*17.51mm - 18.50mm*	•	0.750	8.898	6.299	6.898	2.000	BXD02509IP	TRDR10IP
SMDH075D	0.7287 - 0.7677	*18.51mm - 19.50mm*	•	1.000	9.882	6.654	7.630	2.250	BXD03011IP	TRDR15IP
SMDH079D	0.7681 - 0.8070	*19.51mm - 20.50mm*	•	1.000	10.276	6.969	8.024	2.250	BXD03011IP	TRDR15IP
SMDH083D	0.8074 - 0.8465	*20.51mm - 21.50mm*	•	1.000	10.472	7.323	8.220	2.250	BXD03011IP	TRDR15IP
SMDH087D	0.8469 - 0.8976	*21.51mm - 22.80mm*	•	1.000	10.669	7.638	8.417	2.250	BXD03512IP	TRDR15IP
SMDH091D	0.8980 - 0.9370	*22.81mm - 23.80mm*	•	1.000	11.024	7.953	8.772	2.250	BXD03512IP	TRDR15IP
SMDH096D	0.9374 - 0.9764	*23.81mm - 24.80mm*	•	1.000	11.614	8.268	9.362	2.250	BXD03512IP	TRDR15IP
SMDH100D	0.9768 - 1.0157	*24.81mm - 25.80mm*	•	1.250	11.811	8.622	9.437	2.375	BXD04014IP	TRDR20IP
SMDH104D	1.0161 - 1.0551	*25.81mm - 26.80mm*	•	1.250	12.205	8.937	9.381	2.375	BXD04014IP	TRDR20IP
SMDH107D	1.0555 - 1.0945	*26.81mm - 27.80mm*	•	1.250	12.508	9.291	10.224	2.375	BXD04014IP	TRDR20IP
SMDH112D	1.0949 - 1.1339	*27.81mm - 28.80mm*	•	1.250	12.795	9.606	10.421	2.375	BXD04515IP	TRDR25IP
SMDH115D	1.1343 - 1.1732	*28.81mm - 29.80mm*	•	1.250	13.189	9.961	10.915	2.375	BXD04515IP	TRDR25IP
SMDH118D	1.1736 - 1.2125	*29.81mm - 30.80mm*	•	1.250	13.503	10.276	11.209	2.375	BXD04515IP	TRDR25IP

• = USA Stocked item

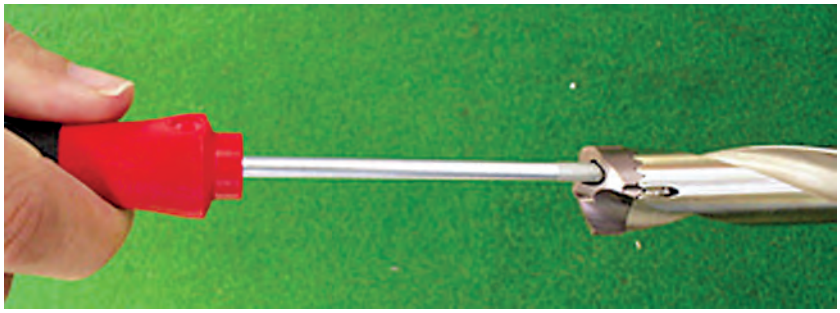
■ HEAD REPLACEMENT INSTRUCTIONS



1) Remove the used head and any debris from the serrated parts of the holder with an air blower.



2) Use a wire brush to remove debris left behind by air blower.



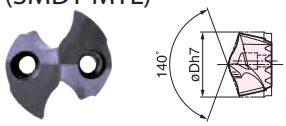
3) Use caution when tightening the head screws.
4) Replace screws as soon as they show signs of marked wear or deformation due to long-term use.
5) See table (right) for recommended tightening torque.

■ Recommended Tightening Torque

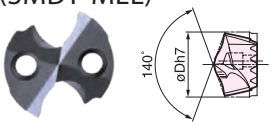
Drill Head Size (in/*mm*)	Screw	Recommended Tightening Torque (in/lbs.)
.4688 - .6102 *12.00 - 15.50*	BXD02208IP	6.6 to 8.8
.6103 - .7283 *15.51 - 18.50*	BXD02509IP	8.2 to 11.0
.7284 - .8464 *18.51 - 21.50*	BXD03011IP	16.3 to 21.6
.8465 - .9763 *21.51 - 24.80*	BXD03512IP	24.2 to 32.9
.9764 - 1.0944 *24.81 - 27.80*	BXD04014IP	36.6 to 48.8
1.0945 - 1.2125 *27.81 - 30.80*	BXD04515IP	44.0 to 58.7

Inch & *Metric*

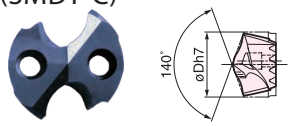
P — ■ STANDARD TIP (SMDT-MTL)



MKS — ■ SUPER ALLOY TIP (SMDT-MEL)



PK — ■ CORNER BREAK TIP (SMDT-C)



Drill Tip	Stock	Drill Tip	Stock	Drill Tip	Stock	øD		Body
SMDT04688MTL-ACX70	●	SMDT04688MEL-ACX80	●	SMDT04688MTL-C-ACX70		15/32	(0.4688)	SMDH047□
SMDT1200MTL-ACX70	●	*SMDT1200MEL-ACX80*	●	*SMDT1200MTL-C-ACX70*	●	*12.0mm*	*(0.4724)*	
SMDT1210MTL-ACX70	★	*SMDT1210MEL-ACX80*	★	*SMDT1210MTL-C-ACX70*		*12.1mm*	*(0.4764)*	
SMDT1220MTL-ACX70	★	*SMDT1220MEL-ACX80*	★	*SMDT1220MTL-C-ACX70*		*12.2mm*	*(0.4803)*	
SMDT1230MTL-ACX70	★	*SMDT1230MEL-ACX80*	★	*SMDT1230MTL-C-ACX70*		*12.3mm*	*(0.4843)*	
SMDT04844MTL-ACX70	●	SMDT04844MEL-ACX80	●	SMDT04844MTL-C-ACX70	●	31/64	(0.4844)	
SMDT1250MTL-ACX70	●	SMDT1250MEL-ACX80	●	SMDT1250MTL-C-ACX70	●	12.5mm	(0.4921)	SMDH049□
SMDT1260MTL-ACX70	★	*SMDT1260MEL-ACX80*	★	*SMDT1260MTL-C-ACX70*		*12.6mm*	*(0.4960)*	
SMDT05000MTL-ACX70	●	SMDT05000MEL-ACX80	●	SMDT05000MTL-C-ACX70		1/2	(0.5000)	
SMDT1270MTL-ACX70	★	*SMDT1270MEL-ACX80*	★	*SMDT1270MTL-C-ACX70*		*12.7mm*	*(0.5000)*	
SMDT1300MTL-ACX70	●	SMDT1300MEL-ACX80	●	SMDT1300MTL-C-ACX70	●	13.0mm	(0.5118)	SMDH051□
SMDT05156MTL-ACX70	●	*SMDT05156MEL-ACX80*	●	*SMDT05156MTL-C-ACX70*	●	*33/64*	*(0.5156)*	
SMDT1310MTL-ACX70	★	*SMDT1310MEL-ACX80*	★	*SMDT1310MTL-C-ACX70*		*13.1mm*	*(0.5157)*	
SMDT05312MTL-ACX70	●	SMDT05312MEL-ACX80	●	SMDT05312MTL-C-ACX70	●	17/32	(0.5312)	
SMDT1350MTL-ACX70	●	*SMDT1350MEL-ACX80*	●	*SMDT1350MTL-C-ACX70*	●	*13.5mm*	*(0.5315)*	SMDH055□
SMDT1365MTL-ACX70		*SMDT1365MEL-ACX80*		*SMDT1365MTL-C-ACX70*	●	*13.65mm*	*(0.5374)*	
SMDT05469MTL-ACX70	●	SMDT05469MEL-ACX80	●	SMDT05469MTL-C-ACX70	●	35/64	(0.5469)	
SMDT1400MTL-ACX70	●	*SMDT1400MEL-ACX80*	●	*SMDT1400MTL-C-ACX70*	●	*14.0mm*	*(0.5512)*	
SMDT1410MTL-ACX70	★	*SMDT1410MEL-ACX80*	★	*SMDT1410MTL-C-ACX70*		*14.1mm*	*(0.5551)*	
SMDT1420MTL-ACX70	★	*SMDT1420MEL-ACX80*	★	*SMDT1420MTL-C-ACX70*		*14.2mm*	*(0.5591)*	
SMDT05625MTL-ACX70	●	SMDT05625MEL-ACX80	●	SMDT05625MTL-C-ACX70	●	9/16	(0.5625)	
SMDT1450MTL-ACX70	●	*SMDT1450MEL-ACX80*	●	*SMDT1450MTL-C-ACX70*	●	*14.5mm*	*(0.5709)*	
SMDT05781MTL-ACX70	●	SMDT05781MEL-ACX80	●	SMDT05781MTL-C-ACX70	●	37/64	(0.5781)	SMDH059□
SMDT1500MTL-ACX70	●	*SMDT1500MEL-ACX80*	●	*SMDT1500MTL-C-ACX70*	●	*15.0mm*	*(0.5906)*	
SMDT05937MTL-ACX70	●	SMDT05937MEL-ACX80	●	SMDT05937MTL-C-ACX70	●	19/32	(0.5938)	
SMDT06094MTL-ACX70	●	SMDT06094MEL-ACX80	●	SMDT06094MTL-C-ACX70	●	39/64	(0.6094)	
SMDT1550MTL-ACX70	●	*SMDT1550MEL-ACX80*	●	*SMDT1550MTL-C-ACX70*	●	*15.5mm*	*(0.6102)*	
SMDT1560MTL-ACX70	★	*SMDT1560MEL-ACX80*		*SMDT1560MTL-C-ACX70*		*15.6mm*	*(0.6142)*	SMDH063□
SMDT1570MTL-ACX70	★	*SMDT1570MEL-ACX80*		*SMDT1570MTL-C-ACX70*		*15.7mm*	*(0.6181)*	
SMDT06250MTL-ACX70	●	SMDT06250MEL-ACX80	●	SMDT06250MTL-C-ACX70	●	5/8	(0.6250)	
SMDT1600MTL-ACX70	●	*SMDT1600MEL-ACX80*	●	*SMDT1600MTL-C-ACX70*	●	*16.0mm*	*(0.6300)*	
SMDT1608MTL-ACX70		*SMDT1608MEL-ACX80*	●	*SMDT1608MTL-C-ACX70*		*16.08mm*	*(0.6331)*	
SMDT06406MTL-ACX70	●	SMDT06406MEL-ACX80	●	SMDT06406MTL-C-ACX70		41/64	(0.6406)	
SMDT1630MTL-ACX70	●	*SMDT1630MEL-ACX80*		*SMDT1630MTL-C-ACX70*		*16.3mm*	*(0.6417)*	
SMDT1650MTL-ACX70	●	*SMDT1650MEL-ACX80*	●	*SMDT1650MTL-C-ACX70*	●	*16.5mm*	*(0.6496)*	
SMDT06562MTL-ACX70	●	SMDT06562MEL-ACX80	●	SMDT06562MTL-C-ACX70	●	21/32	(0.6563)	SMDH067□
SMDT1700MTL-ACX70	●	*SMDT1700MEL-ACX80*	●	*SMDT1700MTL-C-ACX70*	●	*17.0mm*	*(0.6693)*	
SMDT06719MTL-ACX70	●	SMDT06719MEL-ACX80	●	SMDT06719MTL-C-ACX70	●	43/64	(0.6719)	
SMDT06875MTL-ACX70	●	SMDT06875MEL-ACX80	●	SMDT06875MTL-C-ACX70	●	11/16	(0.6875)	
SMDT1750MTL-ACX70	●	*SMDT1750MEL-ACX80*	●	*SMDT1750MTL-C-ACX70*	●	*17.5mm*	*(0.6890)*	
SMDT1760MTL-ACX70	●	*SMDT1760MEL-ACX80*		*SMDT1760MTL-C-ACX70*		*17.6mm*	*(0.6929)*	SMDH071□
SMDT1770MTL-ACX70	★	*SMDT1770MEL-ACX80*	★	*SMDT1770MTL-C-ACX70*		*17.7mm*	*(0.6969)*	
SMDT07031MTL-ACX70	●	SMDT07031MEL-ACX80	●	SMDT07031MTL-C-ACX70	●	45/64	(0.7031)	
SMDT1800MTL-ACX70	●	*SMDT1800MEL-ACX80*	●	*SMDT1800MTL-C-ACX70*	●	*18.0mm*	*(0.7087)*	
SMDT07187MTL-ACX70	●	SMDT07187MEL-ACX80	●	SMDT07187MTL-C-ACX70	●	23/32	(0.7188)	
SMDT1850MTL-ACX70	●	*SMDT1850MEL-ACX80*	●	*SMDT1850MTL-C-ACX70*	●	*18.5mm*	*(0.7283)*	
SMDT07344MTL-ACX70	●	SMDT07344MEL-ACX80	●	SMDT07344MTL-C-ACX70	●	47/64	(0.7344)	SMDH075□
SMDT1900MTL-ACX70	●	*SMDT1900MEL-ACX80*	●	*SMDT1900MTL-C-ACX70*		*19.0mm*	*(0.7480)*	
SMDT07500MTL-ACX70	●	SMDT07500MEL-ACX80	●	SMDT07500MTL-C-ACX70		3/4	(0.7500)	
SMDT1925MTL-ACX70		*SMDT1925MEL-ACX80*	●	*SMDT1925MTL-C-ACX70*		*19.25mm*	*(0.7579)*	
SMDT07656MTL-ACX70	●	SMDT07656MEL-ACX80	●	SMDT07656MTL-C-ACX70	●	49/64	(0.7656)	
SMDT1950MTL-ACX70	●	*SMDT1950MEL-ACX80*	●	*SMDT1950MTL-C-ACX70*	●	*19.5mm*	*(0.7677)*	

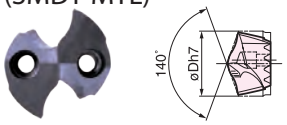
● = Stock item ★ = Worldwide Warehouse item available in 10 business days Note: Special diameters available upon request

SMD Replaceable Tip Drill

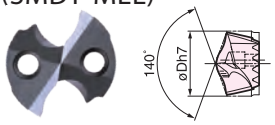
Inch & *Metric*

P — ■ STANDARD TIP | MKS — ■ SUPER ALLOY TIP | K — ■ CORNER BREAK TIP

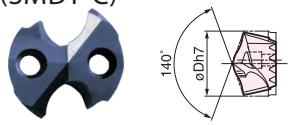
(SMDT-MTL)



(SMDT-MEL)



(SMDT-C)



Drill Tip	Stock	Drill Tip	Stock	Drill Tip	Stock	øD		Body
SMDT07812MTL-ACX70	●	SMDT07812MEL-ACX80	●	SMDT07812MTL-C-ACX70	●	25/32	(0.7813)	SMDH079□
SMDT2000MTL-ACX70	●	*SMDT2000MEL-ACX80*	●	*SMDT2000MTL-C-ACX70*	●	*20.0mm*	*(0.7874)*	
SMDT07969MTL-ACX70	●	SMDT07969MEL-ACX80	●	SMDT07969MTL-C-ACX70		51/64	(0.7969)	
SMDT2050MTL-ACX70	●	*SMDT2050MEL-ACX80*	●	*SMDT2050MTL-C-ACX70*	●	*20.5mm*	*(0.8071)*	
SMDT08125MTL-ACX70	●	SMDT08125MEL-ACX80	●	SMDT08125MTL-C-ACX70		13/16	(0.8125)	SMDH083□
SMDT2100MTL-ACX70	●	*SMDT2100MEL-ACX80*	●	*SMDT2100MTL-C-ACX70*	●	*21.0mm*	*(0.8268)*	
SMDT2120MTL-ACX70	★	*SMDT2120MEL-ACX80*	★	*SMDT2120MTL-C-ACX70*	●	*21.2mm*	*(0.8346)*	
SMDT08281MTL-ACX70	●	SMDT08281MEL-ACX80	●	SMDT08281MTL-C-ACX70		53/64	(0.8281)	
SMDT08437MTL-ACX70	●	SMDT08437MEL-ACX80	●	SMDT08437MTL-C-ACX70	●	27/32	(0.8438)	
SMDT2150MTL-ACX70	●	*SMDT2150MEL-ACX80*	●	*SMDT2150MTL-C-ACX70*	●	*21.5mm*	*(0.8465)*	
SMDT08594MTL-ACX70	●	SMDT08594MEL-ACX80	●	SMDT08594MTL-C-ACX70		55/64	(0.8594)	SMDH087□
SMDT2200MTL-ACX70	●	*SMDT2200MEL-ACX80*	●	*SMDT2200MTL-C-ACX70*	●	*22.0mm*	*(0.8661)*	
SMDT08750MTL-ACX70	●	SMDT08750MEL-ACX80	●	SMDT08750MTL-C-ACX70	●	7/8	(0.8750)	
SMDT2245MTL-ACX70		*SMDT2245MEL-ACX80*	●	*SMDT2245MTL-C-ACX70*		*22.45mm*	*(0.8839)*	
SMDT2250MTL-ACX70	●	*SMDT2250MEL-ACX80*	●	*SMDT2250MTL-C-ACX70*		*22.5mm*	*(0.8858)*	
SMDT08906MTL-ACX70	●	SMDT08906MEL-ACX80	●	SMDT08906MTL-C-ACX70	●	57/64	(0.8906)	
SMDT2300MTL-ACX70	●	*SMDT2300MEL-ACX80*	●	*SMDT2300MTL-C-ACX70*	●	*23.0mm*	*(0.9055)*	SMDH091□
SMDT09062MTL-ACX70	●	SMDT09062MEL-ACX80	●	SMDT09062MTL-C-ACX70		29/32	(0.9062)	
SMDT09219MTL-ACX70	●	SMDT09219MEL-ACX80	●	SMDT09219MTL-C-ACX70	●	59/64	(0.9219)	
SMDT2350MTL-ACX70	●	*SMDT2350MEL-ACX80*	●	*SMDT2350MTL-C-ACX70*		*23.5mm*	*(0.9252)*	
SMDT09375MTL-ACX70	●	SMDT09375MEL-ACX80	●	SMDT09375MTL-C-ACX70	●	15/16	(0.9375)	SMDH096□
SMDT2400MTL-ACX70	●	*SMDT2400MEL-ACX80*	●	*SMDT2400MTL-C-ACX70*	●	*24.0mm*	*(0.9449)*	
SMDT2410MTL-ACX70	★	*SMDT2410MEL-ACX80*	★	*SMDT2410MTL-C-ACX70*		*24.1mm*	*(0.9488)*	
SMDT09531MTL-ACX70	●	SMDT09531MEL-ACX80	●	SMDT09531MTL-C-ACX70		61/64	(0.9531)	
SMDT2450MTL-ACX70	★	*SMDT2450MEL-ACX80*	●	*SMDT2450MTL-C-ACX70*		*24.5mm*	*(0.9646)*	
SMDT09687MTL-ACX70	●	SMDT09687MEL-ACX80	●	SMDT09687MTL-C-ACX70		31/32	(0.9687)	
SMDT2500MTL-ACX70	●	*SMDT2500MEL-ACX80*	●	*SMDT2500MTL-C-ACX70*	●	*25.0mm*	*(0.9843)*	SMDH100□
SMDT09844MTL-ACX70	●	SMDT09844MEL-ACX80	●	SMDT09844MTL-C-ACX70	●	63/64	(0.9844)	
SMDT10000MTL-ACX70	●	SMDT10000MEL-ACX80	●	SMDT10000MTL-C-ACX70		1	(1.0000)	
SMDT2550MTL-ACX70	★	*SMDT2550MEL-ACX80*	●	*SMDT2550MTL-C-ACX70*	●	*25.5mm*	*(1.0039)*	
SMDT2565MTL-ACX70		*SMDT2565MEL-ACX80*	●	*SMDT2565MTL-C-ACX70*		*25.65mm*	*(1.0098)*	
SMDT10156MTL-ACX70	●	SMDT10156MEL-ACX80	●	SMDT10156MTL-C-ACX70		1-1/64	(1.0156)	
SMDT2600MTL-ACX70	●	*SMDT2600MEL-ACX80*	●	*SSMDT2600MTL-C-ACX70*	●	*26.0mm*	*(1.0236)*	SMDH104□
SMDT10312MTL-ACX70	●	SMDT10312MEL-ACX80	●	SMDT10312MTL-C-ACX70	●	1-1/32	(1.0312)	
SMDT2650MTL-ACX70	★	*SMDT2650MEL-ACX80*	●	*SMDT2650MTL-C-ACX70*	●	*26.5mm*	*(1.0433)*	
SMDT10469MTL-ACX70	●	SMDT10469MEL-ACX80	●	SMDT10469MTL-C-ACX70		1-3/64	(1.0469)	
SMDT10625MTL-ACX70	●	SMDT10625MEL-ACX80	●	SMDT10625MTL-C-ACX70	●	1-1/16	(1.0625)	SMDH107□
SMDT2700MTL-ACX70	●	*SMDT2700MEL-ACX80*	●	*SMDT2700MTL-C-ACX70*	●	*27.0mm*	*(1.0630)*	
SMDT10781MTL-ACX70	●	SMDT10781MEL-ACX80	●	SMDT10781MTL-C-ACX70		1-5/64	(1.0781)	
SMDT2750MTL-ACX70	★	*SMDT2750MEL-ACX80*	●	*SMDT2750MTL-C-ACX70*	●	*27.5mm*	*(1.0827)*	
SMDT10937MTL-ACX70	●	SMDT10937MEL-ACX80	●	SMDT10937MTL-C-ACX70		1-3/32	(1.0937)	
SMDT2800MTL-ACX70	●	*SMDT2800MEL-ACX80*	●	*SMDT2800MTL-C-ACX70*	●	*28.0mm*	*(1.1024)*	SMDH112□
SMDT11094MTL-ACX70	●	SMDT11094MEL-ACX80	●	SMDT11094MTL-C-ACX70		1-7/64	(1.1094)	
SMDT2850MTL-ACX70	●	*SMDT2850MEL-ACX80*	●	*SMDT2850MTL-C-ACX70*	●	*28.5mm*	*(1.1220)*	
SMDT11250MTL-ACX70	●	SMDT11250MEL-ACX80	●	SMDT11250MTL-C-ACX70	●	1-1/8	(1.1250)	
SMDT11406MTL-ACX70	●	SMDT11406MEL-ACX80	●	SMDT11406MTL-C-ACX70		1-9/64	(1.1406)	SMDH115□
SMDT2900MTL-ACX70	●	*SMDT2900MEL-ACX80*	●	*SMDT2900MTL-C-ACX70*		*29.0mm*	*(1.1417)*	
SMDT11562MTL-ACX70	●	SMDT11562MEL-ACX80	●	SMDT11562MTL-C-ACX70		1-5/32	(1.1562)	
SMDT2950MTL-ACX70	★	*SMDT2950MEL-ACX80*	●	*SMDT2950MTL-C-ACX70*	●	*29.5mm*	*(1.1614)*	
SMDT11719MTL-ACX70	●	SMDT11719MEL-ACX80	●	SMDT11719MTL-C-ACX70		1-11/64	(1.1719)	
SMDT3000MTL-ACX70	●	*SMDT3000MEL-ACX80*	●	*SMDT3000MTL-C-ACX70*		*30.0mm*	*(1.1811)*	SMDH118□
SMDT11875MTL-ACX70	●	SMDT11875MEL-ACX80	●	SMDT11875MTL-C-ACX70		1-3/16	(1.1875)	
SMDT3050MTL-ACX70	●	*SMDT3050MEL-ACX80*	●	*SMDT3050MTL-C-ACX70*		*30.5mm*	*(1.2008)*	

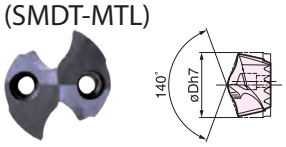
● = USA Stocked item ★ = Worldwide Warehouse item available in 10 business days Note: Special diameters available upon request

P MKS PK

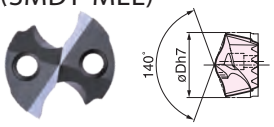
Inch & *Metric*

■ **STANDARD TIP** ■ **SUPER ALLOY TIP** ■ **CORNER BREAK TIP**

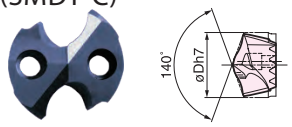
(SMDT-MTL)



(SMDT-MEL)

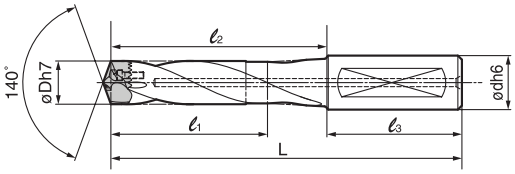


(SMDT-C)



Drill Tip	Stock	Drill Tip	Stock	Drill Tip	Stock	øD		Body
SMDT3100MTL-ACX80	●	*SMDT3100MEL-ACX80*		*SMDT3100MTL-C-ACX80*		*31.0mm*	*(1.2205)*	SMDH1250□
SMDT12500MTL-ACX80	●	SMDT12500MEL-ACX80		SMDT12500MTL-C-ACX80		1 1/4	(1.2500)	
SMDT3200MTL-ACX80	●	*SMDT3200MEL-ACX80*		*SMDT3200MTL-C-ACX80*		*32.0mm*	*(1.2598)*	
SMDT3300MTL-ACX80	●	*SMDT3300MEL-ACX80*		*SMDT3300MTL-C-ACX80*		*33.0mm*	*(1.2992)*	SMDH1319□
SMDT13125MTL-ACX80	●	SMDT13125MEL-ACX80		SMDT13125MTL-C-ACX80		1 5/16	(1.3125)	
SMDT3400MTL-ACX80	★	*SMDT3400MEL-ACX80*		*SMDT3400MTL-C-ACX80*		*34.0mm*	*(1.3386)*	SMDH350□
SMDT3500MTL-ACX80	★	*SMDT3500MEL-ACX80*		*SMDT3500MTL-C-ACX80*		*35.0mm*	*(1.3780)*	
SMDT3600MTL-ACX80	★	*SMDT3600MEL-ACX80*		*SMDT3600MTL-C-ACX80*		*36.0mm*	*(1.4173)*	SMDH365□
SMDT3700MTL-ACX80	★	*SMDT3700MEL-ACX80*		*SMDT3700MTL-C-ACX80*		*37.0mm*	*(1.4567)*	SMDH380□
SMDT3750MTL-ACX80	★	*SMDT3750MEL-ACX80*		*SMDT3750MTL-C-ACX80*		*37.5 mm*	*(1.4764)*	
SMDT3800MTL-ACX80	★	*SMDT3800MEL-ACX80*		*SMDT3800MTL-C-ACX80*		*38.0mm*	*(1.4961)*	
SMDT3900MTL-ACX80	★	*SMDT3900MEL-ACX80*		*SMDT3900MTL-C-ACX80*		*39.0mm*	*(1.5354)*	SMDH395□
SMDT4000MTL-ACX80	★	*SMDT4000MEL-ACX80*		*SMDT4000MTL-C-ACX80*		*40.0mm*	*(1.5748)*	SMDH410□
SMDT4050MTL-ACX80	★	*SMDT4050MEL-ACX80*		*SMDT4050MTL-C-ACX80*		*40.5mm*	*(1.5945)*	
SMDT4100MTL-ACX80	★	*SMDT4100MEL-ACX80*		*SMDT4100MTL-C-ACX80*		*41.0mm*	*(1.6142)*	
SMDT4200MTL-ACX80	★	*SMDT4200MEL-ACX80*		*SMDT4200MTL-C-ACX80*		*42.0mm*	*(1.6535)*	SMDH425□

★ = Worldwide Warehouse item available in 10 business days ● = USA Stocked item Note: Special diameters available upon request

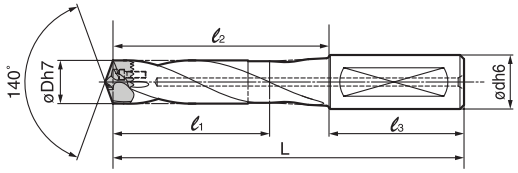


■ SMD BODIES (3X) *METRIC*

★ = Worldwide Warehouse item available in 10 business days

3X Diameter Body No.	Applicable Drill Head	Stock	ød	L	ℓ_1 max depth	ℓ_2	ℓ_3	Screw	Wrench
SMDH120M	SMDT1200M□□ - SMDT1249M□□	★	16.0	105	44	57	48	BXD02208IP	TRDR08IP
SMDH125M	SMDT1250M□□ - SMDT1299M□□	★	16.0	105	44	57	48	BXD02208IP	TRDR08IP
SMDH130M	SMDT1300M□□ - SMDT1349M□□	★	16.0	110	47	62	48	BXD02208IP	TRDR08IP
SMDH140M	SMDT1350M□□ - SMDT1450M□□	★	16.0	116.5	52.5	68.5	48	BXD02208IP	TRDR08IP
SMDH150M	SMDT1451M□□ - SMDT1550M□□	★	20.0	126.5	55.5	76.5	50	BXD02208IP	TRDR08IP
SMDH160M	SMDT1551M□□ - SMDT1650M□□	★	20.0	131.5	59.5	81.5	50	BXD02509IP	TRDR10IP
SMDH170M	SMDT1651M□□ - SMDT1750M□□	★	20.0	136.5	62.5	86.5	50	BXD02509IP	TRDR10IP
SMDH180M	SMDT1751M□□ - SMDT1850M□□	★	20.0	141.5	66.5	91.5	50	BXD02509IP	TRDR10IP
SMDH190M	SMDT1851M□□ - SMDT1950M□□	★	25.0	156.5	69.5	100.5	56	BXD03011IP	TRDR15IP
SMDH200M	SMDT1951M□□ - SMDT2050M□□	★	25.0	156.5	73.5	100.5	56	BXD03011IP	TRDR15IP
SMDH210M	SMDT2051M□□ - SMDT2150M□□	★	25.0	156.5	76.5	100.5	56	BXD03011IP	TRDR15IP
SMDH220M	SMDT2151M□□ - SMDT2280M□□	★	25.0	161.1	80.1	105.1	56	BXD03512IP	TRDR15IP
SMDH230M	SMDT2281M□□ - SMDT2380M□□	★	25.0	160.6	82.6	104.6	56	BXD03512IP	TRDR15IP
SMDH240M	SMDT2381M□□ - SMDT2480M□□	★	32.0	170.2	86.2	110.2	60	BXD03512IP	TRDR15IP
SMDH250M	SMDT2481M□□ - SMDT2580M□□	★	32.0	170	88	110	60	BXD04014IP	TRDR20IP
SMDH260M	SMDT2581M□□ - SMDT2680M□□	★	32.0	175	92	115	60	BXD04014IP	TRDR20IP
SMDH270M	SMDT2681M□□ - SMDT2780M□□	★	32.0	175	94	115	60	BXD04014IP	TRDR20IP
SMDH280M	SMDT2781M□□ - SMDT2880M□□	★	32.0	180	97	120	60	BXD04515IP	TRDR25IP
SMDH290M	SMDT2881M□□ - SMDT2980M□□	★	32.0	180	100	120	60	BXD04515IP	TRDR25IP
SMDH300M	SMDT2981M□□ - SMDT3080M□□	★	32.0	185	104	125	60	BXD04515IP	TRDR25IP
SMDH320M	SMDT3100M□□ - SMDT3200M□□	★	32.0	195	97.9	135	60	BXD04515IP	TRDR25IP
SMDH335M	SMDT3201M□□ - SMDT3350M□□	★	32.0	200	103.3	140	60	BXD04515IP	TRDR25IP
SMDH350M	SMDT3351M□□ - SMDT3500M□□	★	40.0	215	106.8	145	70	BX0515	HD040
SMDH365M	SMDT3501M□□ - SMDT3650M□□	★	40.0	220	112.3	150	70	BX0515	HD040
SMDH380M	SMDT3651M□□ - SMDT3800M□□	★	40.0	225	115.8	155	70	BX0515	HD040
SMDH395M	SMDT3801M□□ - SMDT3950M□□	★	40.0	230	121.3	160	70	BX0515	HD040
SMDH410M	SMDT3951M□□ - SMDT4100M□□	★	40.0	245	129.8	175	70	BX0515	HD040
SMDH425M	SMDT4101M□□ - SMDT4250M□□	★	40.0	250	135.3	180	70	BX0515	HD040

SMD Replaceable Tip Drill



■ SMD BODIES (5X & 8X) *METRIC*

★ = Worldwide Warehouse item available in 10 business days

5X Diameter Body No.	Applicable Drill Head	Stock	ød	L	ℓ_1 max depth	ℓ_2	ℓ_3	Screw	Wrench
SMDH120L	SMDT1200M□□- SMDT1249M□□	★	16.0	130	69	82	48	BXD02208IP	TRDR08IP
SMDH125L	SMDT1250M□□- SMDT1299M□□	★	16.0	130	69	82	48	BXD02208IP	TRDR08IP
SMDH130L	SMDT1300M□□- SMDT1349M□□	★	16.0	140	74	102	48	BXD02208IP	TRDR08IP
SMDH140L	SMDT1350M□□- SMDT1450M□□	★	16.0	146.5	81.5	98.5	48	BXD02208IP	TRDR08IP
SMDH150L	SMDT1451M□□- SMDT1550M□□	★	20.0	156.5	86.5	106.5	50	BXD02208IP	TRDR08IP
SMDH160L	SMDT1551M□□- SMDT1650M□□	★	20.0	166.5	92.5	116.5	50	BXD02509IP	TRDR10IP
SMDH170L	SMDT1651M□□- SMDT1750M□□	★	20.0	171.5	97.5	121.5	50	BXD02509IP	TRDR10IP
SMDH180L	SMDT1751M□□- SMDT1850M□□	★	20.0	176.5	103.5	126.5	50	BXD02509IP	TRDR10IP
SMDH190L	SMDT1851M□□- SMDT1950M□□	★	25.0	191.5	108.5	135.5	56	BXD03011IP	TRDR15IP
SMDH200L	SMDT1951M□□- SMDT2050M□□	★	25.0	196.5	114.5	140.5	56	BXD03011IP	TRDR15IP
SMDH210L	SMDT2051M□□- SMDT2150M□□	★	25.0	196.5	119.5	140.5	56	BXD03011IP	TRDR15IP
SMDH220L	SMDT2151M□□- SMDT2280M□□	★	25.0	201.1	125.1	145.4	56	BXD03512IP	TRDR15IP
SMDH230L	SMDT2281M□□- SMDT2380M□□	★	25.0	210.6	129.6	154.6	56	BXD03512IP	TRDR15IP
SMDH240L	SMDT2381M□□- SMDT2480M□□	★	32.0	220.2	135.2	160.2	60	BXD03512IP	TRDR15IP
SMDH250L	SMDT2481M□□- SMDT2580M□□	★	32.0	225	140	165	60	BXD04014IP	TRDR20IP
SMDH260L	SMDT2581M□□- SMDT2680M□□	★	32.0	230	146	170	60	BXD04014IP	TRDR20IP
SMDH270L	SMDT2681M□□- SMDT2780M□□	★	32.0	235	151	175	60	BXD04014IP	TRDR20IP
SMDH280L	SMDT2781M□□- SMDT2880M□□	★	32.0	240	157	180	60	BXD04515IP	TRDR25IP
SMDH290L	SMDT2881M□□- SMDT2980M□□	★	32.0	245	162	185	60	BXD04515IP	TRDR25IP
SMDH300L	SMDT2981M□□- SMDT3080M□□	★	32.0	255	167	195	60	BXD04515IP	TRDR25IP
SMDH320L	SMDT3100M□□- SMDT3200M□□	★	32.0	260	163	200	60	BXD04515IP	TRDR25IP
SMDH335L	SMDT3201M□□ - SMDT3350M□□	★	32.0	270	171.5	210	60	BXD04515IP	TRDR25IP
SMDH350L	SMDT3351M□□ - SMDT3500M□□	★	40.0	290	182	220	70	BX0515	HD040
SMDH365L	SMDT3501M□□ - SMDT3650M□□	★	40.0	295	187.5	225	70	BX0515	HD040
SMDH380L	SMDT3651M□□ - SMDT3800M□□	★	40.0	305	195.8	235	70	BX0515	HD040
SMDH395L	SMDT3801M□□ - SMDT3950M□□	★	40.0	315	206.3	245	70	BX0515	HD040
SMDH410L	SMDT3951M□□ - SMDT4100M□□	★	40.0	325	209.8	255	70	BX0515	HD040
SMDH425L	SMDT4101M□□ - SMDT4250M□□	★	40.0	335	220.3	265	70	BX0515	HD040

8X Diameter Body No.	Applicable Drill Head	Stock	ød	L	ℓ_1 max depth	ℓ_2	ℓ_3	Screw	Wrench
SMDH140D	SMDT1350M□□ - SMDT1450M□□	★	16.0	191.5	124.5	143.5	48	BXD02208IP	TRDR08IP
SMDH150D	SMDT1451M□□ - SMDT1550M□□	★	20.0	201.5	133.5	151.5	50	BXD02208IP	TRDR08IP
SMDH160D	SMDT1551M□□ - SMDT1650M□□	★	20.0	211.5	141.5	161.5	50	BXD02509IP	TRDR10IP
SMDH170D	SMDT1651M□□ - SMDT1750M□□	★	20.0	221.5	150.5	171.5	50	BXD02509IP	TRDR10IP
SMDH180D	SMDT1751M□□ - SMDT1850M□□	★	20.0	226.5	158.5	176.5	50	BXD02509IP	TRDR10IP
SMDH190D	SMDT1851M□□ - SMDT1950M□□	★	25.0	251.5	167.5	195.5	56	BXD03011IP	TRDR15IP
SMDH200D	SMDT1951M□□ - SMDT2050M□□	★	25.0	261.5	175.5	205.5	56	BXD03011IP	TRDR15IP
SMDH210D	SMDT2051M□□ - SMDT2150M□□	★	25.0	266.5	184.5	210.5	56	BXD03011IP	TRDR15IP
SMDH220D	SMDT2151M□□ - SMDT2280M□□	★	25.0	271.1	192.1	215.1	56	BXD03512IP	TRDR15IP
SMDH230D	SMDT2281M□□ - SMDT2380M□□	★	25.0	280.6	200.6	224.6	56	BXD03512IP	TRDR15IP
SMDH240D	SMDT2381M□□- SMDT2480M□□	★	32.0	295.2	208.2	235.2	60	BXD03512IP	TRDR15IP
SMDH250D	SMDT2481M□□ - SMDT2580M□□	★	32.0	300	217	240	60	BXD04014IP	TRDR20IP
SMDH260D	SMDT2581M□□ - SMDT2680M□□	★	32.0	310	225	250	60	BXD04014IP	TRDR20IP
SMDH270D	SMDT2681M□□ - SMDT2780M□□	★	32.0	320	234	260	60	BXD04014IP	TRDR20IP
SMDH280D	SMDT2781M□□ - SMDT2880M□□	★	32.0	325	242	265	60	BXD04515IP	TRDR25IP
SMDH290D	SMDT2881M□□ - SMDT2980M□□	★	32.0	335	251	275	60	BXD04515IP	TRDR25IP
SMDH300D	SMDT2981M□□ - SMDT3080M□□	★	32.0	345	259	285	60	BXD04515IP	TRDR25IP
SMDH320D	SMDT3100M□□ - SMDT3200M□□	★	32.0	355	257.9	295	60	BXD04515IP	TRDR25IP
SMDH335D	SMDT3201M□□ - SMDT3350M□□	★	32.0	370	273.3	310	60	BXD04515IP	TRDR25IP
SMDH350D	SMDT3351M□□ - SMDT3500M□□	★	40.0	395	287	325	70	BX0515	HD040
SMDH365D	SMDT3501M□□ - SMDT3650M□□	★	40.0	405	297.3	335	70	BX0515	HD040
SMDH380D	SMDT3651M□□ - SMDT3800M□□	★	40.0	420	310.8	350	70	BX0515	HD040
SMDH395D	SMDT3801M□□ - SMDT3950M□□	★	40.0	430	321.3	360	70	BX0515	HD040
SMDH410D	SMDT3951M□□ - SMDT4100M□□	★	40.0	450	334.8	380	70	BX0515	HD040
SMDH425D	SMDT4101M□□ - SMDT4250M□□	★	40.0	460	345.3	390	70	BX0515	HD040

Indexable Drills

Pages 471-493

INDEXABLE DRILLS **PAGES**

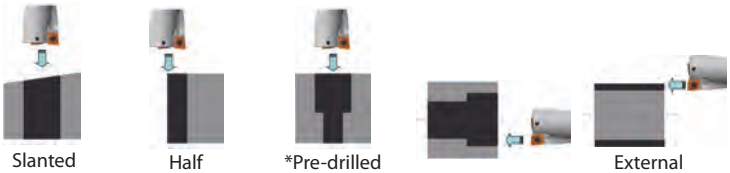
WDX Drills

SR Reamer Series

■ Features & Benefits

- New balanced design for stable drilling
- Three chipbreakers available for superior chip control
- New insert grades for longer tool life: ACP300 for steel, ACK300 for cast iron
- Four-cornered insert design for easy tool management

Applications

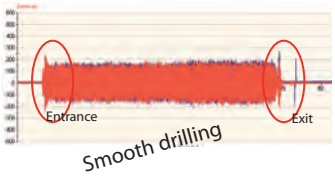


Slanted surface | Half cylindrical | *Pre-drilled surface | Boring | External turning

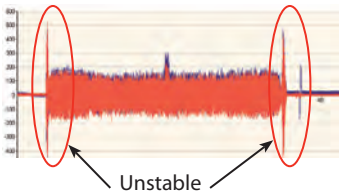
*For pre-drilled surface: secondary OD must be at least 1/16 larger than drill diameter.

Stable Drilling

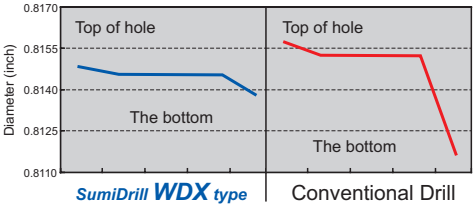
SumiDrill ***WDX*** *type*



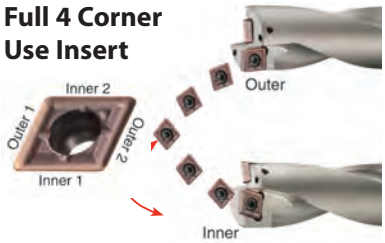
Conventional Drill



Comparison of Hole Accuracy

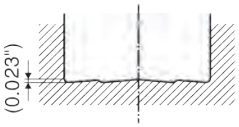


Full 4 Corner Use Insert



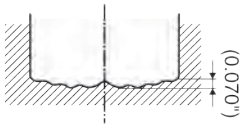
■ Flat Bottom Surface

SumiDrill ***WDX*** *type*



WDX0812D3S100 (0.8125")

Conventional Drill



Conventional drill (0.8125")

WDX Chipbreakers

L type chipbreaker Excellent chip control for lower feed rates	***G type chipbreaker*** First choice for general applications	***H type chipbreaker*** Strong cutting edge for higher feed rates
		
		

Hardware

Screw	Wrench	Wrench	Applicable Holders
			
BFTX01604N	TRX06		WDX130D□ ~ WDX150D□
BFTX0204N	TRX06		WDX155D□ ~ WDX180D□
BFTY02206		TRD07	WDX185D□ ~ WDX225D□
BFTX02506N		TRD08	WDX230D□ ~ WDX285D□
BFTX03584		TRD15	WDX290D□ ~ WDX360D□
BFTX0511N		TRD20	WDX370D□ ~ WDX450D□
BFTX0615N		TRD25	WDX460D□ ~ WDX680D□

Fig. 1

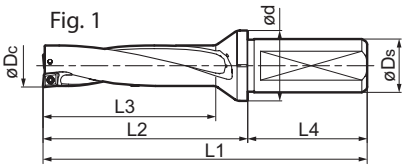


Fig. 2

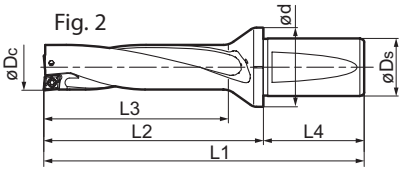
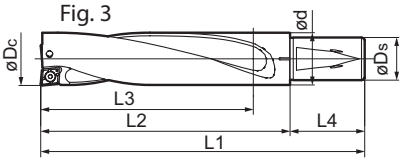


Fig. 3



SumiDrill WDX Bodies - 2XD - *INCH*

Catalog Number	Stock	øDc	L1	L2	L3	ød	øDs	L4	Fig.	Screw	Wrench	Insert
WDX0562D2S075	●	0.5625	3.8330	1.8330	1.2420	1.1020	0.7500	2.0000		BFTX01604N	TRX06	WDXT042004
WDX0594D2S075	●	0.5937	3.8960	1.8960	1.3060	1.1020	0.7500	2.0000		BFTX01604N	TRX06	WDXT042004
WDX0625D2S100	●	0.6250	4.4590	1.9590	1.3680	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDXT052504
WDX0656D2S100	●	0.6562	4.5210	2.0210	1.4300	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDXT052504
WDX0687D2S100	●	0.6875	4.5830	2.0830	1.4920	1.2600	1.0000	2.5000	1	BFTX0204N	TRX06	WDXT052504
WDX0750D2S100	●	0.7500	4.7090	2.2090	1.6180	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDXT063006
WDX0787D2S100	●	0.7870	4.7830	2.2830	1.6920	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDXT063006
WDX0812D2S100	●	0.8125	4.8340	2.3340	1.7430	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDXT063006
WDX0875D2S100	●	0.8750	4.9590	2.4590	1.8680	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDXT063006
WDX0937D2S125	●	0.9375	5.2020	2.7020	1.9930	1.6140	1.2500	2.5000		BFTX02506N	TRD08	WDXT073506
WDX1000D2S125	●	1.0000	5.3270	2.8270	2.1180	1.6140	1.2500	2.5000		BFTX02506N	TRD08	WDXT073506
WDX1062D2S125	●	1.0625	5.9520	2.9520	2.2430	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDXT073506
WDX1125D2S125	●	1.1250	6.0770	3.0770	2.3680	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDXT073506
WDX1187D2S125	●	1.1875	6.3590	3.3590	2.5320	1.9680	1.2500	3.0000		BFTX03584	TRX15	WDXT094008
WDX1250D2S125	●	1.2500	6.4840	3.4840	2.6570	1.9680	1.2500	3.0000	2	BFTX03584	TRX15	WDXT094008
WDX1312D2S150	●	1.3125	6.7270	3.7270	2.7820	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDXT094008
WDX1375D2S150	●	1.3750	6.8520	3.8520	2.9070	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDXT094008
WDX1437D2S150	●	1.4375	6.9770	3.9770	3.0320	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDXT094008
WDX1500D2S150	●	1.5000	7.1020	4.1020	3.1570	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1562D2S150	●	1.5625	7.2260	4.2260	3.2810	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1625D2S150	●	1.6250	7.3520	4.3520	3.4070	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1687D2S150	●	1.6875	7.4780	4.4780	3.5330	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1750D2S150	●	1.7500	7.6020	4.6020	3.6570	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1812D2S150	●	1.8125	7.7280	4.7280	3.7830	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDXT156012
WDX1875D2S150	●	1.8750	7.8520	4.8520	3.9070	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDXT156012
WDX1937D2S150	●	1.9375	7.9780	4.9780	4.0330	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDXT156012
WDX2000D2S150	●	2.0000	8.1020	5.1020	4.1570	1.9490	1.5000	3.0000	3	BFTX0615N	TRD25	WDXT156012
WDX2125D2S150	●	2.1250	8.3520	5.3520	4.4070	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDXT156012
WDX2250D2S150	●	2.2500	9.0750	6.0750	4.8150	2.1730	1.5000	3.0000		BFTX0615N	TRD25	WDXT186012
WDX2375D2S150	●	2.3750	9.3270	6.3270	5.0670	2.2950	1.5000	3.0000		BFTX0615N	TRD25	WDXT186012
WDX2500D2S150	●	2.5000	9.5750	6.5750	5.3150	2.4210	1.5000	3.0000		BFTX0615N	TRD25	WDXT186012
WDX2625D2S150	●	2.6250	9.8270	6.8270	5.5670	2.5470	1.5000	3.0000		BFTX0615N	TRD25	WDXT186012

● = USA Stocked item

SumiDrill WDX Bodies - 3XD - *INCH*

Catalog Number	Stock	øDc	L1	L2	L3	ød	øDs	L4	Fig.	Screw	Wrench	Insert
WDX0562D3S075	●	0.5625	4.3950	2.3950	1.8040	1.1020	0.7500	2.0000		BFTX01604N	TRX06	WDXT042004
WDX0594D3S075	●	0.5937	4.4910	2.4910	1.9000	1.1020	0.7500	2.0000		BFTX01604N	TRX06	WDXT042004
WDX0625D3S100	●	0.6250	5.0840	2.5840	1.9930	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDXT052504
WDX0656D3S100	●	0.6562	5.1770	2.6770	2.0860	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDXT052504
WDX0687D3S100	●	0.6875	5.2700	2.7700	2.1790	1.2600	1.0000	2.5000	1	BFTX0204N	TRX06	WDXT052504
WDX0750D3S100	●	0.7500	5.4590	2.9590	2.3680	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDXT063006
WDX0787D3S100	●	0.7870	5.5700	3.0700	2.4790	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDXT063006
WDX0812D3S100	●	0.8125	5.6460	3.1460	2.5560	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDXT063006
WDX0875D3S100	●	0.8750	5.8340	3.3340	2.7430	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDXT063006
WDX0937D3S125	●	0.9375	6.1390	3.6390	2.9310	1.6140	1.2500	2.5000		BFTX02506N	TRD08	WDXT073506
WDX1000D3S125	●	1.0000	6.3270	3.8270	3.1180	1.6140	1.2500	2.5000		BFTX02506N	TRD08	WDXT073506
WDX1062D3S125	●	1.0625	7.0140	4.0140	3.3060	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDXT073506
WDX1125D3S125	●	1.1250	7.2020	4.2020	3.4930	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDXT073506
WDX1187D3S125	●	1.1875	7.5470	4.5470	3.7200	1.9680	1.2500	3.0000		BFTX03584	TRX15	WDXT094008
WDX1250D3S125	●	1.2500	7.7340	4.7340	3.9070	1.9680	1.2500	3.0000	2	BFTX03584	TRX15	WDXT094008
WDX1312D3S150	●	1.3125	8.0400	5.0400	4.0950	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDXT094008
WDX1375D3S150	●	1.3750	8.2270	5.2270	4.2820	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDXT094008
WDX1437D3S150	●	1.4375	8.4150	5.4150	4.4700	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDXT094008
WDX1500D3S150	●	1.5000	8.8780	5.8780	4.6970	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1562D3S150	●	1.5625	9.0640	6.0640	4.8830	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1625D3S150	●	1.6250	9.2530	6.2530	5.0720	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1687D3S150	●	1.6875	9.4420	6.4420	5.2610	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1750D3S150	●	1.7500	9.6280	6.6280	5.4470	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1812D3S150	●	1.8125	9.8170	6.8170	5.6360	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDXT156012
WDX1875D3S150	●	1.8750	10.0030	7.0030	5.8820	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDXT156012
WDX1937D3S150	●	1.9375	10.1920	7.1920	6.0110	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDXT156012
WDX2000D3S150	●	2.0000	10.3780	7.3780	6.1970	1.9490	1.5000	3.0000	3	BFTX0615N	TRD25	WDXT156012
WDX2125D3S150	●	2.1250	10.7530	7.7530	6.5720	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDXT156012
WDX2250D3S150	●	2.2500	11.3270	8.3270	7.0670	2.1730	1.5000	3.0000		BFTX0615N	TRD25	WDXT186012
WDX2375D3S150	●	2.3750	11.7010	8.7010	7.4410	2.2950	1.5000	3.0000		BFTX0615N	TRD25	WDXT186012
WDX2500D3S150	●	2.5000	12.0750	9.0750	7.8150	2.4210	1.5000	3.0000		BFTX0615N	TRD25	WDXT186012
WDX2625D3S150	●	2.6250	12.4490	9.4490	8.1890	2.5470	1.5000	3.0000		BFTX0615N	TRD25	WDXT186012

● = USA Stocked item

Fig. 1

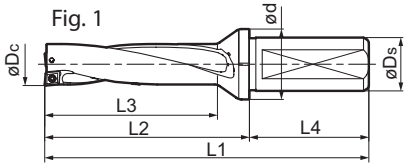


Fig. 2

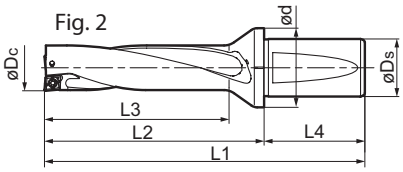
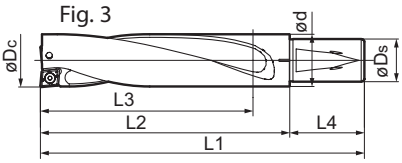


Fig. 3



SumiDrill WDX Bodies - 4XD - *INCH*

Catalog Number	Stock	øDc	L1	L2	L3	ød	øDs	L4	Fig.	Screw	Wrench	Insert
WDX0562D4S075	●	0.5625	4.9570	2.9570	2.3660	1.1020	0.7500	2.0000		BFTX01604N	TRX06	WDXT042004
WDX0594D4S075	●	0.5937	5.0850	3.0850	2.4940	1.1020	0.7500	2.0000		BFTX01604N	TRX06	WDXT042004
WDX0625D4S100	●	0.6250	5.7090	3.2090	2.6180	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDXT052504
WDX0656D4S100	●	0.6562	5.8330	3.3330	2.7420	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDXT052504
WDX0687D4S100	●	0.6875	5.9570	3.4570	2.8660	1.2600	1.0000	2.5000	1	BFTX0204N	TRX06	WDXT052504
WDX0750D4S100	●	0.7500	6.2090	3.7090	3.1180	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDXT063006
WDX0787D4S100	●	0.7870	6.3570	3.8570	3.2660	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDXT063006
WDX0812D4S100	●	0.8125	6.4590	3.9590	3.3680	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDXT063006
WDX0875D4S100	●	0.8750	6.7090	4.2090	3.6180	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDXT063006
WDX0937D4S125	●	0.9375	7.0770	4.5770	3.8680	1.6140	1.2500	2.5000		BFTX02506N	TRD08	WDXT073506
WDX1000D4S125	●	1.0000	7.3270	4.8270	4.1180	1.6140	1.2500	2.5000		BFTX02506N	TRD08	WDXT073506
WDX1062D4S125	●	1.0625	8.0770	5.0770	4.3680	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDXT073506
WDX1125D4S125	●	1.1250	8.3270	5.3270	4.6180	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDXT073506
WDX1187D4S125	●	1.1875	8.7340	5.7340	4.0907	1.9680	1.2500	3.0000		BFTX03584	TRX15	WDXT094008
WDX1250D4S125	●	1.2500	8.9840	5.9840	5.1570	1.9680	1.2500	3.0000	2	BFTX03584	TRX15	WDXT094008
WDX1312D4S150	●	1.3125	9.3520	6.3520	5.4070	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDXT094008
WDX1375D4S150	●	1.3750	9.6020	6.6020	5.6570	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDXT094008
WDX1437D4S150	●	1.4375	9.8520	6.8520	5.9070	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDXT094008
WDX1500D4S150	●	1.5000	10.3780	7.3780	6.1970	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1562D4S150	●	1.5625	10.6260	7.6260	6.4450	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1625D4S150	●	1.6250	10.8780	7.8780	6.6970	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1687D4S150	●	1.6875	11.1300	8.1300	6.9490	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1750D4S150	●	1.7500	11.3780	8.3780	7.1970	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1812D4S150	●	1.8125	11.6300	8.6300	7.4490	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDXT156012
WDX1875D4S150	●	1.8750	11.8780	8.8780	7.6970	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDXT156012
WDX1937D4S150	●	1.9375	12.1300	9.1300	7.9490	1.9490	1.5000	3.0000	3	BFTX0615N	TRD25	WDXT156012
WDX2000D4S150	●	2.0000	12.3780	9.3780	8.1970	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDXT156012
WDX2125D4S150	●	2.1250	12.8780	9.8780	8.6970	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDXT156012
WDX2250D4S150	●	2.2500	13.5750	10.5750	9.3150	2.1730	1.5000	3.0000		BFTX0615N	TRD25	WDXT186012
WDX2375D4S150	●	2.3750	14.0750	11.0750	9.8150	2.2950	1.5000	3.0000		BFTX0615N	TRD25	WDXT186012
WDX2500D4S150	●	2.5000	14.5750	11.5750	10.3150	2.4210	1.5000	3.0000		BFTX0615N	TRD25	WDXT186012

● = USA Stocked item

SumiDrill WDX Bodies - 5XD* - *INCH*

Catalog Number	Stock	øDc	L1	L2	L3	ød	øDs	L4	Fig.	Screw	Wrench	Insert
WDX0562D5S075	●	0.5620	5.5190	3.5190	2.9280	1.1020	0.7500	2.0000		BFTX01604N	TRX06	WDXT042004
WDX0594D5S075	●	0.5940	5.6790	3.6790	3.0880	1.1020	0.7500	2.0000		BFTX01604N	TRX06	WDXT042004
WDX0625D5S100	●	0.6250	6.3340	3.8340	3.2430	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDXT052504
WDX0656D5S100	●	0.6560	6.4890	3.9890	3.3980	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDXT052504
WDX0687D5S100	●	0.6870	6.6440	4.1440	3.5530	1.2600	1.0000	2.5000	1	BFTX0204N	TRX06	WDXT052504
WDX0750D5S100	●	0.7500	6.9590	4.4590	3.8680	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDXT063006
WDX0787D5S100	●	0.7870	7.1440	4.6440	4.0530	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDXT063006
WDX0812D5S100	●	0.8120	7.2690	4.7690	4.1780	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDXT063006
WDX0875D5S100	●	0.8750	7.5840	5.0840	4.4930	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDXT063006
WDX0937D5S125	●	0.9370	8.0120	5.5120	4.8030	1.6140	1.2500	2.5000		BFTX02506N	TRD08	WDXT073506
WDX1000D5S125	●	1.0000	8.3270	5.8270	5.1180	1.6140	1.2500	2.5000		BFTX02506N	TRD08	WDXT073506
WDX1062D5S125	●	1.0620	9.1370	6.1370	5.4280	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDXT073506
WDX1125D5S125	●	1.1250	9.4520	6.4520	5.7430	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDXT073506
WDX1187D5S125	●	1.1870	9.9200	6.9200	6.0930	1.9680	1.2500	3.0000		BFTX03584	TRX15	WDXT094008
WDX1250D5S125	●	1.2500	10.2350	7.2350	6.4080	1.9680	1.2500	3.0000		BFTX03584	TRX15	WDXT094008
WDX1312D5S150	●	1.3120	10.6630	7.6630	6.7180	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDXT094008
WDX1375D5S150	●	1.3750	10.9780	7.9780	7.0330	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDXT094008
WDX1437D5S150	●	1.4370	11.2880	8.2880	7.3430	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDXT094008
WDX1500D5S150	●	1.5000	11.8780	8.8780	7.6970	1.9490	1.5000	3.0000	2	BFTX0511N	TRD20	WDXT125012
WDX1562D5S150	●	1.5620	12.1880	9.1880	8.0070	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1625D5S150	●	1.6250	12.5030	9.5030	8.3220	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1687D5S150	●	1.6870	12.8130	9.8130	8.6320	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1750D5S150	●	1.7500	13.1280	10.1280	8.9470	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDXT125012
WDX1812D5S150	●	1.8120	13.4380	10.4380	9.2570	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDXT156012
WDX1875D5S150	●	1.8750	13.7530	10.7530	9.5720	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDXT156012
WDX1937D5S150	●	1.9370	14.0630	11.0630	9.8820	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDXT156012
WDX2000D5S150	●	2.0000	14.3780	11.3780	10.1970	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDXT156012
WDX2125D5S150	●	2.1250	15.0030	12.0030	10.8220	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDXT156012

● = USA Stocked item

***NOTE:** Coolant adapter sleeves for lathes are available upon request.

4XD Side Port -*INCH*
WDX

Figure 1

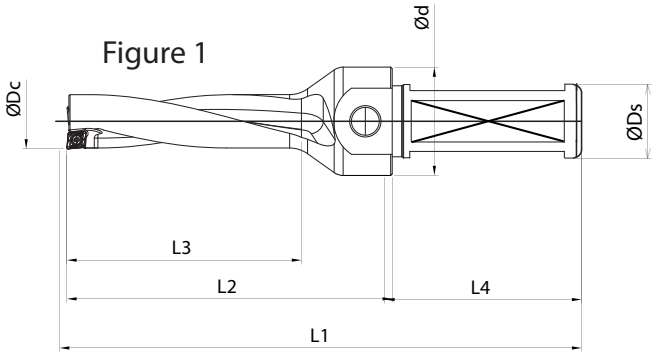
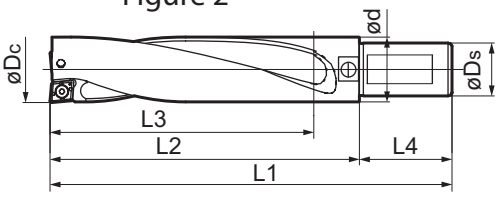


Figure 2



SumiDrill WDX Bodies Side Port - 4XD - INCH

Catalog Number	Stock	øDc	L1	L2	L3	ød	øDs	L4	Screw	Wrench	Insert	Pipe Plug	Fig.
WDX0562D4S075-L	O	0.5625	5.350	3.350	2.366	1.102	1.000	2.000	BFTX01604N	TRX06	WDXT042004	NPT 1/8	1
WDX0594D4S075-L	O	0.5937	5.478	3.478	2.494	1.102	1.000	2.000	BFTX01604N	TRX06	WDXT042004	NPT 1/8	1
WDX0625D4S100-L	O	0.6250	6.181	3.681	2.618	1.260	1.000	2.500	BFTX0204N	TRX06	WDXT052504	NPT 1/4	1
WDX0656D4S100-L	O	0.6562	6.305	3.805	2.742	1.260	1.000	2.500	BFTX0204N	TRX06	WDXT052504	NPT 1/4	1
WDX0687D4S100-L	O	0.6875	6.429	3.929	2.866	1.260	1.000	2.500	BFTX0204N	TRX06	WDXT052504	NPT 1/4	1
WDX0750D4S100-L	O	0.7500	6.681	4.181	3.118	1.299	1.000	2.500	BFTY02206	TRD07	WDXT063006	NPT 1/4	1
WDX0787D4S100-L	O	0.7870	6.829	4.329	3.266	1.299	1.000	2.500	BFTY02206	TRD07	WDXT063006	NPT 1/4	1
WDX0812D4S100-L	O	0.8125	6.931	4.431	3.368	1.299	1.000	2.500	BFTY02206	TRD07	WDXT063006	NPT 1/4	1
WDX0875D4S100-L	O	0.8750	7.181	4.681	3.618	1.299	1.000	2.500	BFTY02206	TRD07	WDXT063006	NPT 1/4	1
WDX0937D4S125-L	O	0.9375	7.549	5.049	3.868	1.614	1.250	2.500	BFTX02506N	TRD08	WDXT073506	NPT 1/4	1
WDX1000D4S125-L	O	1.0000	7.799	5.299	4.118	1.614	1.250	2.500	BFTX02506N	TRD08	WDXT073506	NPT 1/4	1
WDX1062D4S125-L	O	1.0625	8.549	5.549	4.368	1.614	1.250	3.000	BFTX02506N	TRD08	WDXT073506	NPT 1/4	1
WDX1125D4S125-L	O	1.1250	8.799	5.799	4.618	1.614	1.250	3.000	BFTX02506N	TRD08	WDXT073506	NPT 1/4	1
WDX1187D4S125-L	O	1.1875	9.206	6.206	4.091	1.968	1.250	3.000	BFTX03584	TRX15	WDXT094008	NPT 1/4	1
WDX1250D4S125-L	O	1.2500	9.456	6.456	5.157	1.968	1.250	3.000	BFTX03584	TRX15	WDXT094008	NPT 1/4	1
WDX1312D4S150-L	O	1.3125	9.824	6.824	5.407	2.126	1.500	3.000	BFTX03584	TRX15	WDXT094008	NPT 1/4	1
WDX1375D4S150-L	O	1.3750	10.074	7.074	5.657	2.126	1.500	3.000	BFTX03584	TRX15	WDXT094008	NPT 1/4	1
WDX1437D4S150-L	O	1.4375	10.324	7.324	5.907	2.126	1.500	3.000	BFTX03584	TRX15	WDXT094008	NPT 1/4	1
WDX1500D4S150-L	O	1.5000	10.850	7.850	6.197	1.949	1.500	3.000	BFTX0511N	TRD20	WDXT125012	NPT 1/4	1
WDX1562D4S150-L	O	1.5625	11.098	8.098	6.445	1.949	1.500	3.000	BFTX0511N	TRD20	WDXT125012	NPT 1/4	1
WDX1625D4S150-L	O	1.6250	11.350	8.350	6.697	1.949	1.500	3.000	BFTX0511N	TRD20	WDXT125012	NPT 1/4	1
WDX1687D4S150-L	O	1.6875	11.602	8.602	6.949	1.949	1.500	3.000	BFTX0511N	TRD20	WDXT125012	NPT 1/4	2
WDX1750D4S150-L	O	1.7500	11.850	8.850	7.197	1.949	1.500	3.000	BFTX0511N	TRD20	WDXT125012	NPT 1/4	2
WDX1812D4S150-L	O	1.8125	12.102	9.102	7.449	1.949	1.500	3.000	BFTX0615N	TRD25	WDXT156012	NPT 1/4	2
WDX1875D4S150-L	O	1.8750	12.350	9.350	7.697	1.949	1.500	3.000	BFTX0615N	TRD25	WDXT156012	NPT 1/4	2
WDX1937D4S150-L	O	1.9375	12.602	9.602	7.949	1.949	1.500	3.000	BFTX0615N	TRD25	WDXT156012	NPT 1/4	2
WDX2000D4S150-L	O	2.0000	12.850	9.850	8.197	1.949	1.500	3.000	BFTX0615N	TRD25	WDXT156012	NPT 1/4	2
WDX2125D4S150-L	O	2.1250	13.350	10.350	8.697	1.949	1.500	3.000	BFTX0615N	TRD25	WDXT156012	NPT 1/4	2
WDX2250D4S150-L	O	2.2500	14.047	11.047	9.315	2.173	1.500	3.000	BFTX0615N	TRD25	WDXT186012	NPT 1/4	2
WDX2375D4S150-L	O	2.3750	14.547	11.547	9.815	2.295	1.500	3.000	BFTX0615N	TRD25	WDXT186012	NPT 1/4	2
WDX2500D4S150-L	O	2.5000	15.047	12.047	10.315	2.421	1.500	3.000	BFTX0615N	TRD25	WDXT186012	NPT 1/4	2

O - Items Available 1st Quarter 2015

WDX

WDX Indexable Coolant Through Drills

Fig. 1

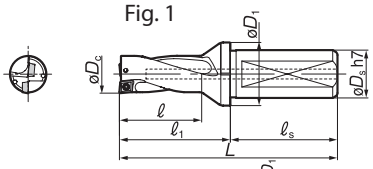


Fig. 2

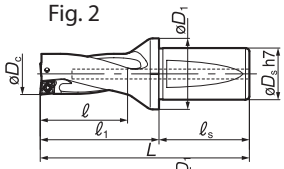


Fig. 3

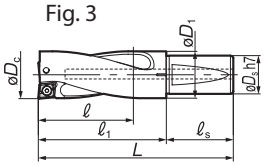


Fig. 4

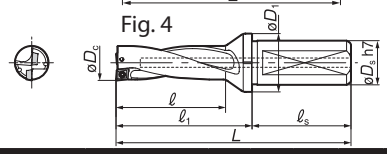


Fig. 5

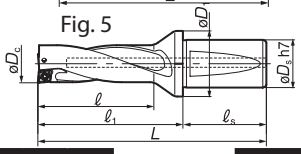
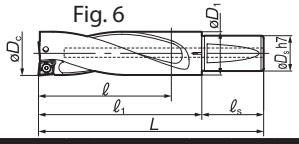


Fig. 6



SumiDrill WDX Bodies - 2XD - *METRIC*

Catalog Number	Stock	øDc	L	ℓ1	ℓ	øD1	øDs	ℓs	Insert	Fig.
WDX130D2S20	★	13.0	88	44	29	28.0	20	44	WDXT 042004	1
WDX135D2S20	★	13.5	89	45	30					
WDX140D2S20	★	14.0	90	46	31					
WDX145D2S20	★	14.5	91	47	32					
WDX150D2S20	★	15.0	92	48	33					
WDX155D2S20	★	15.5	93	49	34	30.0	20	44	WDXT 052504	
WDX160D2S20	★	16.0	94	50	35					
WDX165D2S20	★	16.5	95	51	36					
WDX170D2S20	★	17.0	96	52	37					
WDX175D2S25	★	17.5	109	53	38	32.0	25	56		
WDX180D2S25	★	18.0	110	54	39					
WDX185D2S25	★	18.5	111	55	40	33.0	25	56	WDXT 063006	
WDX190D2S25	★	19.0	112	56	41					
WDX195D2S25	★	19.5	113	57	42					
WDX200D2S25	★	20.0	114	58	43					
WDX205D2S25	★	20.5	115	59	44					
WDX210D2S25	★	21.0	116	60	45					
WDX215D2S25	★	21.5	117	61	46					
WDX220D2S25	★	22.0	118	62	47					
WDX225D2S25	★	22.5	119	63	48					
WDX230D2S25	★	23.0	123	67	49	37.0	25	56	WDXT 073506	
WDX235D2S25	★	23.5	124	68	50					
WDX240D2S25	★	24.0	125	69	51					
WDX245D2S25	★	24.5	126	70	52					
WDX250D2S25	★	25.0	127	71	53					
WDX255D2S32	★	25.5	134	74	54	41.0	32	60		2
WDX260D2S32	★	26.0	135	75	55					
WDX265D2S32	★	26.5	136	76	56					
WDX270D2S32	★	27.0	137	77	57					
WDX275D2S32	★	27.5	138	78	58					
WDX280D2S32	★	28.0	139	79	59					
WDX285D2S32	★	28.5	140	80	60					
WDX290D2S32	★	29.0	143	83	62	50.0	32	60	WDXT 094008	
WDX295D2S32	★	29.5	144	84	63					
WDX300D2S40	★	30.0	158	88	64	54.0	40	70		
WDX310D2S40	★	31.0	160	90	66					
WDX320D2S40	★	32.0	162	92	68					
WDX330D2S40	★	33.0	164	94	70					
WDX340D2S40	★	34.0	166	96	72					
WDX350D2S40	★	35.0	168	98	74					
WDX360D2S40	★	36.0	170	100	76					
WDX370D2S40	★	37.0	179	109	79	49.5	40	70	WDXT 125012	
WDX380D2S40	★	38.0	181	111	81					
WDX390D2S40	★	39.0	183	113	83					
WDX400D2S40	★	40.0	185	115	85					
WDX410D2S40	★	41.0	187	117	87					
WDX420D2S40	★	42.0	189	119	89					
WDX430D2S40	★	43.0	191	121	91					
WDX440D2S40	★	44.0	193	123	93					
WDX450D2S40	★	45.0	195	125	95					
WDX460D2S40	★	46.0	197	127	97	49.5	40	70	WDXT 156012	
WDX470D2S40	★	47.0	199	129	99					
WDX480D2S40	★	48.0	201	131	101					
WDX490D2S40	★	49.0	203	133	103					
WDX500D2S40	★	50.0	205	135	105					
WDX510D2S40	★	51.0	207	137	107					
WDX520D2S40	★	52.0	209	139	109	50.5				3
WDX530D2S40	★	53.0	211	141	111	51.5				
WDX540D2S40	★	54.0	213	143	113	52.5				
WDX550D2S40	★	55.0	215	145	115	53.5				
WDX560D2S40	★	56.0	222	152	120	54.0	40	70	WDXT 186012	
WDX570D2S40	★	57.0	224	154	122	55.0				
WDX580D2S40	★	58.0	226	156	124	56.0				
WDX590D2S40	★	59.0	228	158	126	57.0				
WDX600D2S40	★	60.0	230	160	128	58.0				
WDX610D2S40	★	61.0	232	162	130	59.0				
WDX620D2S40	★	62.0	234	164	132	60.0				
WDX630D2S40	★	63.0	236	166	134	61.0				
WDX640D2S40	★	64.0	238	168	136	62.0				
WDX650D2S40	★	65.0	240	170	138	63.0				
WDX660D2S40	★	66.0	242	172	140	64.0				
WDX670D2S40	★	67.0	244	174	142	65.0				
WDX680D2S40	★	68.0	246	176	144	66.0				

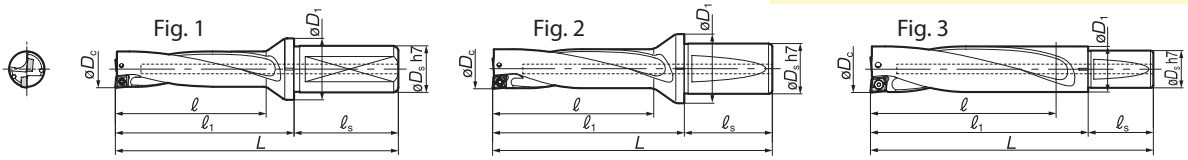
★ = Worldwide Warehouse item

SumiDrill WDX Bodies - 3XD - *METRIC*

Catalog Number	Stock	øDc	L	ℓ1	ℓ	øD1	øDs	ℓs	Insert	Fig.
WDX130D3S20	★	13.0	101.0	57.0	42.0	28.0	20	44	WDXT 042004	4
WDX135D3S20	★	13.5	102.5	58.5	43.5					
WDX140D3S20	★	14.0	104.0	60.0	45.0					
WDX145D3S20	★	14.5	105.5	61.5	46.5					
WDX150D3S20	★	15.0	107.0	63.0	48.0					
WDX155D3S20	★	15.5	108.5	64.5	49.5	30.0	20	44	WDXT 052504	
WDX160D3S20	★	16.0	110.0	66.0	51.0					
WDX165D3S20	★	16.5	111.5	67.5	52.5					
WDX170D3S20	★	17.0	113.0	69.0	54.0					
WDX175D3S25	★	17.5	126.5	70.5	55.5	32.0	25	56		
WDX180D3S25	★	18.0	128.0	72.0	57.0					
WDX185D3S25	★	18.5	129.5	73.5	58.5	33.0	25	56	WDXT 063006	
WDX190D3S25	★	19.0	131.0	75.0	60.0					
WDX195D3S25	★	19.5	132.5	76.5	61.5					
WDX200D3S25	★	20.0	134.0	78.0	63.0					
WDX205D3S25	★	20.5	135.5	79.5	64.5					
WDX210D3S25	★	21.0	137.0	81.0	66.0					
WDX215D3S25	★	21.5	138.5	82.5	67.5					
WDX220D3S25	★	22.0	140.0	84.0	69.0					
WDX225D3S25	★	22.5	141.5	85.5	70.5					
WDX230D3S25	★	23.0	146.0	90.0	72.0	37.0	25	56	WDXT 073506	
WDX235D3S25	★	23.5	147.5	91.5	73.5					
WDX240D3S25	★	24.0	149.0	93.0	75.0					
WDX245D3S25	★	24.5	150.5	94.5	76.5					
WDX250D3S25	★	25.0	152.0	96.0	78.0					
WDX255D3S32	★	25.5	159.5	99.5	79.5	41.0	32	60		5
WDX260D3S32	★	26.0	161.0	101.0	81.0					
WDX265D3S32	★	26.5	162.5	102.5	82.5					
WDX270D3S32	★	27.0	164.0	104.0	84.0					
WDX275D3S32	★	27.5	165.5	105.5	85.5					
WDX280D3S32	★	28.0	167.0	107.0	87.0					
WDX285D3S32	★	28.5	168.5	108.5	88.5					
WDX290D3S32	★	29.0	172.0	112.0	91.0	50.0	32	60	WDXT 094008	
WDX295D3S32	★	29.5	173.5	113.5	92.5					
WDX300D3S40	★	30.0	188.0	118.0	94.0	54.0	40	70		
WDX310D3S40	★	31.0	191.0	121.0	97.0					
WDX320D3S40	★	32.0	194.0	124.0	100.0					
WDX330D3S40	★	33.0	197.0	127.0	103.0					
WDX340D3S40	★	34.0	200.0	130.0	106.0					
WDX350D3S40	★	35.0	203.0	133.0	109.0					
WDX360D3S40	★	36.0	206.0	136.0	112.0					
WDX370D3S40	★	37.0	216.0	146.0	116.0	49.5	40	70	WDXT 125012	
WDX380D3S40	★	38.0	219.0	149.0	119.0					
WDX390D3S40	★	39.0	222.0	152.0	122.0					
WDX400D3S40	★	40.0	225.0	155.0	125.0					
WDX410D3S40	★	41.0	228.0	158.0	128.0					
WDX420D3S40	★	42.0	231.0	161.0	131.0					
WDX430D3S40	★	43.0	234.0	164.0	134.0					
WDX440D3S40	★	44.0	237.0	167.0	137.0					
WDX450D3S40	★	45.0	240.0	170.0	140.0					
WDX460D3S40	★	46.0	243.0	173.0	143.0	49.5	40	70	WDXT 156012	
WDX470D3S40	★	47.0	246.0	176.0	146.0					
WDX480D3S40	★	48.0	249.0	179.0	149.0					
WDX490D3S40	★	49.0	252.0	182.0	152.0					
WDX500D3S40	★	50.0	255.0	185.0	155.0					
WDX510D3S40	★	51.0	258.0	188.0	158.0					
WDX520D3S40	★	52.0	261.0	191.0	161.0	50.5				6
WDX530D3S40	★	53.0	264.0	194.0	164.0	51.5				
WDX540D3S40	★	54.0	267.0	197.0	167.0	52.5				
WDX550D3S40	★	55.0	270.0	200.0	170.0	53.5				
WDX560D3S40	★	56.0	278.0	208.0	176.0	54.0	40	70	WDXT 186012	
WDX570D3S40	★	57.0	281.0	211.0	179.0	55.0				
WDX580D3S40	★	58.0	284.0	214.0	182.0	56.0				
WDX590D3S40	★	59.0	287.0	217.0	185.0	57.0				
WDX600D3S40	★	60.0	290.0	220.0	188.0	58.0				
WDX610D3S40	★	61.0	293.0	223.0	191.0	59.0				
WDX620D3S40	★	62.0	296.0	226.0	194.0	60.0				
WDX630D3S40	★	63.0	299.0	229.0	197.0	61.0				
WDX640D3S40	★	64.0	302.0	232.0	200.0	62.0				
WDX650D3S40	★	65.0	305.0	235.0	203.0	63.0				
WDX660D3S40	★	66.0	308.0	238.0	206.0	64.0				
WDX670D3S40	★	67.0	311.0	241.0	209.0	65.0				
WDX680D3S40	★	68.0	314.0	244.0	212.0	66.0				

★ = Worldwide Warehouse item

4XD & 5XD-*METRIC*
WDX



SumiDrill WDX Bodies - 4XD - *METRIC*

Catalog Number	Stock	øD$_c$	L	ℓ$_1$	ℓ	øD$_1$	øD$_s$	ℓ$_s$	Insert	Fig.
WDX130D4S20	★	13.0	114	70	55	28.0	20	44	WDXT 042004	1
WDX135D4S20	★	13.5	116	72	57					
WDX140D4S20	★	14.0	118	74	59					
WDX145D4S20	★	14.5	120	76	61					
WDX150D4S20	★	15.0	122	78	63					
WDX155D4S20	★	15.5	124	80	65	30.0	20	44	WDXT 052504	
WDX160D4S20	★	16.0	126	82	67					
WDX165D4S20	★	16.5	128	84	69					
WDX170D4S20	★	17.0	130	86	71					
WDX175D4S25	★	17.5	144	88	73	32.0	25	56		
WDX180D4S25	★	18.0	146	90	75					
WDX185D4S25	★	18.5	148	92	77	33.0	25	56	WDXT 063006	
WDX190D4S25	★	19.0	150	94	79					
WDX195D4S25	★	19.5	152	96	81					
WDX200D4S25	★	20.0	154	98	83					
WDX205D4S25	★	20.5	156	100	85					
WDX210D4S25	★	21.0	158	102	87					
WDX215D4S25	★	21.5	160	104	89					
WDX220D4S25	★	22.0	162	106	91					
WDX225D4S25	★	22.5	164	108	93					
WDX230D4S25	★	23.0	169	113	95	37.0	25	56	WDXT 073506	
WDX235D4S25	★	23.5	171	115	97					
WDX240D4S25	★	24.0	173	117	99					
WDX245D4S25	★	24.5	175	119	101					
WDX250D4S25	★	25.0	177	121	103					
WDX255D4S32	★	25.5	185	125	105	41.0	32	60		2
WDX260D4S32	★	26.0	187	127	107					
WDX265D4S32	★	26.5	189	129	109					
WDX270D4S32	★	27.0	191	131	111					
WDX275D4S32	★	27.5	193	133	113					
WDX280D4S32	★	28.0	195	135	115					
WDX285D4S32	★	28.5	197	137	117					
WDX290D4S32	★	29.0	201	141	120	50.0	32	60	WDXT 094008	
WDX295D4S32	★	29.5	203	143	122					
WDX300D4S40	★	30.0	218	148	124	54.0	40	70		
WDX310D4S40	★	31.0	222	152	128					
WDX320D4S40	★	32.0	226	156	132					
WDX330D4S40	★	33.0	230	160	136					
WDX340D4S40	★	34.0	234	164	140					
WDX350D4S40	★	35.0	238	168	144					
WDX360D4S40	★	36.0	242	172	148					
WDX370D4S40	★	37.0	253	183	153	49.5	40	70	WDXT 125012	
WDX380D4S40	★	38.0	257	187	157					
WDX390D4S40	★	39.0	261	191	161					
WDX400D4S40	★	40.0	265	195	165					
WDX410D4S40	★	41.0	269	199	169					
WDX420D4S40	★	42.0	273	203	173					
WDX430D4S40	★	43.0	277	207	177					
WDX440D4S40	★	44.0	281	211	181					
WDX450D4S40	★	45.0	285	215	185					
WDX460D4S40	★	46.0	289	219	189	49.5	40	70	WDXT 156012	
WDX470D4S40	★	47.0	293	223	193					
WDX480D4S40	★	48.0	297	227	197					
WDX490D4S40	★	49.0	301	231	201					
WDX500D4S40	★	50.0	305	235	205					
WDX510D4S40	★	51.0	309	239	209					3
WDX520D4S40	★	52.0	313	243	213	50.5				
WDX530D4S40	★	53.0	317	247	217	51.5				
WDX540D4S40	★	54.0	321	251	221	52.5				
WDX550D4S40	★	55.0	325	255	225	53.5				
WDX560D4S40	★	56.0	334	264	232	54.0	40	70	WDXT 186012	
WDX570D4S40	★	57.0	338	268	236	55.0				
WDX580D4S40	★	58.0	342	272	240	56.0				
WDX590D4S40	★	59.0	346	276	244	57.0				
WDX600D4S40	★	60.0	350	280	248	58.0				
WDX610D4S40	★	61.0	354	284	252	59.0				
WDX620D4S40	★	62.0	358	288	256	60.0				
WDX630D4S40	★	63.0	362	292	260	61.0				

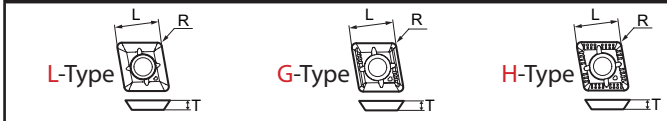
★ = Worldwide Warehouse item

SumiDrill WDX Bodies - 5XD* - *METRIC*

Catalog Number	Stock	øD$_c$	L	ℓ$_1$	ℓ	øD$_1$	øD$_s$	ℓ$_s$	Insert	Fig.
WDX 130D5S20	★	13.0	127.0	83.0	68.0	28.0	20.0	44.0	WDXT 042004	1
WDX 135D5S20	★	13.5	129.5	85.5	70.5					
WDX 140D5S20	★	14.0	132.0	88.0	73.0					
WDX 145D5S20	★	14.5	134.5	90.5	75.5					
WDX 150D5S20	★	15.0	137.0	93.0	78.0					
WDX 155D5S20	★	15.5	139.5	95.5	80.5	30.0	20.0	44.0	WDXT 052504	
WDX 160D5S20	★	16.0	142.0	98.0	83.0					
WDX 165D5S20	★	16.5	144.5	100.5	85.5					
WDX 170D5S20	★	17.0	147.0	103.0	88.0					
WDX 175D5S25	★	17.5	161.5	105.5	90.5	32.0	25.0	56.0		
WDX 180D5S25	★	18.0	164.0	108.0	93.0					
WDX 185D5S25	★	18.5	166.5	110.5	95.5	33.0	25.0	56.0	WDXT 063006	
WDX 190D5S25	★	19.0	169.0	113.0	98.0					
WDX 195D5S25	★	19.5	171.5	115.5	100.5					
WDX 200D5S25	★	20.0	174.0	118.0	103.0					
WDX 205D5S25	★	20.5	176.5	120.5	105.5					
WDX 210D5S25	★	21.0	179.0	123.0	108.0					
WDX 215D5S25	★	21.5	181.5	125.5	110.5					
WDX 220D5S25	★	22.0	184.0	128.0	113.0					
WDX 225D5S25	★	22.5	186.5	130.5	115.5					
WDX 230D5S25	★	23.0	192.0	136.0	118.0	37.0	25.0	56.0	WDXT 073506	
WDX 235D5S25	★	23.5	194.5	138.5	120.5					
WDX 240D5S25	★	24.0	197.0	141.0	123.0					
WDX 245D5S25	★	24.5	199.5	143.5	125.5					
WDX 250D5S25	★	25.0	202.0	146.0	128.0					
WDX 260D5S32	★	26.0	213.0	153.0	133.0	41.0	32.0	60.0		2
WDX 270D5S32	★	27.0	218.0	158.0	138.0					
WDX 280D5S32	★	28.0	223.0	163.0	143.0					
WDX 290D5S32	★	29.0	230.0	170.0	149.0	50.0		60.0	WDXT 094008	
WDX 300D5S32	★	30.0	238.0	178.0	154.0	54.0				
WDX 310D5S32	★	31.0	243.0	183.0	159.0					
WDX 320D5S32	★	32.0	248.0	188.0	164.0					
WDX 300D5S40	★	30.0	248.0	178.0	154.0		40.0	70.0		
WDX 310D5S40	★	31.0	253.0	183.0	159.0					
WDX 320D5S40	★	32.0	258.0	188.0	164.0					
WDX 330D5S40	★	33.0	263.0	193.0	169.0					
WDX 340D5S40	★	34.0	268.0	198.0	174.0					
WDX 350D5S40	★	35.0	273.0	203.0	179.0					
WDX 360D5S40	★	36.0	278.0	208.0	184.0					

★ = Worldwide Warehouse item
***NOTE:** Coolant adapter sleeves for lathes are available upon request.

Inserts



Catalog Number	Stock ACP300	Stock ACK300	Stock DL1500	Fig.	L	T	R
WDXT042004-L	●	●		3			
WDXT042004-G	●	●	●	4	0.1654	0.0788	0.0157
WDXT042004-H	●	●		5			
WDXT052504-L	●	●		3			
WDXT052504-G	●	●	●	4	0.1969	0.0984	0.0157
WDXT052504-H	●	●		5			
WDXT063006-L	●	●		3			
WDXT063006-G	●	●	●	4	0.2362	0.1181	0.0236
WDXT063006-H	●	●		5			
WDXT073506-L	●	●		3			
WDXT073506-G	●	●	●	4	0.2953	0.1378	0.0236
WDXT073506-H	●	●		5			
WDXT094008-L	●	●		3			
WDXT094008-G	●	●	●	4	0.3780	0.1575	0.0315
WDXT094008-H	●	●		5			
WDXT125012-L	●	●		3			
WDXT125012-G	●	●	●	4	0.4882	0.1969	0.0472
WDXT125012-H	●	●		5			
WDXT156012-L	●	●		3			
WDXT156012-G	●	●	●	4	0.5984	0.2362	0.0472
WDXT156012-H	●	●		5			
WDXT186012-L	●	●		3			
WDXT186012-G	●	●	●	4	0.7087	0.2362	0.0472
WDXT186012-H	●	●		5			

WDX		Work Material	Hardness HB	Chip Breaker	Insert Grade	Cutting Speed SFM	Feed Rate - IPR (Inches per revolution)			
							ø0.562 - ø1.00	ø1.062 - ø1.50	ø1.56 - ø2.125	ø2.25 - ø2.625
2D	P	Low Carbon Steel	<190	G	ACP300	450 - 780	.002 - .006	.003 - .008	.005 - .010	.006 - .012
				L	ACP300	450 - 750	.002 - .004	.002 - .005	.003 - .006	N/A
			190 ~ 250	G	ACP300	400 - 700	.003 - .009	.004 - .010	.005 - .010	.006 - .012
				L	ACP300	400 - 700	.002 - .004	.002 - .005	.003 - .006	N/A
			250 ~ 300	G	ACP300	350 - 550	.003 - .007	.003 - .008	.004 - .009	.004 - .010
				L	ACP300	350 - 525	.002 - .004	.002 - .004	.003 - .005	N/A
		Medium Carbon Steel	180 ~ 275	G	ACP300	350 - 700	.002 - .007	.003 - .008	.005 - .010	.006 - .010
				L	ACP300	350 - 650	.002 - .004	.002 - .005	.003 - .006	N/A
			275 ~ 350	G	ACP300	300 - 500	.002 - .006	.003 - .007	.004 - .008	.006 - .009
				L	ACP300	300 - 500	.002 - .003	.002 - .004	.003 - .005	N/A
		Alloy Steel	200 ~ 350	G	ACP300	350 - 650	.003 - .006	.003 - .008	.006 - .010	.006 - .012
				L	ACP300	300 - 450	.002 - .004	.003 - .005	.003- .006	N/A
	M	300 Austenitic Stainless Steel	160	G	ACP300	400 - 650	.003 - .007	.003 - .008	.005 - .010	.006 - .012
			280	G	ACP300	325 - 500	.002 - .006	.003 - .006	.004 - .008	.006 - .010
		400 Martensitic Stainless Steel	160	G	ACP300	400 - 650	.003 - .007	.003 - .008	.004 - .010	.006 - .012
			240	G	ACP300	325 - 600	.002 - .006	.003 - .006	.004 - .008	.006 - .010
	K	Cast Iron		H	ACK300	400 - 650	.004 - .008	.004 - .012	.006 - .014	.006 - .017
		Ductile Iron		H	ACK300	300 - 500	.004 - .008	.004 - .012	.006 - .014	.006 - .017
	S	Exotic Alloys	200 ~ 375	G	ACP300	80 - 250	.002 - .005	.003 - .007	.003 - .008	.003 - .010
	N	Aluminum alloy		G	DL1500	650 - 1200	.003 - .006	.003 - .007	.004 - .008	.005 - .010
		Copper Alloy		G	DL1500	600 - 900	.003 - .006	.003 - .007	.004 - .008	.005 - .010

WDX		Work Material	Hardness HB	Chip Breaker	Insert Grade	Cutting Speed SFM	Feed Rate - IPR (Inches per revolution)			
							ø0.562 - ø1.00	ø1.062 - ø1.50	ø1.56 - ø2.125	ø2.25 - ø2.625
3D	P	Low Carbon Steel	<190	G	ACP300	450 - 780	.002 - .006	.003 - .008	.005 - .010	.006 - .012
				L	ACP300	450 - 750	.002 - .004	.002 - .005	.003 - .006	N/A
			190 ~ 250	G	ACP300	400 - 700	.003 - .009	.004 - .010	.005 - .010	.006 - .012
				L	ACP300	400 - 700	.002 - .004	.002 - .005	.003 - .006	N/A
			250 ~ 350	G	ACP300	350 - 550	.003 - .007	.003 - .008	.004 - .009	.004 - .010
				L	ACP300	350 - 525	.002 - .004	.002 - .004	.003 - .005	N/A
		Medium Carbon Steel	180 ~ 275	G	ACP300	350 - 700	.002 - .007	.003 - .008	.005 - .010	.006 - .010
				L	ACP300	350 - 650	.002 - .004	.002 - .005	.003 - .006	N/A
			275 ~ 350	G	ACP300	300 - 500	.002 - .006	.003 - .007	.004 - .008	.006 - .009
				L	ACP300	300 - 500	.002 - .003	.002 - .004	.003 - .005	N/A
		Alloy Steel	200 ~ 350	G	ACP300	350 - 650	.003 - .006	.003 - .008	.006 - .010	.006 - .012
				L	ACP300	300 - 450	.002 - .004	.003 - .005	.003- .006	N/A
	M	300 Austenitic Stainless Steel	160	G	ACP300	400 - 650	.003 - .007	.003 - .008	.005 - .010	.006 - .012
			280	G	ACP300	325 - 500	.002 - .006	.003 - .006	.004 - .008	.006 - .010
		400 Martensitic Stainless Steel	160	G		400 - 650	.003 - .007	.003 - .008	.004 - .010	.006 - .012
			240	G	ACP300	325 - 600	.002 - .006	.003 - .006	.004 - .008	.006 - .010
	K	Cast Iron		H	ACK300	400 - 650	.004 - .008	.004 - .012	.006 - .014	.006 - .017
		Ductile Iron		H	ACK300	300 - 500	.004 - .008	.004 - .012	.006 - .014	.006 - .017
	S	Exotic Alloys	200 ~ 375	G	ACP300	80 - 250	.002 - .005	.003 - .007	.003 - .008	.003 - .010
	N	Aluminum alloy		G	DL1500	650 - 1200	.003 - .006	.003 - .007	.004 - .008	.005 - .010
		Copper Alloy		G	DL1500	600 - 900	.003 - .006	.003 - .007	.004 - .008	.005 - .010

Cutting Conditions
WDX

WDX		Work Material	Hardness HB	Chip Breaker	Insert Grade	Cutting Speed SFM	Feed Rate - IPR (Inches per revolution)			
							ø0.562 - ø1.00	ø1.062 - ø1.50	ø1.56 - ø2.125	ø2.25 - ø2.625
4D	P	Low Carbon Steel	<190	G	ACP300	450 - 780	.002 - .004	.003 - .006	.004 - .007	.004 - .008
				L	ACP300	450 - 750	.002 - .004	.002 - .004	.003 - .005	N/A
			190 ~ 250	G	ACP300	400 - 700	.003 - .006	.003 - .007	.005 - .008	.004 - .009
				L	ACP300	400 - 700	.002 - .004	.002 - .005	.003 - .006	N/A
			250 ~ 350	G	ACP300	350 - 550	.003 - .006	.003 - .007	.003 - .007	.004 - .008
				L	ACP300	350 - 525	.002 - .004	.002 - .004	.003 - .005	N/A
		Medium Carbon Steel	180 ~ 275	G	ACP300	350 - 700	.003 - .006	.003 - .008	.004 - .008	.006 - .010
				L	ACP300	350 - 650	.002 - .004	.002 - .005	.003 - .005	N/A
			275 ~ 350	G	ACP300	300 - 500	.003 - .005	.003 - .007	.004 - .008	.005 - .009
				L	ACP300	300 - 500	.002 - .003	.002 - .004	.003 - .005	N/A
		Alloy Steel	200 ~ 350	G	ACP300	350 - 650	.003 - .006	.003 - .008	.004 - .008	.006 - .010
				L	ACP300	300 - 450	.002 - .004	.003 - .005	.003- .006	N/A
	M	300 Austenitic Stainless Steel	160	G	ACP300	400 - 650	.003 - .006	.003 - .007	.005 - .008	.005 - .009
			280	G	ACP300	325 - 500	.002 - .005	.003 - .005	.004 - .006	.004 - .008
		400 Martensitic Stainless Steel	160	G	ACP300	400 - 650	.003 - .006	.003 - .007	.004 - .008	.006 - .010
			240	G	ACP300	325 - 600	.002 - .005	.003 - .005	.004 - .006	.005 - .008
	K	Cast Iron		H	ACK300	400 - 650	.004 - .008	.004 - .012	.006 - .012	.006 - .014
		Ductile Iron		H	ACK300	300 - 500	.004 - .008	.004 - .012	.006 - .012	.006 - .014
	S	Exotic Alloys	200 ~ 375	G	ACP300	80 - 250	.002 - .004	.002 - .005	.003 - .006	.004 - .007
	N	Aluminum alloy		G	DL1500	650 - 1200	.003 - .006	.003 - .007	.004 - .008	.005 - .010
		Copper Alloy		G	DL1500	600 - 900	.003 - .006	.003 - .007	.004 - .008	.005 - .010

WDX		Work Material	Hardness HB	Chip Breaker	Insert Grade	Cutting Speed SFM	Feed Rate - IPR (Inches per revolution)			
							ø0.562 - ø1.00	ø1.062 - ø1.50	ø1.56 - ø2.125	ø2.25 - ø2.625
5D	P	Low Carbon Steel	<190	G	ACP300	450 - 780	.002 - .004	.003 - .006	.004 - .007	
				L	ACP300	450 - 750	.002 - .004	.002 - .005	.002 - .005	
			190 ~ 250	G	ACP300	400 - 700	.003 - .006	.003 - .007	.005 - .008	
				L	ACP300	400 - 700	.002 - .004	.002 - .005	.002 - .005	
			250 ~ 350	G	ACP300	350 - 550	.003 - .006	.003 - .007	.003 - .007	
				L	ACP300	350 - 525	.002 - .004	.002 - .004	.002 - .005	
		Medium Carbon Steel	180 ~ 275	G	ACP300	350 - 700	.003 - .006	.003 - .008	.004 - .008	
				L	ACP300	350 - 650	.002 - .004	.002 - .005	.002 - .005	
			275 ~ 350	G	ACP300	300 - 500	.003 - .005	.003 - .007	.004 - .008	
				L	ACP300	300 - 500	.002 - .003	.002 - .004	.002 - .005	
		Alloy Steel	200 ~ 350	G	ACP300	350 - 650	.003 - .006	.003 - .008	.004 - .008	
				L	ACP300	300 - 450	.002 - .004	.003 - .005	.003- .006	
	M	300 Austenitic Stainless Steel	160	G	ACP300	400 - 650	.002 - .004	.003 - .006	.003 - .007	
			280	G	ACP300	325 - 500	.001 - .003	.003 - .005	.003 - .006	
		400 Martensitic Stainless Steel	160	G	ACP300	400 - 650	.002 - .004	.003 - .006	.003 - .007	
			240	G	ACP300	325 - 600	.001 - .003	.003 - .005	.003 - .006	
	K	Cast Iron		H	ACK300	400 - 650	.004 - .008	.004 - .010	.005 - .011	
		Ductile Iron		H	ACK300	300 - 500	.004 - .008	.004 - .010	.005 - .011	
	S	Exotic Alloys	200 ~ 375	G	ACP300	80 - 250	.002 - .004	.003 - .006	.003 - .007	
	N	Aluminum alloy		G	DL1500	650 - 1200	.003 - .006	.003 - .007	.004 - .008	
		Copper Alloy		G	DL1500	600 - 900	.003 - .006	.003 - .007	.004 - .008	

PDL / PCT Type

SEC Plunge

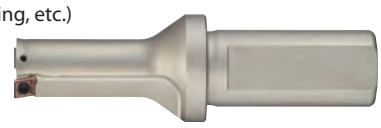
Drill and Mill

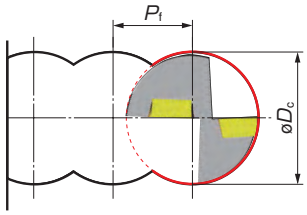
Features & Benefits

- The tool cuts in the Z axis direction where tool rigidity is highest, allowing high efficiency roughing for aeronautic components and dies with long tool overhang must be used to machine deep holes and pockets.
- The flat cutting edge design produces near-flat bottom profiles to reduce depth of cut variation during finishing.
- All sizes come with an air hole for supplying coolant internally to improve chip evacuation.
- The tools use SumiDrill WDX type inserts for handling a wide range of work materials, from steel to non-ferrous metals and exotic alloys.

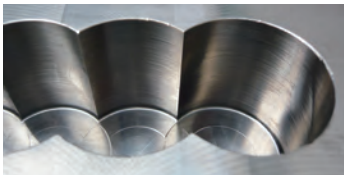
Characteristics

- The PDL type has a central insert making it possible to make radial cuts beyond the tool's radius, pitch feed cutting, and drilling. (Pocket milling, etc.)

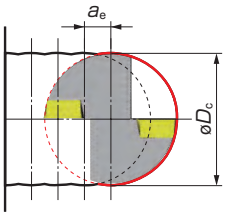


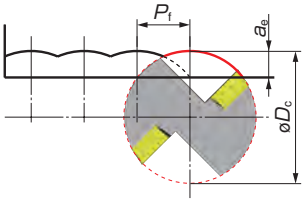


Keep the value of Pf for PDL type tools to less than 70% of the tool diameter (øDc).

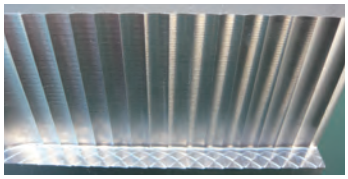


- Although the PCT type has limited radial cutting ability, the tool has many effective teeth enabling it to perform high feed cutting. (Medium finishing of corners, hole expansion, deep grooving, etc.)



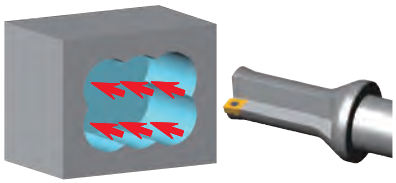


Keep the value of Pf for PCT type tools to less than 50% of the tool diameter (øDc). For a_e, refer to the dimension under "a_e max" in the stock/dimensions tables titled "Holders Max. Depth: 3D/5D".



Application Examples

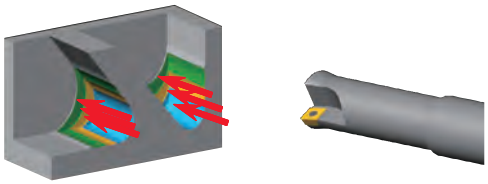
Pocketing PDL Work Material: Ti Alloy



Tool: PDL400D2S40 (ø40)
Insert: WDXT125012-G
Grade: ACK300

Cutting Speed: v_c=130 sfm
Feed Rate: f=0.003 ipr
Depth of Cut: $a_e(p_f)$= 1 in.

Corner Finishing PCT Work Piece: Ti Alloy

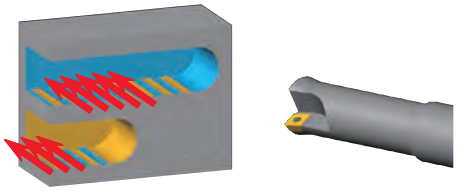


Tool:
PCT320D3S32 (ø32)
PCT250D3S25 (ø25)
PCT200D3S20 (ø20)
Grade: ACK300

Insert:
WDXT094008-G
WDXT073506-G
WDXT063006-G

Cutting Speed: v_c=165 sfm
Feed Rate: f_z=0.0031 ipt
Depth of Cut: a_e=0.13 to 0.26 in.

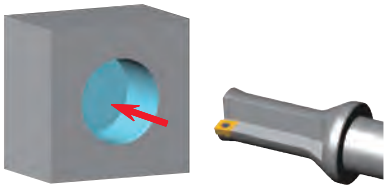
Grooving PCT Work Piece: Ti Alloy



Tool: PCT320D5S32 (ø32)
Insert: WDXT094008-G
Grade: ACK300

Cutting Speed: v_c=130 sfm
Feed Rate: f_z=0.0027ipt
Depth of Cut: $a_e(p_f)$= 0.20 in.

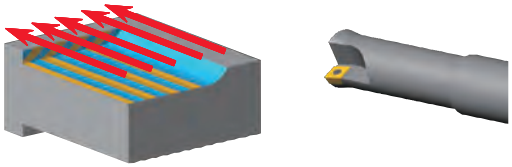
Drilling PDL Work Material: SUS316



Tool: PDL200D3S25 (ø20)
Insert: WDXT063006-G
Grade: ACP300

Cutting Speed: v_c=600 sfm
Feed Rate: f =0.004 ipr
Depth of Cut: a_e= 0.80 in.

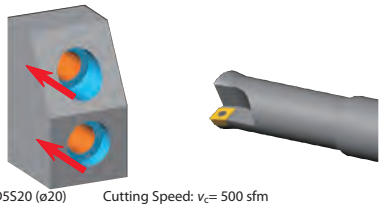
Aeronautic Components PCT Work Piece: SUS304



Tool: PCT320D3S32
(ø32)
Insert: WDXT094008-G
Grade: ACP300

Cutting Speed: v_c= 600 sfm
Feed Rate: f_z=0.006 ipt
Depth of Cut: a_e= 0.28 in.
p_f= 0.2 in.

Machine Components PCT Work Piece: SCM435



Tool: PCT200D5S20 (ø20)
Insert: WDXT063006-G
Grade: ACK300

Cutting Speed: v_c= 500 sfm
Feed Rate: f_z=0.006 ipt
Depth of Cut: a_e= 0.14 in.

2XD, 3XD, 4XD & 5XD-METRIC
PDL / PCT Type

Carbon Steel, Alloy Steel Up to 0.28%	Carbon Steel, Alloy Steel From 0.29%	Tempered Steel	Hardened Steel Up to 45HRC	Hardened Steel From 46HRC	Stainless Steel	Ti-Alloy	Heat-resistant steels	Cast Iron	Ductile Cast Iron	Aluminium Alloy	Copper Alloy	Composite CFRP
◎	◎		○		○	◎		◎	◎	◎	○	

2D 3D

W/ oil hole

Indexable

PVD Coat

Aurora DLC Coat

Fig 1

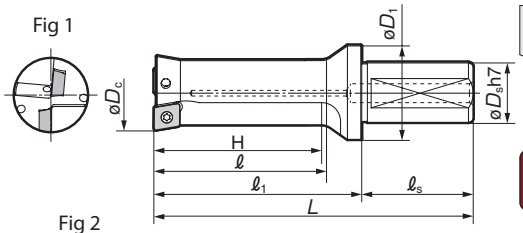
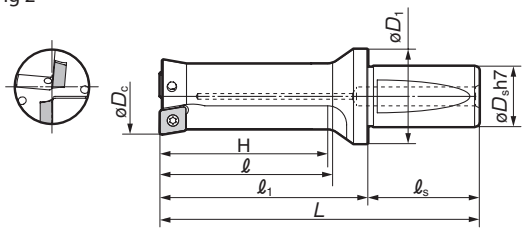


Fig 2



Carbon Steel, Alloy Steel Up to 0.28%	Carbon Steel, Alloy Steel From 0.29%	Tempered Steel	Hardened Steel Up to 45HRC	Hardened Steel From 46HRC	Stainless Steel	Ti-Alloy	Heat-resistant steels	Cast Iron	Ductile Cast Iron	Aluminium Alloy	Copper Alloy	Composite CFRP
◎	◎		○		○	◎		◎	◎	◎	○	

PVD Coat

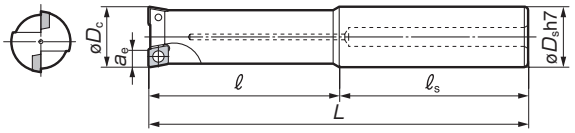
Aurora DLC Coat

W/ oil hole

Indexable

3D 5D

Fig 3



PDL Metric 2XD

Cat. No.	Stock	Dimensions (mm) øDc	L	ℓ1	ℓ	øD1	øDs	ℓs	H	Applicable Insert	Fig.
PDL 160D2S20	★	**16.0**	94	50	35	28	20	44	**32**	WDXT052504	1
200D2S25	★	**20.0**	114	58	43	33	25	56	**40**	WDXT063006	
250D2S25	★	**25.0**	127	71	53	37	25	56	**50**	WDXT073506	
PDL 320D2S40	★	**32.0**	162	92	68	54	40	70	**64**	WDXT094008	2
400D2S40	★	**40.0**	185	115	85	54	40	70	**80**	WDXT125012	

PDL Metric 3XD

Cat. No.	Stock	Dimensions (mm) øDc	L	ℓ1	ℓ	øD1	øDs	ℓs	H	Applicable Insert	Fig.
PDL 160D3S20	★	16.0	110	66	51	28	20	44	48	WDXT052504	1
200D3S25	★	20.0	134	78	63	33	25	56	60	WDXT063006	
250D3S25	★	25.0	152	96	78	37	25	56	75	WDXT073506	
PDL 320D3S40	★	32.0	194	124	100	54	40	70	96	WDXT094008	2
400D3S40	★	40.0	225	155	125	54	40	70	120	WDXT125012	

PCT Metric 3XD

Cat. No.	Stock	Dimensions (mm) øDc	ae max	L	ℓ	ℓs	øDs	No.of flutes	Applicable Insert	Fig.
PCT 160D3S16	★	16.0	4.0	123	53	70	16	2	WDXT052504	3
200D3S20	★	20.0	5.0	145	65	80	20	2	WDXT063006	
250D3S25	★	25.0	6.5	160	80	80	25	2	WDXT073506	
320D3S32	★	32.0	8.5	191	101	90	32	2	WDXT094008	
400D3S42	★	40.0	11.0	225	125	100	42	3	WDXT125012	

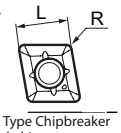
PCT Metric 5XD

Cat. No.	Stock	Dimensions (mm) øDc	ae max	L	ℓ	ℓs	øDs	No.of flutes	Applicable Insert	Fig.
PCT 160D5S16	★	16.0	4.0	155	85	70	16	2	WDXT052504	3
200D5S20	★	20.0	5.0	185	105	80	20	2	WDXT063006	
250D5S25	★	25.0	6.5	210	130	80	25	2	WDXT073506	
320D5S32	★	32.0	8.5	255	165	90	32	2	WDXT094008	
400D5S42	★	40.0	11.0	305	205	100	42	3	WDXT125012	

Parts

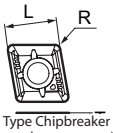
Screw	Spanner	Spanner	Recommended Tightening Torque (N·m)	Applicable Holders
BFTX0204N	TRX06	–	**0.5**	PDL160D2S20 PDL160D3S20 PCT160D3S16 PCT160D5S16
BFTY02206	–	TRD07	**1.0**	PDL200D2S25 PDL200D3S25 PCT200D3S20 PCT200D5S20
BFTX02506N	–	TRD08	**1.5**	PDL250D2S25 PDL250D3S25 PCT250D3S25 PCT250D5S25
BFTX03584	–	TRD15	**3.5**	PDL320D2S40 PDL320D3S40 PCT320D3S32 PCT320D5S32
BFTX0511N	–	TRD20	**5.0**	PDL400D2S40 PDL400D3S40 PCT400D3S42 PCT400D5S42

Fig 4



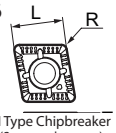
L Type Chipbreaker
(Low feed, chip management type)

Fig 5



G Type Chipbreaker
(General purpose type)

Fig 6



H Type Chipbreaker
(Strong edge type)

Application	Grade	ACP300	ACK300	DL1500
	High Speed/Light			N
	General Purpose	M		
	Roughing	PM	K	

Cat. No.	ACP300	ACK300	DL1500	Fig.	Dimensions (mm) ℓ	Thickness	rε	Applicable Holders
WDXT 052504-L	●	●		4	5.0	2.5	0.4	PDL160D2S20 PDL160D3S20 PCT160D3S16 PCT160D5S16
052504-G	●	●	●	5				
052504-H	●	●		6				
WDXT 063006-L	●	●		4	6.0	3.0	0.6	PDL200D2S25 PDL200D3S25 PCT200D3S20 PCT200D5S20
063006-G	●	●	●	5				
063006-H	●	●		6				
WDXT 073506-L	●	●		4	7.5	3.5	0.6	PDL250D2S25 PDL250D3S25 PCT250D3S25 PCT250D5S25
073506-G	●	●	●	5				
073506-H	●	●		6				
WDXT 094008-L	●	●		4	9.6	4.0	0.8	PDL320D2S40 PDL320D3S40 PCT320D3S32 PCT320D5S32
094008-G	●	●	●	5				
094008-H	●	●		6				
WDXT 125012-L	●	●		4	12.4	5.0	1.2	PDL400D2S40 PDL400D3S40 PCT400D3S42 PCT400D5S42
125012-G	●	●	●	5				
125012-H	●	●		6				

PDL / PCT Type

SEC Plunge
Drill & Mill

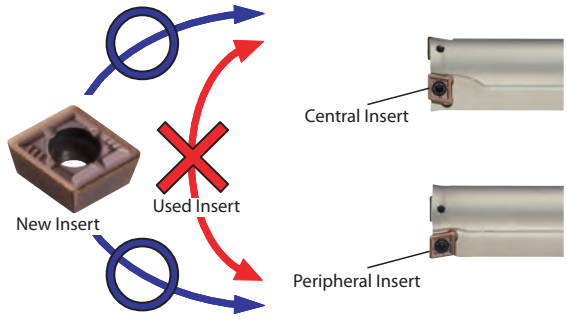
Recommended Cutting Conditions PDL 2XD

	Work Piece		Hardness HB	Recommended Breaker	Recommended Insert Grade	v_c Cutting Speed (sfm)	f Feed Rate (ipt) <Min.-Max.> ø0.625"	ø0.75",ø1.000"	ø1.250"	ø1.500"
P	Steel, Carbon Steel	A283 and similar Structural Steels	125	G	ACP300	390-790	0.002-0.004	0.002-0.004	0.002-0.004	0.002-0.005
		1015 Steel	125	L	ACP300	430-720	0.002-0.005	0.002-0.005	0.002-0.005	0.002-0.006
		1045 Steel	190	G	ACP300	330-660	0.003-0.009	0.003-0.009	0.003-0.010	0.004-0.011
		1045 Steel (Hardened)	250	G	ACP300	260-520	0.002-0.007	0.002-0.007	0.002-0.007	0.003-0.009
		1075 Steel	270	G	ACP300	330-520	0.003-0.008	0.003-0.008	0.003-0.009	0.004-0.010
		1075C Steel (Hardened)	300	G	ACP300	230-460	0.002-0.006	0.002-0.004	0.002-0.007	0.003-0.008
	Low Alloy Steel	4100, 4300 and 8600 Steels	180	L	ACP300	330-590	0.002-0.005	0.002-0.006	0.002-0.006	0.002-0.007
		4100, 4300 and 8600 Steels (Hardened)	275	G	ACP300	260-520	0.002-0.006	0.002-0.004	0.002-0.007	0.003-0.008
		4100, 4300 and 8600 Steels (Hardened)	300	G	ACP300	250-460	0.002-0.006	0.002-0.004	0.002-0.007	0.003-0.008
		4100, 4300 and 8600 Steels (Hardened)	350	G	ACP300	200-360	0.002-0.006	0.002-0.004	0.002-0.007	0.003-0.008
	High Alloy Steel	A2, D2 and other Tool and Die Steels	200	G	ACP300	330-520	0.003-0.009	0.003-0.009	0.003-0.010	0.004-0.011
		A2, D2 and other Tool and Die Steels (Hardened)	325	G	ACP300	260-390	0.002-0.007	0.002-0.007	0.002-0.007	0.003-0.009
M	Stainless Steel	403 and other Martensitic and Ferritic Stainlesses	200	G	ACP300	330-590	0.002-0.007	0.002-0.007	0.002-0.007	0.003-0.009
		403 and other Martensitic Stainlesses (Hardened)	240	G	ACP300	300-490	0.002-0.007	0.002-0.007	0.002-0.007	0.003-0.009
		304, 316 and other Austenitic Stainlesses	180	G	ACP300	330-590	0.002-0.007	0.002-0.007	0.002-0.007	0.003-0.009
K	Cast Iron			H	ACK300	390-660	0.004-0.013	0.004-0.014	0.004-0.016	0.005-0.017
	Ductile Cast Iron			H	ACK300	300-490	0.004-0.013	0.004-0.014	0.004-0.016	0.005-0.017
S	Exotic Alloys (Heat Resistant Alloy, Super Alloy, Ti Alloy, etc.)		200	G	ACP300	80-230	0.002-0.007	0.002-0.007	0.002-0.019	0.003-0.009
N	Aluminium Alloy			G	DL1500	660-1050	0.002-0.006	0.002-0.004	0.002-0.007	0.003-0.008
	Copper Alloy			G	DL1500	590-920	0.002-0.006	0.002-0.004	0.002-0.007	0.003-0.008

Recommended Cutting Conditions PDL 3XD

	Work Piece		Hardness HB	Recommended Breaker	Recommended Insert Grade	v_c Cutting Speed (sfm)	f Feed Rate (ipt) <Min.-Max.> ø0.625"	ø0.75",ø1.000"	ø1.250"	ø1.500"
P	Steel, Carbon Steel	A283 and similar Structural Steels	125	G	ACP300	390-790	0.002-0.004	0.002-0.004	0.002-0.004	0.002-0.005
		1015 Steel	125	L	ACP300	430-720	0.002-0.004	0.002-0.004	0.002-0.004	0.002-0.005
		1045 Steel	190	G	ACP300	330-660	0.003-0.008	0.003-0.008	0.003-0.009	0.004-0.009
		1045 Steel (Hardened)	250	G	ACP300	260-520	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
		1075 Steel	270	G	ACP300	330-520	0.003-0.007	0.003-0.007	0.003-0.008	0.004-0.009
		1075C Steel (Hardened)	300	G	ACP300	230-460	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
	Low Alloy Steel	4100, 4300 and 8600 Steels	180	L	ACP300	330-590	0.002-0.005	0.002-0.005	0.002-0.005	0.002-0.006
		4100, 4300 and 8600 Steels (Hardened)	275	G	ACP300	260-520	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
		4100, 4300 and 8600 Steels (Hardened)	300	G	ACP300	250-460	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
		4100, 4300 and 8600 Steels (Hardened)	350	G	ACP300	200-360	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
	High Alloy Steel	A2, D2 and other Tool and Die Steels	200	G	ACP300	330-520	0.003-0.008	0.003-0.008	0.003-0.009	0.004-0.009
		A2, D2 and other Tool and Die Steels (Hardened)	325	G	ACP300	260-390	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
M	Stainless Steel	403 and other Martensitic and Ferritic Stainlesses	200	G	ACP300	330-590	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
		403 and other Martensitic Stainlesses (Hardened)	240	G	ACP300	300-490	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
		304, 316 and other Austenitic Stainlesses	180	G	ACP300	330-590	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
K	Cast Iron			H	ACK300	390-660	0.004-0.010	0.002-0.011	0.004-0.013	0.005-0.014
	Ductile Cast Iron			H	ACK300	300-490	0.004-0.010	0.002-0.011	0.004-0.013	0.005-0.014
S	Exotic Alloys (Heat Resistant Alloy, Super Alloy, Ti Alloy, etc.)		200	G	ACP300	80-230	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
N	Aluminium Alloy			G	DL1500	660-1050	0.002-0.007	0.002-0.007	0.002-0.007	0.003-0.008
	Copper Alloy			G	DL1500	590-920	0.002-0.007	0.002-0.007	0.002-0.007	0.003-0.008

Notes About Mounting Inserts (PDL type)



PDL type: Inserts can be used on either the centre or the outside.
Inserts used on the outside cannot be used in the centre. Similarly, inserts used in the centre cannot be used on the outside.

PCT type: 2 corners can be used only for the outer inserts.

Identification Information

PCT, PDL Type Identification

PCT 250 D3 S25

- 250: Tool Diameter (ø25.0)
- D3: Max Depth L/D (3D)
- S25: Shank Size (ø25.0)

PCT, PDL Type Insert Identification

WDXT 07 35 06 -G

- 07: Width Across Flats (7.5)
- 35: Thickness x 10 (3.5)
- 06: Corner Radius x 10 (R0.6)
- -G: Breaker Type

2XD, 3XD, 4XD & 5XD-*INCH*
PDL / PCT Type

Recommended Cutting Conditions PDL 4XD

	Work Piece		Hardness HB	Recommended Breaker	Recommended Insert Grade	v_c Cutting Speed (sfm)	*f* Feed Rate (ipt) <Min.-Max.> ø0.625"	ø0.75",ø1.000"	ø1.250"	ø1.500"
P	Steel, Carbon Steel	A283 and similar Structural Steels	125	G	ACP300	390-790	0.002-0.004	0.002-0.004	0.002-0.004	0.002-0.005
		1015 Steel	125	L	ACP300	430-720	0.002-0.004	0.002-0.004	0.002-0.004	0.002-0.005
		1045 Steel	190	G	ACP300	330-660	0.003-0.008	0.003-0.008	0.003-0.009	0.004-0.009
		1045 Steel (Hardened)	250	G	ACP300	260-520	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
		1075 Steel	270	G	ACP300	330-520	0.003-0.007	0.003-0.007	0.003-0.008	0.004-0.009
		1075C Steel (Hardened)	300	G	ACP300	230-460	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
	Low Alloy Steel	4100, 4300 and 8600 Steels	180	L	ACP300	330-590	0.002-0.005	0.002-0.005	0.002-0.005	0.002-0.006
		4100, 4300 and 8600 Steels (Hardened)	275	G	ACP300	260-520	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
		4100, 4300 and 8600 Steels (Hardened)	300	G	ACP300	250-460	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
		4100, 4300 and 8600 Steels (Hardened)	350	G	ACP300	200-360	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
	High Alloy Steel	A2, D2 and other Tool and Die Steels	200	G	ACP300	330-520	0.003-0.008	0.003-0.008	0.003-0.009	0.004-0.009
		A2, D2 and other Tool and Die Steels (Hardened)	325	G	ACP300	260-390	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
M	Stainless Steel	403 and other Martensitic and Ferritic Stainlesses	200	G	ACP300	330-590	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
		403 and other Martensitic Stainlesses (Hardened)	240	G	ACP300	300-490	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
		304, 316 and other Austenitic Stainlesses	180	G	ACP300	330-590	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
K	Cast Iron			H	ACK300	390-660	0.004-0.010	0.002-0.011	0.004-0.013	0.005-0.014
	Ductile Cast Iron			H	ACK300	300-490	0.004-0.010	0.002-0.011	0.004-0.013	0.005-0.014
S	Exotic Alloys (Heat Resistant Alloy, Super Alloy, Ti Alloy, etc.)		200	G	ACP300	80-230	0.002-0.006	0.002-0.006	0.002-0.006	0.003-0.007
N	Aluminium Alloy			G	DL1500	660-1050	0.002-0.007	0.002-0.007	0.002-0.007	0.003-0.008
	Copper Alloy			G	DL1500	590-920	0.002-0.007	0.002-0.007	0.002-0.007	0.003-0.008

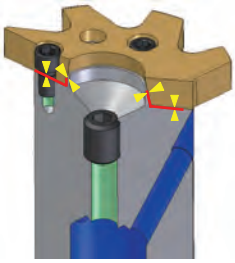
Recommended Cutting Conditions PDL 5XD

	Work Piece		Hardness HB	Recommended Breaker	Recommended Insert Grade	v_c Cutting Speed (sfm)	*f* Feed Rate (ipt) <Min.-Max.> ø0.625"	ø0.75",ø1.000"	ø1.250"	ø1.500"
P	Steel, Carbon Steel	A283 and similar Structural Steels	125	G	ACP300	390-790	0.002-0.004	0.002-0.004	0.002-0.004	0.002-0.004
		1015 Steel	125	L	ACP300	430-720	0.002-0.003	0.002-0.003	0.002-0.003	0.002-0.004
		1045 Steel	190	G	ACP300	330-660	0.003-0.006	0.003-0.006	0.003-0.007	0.004-0.007
		1045 Steel (Hardened)	250	G	ACP300	260-520	0.002-0.004	0.002-0.004	0.002-0.005	0.002-0.006
		1075 Steel	270	G	ACP300	330-520	0.003-0.006	0.003-0.006	0.003-0.006	0.004-0.007
		1075C Steel (Hardened)	300	G	ACP300	230-460	0.002-0.004	0.002-0.004	0.002-0.005	0.002-0.005
	Low Alloy Steel	4100, 4300 and 8600 Steels	180	L	ACP300	330-590	0.002-0.004	0.002-0.004	0.002-0.004	0.002-0.004
		4100, 4300 and 8600 Steels (Hardened)	275	G	ACP300	260-520	0.002-0.004	0.002-0.004	0.002-0.005	0.002-0.005
		4100, 4300 and 8600 Steels (Hardened)	300	G	ACP300	250-460	0.002-0.004	0.002-0.004	0.002-0.005	0.002-0.005
		4100, 4300 and 8600 Steels (Hardened)	350	G	ACP300	200-360	0.002-0.004	0.002-0.004	0.002-0.005	0.002-0.005
	High Alloy Steel	A2, D2 and other Tool and Die Steels	200	G	ACP300	330-520	0.003-0.006	0.003-0.006	0.003-0.007	0.004-0.007
		A2, D2 and other Tool and Die Steels (Hardened)	325	G	ACP300	260-390	0.002-0.004	0.002-0.004	0.002-0.005	0.002-0.006
M	Stainless Steel	403 and other Martensitic and Ferritic Stainlesses	200	G	ACP300	330-590	0.002-0.004	0.002-0.004	0.002-0.005	0.002-0.006
		403 and other Martensitic Stainlesses (Hardened)	240	G	ACP300	300-490	0.002-0.004	0.002-0.004	0.002-0.005	0.002-0.006
		304, 316 and other Austenitic Stainlesses	180	G	ACP300	330-590	0.002-0.004	0.002-0.004	0.002-0.005	0.002-0.006
K	Cast Iron			H	ACK300	390-660	0.003-0.008	0.004-0.009	0.004-0.010	0.004-0.011
	Ductile Cast Iron			H	ACK300	300-490	0.003-0.008	0.004-0.009	0.004-0.010	0.004-0.011
S	Exotic Alloys (Heat Resistant Alloy, Super Alloy, Ti Alloy, etc.)		200	G	ACP300	80-230	0.002-0.004	0.002-0.004	0.002-0.005	0.002-0.006
N	Aluminium Alloy			G	DL1500	660-1050	0.002-0.006	0.002-0.006	0.002-0.006	0.002-0.007
	Copper Alloy			G	DL1500	590-920	0.002-0.006	0.002-0.006	0.002-0.006	0.002-0.007

- Characteristics
  - Achieves efficiency through high speed, high feeding ability!! (v_C=50 to 200m/min, f=0.4 to 1.0mm/rev)

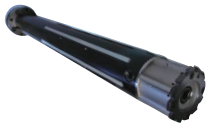
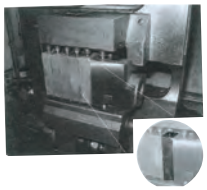
  · Compatibility with a wide range of cutting conditions allows less strict cutting conditions and coolant control
  · Minimal cut edge length design eliminates biting and tearing for improved quality and reliability
  Indexable cut edge design improves reliability of quality and life
  · Cut edge diameters available from ø11.9 to ø140.6 mm

- Easy insert replacement
- Flexible tool overhang lengths possible by combining the modular holder/arbor and holder with correction mechanism
- Can be used as a self-guiding tool with special guide pad holder



Positioning based on HSK taper has two points of contact with radial runout accuracy < 4 µm and face contact guarantees excellent power transmission

■ Application Examples

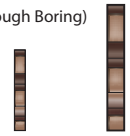
Tool Type					
Work	 Connection rod	 Engine case	 Universal joint yoke	 Crank case, bearing stage	 Bearing case
Work Material	S50C or equivalent (260 to 310HB)	FC200 (190HB)	CK45 S50C or equivalent	AlMgSi17/ FC200	FCD400
Bore ø (mm)	ø17.017	ø25.159	ø24 F7	ø65 H6	ø32.984
Surface Roughness max Ra/Rz	16	7	10	16	10
No. of Teeth	6	8	8	12	8
Lap Speed v_c (m/min)	250	23	127	120	320
Spindle Speed (min^{-1})	4,683	293	1,685	588	3,100
Feed Rate f_z (mm/t)	0.14	0.085	0.16	0.15	0.20
Feed Rate v_f (mm/min)	3,934	199	2,164	1,058	4,941
Depth of Cut a_p (mm/radius)	0.225	0.15	0.15	0.15	0.15
Wet/ Dry	Emulsion Type	Dry	Emulsion Type	Emulsion Type	MQL
Life, etc	1.25 efficiency	13,000 holes	7,500 pcs	160 pcs	90 Set

■SumiReamer SR Type Configurations

①

Insert

●SRG Type
(For Stop/Through Boring)

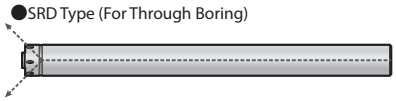


●SRL Type
(For Through Boring)

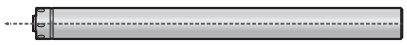
Diameter：φ11.900 to φ140.600mm

Toolholder

●SRD Type (For Through Boring)



●SRB Type (For Stop Boring)

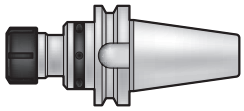


Applicable Diameter Range：φ11.900 to φ35.600mm
Shank Length：100 to 274mm

Insert Run-Out Adjustment Mechanism

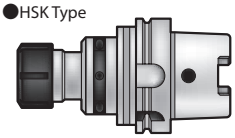
Arbor

●BT/A Type



Taper Size：40 to 50

●HSK Type

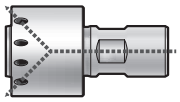


Taper Size：50 to 100

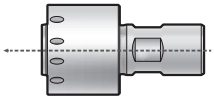
②

Head

●SRKG Type (For Through Boring)



●SRKB Type (For Stop Boring)

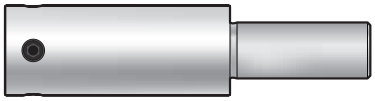


Applicable Diameter Range：
φ35.601 to φ140.600mm
Head Length：30 to 60mm

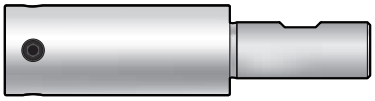
Insert Run-Out Adjustment Mechanism

Shank

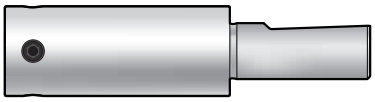
●SRA Type



ZS(Cylindrical Shank) Type : ZS-20/25/32/40



WD(Weldon Shank) Type : WD-20/25/32/40

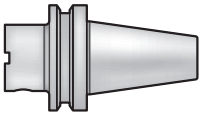


WN(Whistle Notch Shank) Type : WN-20/25/32/40

Applicable Diameter Range：φ35.601 to φ140.600mm
Shank Length：80 to 160mm

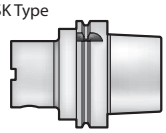
Arbor

●BT/A Type



Taper Size：40 to 50

●HSK Type

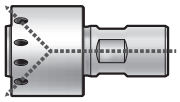


Taper Size：50 to 100

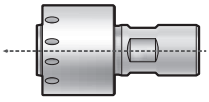
③

Head

●SRKG Type (For Through Boring)



●SRKB Type (For Stop Boring)

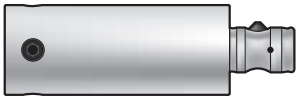


Applicable Diameter Range：
φ35.601 to φ140.600mm
Head Length：30 to 60mm

Insert Run-Out Adjustment Mechanism

Shank

●SRA Type

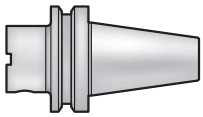


BM(Beta Module Shank) Type : BM-32/40/50/63

Applicable Diameter Range：φ35.601 to φ140.600mm
Shank Length：80 to 160mm

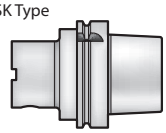
Arbor

●BT/A Type



Taper Size：40 to 50

●HSK Type

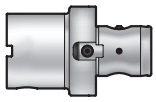


Taper Size：50 to 100

⚠ Check Sizes
When using a BM (Beta Module) type shank, choose a matching standard size.

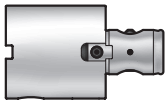
Extensions

●B12 Type



Shank Length：40 to 75mm

●B13 Type



Shank Length：35 to 180mm

Multiple extensions can be connected together
When connecting multiple extensions, it is recommended to consider rigidity and use longer shank sizes so that the total number of extensions is as low as possible.

Sumi Reamer SR Type Insert : SRG Type

Fig 1

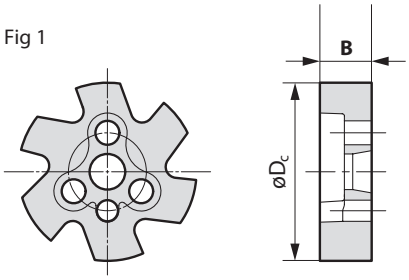
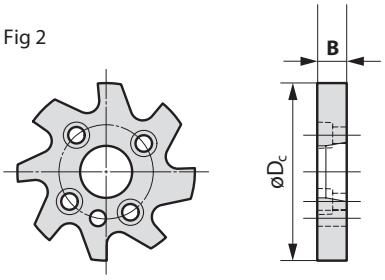
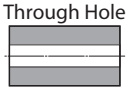


Fig 2

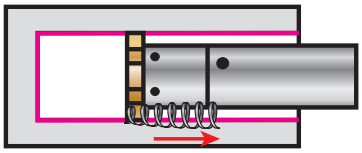


Stop Hole

Through Hole

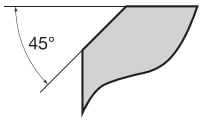


Conceptual Image of Chip Evacuation



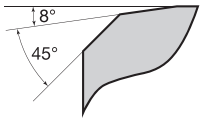
Chips Evacuated Toward Front

A01 Type



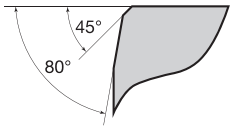
Standard Type

C01 Type



Emphasis on Surface Roughness

S02 Type



Emphasis on Direct Line

SR Type Inserts

■ Japan Stock Items (SRG Type)

Cat. No.	Stock	★iameter ø★c	Tolerance	Thickness B	No. of Teeth z
SRG 12.0H7-A01-F0512R1	★	ø12	H7	4.3	6
SRG 13.0H7-A01-F0512R1	★	ø13	H7	4.3	6
SRG 14.0H7-A01-F0512R1	★	ø14	H7	4.3	6
SRG 15.0H7-A01-F0512R1	★	ø15	H7	4.3	6
SRG 16.0H7-A01-F0512R1	★	ø16	H7	4.3	6
SRG 17.0H7-A01-F0512R1	★	ø17	H7	4.3	6
SRG 18.0H7-A01-F0512R1	★	ø18	H7	4.3	6
SRG 19.0H7-A01-F0512R1	★	ø19	H7	4.3	6
SRG 20.0H7-A01-F0512R1	★	ø20	H7	4.3	6
SRG 21.0H7-A01-F0512R1	★	ø21	H7	4.3	6
SRG 22.0H7-A01-F0512R1	★	ø22	H7	4.3	6
SRG 23.0H7-A01-F0512R1	★	ø23	H7	4.3	6
SRG 24.0H7-A01-F0512R1	★	ø24	H7	4.3	8
SRG 25.0H7-A01-F0512R1	★	ø25	H7	4.3	8
SRG 26.0H7-A01-F0512R1	★	ø26	H7	4.3	8
SRG 27.0H7-A01-F0512R1	★	ø27	H7	4.3	8
SRG 28.0H7-A01-F0512R1	★	ø28	H7	4.3	8
SRG 29.0H7-A01-F0512R1	★	ø29	H7	4.3	8
SRG 30.0H7-A01-F0512R1	★	ø30	H7	4.3	8

■ Order Items (Made-to-order)

Diameter Range øD_c	Thickness B	No. of Teeth z	Order Number
ø11.900 to ø15.600	4.3	6	SRG… (See below) or SRL… (See below)
ø15.601 to ø18.600	4.3	6	
ø18.601 to ø23.600	4.3	6	
ø23.601 to ø28.600	4.3	8	
ø28.601 to ø35.600	4.3	8	
ø35.601 to ø43.600	4.3	8	
ø43.601 to ø51.600	4.3	10	
ø51.601 to ø60.600	4.3	10	
ø60.601 to ø80.600	4.3	12	
ø80.601 to ø106.600	4.3	12	
ø106.601 to ø120.600	5.3	12	
ø120.601 to ø140.600	5.3	12	

SRG (Special) and SRL (Special) are made-to-order items.

■ SR Type Reamer Insert Identification

Specifying Inserts Using Work Hole Diameter Tolerance

The actual desired reamer diameter will be on the upper limit side of the median work tolerance, and will differ depending on diameter/tolerance range/grade. Please contact us for details.

SR G 18.2 + 20 - 10 - A01 M1 - F05 12R 1
1 2 3 4 5 6 7 8 9

1. SR Type
2. G = Straight, L = Lefthand helix
3. Work Hole Diameter(mm)
4. Tolerance (µm) +/- or standard (ex. H7)
5. Approach Angle Code
6. Nano Finishing
7. Grade Symbol
8. Coating Code
9. Coating Thickness Code: 1 = Thin, 2 = Thick

Specifying Inserts Using Desired Reamer Diameter

By adding a "Q" after the diameter, it is possible to specify exact desired reamer dimensions. Uncoated types are available within ±2µ, thin-layer coated types within ±3µ, and thick-layer coated types within ±4µ.

SR L 18.2 Q + 3 - 3 - A01 M1 - F05 12R 1
1 2 3 4 5 6 7 8 9

1. SR Type
2. G = Straight, L = Lefthand helix
3. Work Hole Diameter(mm)
4. Tolerance (µm) +/-
5. Approach Angle Code
6. Nano finishing
7. Grade Symbol
8. Coating Code
9. Coating Thickness Code: 1 = Thin, 2 = Thick

Sumi Reamer SR Type Insert : SRL Type

Fig 1

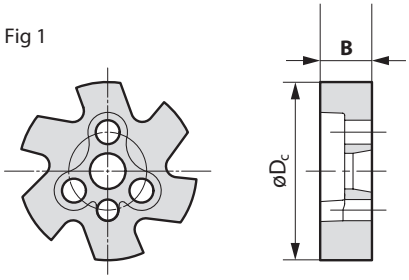
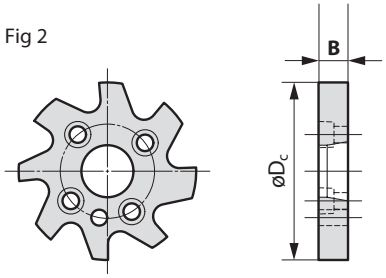
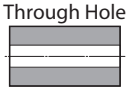


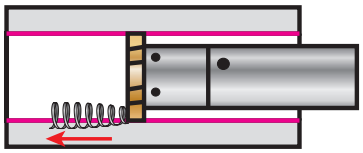
Fig 2



Through Hole

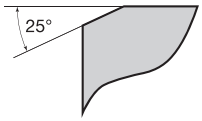


Conceptual Image of Chip Evacuation



Chips Evacuated Toward Back

B01 Type



For Steel Through-Holes

SR Type Inserts

■ Japan Stock Items (SRL Type)

Cat. No.	Stock	★iameter ø★c	Tolerance	Thickness B	No. of Teeth z
SRL 12.0H7-A01-F0512R1	★	ø12	H7	4.3	6
SRL 13.0H7-A01-F0512R1	★	ø13	H7	4.3	6
SRL 14.0H7-A01-F0512R1	★	ø14	H7	4.3	6
SRL 15.0H7-A01-F0512R1	★	ø15	H7	4.3	6
SRL 16.0H7-A01-F0512R1	★	ø16	H7	4.3	6
SRL 17.0H7-A01-F0512R1	★	ø17	H7	4.3	6
SRL 18.0H7-A01-F0512R1	★	ø18	H7	4.3	6
SRL 19.0H7-A01-F0512R1	★	ø19	H7	4.3	6
SRL 20.0H7-A01-F0512R1	★	ø20	H7	4.3	6
SRL 21.0H7-A01-F0512R1	★	ø21	H7	4.3	6
SRL 22.0H7-A01-F0512R1	★	ø22	H7	4.3	6
SRL 23.0H7-A01-F0512R1	★	ø23	H7	4.3	6
SRL 24.0H7-A01-F0512R1	★	ø24	H7	4.3	8
SRL 25.0H7-A01-F0512R1	★	ø25	H7	4.3	8
SRL 26.0H7-A01-F0512R1	★	ø26	H7	4.3	8
SRL 27.0H7-A01-F0512R1	★	ø27	H7	4.3	8
SRL 28.0H7-A01-F0512R1	★	ø28	H7	4.3	8
SRL 29.0H7-A01-F0512R1	★	ø29	H7	4.3	8
SRL 30.0H7-A01-F0512R1	★	ø30	H7	4.3	8

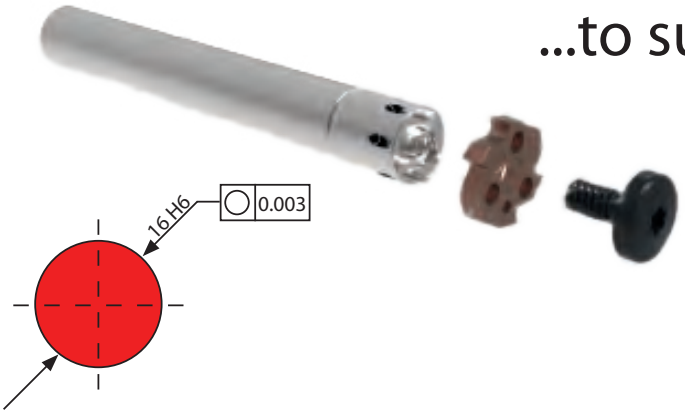
■ Recommended Cutting Conditions

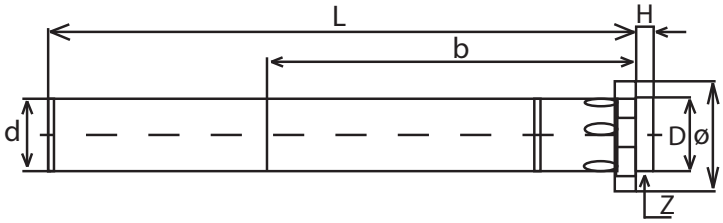
(Min. - Max.)

ISO	Work Material	Helix	Adopted Grades	Grade	Depth of Cut a_p (mm/radius)			Cutting Speed v_c (m/min)	Feed Rate f_z (mm/t)
					Below ø20	ø20 to ø35	ø35 or more		
P	Carbon Steel	G (Straight)	F0512R1	Micro-Fine Grained Carbide + PVD	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	80 to 220	0.10 to 0.25
		L (Lefthand Helix)			0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	100 to 220	0.15 to 0.35
		G (Straight)	T1200A	Cermet	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	120 to 250	0.10 to 0.25
		L (Lefthand Helix)			0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	120 to 250	0.15 to 0.35
	Aloy Steel	G (Straight)	F0512R1	Micro-Fine Grained Carbide + PVD	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	60 to 180	0.06 to 0.20
		L (Lefthand Helix)			0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	60 to 180	0.10 to 0.22
		G (Straight)	T1200A	Cermet	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	70 to 200	0.08 to 0.20
		L (Lefthand Helix)			0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	70 to 200	0.12 to 0.25
	Die Steel	G (Straight)	F0512R1	Micro-Fine Grained Carbide + PVD	0.05 to 0.10	0.08 to 0.15	0.10 to 0.20	15 to 60	0.06 to 0.20
	Tool Steels	G (Straight)	F0512R1	Micro-Fine Grained Carbide + PVD	0.05 to 0.10	0.08 to 0.15	0.10 to 0.20	15 to 30	0.04 to 0.15
M	Stainless Steel	G (Straight)	F0512R1	Micro-Fine Grained Carbide + PVD	0.05 to 0.10	0.08 to 0.15	0.08 to 0.20	15 to 60	0.06 to 0.20
K	Cast Iron	G (Straight)	F0512R1	Micro-Fine Grained Carbide + PVD	0.05 to 0.18	0.08 to 0.20	0.10 to 0.25	80 to 250	0.10 to 0.30
N	Non-Ferrous Metal	G (Straight)	F0510C	Micro-Fine Grained Carbide + DLC	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	100 to 250	0.10 to 0.30

NEW

...to support higher cutting forces





■ SRD INSERT HOLDER (Steel Body)

Cat. No.	Stock	Diameter	d	L	b	H	D	Z
SRD 16-10-100SD		ø11.900 to ø15.600	10	100	60	2.5	9.8	C00-90-22
SRD 16-10-160SD		ø11.900 to ø15.600	10	160	60	2.5	9.8	C00-90-22
SRD 19-12-115SD		ø15.601 to ø18.600	12	115	70	3.0	11.8	C00-90-23
SRD 19-12-185SD		ø15.601 to ø18.600	12	185	70	3.0	11.8	C00-90-23
SRD 24-16-128SD		ø18.601 to ø23.600	16	128	80	4.0	15.8	C00-90-24
SRD 24-16-208SD		ø18.601 to ø23.600	16	208	80	4.0	15.8	C00-90-24
SRD 29-20-145SD		ø23.601 to ø28.600	20	145	95	4.0	15.8	C00-90-24
SRD 29-20-240SD		ø23.601 to ø28.600	20	240	95	4.0	15.8	C00-90-24
SRD 36-25-170SD		ø28.601 to ø35.600	25	170	110	4.0	24.5	C00-90-25
SRD 36-25-274SD		ø28.601 to ø35.600	25	274	110	4.0	24.5	C00-90-25

■ SRB INSERT HOLDER (Steel Body)

Cat. No.	Stock	Diameter	d	L	b	H	D	Z
SRB 16-10-100SD		ø11.900 to ø15.600	10	100	60	2.5	9.8	C00-90-22
SRB 16-10-160SD		ø11.900 to ø15.600	10	160	60	2.5	9.8	C00-90-22
SRB 19-12-115SD		ø15.601 to ø18.600	12	115	70	3.0	11.8	C00-90-23
SRB 19-12-185SD		ø15.601 to ø18.600	12	185	70	3.0	11.8	C00-90-23
SRB 24-16-128SD		ø18.601 to ø23.600	16	128	80	4.0	15.8	C00-90-24
SRB 24-16-208SD		ø18.601 to ø23.600	16	208	80	4.0	15.8	C00-90-24
SRB 29-20-145SD		ø23.601 to ø28.600	20	145	95	4.0	15.8	C00-90-24
SRB 29-20-240SD		ø23.601 to ø28.600	20	240	95	4.0	15.8	C00-90-24
SRB 36-25-170SD		ø28.601 to ø35.600	25	170	110	4.0	24.5	C00-90-25
SRB 36-25-274SD		ø28.601 to ø35.600	25	274	110	4.0	24.5	C00-90-25

■ SRD INSERT HOLDER (Carbide Body)

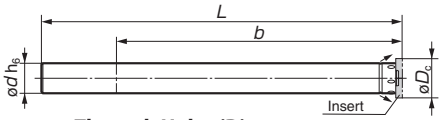
Cat. No.	Stock	Diameter	d	L	b	H	D	Z
SRD 16-10-160HMSD		ø11.900 to ø15.600	10	160	60	2.5	9.8	C00-90-22
SRD19-12-195HMSD		ø15.601 to ø18.600	12	185	70	3.0	11.8	C00-90-23
SRD 24-16-208HMSD		ø18.601 to ø23.600	16	208	80	4.0	15.8	C00-90-24
SRD 29-20-240HMSD		ø23.601 to ø28.600	20	240	95	4.0	15.8	C00-90-24
SRD 36-25-274HMSD		ø28.601 to ø35.600	25	274	110	4.0	24.5	C00-90-25

■ SRB INSERT HOLDER (Carbide Body)

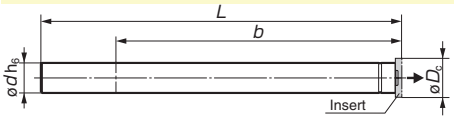
Cat. No.	Stock	Diameter	d	L	b	H	D	Z
SRB 16-10-160HMSD		ø11.900 to ø15.600	10	160	60	2.5	9.8	C00-90-22
SRB19-12-195HMSD		ø15.601 to ø18.600	12	185	70	3.0	11.8	C00-90-23
SRB 24-16-208HMSD		ø18.601 to ø23.600	16	208	80	4.0	15.8	C00-90-24
SRB 29-20-240HMSD		ø23.601 to ø28.600	20	240	95	4.0	15.8	C00-90-24
SRB 36-25-274HMSD		ø28.601 to ø35.600	25	274	110	4.0	24.5	C00-90-25

SUMIREAMER SR SERIES

■ Insert Holder



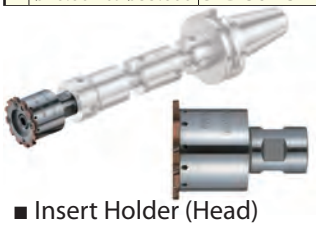
Through Holes (D)



Stop Hole (B)

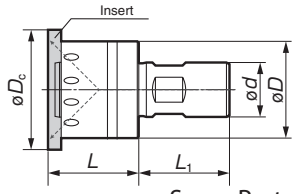
■ Spare Parts

	Reamer Diameter øDc Range	Cat. No. Through Holes (D) Cat. No.	Stock	Stop Hole (B) Cat. No.	Stock	Carbide Shank SRD Type Cat. No.	Stock	Carbide Shank SRB Type Cat. No.	Stock	Dimensions ød h6	L	b	Cap Screw	Wrench
Short	ø11.900 to ø15.600	**SRD 16-10-100**	★	**SRB 16-10-100**	★					10	100	60	C00-90-00-(3x)	G00-20-01
	ø15.601 to ø18.600	**SRD 19-12-115**	★	**SRB 19-12-115**	★					12	115	70	C00-90-00-(3x)	G00-20-01
	ø18.601 to ø23.600	**SRD 24-16-128**	★	**SRB 24-16-128**	★					16	128	80	C00-90-01-(3x)	G00-20-02
	ø23.601 to ø28.600	**SRD 29-20-145**	★	**SRB 29-20-145**	★					20	145	95	C00-90-01-(4x)	G00-20-02
	ø28.601 to ø35.600	**SRD 36-25-170**	★	**SRB 36-25-170**	★					25	170	120	C00-90-01-(4x)	G00-20-02
Long	ø11.900 to ø15.600	**SRD 16-10-160**		**SRB 16-10-160**		**SRD 16-10-160HM**		**SRB 16-10-160HM**		10	160	120	C00-90-00-(3x)	G00-20-01
	ø15.601 to ø18.600	**SRD 19-12-185**		**SRB 19-12-185**		**SRD 19-12-185HM**		**SRB 19-12-185HM**		12	185	140	C00-90-00-(3x)	G00-20-01
	ø18.601 to ø23.600	**SRD 24-16-208**		**SRB 24-16-208**		**SRD 24-16-208HM**		**SRB 24-16-208HM**		16	208	160	C00-90-01-(3x)	G00-20-02
	ø23.601 to ø28.600	**SRD 29-20-240**		**SRB 29-20-240**		**SRD 29-20-240HM**		**SRB 29-20-240HM**		20	240	190	C00-90-01-(4x)	G00-20-02
	ø28.601 to ø35.600	**SRD 36-25-274**		**SRB 36-25-274**		**SRD 36-25-274HM**		**SRB 36-25-274HM**		25	274	224	C00-90-01-(4x)	G00-20-02

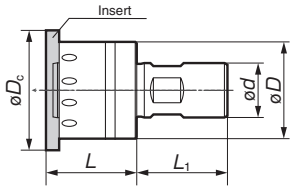


■ SRK Type

SRKG Type (For Through Boring)



SRKB Type (For Stop Boring)



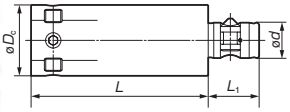
■ Insert Holder (Head)

■ Spare Parts

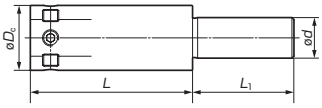
Reamer Diameter øDc Range	Cat. No. SKRG Type Cat. No.	Stock	SRKB Type Cat. No.	Stock	Dimensions D	d	L	Cap Screw (1)	Wrench (2)	Cap Screw (3)	Wrench (4)
ø35.601 to ø43.600	**SRKG 44-32-18-030**		**SRKB 44-32-18-030**		32	18	30	C00-90-02-(4x)	G00-20-02	C00-26-23	G00-02-07
ø43.601 to ø51.600	**SRKG 52-39-20-035**		**SRKB 52-39-20-035**		39	20	35	C00-90-02-(5x)	G00-20-02	C00-26-38	G00-02-07
ø51.601 to ø60.600	**SRKG 61-46-25-040**		**SRKB 61-46-25-040**		46	25	40	C00-90-02-(5x)	G00-20-02	C00-24-26	G00-02-08
ø60.601 to ø80.600	**SRKG 81-56-32-050**		**SRKB 81-56-32-050**		56	32	50	C00-90-04-(4x)	G00-20-03	C00-26-37	G00-02-09
ø80.601 to ø100.600	**SRKG 101-76-40-060**		**SRKB 101-76-40-060**		76	40	60	C00-90-04-(4x)	G00-20-03	C00-24-31	G00-02-16
ø100.601 to ø120.600	**SKRG 121-76-40-060**		**SKRB 121-76-40-060**		76	40	60	C00-90-04-(4x)	G00-20-03	C00-24-31	G00-02-16
ø120.601 to ø140.600	**SKRG 121-76-40-060**		**SKRB 121-76-40-060**		76	40	60	C00-90-04-(4x)	G00-20-03	C00-24-31	G00-02-16

■ **SRA Type**

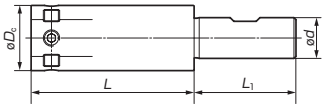
BM (Beta Module Shank) Type



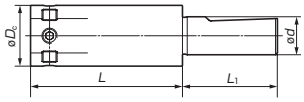
ZS (Cylindrical Shank) Type



WD (Weldon Shank) Type



WN(Whistle Notch Shank) Type



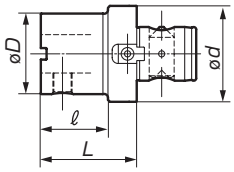
■ Holder (with diameter correction mechanism)

■ Spare Parts

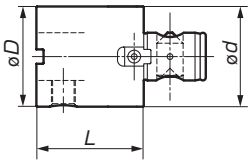
Reamer Diameter øDc Range	Cat. No. Through Holes (D) Cat. No.	Stock	Dimensions D	d	L	Cap Screw (1)	Wrench (2)	Clamp (3)	Screw (4)
ø35.601 to ø43.600	**SRA 44-32-BM32-080**		32	BM-32	80	C00-90-08-(4x)	G00-02-05	Z00-32-21	Z00-32-23
	SRA 44-32-ZS20-080			ZS-20					
	SRA 44-32-WD20-080			WD-20					
	SRA 44-32-WN20-080			WN-20					
ø43.601 to ø51.600	**SRA 52-39-BM40-100**		39	BM-40	100	C00-90-10-(4x)	G00-02-06	Z00-40-21	Z00-40-23
	SRA 52-39-ZS25-100			ZS-25					
	SRA 52-39-WD25-100			WD-25					
	SRA 52-39-WN25-100			WN-25					
ø51.601 to ø60.600	**SRA 61-46-BM50-120**		46	BM-50	120	C00-90-10-(4x)	G00-02-06	Z00-50-21	Z00-50-23
	SRA 61-46-ZS32-120			ZS-32					
	SRA 61-46-WD32-120			WD-32					
	SRA 61-46-WN32-120			WN-32					
ø60.601 to ø80.600	**SRA 81-56-BM50-140**		56	BM-50	140	C00-90-12-(4x)	G00-02-07	Z00-50-21	Z00- 50-23
	SRA 81-56-BM50-080				80				
	SRA 81-56-ZS40-140			ZS-40	140				
	SRA 81-56-ZS40-080				80				
	SRA 81-56-WD40-140			WD-40	140				
	SRA 81-56-WD40-080				80				
	SRA 81-56-WN40-140			WN-40	140				
	SRA 81-56-WN40-080				80				
ø80.601 to ø140.600	**SRA 101-76-BM63-160**		76	BM-63	160	C00-90-16-(4x)	G00-02-08	Z00-63-21	Z00-63-23
	SRA 101-76-BM63-100				100				
	SRA 101-76-ZS40-100			ZS-40	160				
	SRA 101-76-ZS40-160				100				
	SRA 101-76-WD40-160			WD-40	160				
	SRA 101-76-WD40-100				100				
	SRA 101-76-WN40-160			WN-40	160				
	SRA 101-76-WN40-100				100				

Indexable Reamers

■ B12 Type



■ B13 Type

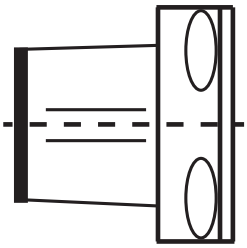


■ Extensions

Cat. No.	øD	ød	L	l	Weight (kg)
B12-32-25-040	**25**	32	40	25	0.2
B12-40-25-040	**25**	42	40	25	0.3
32-045	**32**	42	45	30	0.3
B12-50-40-050	**42**	50	50	35	0.5
B12-63-25-045	**25**	63	45	25	0.7
32-050	**32**	63	50	30	0.9
40-055	**42**	63	55	35	1.1
B12-80-40-060	**42**	80	60	35	2.2
63-060	**63**	80	60	35	2.4
B12-100-40-060	**42**	100	60	35	3.1
63-060	**63**	100	60	35	3.3
80-075	**80**	100	75	50	3.5

Cat. No.	øD	ød	L	l	Weight (kg)
B13-25-25-045	**25**	25	45	–	0.2
070	**25**	25	70	–	0.3
B13-32-32-035	**32**	32	35	–	0.2
070	**32**	32	70	–	0.4
B13-40-40-045	**42**	42	45	–	0.4
070	**42**	42	70	–	0.7
B13-50-50-065	**50**	50	65	–	1.0
100	**50**	50	100	–	1.5
B13-63-63-060	**63**	63	60	–	1.3
125	**63**	63	125	–	2.9
B13-80-80-080	**80**	80	80	–	2.9
160	**80**	80	160	–	4.9
B13-100-100-080	**100**	100	80	–	4.9
180	**100**	100	180	–	10.9

Capto Holders



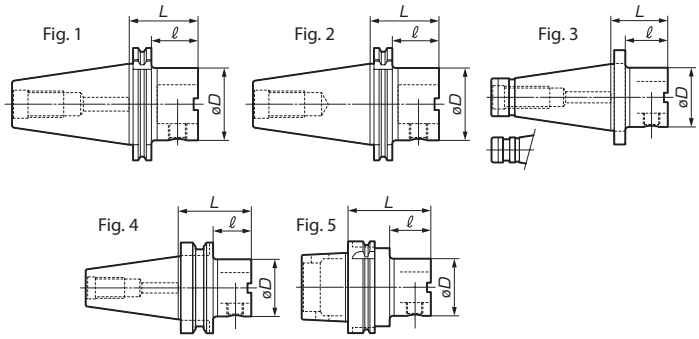
■ CAPTO Hydraulic Holders

Capto Style	Stock	d	L	kg
CAPTO C4		ø12	81	0.7
CAPTO C4		ø20	-	-
CAPTO C4		ø32	-	-
CAPTO C5		ø12	85	0.9
CAPTO C5		ø20	90	1.05
CAPTO C5		ø32	-	-
CAPTO C6		ø12	87	1.3
CAPTO C6		ø20	97	1.6
CAPTO C6		ø32	110	2.8

All Capto Holders available upon request

SUMIREAMER
SR SERIES

■ Arbor BETA Module



■ DIN 69871-A/D

Cat. No.	Stock	BETA No.	Taper Size	L	ℓ	D	kg	MCC	Fig.
BD10-40A-25-050		25	40	50	31	25	0.8	B25	1
BD10-40A-32-050		32	40	50	31	35	0.9	B32	
BD10-40A-40-035		40	40	35	16	42	0.9	B40	
BD10-40A-40-050		40	40	50	31	42	1.1	B40	
BD10-40A-63-065		63	40	65	46	63	1.5	B63	
BD10-40A-50-050		50	40	50	31	50	1.2	B50	
BD10-40A-63-090		63	40	90	70	63	2.0	B63	
BD10-50A-25-060		25	50	60	41	25	2.8	B25	
BD10-50A-32-060		32	50	60	41	32	2.9	B32	
BD10-50A-40-060		40	50	60	41	42	3.0	B40	
BD10-50A-50-060		50	50	60	41	50	3.2	B50	
BD10-50A-63-060		63	50	60	41	63	3.3	B63	
BD10-50A-80-070		80	50	70	51	80	4.0	B80	
BD10-50A-100-115		100	50	115	96	100	6.9	B100	

■ MAS-BT/A

Cat. No.	Stock	BETA No.	Taper Size	L	ℓ	D	kg	MCC	Fig.
BT10-40A-25-060		25	40	60	33	25	0.8	B25	4
BT10-40A-32-060		32	40	60	33	32	0.9	B32	
BT10-40A-40-028		40	40	28	1	42	0.9	B40	
BT10-40A-40-060		40	40	60	33	42	1.2	B40	
BT10-40A-50-060		50	40	60	33	50	1.3	B50	
BT10-40A-63-055		63	40	55	28	63	1.4	B63	
BT10-40A-63-070		63	40	70	43	63	1.7	B63	
BT10-50A-32-070		32	50	70	32	32	3.7	B32	
BT10-50A-40-070		40	50	70	32	42	3.9	B40	
BT10-50A-50-070		50	50	70	32	50	4.1	B50	
BT10-50A-63-080		63	50	80	42	63	4.3	B63	
BT10-50A-80-100		80	50	100	62	80	5.5	B80	
BT10-50A-100-110		100	50	110	72	100	7.0	B100	

■ DIN 69871-B

Cat. No.	Stock	BETA No.	Taper Size	L	ℓ	D	kg	MCC	Fig.
BD10-40B-25-050		25	40	50	31	25	0.8	B25	2
BD10-40B-32-050		32	40	50	31	35	0.9	B32	
BD10-40B-40-035		40	40	35	16	42	0.9	B40	
BD10-40B-40-050		40	40	50	31	42	1.1	B40	
BD10-40B-50-065		50	40	50	31	50	1.2	B50	
BD10-40B-63-050		63	40	65	46	63	1.5	B63	
BD10-40B-63-090		63	40	90	70	63	2.0	B63	
BD10-50B-25-060		25	50	60	41	25	2.8	B25	
BD10-50B-32-060		32	50	60	41	32	2.9	B32	
BD10-50B-40-060		40	50	60	41	42	3.0	B40	
BD10-50B-50-060		50	50	60	41	50	3.2	B50	
BD10-50B-63-060		63	50	60	41	63	3.3	B63	
BD10-50B-80-070		80	50	70	51	80	4.0	B80	
BD10-50B-100-115		100	50	115	96	100	6.9	B100	

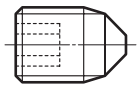
■ DIN 69893-A HSK (Coolant tube sold separately.)

Cat. No.	Stock	BETA No.	Taper Size	L	ℓ	D	kg	MCC	Fig.
BH10-50A-25-055		25	50	55	29	25	0.5	B25	5
BH10-50A-32-060		32	50	60	34	32	0.6	B32	
BH10-50A-40-065		40	50	65	39	42	0.7	B40	
BH10-63A-25-055		25	63	55	29	25	0.9	B25	
BH10-63A-32-060		32	63	60	34	32	1.0	B32	
BH10-63A-40-065		40	63	65	23	42	1.1	B40	
BH10-63A-50-070		50	63	70	44	50	1.5	B50	
BH10-63A-63-080		63	63	80	38	63	1.5	B63	
BH10-100A-40-080		40	100	80	35	42	2.3	B40	
BH10-100A-50-080		50	100	80	35	50	2.5	B50	
BH10-100A-63-080		63	100	80	35	63	2.8	B63	
BH10-100A-80-090		80	100	90	45	80	3.8	B80	
BH10-100A-100-100		100	100	100	55	100	4.0	B100	

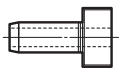
■ ISO-DIN 2080

Cat. No.	Stock	BETA No.	Taper Size	L	ℓ	D	kg	MCC	Fig.
BI10-40-40-035		40	40	35	23	42	0.7	B40	3
BI10-40-40-050		40	40	50	38	42	1.1	B40	
BI10-40-63-070		63	40	70	58	63	1.8	B63	
BI10-50-40-060		40	50	60	45	42	3.0	B40	
BI10-50-63-060		63	50	60	45	63	3.5	B63	
BI10-50-100-100		100	85	100	85	100	6.8	B100	

■ Spare Parts

Clamp BETA No.	
25	Z00-25-24
32	Z00-32-24
40	Z00-40-24
63	Z00-63-24
80	Z00-80-24
100	Z00-100-24

■ Coolant Tubes

Taper Size	
50	H00-50-01
63	H00-63-01
100	H00-100-01

■ Holders with Diameter Correction Mechanism

Fig. 1

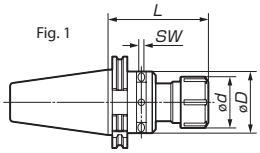


Fig. 2

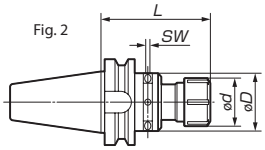
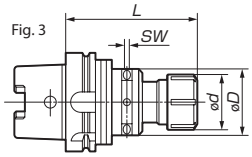


Fig. 3



■ DIN 69871-A/D-B

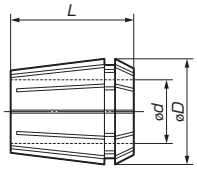
Cat. No. (L)	Stock	Taper Size	Size	Diameter Range	ød	øD	L	SW	Fig.
AAD60-40A-25-085		40	ER25	2.0 to 16.0	42	50	85	4	1
AAD60-40A-32-090		40	ER32	2.0 to 20.0	50	50	90	4	
AAD60-40A-40-115		40	ER40	3.0 to 26.0	63	60	115	4	
AAD60-50A-32-090		50	ER32	2.0 to 20.0	50	50	90	4	
AAD60-50A-40-100		50	ER40	3.0 to 26.0	63	60	100	4	

■ MAS-BT/A

AAT60-40A-25-090	★	40	ER25	2.0 to 16.0	42	50	90	4	2
AAT60-40A-32-100	★	40	ER32	2.0 to 20.0	50	50	100	4	
AAT60-40A-40-105	★	40	ER40	3.0 to 26.0	63	60	105	4	
AAT60-50A-32-110	★	50	ER32	2.0 to 20.0	50	50	110	4	
AAT60-50A-40-115	★	50	ER40	3.0 to 26.0	63	60	115	4	

■ ★IN 69893-A HSK (Coolant tube sold separately.)

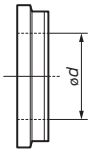
AAH60-40A-25-100	★	40	ER25	2.0 to 16.0	42	50	105	4	3
AAH60-40A-32-100	★	40	ER32	2.0 to 20.0	50	50	110	4	
AAH60-63A-25-090	★	63	ER25	2.0 to 16.0	42	50	90	4	
AAH60-63A-32-095	★	63	ER32	2.0 to 20.0	50	50	95	4	
AAH60-63A-40-125	★	63	ER40	3.0 to 26.0	63	60	125	4	
AAH60-100A-40-110	★	100	ER40	3.0 to 26.0	63	60	110	4	



■ Collet

Cat. No.	Size	øD	L
62-25-□□	ER25	26	35
62-32-□□	ER32	33	40
62-40-□□	ER40	41	46

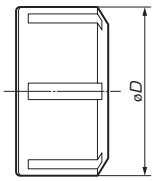
□□□ = ød
Ex. 1: ER25, d=12 ⇨ 62 25 12
These items are in stock in increments of 1 mm:
62-25- □□ from ø12 to ø16 mm
62-32- □□ from ø12 to ø20 mm
62-40- □□ from ø12 to ø26 mm.



■ Seal Disc

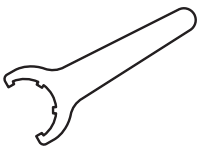
Cat. No.	Size	ød
20.107.41-□□□	ER25	3.0 to 16.0
20.107.51-□□□	ER32	3.0 to 20.0
20.107.61-□□□	ER40	3.0 to 26.0

□□□ = ød
Ex. 1: ER25, d=12 ⇨ 20.107.41 120
These items are in stock in increments of 1 mm:
20.107.41- □□□ from ø12 to ø16 mm
20.107.51- □□□ from ø12 to ø20 mm
20.107.61- □□□ from ø12 to ø26 mm.



■ Collet Cap

Cat. No.	Size	D	ød
20.107.410	ER25	42	M32 x 1.5
20.107.510	ER32	50	M40 x 1.5
20.107.610	ER40	63	M50 x 1.5



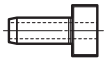
■ Tightening Wrench

Cat. No.	Size
00-05-05	ER25
00-05-02	ER32
00-05-03	ER40

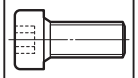
■ Torque Wrench

Wrench Cat. No.	Applicable Holder	Torx Hole	Torque Rating
G00-40-11	SR□ 16 / SR□ 19	T 6	0.9Nm
G00-40-12	SR□ 24 to SR□ 61	T 8	1.5Nm
G00-40-13	SR□ 81 / SR□ 101	T 15	3.5Nm

■ Coolant Tubes

Taper Size	
40	H00-40-01
63	H00-63-01
100	H00-100- 01

■ Spare Parts

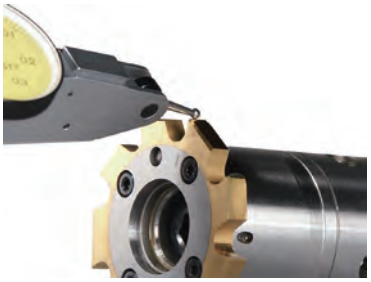


C00-96-16

■ SR Type Reamer Usage Instructions (Adjusting runout)

The runout at the cut edge of a reamer should be zero to obtain optimum boring precision. To correct runout in the holder or the machine's spindle, use of holders with a correction mechanism, hydro chucks, and shrink-fitting is recommended. Various methods can be used to measure runout on an SR type reamer. SR type reamers offer good runout repeatability so it is recommended that inserts be replaced without removing the shank holder from the spindle.

(1) High-accurate cutting edge runout measurement method (for measuring the arc land on the insert)
Measuring the lands immediately after the outer diameter of the insert has been chamfered eliminates all attachment errors. This allows for the most accurate runout measurement.



(2) Simplified measurement method (for measuring the short taper of the holder)
The short taper on the holder where the inserts are attached provides the easiest and most accurate measurement before attaching the inserts.

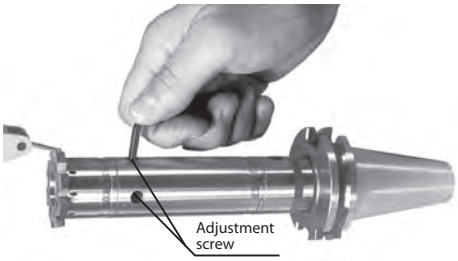
(3) Simplified measurement method (for measuring the outer diameter of the holder)
The high precision machined outer diameter of the shank holder provides a good estimate of the runout measurement.

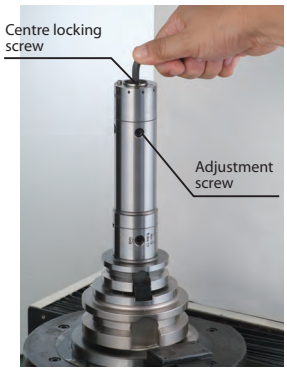
* Runout accuracy is higher in order of (1), (2) and (3).

■ Shank Holders with Correction Mechanism

Shank holders must have a correction mechanism when using reamers of ø35 mm or larger.
(Adjustment procedure)

(1) Tighten the centre locking screw to torque value A in the table below, then attach the insert and measure the runout of the cut edge.
(2) Verify the tooth where runout peaks and adjust with the adjustment screw.
(3) Repeat this adjustment for each tooth as necessary.
(4) Remove the adjusted insert, tighten the centre locking screw to torque value B in the table below, then re-attach the insert.





Recommended Tightening Torque for Center Locking Screw (N·m)

Size	A	B
SR044	25	32
SR052	25	32
SR061	40	55
SR081	65	85
SR101	95	120

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PRODUCTS

Pages 495-502

A.L.M.T. Corp.

Our PCD Reamers Make Efficient and High-speed Cutting Possible

Advantages Gained by Upgrading from a Carbide Reamer to a PCD Reamer

High Efficiency / Reduction of Tool Cost

- Improvement in tool life
- Improvement in machining accuracy
- Reduction of machining time
- Reduction of frequency of tool replacement

Features

1. Multistage machining can be done on one pass by using an integrated profiled step tool.
2. Long tool life with sharp cutting edge made by adopted grinding technology providing excellent sharpness and wear resistance compared to cemented carbide tools.
3. Excellent machining surfaces can be obtained by rapid feed even with cutting speeds at 500 m/min.
4. Stable cutting and sufficient performance when using emulsion type water-soluble coolant.
5. New mechanism that prevents various common machining troubles

Examples of troubles

- Vibration, chattering→Assurance of dynamic balance
- Built-up edge→Surface finishing to prevent built-up edge
- Clogging of tools with cutting chips→Chip breaker process

n from Carbide to PCD Reamer

fficient, accurate and high grade multi-step holes can be machined in a single process

High machining accuracy combined with mass-production at low cost is required for the processing of aluminum alloys for auto parts these days.Our PCD (Poly Crystalline Diamond) cutting tools achieve long tool life and high machining accuracy by constructing sharp cutting edges which use grinding technology applied to PCD with the resulting special feature that tool hardness is effectively more than 10 times that of carbide made tools.Longer life of PCD cutting tools improves productivity, reduces the frequency of tool replacement and machining cost.In addition, machining accuracy and discharge of cutting chips have been improved by cutting edge grinding technology and strengthening the breaker function. We, A.L.M.T. Corp., will respond to all requests from diversified automobile parts manufacturers as a pioneer manufacturer of diamond tools

《Reduction of Tooling Cost and Improvements in Productivity》

● Tool life

Work material	Carbide	PCD
ADC12 (Contains12%Si)	1	10～20
A390 (Contains18%Si)	1	20～

● Cutting machining time

(Test) Item	Carbide	PCD
Number of rotations S(min⁻¹)	2000	6000
Cutting speed V(m/min)	125	380
Feeding speed F(mm/min)	600	1800
Machining time	3 :	1
Tool size	∅20×4NT(Machining depth 20mm)	

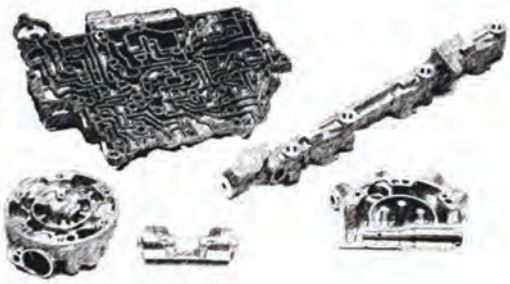
● Number of tool replacement

(Test) Item	Carbide	PCD
Number of tool replacement	10 times	once

Purposes Nonferrous metal (Aluminum alloy)

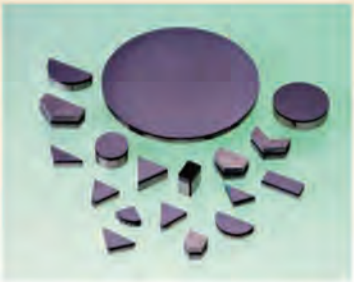
Machined components

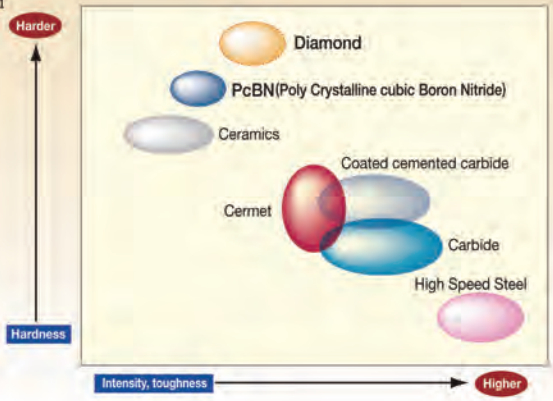
- Cylinder head
- Cylinder block
- Transmission/steering components
- Compressor components



The position of diamonds

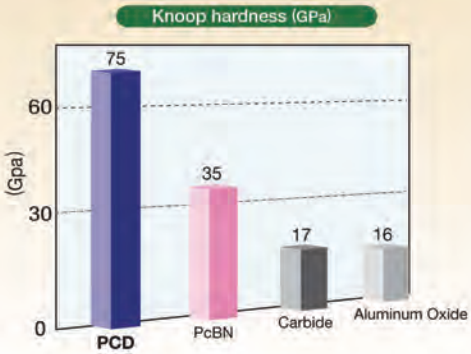
In the field of cutting tools, diamonds with excellent material features are in the limelight as the material that is expected to be applied for fine shape machining as well as various requests and issues in high grade and high efficient machining.

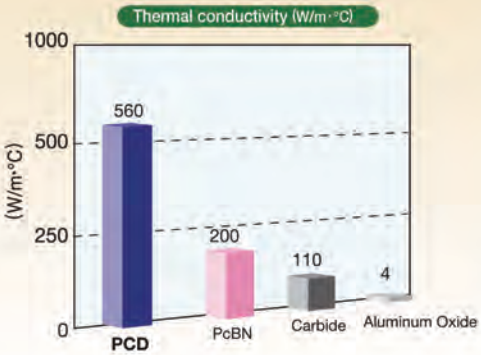




Material features of PCD (Poly Crystalline Diamond)

The features of PCD (Poly Crystalline Diamond) in poly crystalline cutting tool materials are as follows:
1. High hardness is high 2. High thermal conductivity is high 3. Coefficient of thermal expansion is small.
It has excellent thermal conductivity and hardness, that is required for cutting tools, compared to other tool materials.





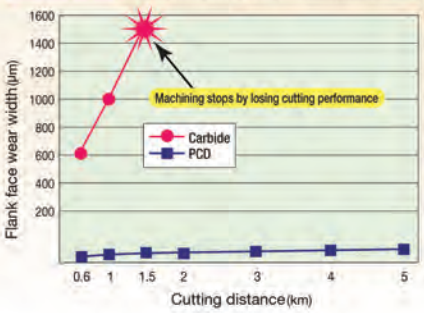
Comparison of cutting performance between PCD (Poly Crystalline Diamond) and carbide tools

Longer life than carbide by a ratio of 10 to 20 times

A390-T6 and ADC-12 that are widely used as a main material for automotive components had many problems such as grade of processing surface and running cost for machining with carbide cutting tools. PCD has cleared various problems, especially machining ADC-12 which is difficult to cut, due to its longer tool life and stable machining accuracy compared to carbide

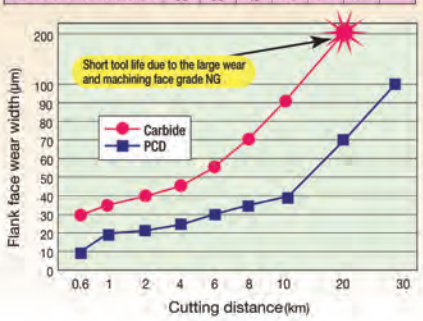
A390-T6 Cutting distance and flank face wear width

Cutting distance(km)	0.6	1.0	1.5	2.0	3.0	4.0	5.0
PCD flank face wear width(μm)	28	35	50	55	60	70	80
Carbide flank face wear width(μm)	600	1000	1500	Immeasurable			



ADC12Cutting distance and flank face wear width

Cutting distance(km)	0.6	1.0	2.0	6.0	10.0	20.0	30.0
PCD flank face wear width(μm)	10	20	22	30	40	70	100
Carbide flank face wear width(μm)	30	35	40	55	90	200	—



Data.1

Amazing accuracy

Generated from segmented cutting chips

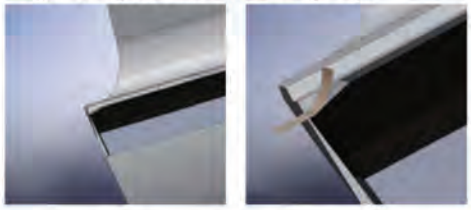
Breaker function has been enhanced as a method to resolve deteriorating productivity due to the cutting chip troubles. We can also suggest [other] precautions and procedures against various cutting chip troubles.

Solving problems

A. Length of cutting chips

❶ **Edge honing specifications**
Bend the flow of cutting chips moderately to shorten the length of cutting chips.

Edge honing specification cutting edge

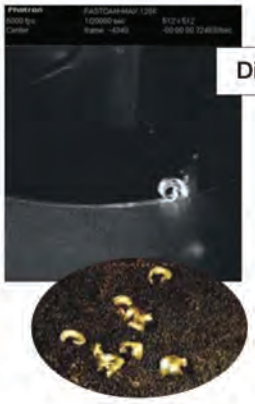


❷ **Breaker specifications**
Curl the cutting chips by the wall surface of the breaker to forcibly shorten the length of cutting chips.

B. Width of cutting chips

❸ **Nick Specifications**
Shorten the width of cutting chips by a recess prepared on the cutting edge.

Without breaker



With breaker

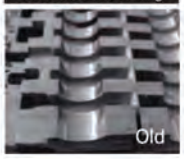
Divided cutting chips

Cutting chips curl thickly and they divide

High machining accuracy without white turbidity is achieved by segmentalizing cutting chips

● Cutting resistance and contour accuracy have been improved by grinding technology

Conventional machining



Old

Special grinding machining

New

A.L.M.T. Corp.

Data.2

Ability of Design and Quality

「Achieved both high efficiency cutting and high machining accuracy」

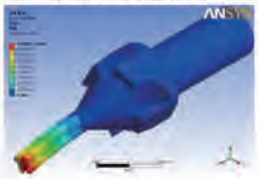
The concentricity and roundness of cutting edges have improved spectacularly by high shank rigidity (carbide) and grinding technology on the cutting edge.
The machining efficiency per cutting edge has improved by cutting down the machining time.

Machining conditions

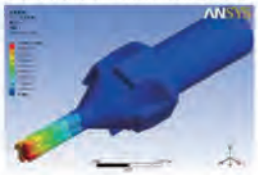
Name of work piece	Cylinder head, valve seat and guide hole
Work material	Aluminum alloy casting AC4B
Machines	Horizontal machining center
Tool size	Ø11-Ø36-L150
Number of rotations (min⁻¹)	3500
Cutting speed (m/min)	395
Feeding rate (mm/rev)	0.3
Depth of cut (mm/diameter)	0.5
Coolant	Emulsion type water-soluble coolant

Deformation volume by CAE analysis

Shank material: Steel



Shank material: Cemented carbide



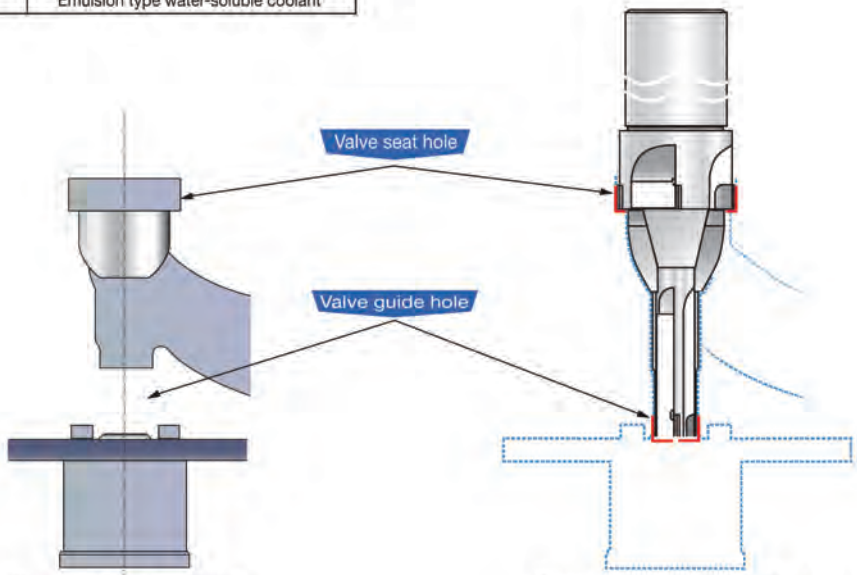
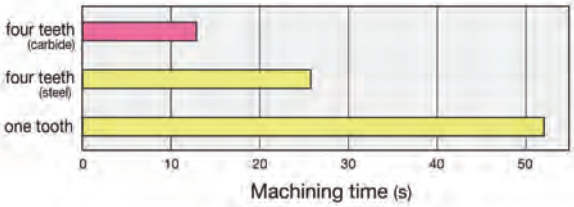


Diagram of work material

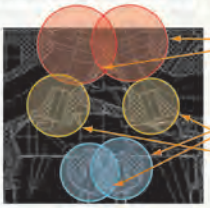
Cross section of machining tool

Differences of performance between shank materials

Machining results	one tooth	four teeth (steel)	four teeth (carbide)
Machining time (s)	52	26	13
Circularity (mm)	0.01	0.05	0.03
Coaxiality (mm)	0.01	0.07	0.05



Machining application



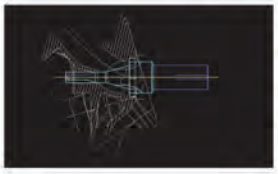
Stage 1 Valve seat and guide hole

Stage 2 HLA(Hydraulic Lash) Adjuster hole finishing

Stage 3 Intake & exhaust valve guide hole finishing

Stage1 Valve seat and guide hole finishing

The issues such as concentricity and cylindricality are solved by high shank rigidity and high cutting edge accuracy.



■ Valve seat and guide hole finishing specifications

	Machine : Horizontal machining center	
Machining conditions	Number of rotations (min⁻¹)	6,000
	Feeding rate (mm/rev)	0.48
	Feeding speed (mm/min)	2,880
	Depth of cut (mm/diameter)	0.6
	Coolant	Emulsion type water-soluble coolant

Stage2 Hydraulic lash adjuster hole finishing

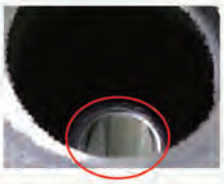
The issues such as removal of cutting chips and cylindricality are solved by the design that responded to thin-walled & blind hole machining portions.

■ HLA (Hydraulic Lash Adjuster) hole finishing specifications

	Machine : Horizontal machining center	
Machining conditions	Number of rotations (min⁻¹)	5,000
	Feeding rate (mm/rev)	0.34
	Feeding speed (mm/min)	1,700
	Depth of cut (mm/diameter)	0.5
	Coolant	Emulsion type water-soluble coolant

Stage3 Intake & exhaust valve guide hole finishing

Concentricity and cylindricality of cutting edge are controlled highly accurately and the self-guide effect is enhanced in order to respond to long overhang and bending moment by small diameter. Moreover, the discharge amount of cutting chips has improved by the guide hole shape and coolant design. As a result, it can machine 10 times more the number of holes compared to cemented carbide to improve productivity.



■ Intake & exhaust valve guide hole finishing specifications

	Machine : Horizontal machining center	
Machining conditions	Number of rotations (min⁻¹)	3,250
	Feeding rate (mm/rev)	0.1
	Feeding speed (mm/min)	325
	Depth of cut (mm/diameter)	0.1
	Coolant	Emulsion type water-soluble coolant

■ Machining results

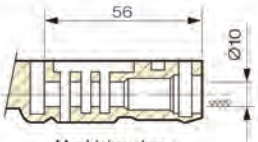
Cutting tool	Tool life (number of machined holes)	Ratio of prices	Ratio of costs	Coaxiality	Inner diameter change volume
Carbide	1,200	1	1	—	—
Our PCD tool	12,000	3	0.8	10μm	3μm/10,000hole

A.L.M.T. Corp.

PCD reamer

Application of PCD reamer machining

Reamer machining of automobile hydraulic regulator valves

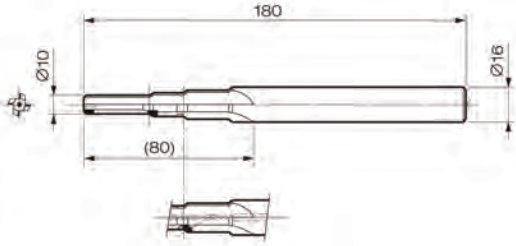


Machining shape

Item	Carbide reamer	PCD reamer
Cutting speed (m/min)	120	120
Feeding speed (mm/rev)	0.2	0.2
Depth of cut (mm/diameter)	0.4	0.4
Coolant	oil-based	water-soluble based
Machining surface roughness (μmRz)	8	3
Circularity	10	5
Running cost	1	0.5

■ Shape

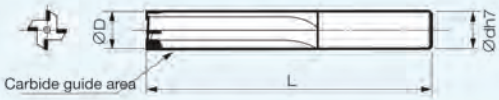
Cutting edge diameter ØD	Maximum number of edges	Other specifications
"3 <= phi < 4"	1tooth	Blade diameter tolerance Standard specifications ØD±0.0025mm High-accurate specifications ØD±0.0015mm (5 or bigger and 25 or below) Along the length : Maximum length 450mm (Standard L/D= from 3 to 5)
"4 <= phi < 6"	3teeth	
"6 <= phi < 8"	4teeth	
"8 <= phi	6teeth	



Our products

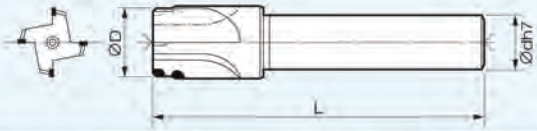
PCD reamer (Single-step reamer)

Body materials (1) Solid carbide (2) Combination of carbide and steel (3) Hardened steel
Applications : HDD, CD-ROM, rocker-arms, etc.



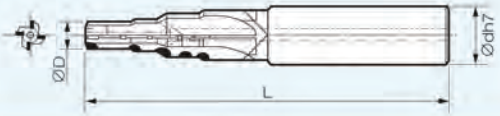
PCD reamer (with chamfering tip)

Body materials (1) Solid carbide (2) Combination of carbide and steel (3) Hardened steel
Applications : Compressor body, ABS actuator, power steering body, etc.



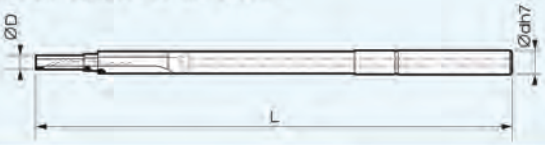
PCD reamer (PCD Profiled step reamer)

Body materials (1) Solid carbide (2) Combination of carbide and steel (3) Hardened steel
Applications : Oil pumps, steering, AT hydraulic control body, etc.



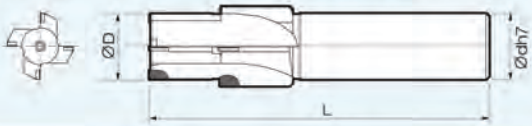
PCD gun reamer (Multiple-step reamer)

Body materials (1) Combination of carbide and steel
Applications : AT hydraulic control body, etc.



PCD reamer (with breakers)

Body materials (1) Combination of carbide and steel
Applications : ABS body, Oil pumps, AT hydraulic control body, etc.



ADAPTERS & HOLDERS

Pages 503-539

ADAPTERS & HOLDERS **PAGES**

AVAILABILITY:
All holders, collets and accessories have a minimum shipment time of 3 working days after receipt of order at Sumitomo.

CNC Holders

CNC Holder line provides options for all industry-standard sizes and congurations for collet chucks, end mill holders, shell mill holders, hi-power milling chucks, and face mill holders.

Each product represents the latest technology, and reects our commitment to quality and innovation. We also support our products with unmatched application expertise and customer service.

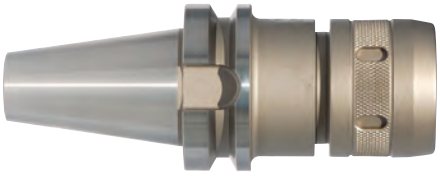
Induction Shrink-Fit System

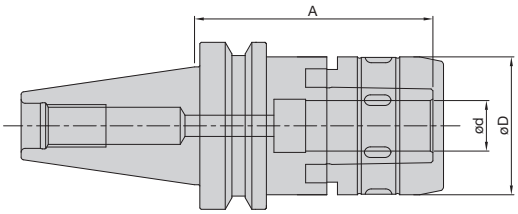
The finest shrink fit holders available. Precise manufacturing and exclusive "counter bore" technology optimize the advantages of using shrink fit tooling. These holders offer the best part finish quality, longer tool life, and higher feed rates and speeds. All of this is accomplished due to micrometer accuracy in runout, high cutting tool rigidity and extremely high clamping forces.

Tightening Fixtures and Retention Knobs

Our tightening fixtures are the best and simplest in the world. You gain immediate access to both the working and taper ends. Less handling just means fewer chances of costly holders being dropped and damaged.

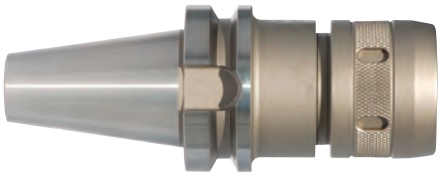
Our retention knobs are manufactured from the finest and most consistent steels required. Accurately machined surfaces and quality threads mean constant productivity and less down-time.

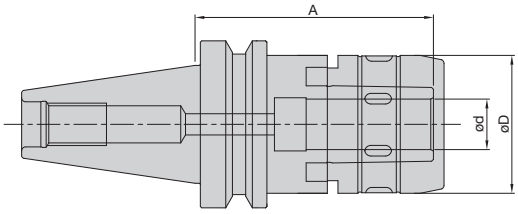




CAT40					Balanced to G6.3 @ 8,000 RPM
Catalog Number	Dimensions				
	d (mm)	d (inch)	D (mm)	A (mm)	A (inch)
SHPMC0.750-3.54-CAT40	19.05	0.75	52	89.9	3.54
SHPMC1.000-3.54-CAT40	25.4	1.00	58	89.9	3.54
SHPMC1.250-4.25-CAT40	31.75	1.25	66	108.0	4.25
SHPMC25-90-CAT40	25	–	58	90	–
SHPMC32-105-CAT40	32	–	66	105	–

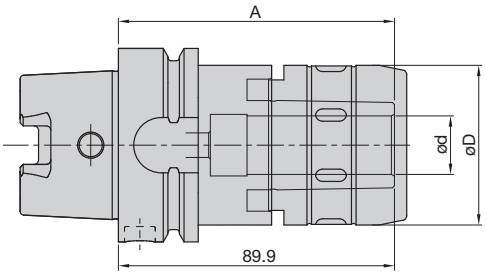
CAT50					Balanced to G6.3 @ 8,000 RPM
Catalog Number	Dimensions				
	d (mm)	d (inch)	D (mm)	A (mm)	A (inch)
SHPMC0.750-3.54-CAT50	19.05	0.75	52	89.9	3.54
SHPMC0.750-6.50-CAT50	19.05	0.75	52	165.1	6.50
SHPMC1.000-3.54-CAT50	25.4	1.00	58	89.9	3.54
SHPMC1.000-5.31-CAT50	25.4	1.00	58	134.9	5.31
SHPMC1.250-4.13-CAT50	31.75	1.25	66	104.9	4.13
SHPMC1.250-5.31-CAT50	31.75	1.25	66	134.9	5.31
SHPMC2.000-4.72-CAT50	50.8	2.00	103	119.9	4.72
SHPMC2.000-5.90-CAT50	50.8	2.00	103	149.9	5.90
SHPMC32-105-CAT50	32	–	58	105	–
SHPMC50-135-CAT50	50	–	103	135	–





BT30					Balanced to G6.3 @ 8,000 RPM
Catalog Number	Dimensions				
	d (mm)	d (inch)	D (mm)	A (mm)	A (inch)
SHPMC0.750-3.54-BT30	19.05	0.75	52	89.9	3.54
SHPMC20-90-BT30	20	–	52	90	–
SHPMC25-90-BT30	25	–	58	90	–
SHPMC32-105-BT30	32	–	66	105	–

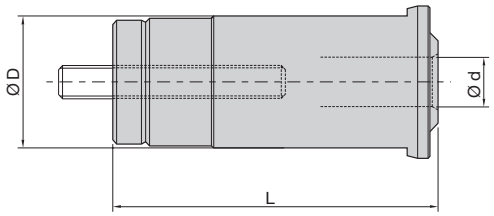
Sumi Power Milling Chucks



HSK-A63					Balanced to G6.3 @ 8,000 RPM
Catalog Number	Dimensions				
	d (mm)	d (inch)	D (mm)	A (mm)	A (inch)
SHPMC0.750-3.54-HSKA63	19.05	0.75	52	89.9	3.54
SHPMC1.000-4.13-HSKA63	25.4	1.00	58	104.9	4.13
SHPMC1.250-4.72-HSKA63	31.75	1.25	66	119.9	4.72
SHPMC20-90-HSKA63	20	–	52	90	–
SHPMC25-105-HSKA63	25	–	58	105	–
SHPMC32-135-HSKA63	32	–	66	135	–

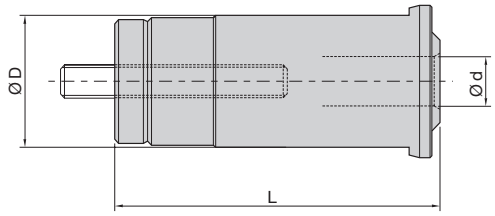
HSK-A100					Balanced to G6.3 @ 15,000 RPM
Catalog Number	Dimensions				
	d (mm)	d (inch)	D (mm)	A (mm)	A (inch)
SHPMC0.750-3.94-HSKA100	–	0.750	52	–	3.94
SHPMC1.000-4.53-HSKA100	–	1.000	58	–	4.53
SHPMC1.250-5.31-HSKA100	–	1.250	66	–	5.31
SHPMC20-100-HSKA100	20	–	52	100mm	–
SHPMC25-115-HSKA100	25	–	58	115mm	–
SHPMC32-135-HSKA100	32	–	66	135mm	–

Adjustable Straight Collets for Milling Chucks (Metric)



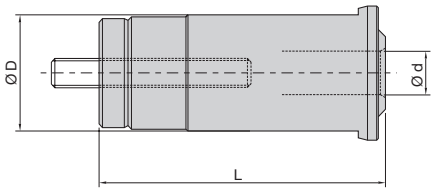
Catalog Number	Dimensions (mm)		
	D	d	L
SSC20-6	20	6	63
SSC20-8	20	8	63
SSC20-10	20	10	63
SSC20-12	20	12	63
SSC20-16	20	16	63
SSC25-6	25	6	73
SSC25-8	25	8	73
SSC25-10	25	10	73
SSC25-12	25	12	73
SSC25-16	25	16	73
SSC25-18	25	18	73
SSC25-20	25	20	73
SSC32-6	32	6	79
SSC32-8	32	8	79
SSC32-10	32	10	79
SSC32-12	32	12	79
SSC32-16	32	16	79
SSC32-18	32	18	79
SSC32-20	32	20	79
SSC32-25	32	25	79

Adjustable Straight Collets for Milling Chucks (Inch)



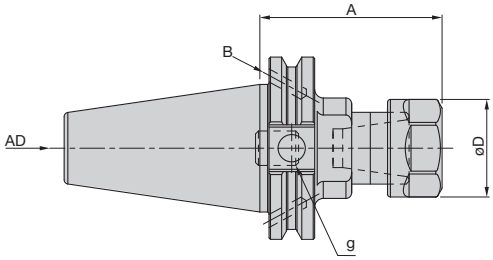
Catalog Number	Dimensions (inch)		
	D	d	L
SSC 0.750-0.250	0.750	0.250	2.48
SSC 0.750-0.312	0.750	0.312	2.48
SSC 0.750-0.375	0.750	0.375	2.48
SSC 0.750-0.437	0.750	0.437	2.48
SSC 0.750-0.500	0.750	0.500	2.48
SSC 0.750-0.562	0.750	0.562	2.48
SSC 0.750-0.625	0.750	0.625	2.48
SSC 1.000-0.250	1.000	0.250	2.87
SSC 1.000-0.312	1.000	0.312	2.87
SSC 1.000-0.375	1.000	0.375	2.87
SSC 1.000-0.437	1.000	0.437	2.87
SSC 1.000-0.500	1.000	0.500	2.87
SSC 1.000-0.562	1.000	0.562	2.87
SSC 1.000-0.625	1.000	0.625	2.87
SSC 1.000-0.750	1.000	0.750	2.87
SSC 1.250-0.250	1.250	0.250	3.11
SSC 1.250-0.312	1.250	0.312	3.11
SSC 1.250-0.375	1.250	0.375	3.11
SSC 1.250-0.437	1.250	0.437	3.11
SSC 1.250-0.500	1.250	0.500	3.11
SSC 1.250-0.562	1.250	0.562	3.11
SSC 1.250-0.625	1.250	0.625	3.11
SSC 1.250-0.750	1.250	0.750	3.11
SSC 1.250-0.875	1.250	0.875	3.11
SSC 1.250-1.000	1.250	1.000	3.11

Adjustable Straight Collets for Milling Chucks (Metric to Inch)



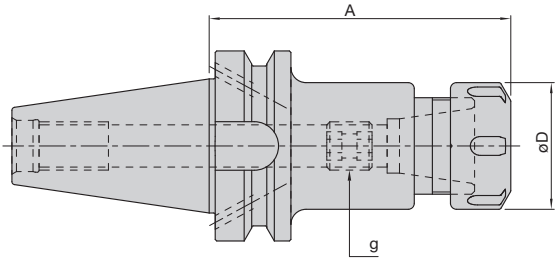
Catalog Number	Dimensions		
	D	d	L
SSC32-0.375	32	0.375	3.11
SSC32-0.500	32	0.500	3.11
SSC32-0.625	32	0.625	3.11
SSC32-0.750	32	0.750	3.11
SSC32-1.000	32	1.000	3.11

ER Collet Milling Chucks



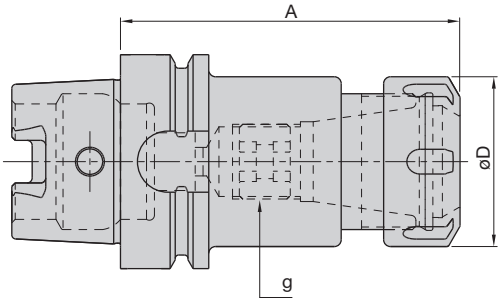
CAT40						Balanced to G6.3 @ 20,000 RPM
Catalog Number	Dimensions					
	Collet Type	Range (mm)	D (mm)	A (mm)	A (inch)	g
SCCH-ER16-2.50-CAT40	ER16	1–10	28	63.5	2.50	M10
SCCH-ER16-5.00-CAT40	ER16	1–10	28	127.0	5.00	M10
SCCH-ER20-2.50-CAT40	ER20	1–13	34	63.5	2.50	M12
SCCH-ER20-6.00-CAT40	ER20	1–13	34	152.4	6.00	M12
SCCH-ER25-2.50-CAT40	ER25	2–16	42	63.5	2.50	M16
SCCH-ER25-6.00-CAT40	ER25	2–16	42	152.4	6.00	M16
SCCH-ER32-2.75-CAT40	ER32	2–20	50	69.9	2.75	M22x1.5
SCCH-ER32-6.00-CAT40	ER32	2–20	50	152.4	6.00	M22x1.5
SCCH-ER40-3.00-CAT40	ER40	3–26	63	76.2	3.00	M22x1.5
SCCH-ER40-6.00-CAT40	ER40	3–26	63	152.4	6.00	M22x1.5

CAT50						Balanced to G6.3 @ 20,000 RPM
Catalog Number	Dimensions					
	Collet Type	Range (mm)	D (mm)	A (mm)	A (inch)	g
SCCH-ER16-2.50-CAT50	ER16	1–10	28	63.5	2.50	M10
SCCH-ER16-4.00-CAT50	ER16	1–10	28	101.6	4.00	M10
SCCH-ER16-6.00-CAT50	ER16	1–10	28	152.4	6.00	M10
SCCH-ER20-2.50-CAT50	ER20	1–13	34	63.5	2.50	M12
SCCH-ER20-4.00-CAT50	ER20	1–13	34	101.6	4.00	M12
SCCH-ER20-6.00-CAT50	ER20	1–13	34	152.4	6.00	M12
SCCH-ER25-2.50-CAT50	ER25	2–16	42	63.5	2.50	M16
SCCH-ER25-4.00-CAT50	ER25	2–16	42	101.6	4.00	M16
SCCH-ER25-6.00-CAT50	ER25	2–16	42	152.4	6.00	M16
SCCH-ER32-2.75-CAT50	ER32	2–20	50	69.9	2.75	M22x1.5
SCCH-ER32-4.00-CAT50	ER32	2–20	50	101.6	4.00	M22x1.5
SCCH-ER32-6.00-CAT50	ER32	2–20	50	152.4	6.00	M22x1.5
SCCH-ER40-3.00-CAT50	ER40	3–26	63	76.2	3.00	M22x1.5
SCCH-ER40-4.00-CAT50	ER40	3–26	63	101.6	4.00	M22x1.5
SCCH-ER40-6.00-CAT50	ER40	3–26	63	152.4	6.00	M22x1.5

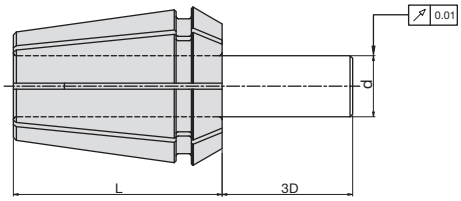


ER Collet Chucks						Balanced to G6.3 @ 20,000 RPM
Catalog Number	Dimensions					
	Collet Type	Range (mm)	D (mm)	A (mm)	A (inch)	g
BT30						
SCCH-ER16-100-BT30	ER16	1–10	28	100	3.94	M10
SCCH-ER16-150-BT30	ER16	1–10	28	150	5.90	M10
SCCH-ER16-70-BT30	ER16	1–10	28	70	2.76	M10
SCCH-ER20-100-BT30	ER20	1–13	34	100	3.94	M12
SCCH-ER20-70-BT30	ER20	1–13	34	70	2.76	M12
SCCH-ER25-100-BT30	ER25	2–16	42	100	3.94	M12
SCCH-ER25-70-BT30	ER25	2–16	42	70	2.76	M12
SCCH-ER32-100-BT30	ER32	2–20	50	100	3.94	M22x1.5
SCCH-ER32-70-BT30	ER32	2–20	50	70	2.76	M12
SCCH-ER40-100-BT30	ER40	3–26	63	100	3.89	M22x1.5
BT40						
SCCH-ER16-100-BT40	ER16	1–10	28	100	3.94	M10
SCCH-ER16-160-BT40	ER16	1–10	28	160	6.30	M10
SCCH-ER16-70-BT40	ER16	1–10	28	70	2.76	M10
SCCH-ER20-100-BT40	ER20	1–13	34	100	3.94	M12
SCCH-ER20-160-BT40	ER20	1–13	34	160	6.30	M12
SCCH-ER20-70-BT40	ER20	1–13	34	70	2.76	M12
SCCH-ER25-100-BT40	ER25	2–16	42	100	3.94	M16
SCCH-ER25-160-BT40	ER25	2–16	42	160	6.30	M16
SCCH-ER25-70-BT40	ER25	2–16	42	70	2.76	M16
SCCH-ER32-100-BT40	ER32	2–20	50	100	3.94	M22x1.5
SCCH-ER32-160-BT40	ER32	2–20	50	160	6.30	M22x1.5
SCCH-ER32-70-BT40	ER32	2–20	50	70	2.76	M22x1.5
SCCH-ER40-100-BT40	ER40	3–26	63	100	3.94	M22x1.5
SCCH-ER40-160-BT40	ER40	3–26	63	160	6.30	M22x1.5
SCCH-ER40-80-BT40	ER40	3–26	63	80	3.15	M22x1.5

ER Collet Milling Chucks



HSK ER Collet Chuck Holders						Balanced to G6.3 @ 20,000 RPM
Catalog Number	Dimensions					
	Collet Type	Range (mm)	D (mm)	A (mm)	A (inch)	g
HSK-A63						
SCCH-ER16M-100-HSKA63	ER16	1–10	28	100	3.94	M10
SCCH-ER16M-160-HSKA63	ER16	1–10	28	160	6.3	M10
SCCH-ER20-100-HSKA63	ER20	1–13	34	100	3.94	M12
SCCH-ER20M-160-HSKA63	ER20	1–13	34	160	6.3	M12
SCCH-ER25-100-HSKA63	ER25	2–16	42	100	3.94	M16
SCCH-ER25M-160-HSKA63	ER25	2–16	42	160	6.3	M16
SCCH-ER32-100-HSKA63	ER32	2–20	50	100	3.94	M22x1.5
SCCH-ER32-160-HSKA63	ER32	2–20	50	160	6.3	M22x1.5
SCCH-ER40-120-HSKA63	ER40	3–26	63	120	4.72	M22x1.5
SCCH-ER40-160-HSKA63	ER40	3–26	63	160	6.3	M22x1.5
HSK-A100						
SCCH-ER16M-100-HSKA100	ER16M	1–10	22	100	3.94	M10
SCCH-ER20-100-HSKA100	ER20	1–13	34	100	3.94	M12
SCCH-ER25-100-HSKA100	ER25	2–16	42	100	3.94	M16
SCCH-ER32-100-HSKA100	ER32	2–20	50	100	3.94	M22X1.5
SCCH-ER40-120-HSKA100	ER40	3–26	63	120	4.72	M22x1.5
SCCH-ER16M-160-HSKA100	ER16M	1–10	22	160	6.3	M10
SCCH-ER20-160-HSKA100	ER20	1–13	34	160	6.3	M12
SCCH-ER25-160-HSKA100	ER25	2–16	42	160	6.3	M16
SCCH-ER32-160-HSKA100	ER32	2–20	50	160	6.3	M22X1.5
SCCH-ER40-160-HSKA100	ER40	3–26	63	160	6.3	M22x1.5



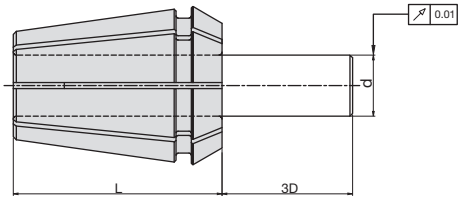
Spring Collets ER16 (Metric)			
Catalog Number	Dimensions (mm)		
	D	L	d
ER16-1.0	17	27	1.0-0.5
ER16-1.5	17	27	1.5-1.0
ER16-2.0	17	27	2.0-1.5
ER16-2.5	17	27	2.5-2.0
ER16-3.0	17	27	3.0-2.5
ER16-3.5	17	27	3.5-3.0
ER16-4.0	17	27	4.0-3.5
ER16-4.5	17	27	4.5-4.0
ER16-5.0	17	27	5.0-4.5
ER16-5.5	17	27	5.5-5.0
ER16-6.0	17	27	6.0-5.5
ER16-6.5	17	27	6.5-6.0
ER16-7.0	17	27	7.0-6.5
ER16-7.5	17	27	7.5-7.0
ER16-8.0	17	27	8.0-7.5
ER16-8.5	17	27	8.5-8.0
ER16-9.0	17	27	9.0-8.5
ER16-9.5	17	27	9.5-9.0
ER16-10.0	17	27	10.0-9.5
ER16 10pc. Collet Set	–	–	–

Spring Collets ER25 (Metric)			
Catalog Number	Dimensions (mm)		
	D	L	d
ER25-2.0	26	35	2.0-1.5
ER25-3.0	26	35	3.0-2.5
ER25-4.0	26	35	4.0-3.5
ER25-5.0	26	35	5.0-4.5
ER25-6.0	26	35	6.0-5.5
ER25-7.0	26	35	7.0-6.5
ER25-8.0	26	35	8.0-7.5
ER25-9.0	26	35	9.0-8.5
ER25-10.0	26	35	10.0-9.5
ER25-11.0	26	35	11.0-10.5
ER25-12.0	26	35	12.0-11.5
ER25-13.0	26	35	13.0-12.5
ER25-14.0	26	35	14.0-13.5
ER25-15.0	26	35	15.0-14.5
ER25-16.0	26	35	16.0-15.5
ER25 15pc. Collet Set	–	–	–

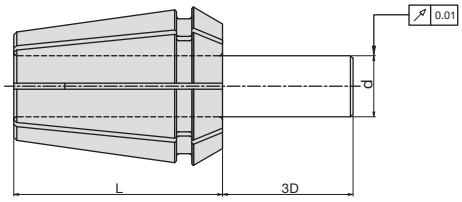
Spring Collets ER20 (Metric)			
Catalog Number	Dimensions (mm)		
	D	L	d
ER20-1.0	21	31	1.0-0.5
ER20-2.0	21	31	2.0-1.5
ER20-3.0	21	31	3.0-2.5
ER20-4.0	21	31	4.0-3.5
ER20-5.0	21	31	5.0-4.5
ER20-6.0	21	31	6.0-5.5
ER20-7.0	21	31	7.0-6.5
ER20-8.0	21	31	8.0-7.5
ER20-9.0	21	31	9.0-8.5
ER20-10.0	21	31	10.0-9.5
ER20-11.0	21	31	11.0-10.5
ER20-12.0	21	31	12.0-11.5
ER20-13.0	21	31	13.0-12.5
ER20 12pc. Collet Set	–	–	–

Spring Collets ER32 (Metric)			
Catalog Number	Dimensions (mm)		
	D	L	d
ER32-2.0	33	40	2.0-1.5
ER32-3.0	33	40	3.0-2.5
ER32-4.0	33	40	4.0-3.5
ER32-5.0	33	40	5.0-4.5
ER32-6.0	33	40	6.0-5.5
ER32-7.0	33	40	7.0-6.5
ER32-8.0	33	40	8.0-7.5
ER32-9.0	33	40	9.0-8.5
ER32-10.0	33	40	10.0-9.5
ER32-11.0	33	40	11.0-10.5
ER32-12.0	33	40	12.0-11.5
ER32-13.0	33	40	13.0-12.5
ER32-14.0	33	40	14.0-13.5
ER32-15.0	33	40	15.0-14.5
ER32-16.0	33	40	16.0-15.5
ER32-17.0	33	40	17.0-16.5
ER32-18.0	33	40	18.0-17.5
ER32-19.0	33	40	19.0-18.5
ER32-20.0	33	40	20.0-19.5
ER32 18pc. Collet Set	–	–	–

ER Collets-*Metric*



Spring Collets ER40 (Metric)			
Catalog Number	Dimensions (mm)		
	D	L	d
ER40-3.0	41	46	3.0-2.5
ER40-4.0	41	46	4.0-3.5
ER40-5.0	41	46	5.0-4.5
ER40-6.0	41	46	6.0-5.5
ER40-7.0	41	46	7.0-6.5
ER40-8.0	41	46	8.0-7.5
ER40-9.0	41	46	9.0-8.5
ER40-10.0	41	46	10.0-9.5
ER40-11.0	41	46	11.0-10.5
ER40-12.0	41	46	12.0-11.5
ER40-13.0	41	46	13.0-12.5
ER40-14.0	41	46	14.0-13.5
ER40-15.0	41	46	15.0-14.5
ER40-16.0	41	46	16.0-15.5
ER40-17.0	41	46	17.0-16.5
ER40-18.0	41	46	18.0-17.5
ER40-19.0	41	46	19.0-18.5
ER40-20.0	41	46	20.0-19.5
ER40-21.0	41	46	21.0-20.5
ER40-22.0	41	46	22.0-21.5
ER40-23.0	41	46	23.0-22.5
ER40-24.0	41	46	24.0-23.5
ER40-25.0	41	46	25.0-24.5
ER40-26.0	41	46	26.0-25.5
ER40 23pc. Collet Set	–	–	–



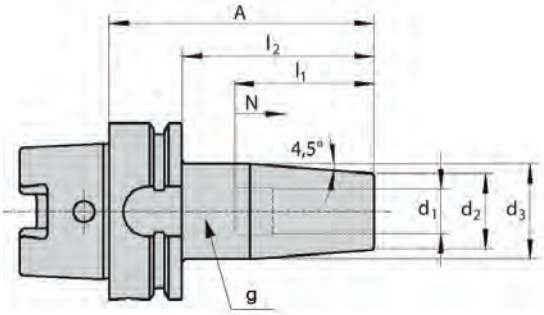
Spring Collets ER16 (Inch)			
Catalog Number	Dimensions (inch)		
	D	L	d
ER16-1/16	0.669	1.063	0.043-0.062
ER16-3/32	0.669	1.063	0.054-0.093
ER16-1/8	0.669	1.063	0.086-0.125
ER16-5/32	0.669	1.063	0.117-0.156
ER16-3/16	0.669	1.063	0.148-0.187
ER16-7/32	0.669	1.063	0.179-0.218
ER16-1/4	0.669	1.063	0.211-0.250
ER16-9/32	0.669	1.063	0.242-0.281
ER16-5/16	0.669	1.063	0.273-0.312
ER16-11/32	0.669	1.063	0.304-0.343
ER16-3/8	0.669	1.063	0.336-0.375
ER16-13/32	0.669	1.063	0.367-0.406
ER16 12pc. Collet Set	–	–	–

Spring Collets ER16 (Inch)			
Catalog Number	Dimensions (inch)		
	D	L	d
ER25-1/8	1.024	1.378	0.086-0.125
ER25-3/16	1.024	1.378	0.148-0.187
ER25-1/4	1.024	1.378	0.211-0.250
ER25-5/16	1.024	1.378	0.273-0.312
ER25-3/8	1.024	1.378	0.336-0.375
ER25-7/16	1.024	1.378	0.398-0.437
ER25-1/2	1.024	1.378	0.461-0.500
ER25-9/16	1.024	1.378	0.523-0.562
ER25-5/8	1.024	1.378	0.586-0.625
ER25 9pc. Collet Set	–	–	–

Spring Collets ER16 (Inch)			
Catalog Number	Dimensions (inch)		
	D	L	d
ER20-1/8	0.827	1.22	0.086-0.125
ER20-3/16	0.827	1.22	0.148-0.187
ER20-1/4	0.827	1.22	0.211-0.250
ER20-5/16	0.827	1.22	0.273-0.312
ER20-3/8	0.827	1.22	0.336-0.375
ER20-7/16	0.827	1.22	0.398-0.437
ER20-1/2	0.827	1.22	0.461-0.500
ER20 7pc. Collet Set	–	–	–

Spring Collets ER16 (Inch)			
Catalog Number	Dimensions (inch)		
	D	L	d
ER32-1/8	1.299	1.575	0.086-0.125
ER32-3/16	1.299	1.575	0.148-0.187
ER32-1/4	1.299	1.575	0.211-0.250
ER32-5/16	1.299	1.575	0.273-0.312
ER32-3/8	1.299	1.575	0.336-0.375
ER32-7/16	1.299	1.575	0.398-0.437
ER32-1/2	1.299	1.575	0.461-0.500
ER32-9/16	1.299	1.575	0.523-0.562
ER32-5/8	1.299	1.575	0.586-0.625
ER32-11/16	1.299	1.575	0.648-0.687
ER32-3/4	1.299	1.575	0.711-0.750
ER32 12pc Collet Set	–	–	–

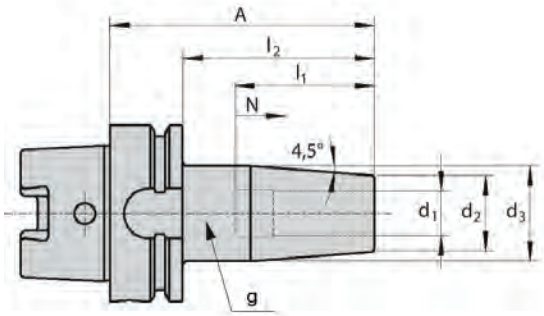
Spring Collets ER16 (Inch)			
Catalog Number	Dimensions (inch)		
	D	L	d
ER40-1/8	1.614	1.811	0.086-0.125
ER40-3/16	1.614	1.811	0.148-0.187
ER40-1/4	1.614	1.811	0.211-0.250
ER40-5/16	1.614	1.811	0.273-0.312
ER40-3/8	1.614	1.811	0.336-0.375
ER40-7/16	1.614	1.811	0.398-0.437
ER40-1/2	1.614	1.811	0.461-0.500
ER40-9/16	1.614	1.811	0.523-0.562
ER40-5/8	1.614	1.811	0.586-0.625
ER40-11/16	1.614	1.811	0.648-0.687
ER40-3/4	1.614	1.811	0.711-0.750
ER40-7/8	1.614	1.811	0.836-0.875
ER40-1.0	1.614	1.811	0.961-1.000
ER40 14pc. Collet Set	–	–	–



HSK-A63 | ThermoGrip® Standard -INCH

Catalog Number	Dimensions (inch)						
	d_1	A	d_2	d_3	l_1	N	g
STANDARD PROJECTION							
ST0318-80-HSKA63	0.125	3.15	0.83	1.06	1.42	0.39	M6
ST0476-80-HSKA63	0.187	3.15	0.83	1.06	1.42	0.39	M6
ST0635-80-HSKA63	0.250	3.15	0.83	1.06	1.42	0.39	M5
ST0953-85-HSKA63	0.375	3.34	0.95	1.26	1.65	0.39	M8x1
ST1270-90-HSKA63	0.500	3.54	1.06	1.34	1.85	0.39	M10x1
ST1588-95-HSKA63	0.625	3.74	1.06	1.34	1.97	0.39	M12x1
ST1905-100-HSKA63	0.750	3.94	1.30	1.65	2.05	0.39	M16x1
LONG PROJECTION							
ST0318-120-HSKA63	0.125	4.72	0.83	1.06	1.42	0.39	M6
ST0476-120-HSKA63	0.187	4.72	0.83	1.06	1.42	0.39	M6
ST0635-120-HSKA63	0.250	4.72	0.83	1.06	1.42	0.39	M5
ST0953-120-HSKA63	0.375	4.72	0.95	1.26	1.65	0.39	M8x1
ST1270-120-HSKA63	0.500	4.72	1.06	1.34	1.85	0.39	M10x1
ST1588-120-HSKA63	0.625	4.72	1.06	1.34	1.97	0.39	M12x1
ST2540-120-HSKA63	1.000	4.72	1.73	2.09	2.44	0.39	M16x1
ST3175-120-HSKA63	1.250	4.72	1.73	2.09	2.28	0.39	M16x1
EXTRA LONG PROJECTION							
ST0318-160-HSKA63	0.125	6.30	0.83	1.26	1.42	0.39	M6
ST0476-160-HSKA63	0.187	6.30	0.83	1.26	1.42	0.39	M6
ST0635-160-HSKA63	0.250	6.30	0.83	1.26	1.42	0.39	M5
ST0953-160-HSKA63	0.375	6.30	0.95	1.34	1.65	0.39	M8x1
ST1270-160-HSKA63	0.500	6.30	1.06	1.65	1.85	0.39	M10x1
ST1588-160-HSKA63	0.625	6.30	1.06	1.65	1.97	0.39	M12x1
ST1905-160-HSKA63	0.750	6.30	1.30	2.01	2.05	0.39	M16x1
ST2540-160-HSKA63	1.000	6.30	1.73	2.09	2.44	0.39	M16x1
ST3175-160-HSKA63	1.250	6.30	1.73	2.09	2.28	0.39	M16x1

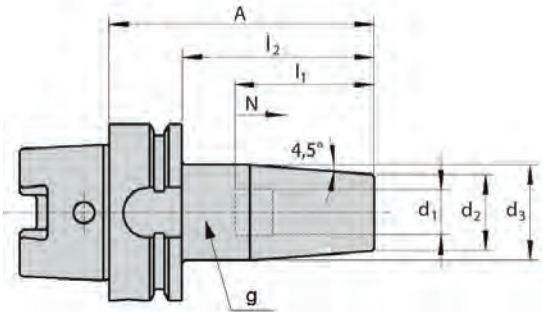
All holders can be run with internal coolant
Please Order Coolant Tube separately
NOTE: Tool Shank Tolerance must be h6 or better, h4 for holders with ID smaller than 5mm



HSK-A63 | ThermoGrip® Standard -METRIC

Catalog Number	Dimensions (mm)						
	d_1	A	d_2	d_3	l_1	N	g
STANDARD PROJECTION							
ST0300-80-HSKA63	3	80	15	20	20	5	M6
ST0400-80-HSKA63	4	80	15	20	20	5	M6
ST0500-80-HSKA63	5	80	15	20	25	5	M6
ST0600-80-HSKA63	6	80	21	27	36	10	M5
ST0800-80-HSKA63	8	80	21	27	36	10	M6
ST1000-85-HSKA63	10	85	24	32	42	10	M8x1
ST1200-90-HSKA63	12	90	24	32	47	10	M10x1
ST1400-90-HSKA63	14	90	27	34	47	10	M10x1
ST1600-95-HSKA63	16	95	27	34	50	10	M12x1
ST1800-95-HSKA63	18	95	33	42	50	10	M12x1
ST2000-100-HSKA63	20	100	33	42	52	10	M16x1
ST2500-115-HSKA63	25	115	44	53	58	10	M16x1
LONG PROJECTION							
ST0600-120-HSKA63	6	120	21	27	36	10	M5
ST0800-120-HSKA63	8	120	21	27	36	10	M6
ST1000-120-HSKA63	10	120	24	32	42	10	M8x1
ST1200-120-HSKA63	12	120	24	32	47	10	M10x1
ST1400-120-HSKA63	14	120	27	34	47	10	M10x1
ST1600-120-HSKA63	16	120	27	34	50	10	M12x1
ST1800-120-HSKA63	18	120	33	42	50	10	M12x1
ST2000-120-HSKA63	20	120	33	42	52	10	M16x1
ST3200-120-HSKA63	32	120	44	53	58	10	M16x1
EXTRA LONG PROJECTION							
ST0600-160-HSKA63	6	160	21	32	36	10	M5
ST0800-160-HSKA63	8	160	21	32	36	10	M6
ST1000-160-HSKA63	10	160	24	34	42	10	M8x1
ST1200-160-HSKA63	12	160	24	34	47	10	M10x1
ST1400-160-HSKA63	14	160	27	42	47	10	M10x1
ST1600-160-HSKA63	16	160	27	42	50	10	M12x1
ST1800-160-HSKA63	18	160	33	51	50	10	M12x1
ST2000-160-HSKA63	20	160	33	51	52	10	M16x1
ST2500-160-HSKA63	25	160	44	53	58	10	M16x1
ST3200-160-HSKA63	32	160	44	53	62	10	M16x1

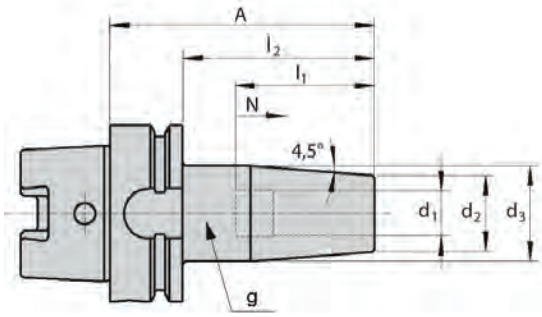
All holders can be run with internal coolant
Please Order Coolant Tube Catalog separately
NOTE: Tool Shank Tolerance must be h6 or better, h4 for holders with ID smaller than 5mm



HSK-A100 | ThermoGrip® Standard-INCH

Catalog Number	Dimensions (inch)						
	d_1	A	d_2	d_3	l_1	N	g
STANDARD PROJECTION							
ST0635-85-HSKA100	0.250	3.35	0.83	1.06	1.42	0.39	M5
ST0953-90-HSKA100	0.375	3.54	0.94	1.26	1.65	0.39	M8X1
ST1270-95-HSKA100	0.500	3.74	1.06	1.34	1.85	0.39	M10X1
ST1588-95-HSKA100	0.625	3.94	1.06	1.34	1.97	0.39	M12X1
ST1905-105-HSKA100	0.750	4.13	1.30	1.65	2.05	0.39	M16X1
LONG PROJECTION							
ST0635-120-HSKA100	0.250	4.72	0.83	1.06	1.42	0.39	M5
ST0953-120-HSKA100	0.375	4.72	0.94	1.26	1.65	0.39	M8X1
ST1270-120-HSKA100	0.500	4.72	1.06	1.34	1.85	0.39	M10X1
ST1588-120-HSKA100	0.625	4.72	1.06	1.34	1.97	0.39	M12X1
ST1905-120-HSKA100	0.750	4.72	1.30	1.65	2.05	0.39	M16X1
ST2540-120-HSKA100	1.000	4.72	1.73	2.09	2.44	0.39	M16X1
ST3175-120-HSKA100	1.250	4.72	1.73	2.09	2.44	0.39	M16X1
EXTRA LONG PROJECTION							
ST0635-160-HSKA100	0.250	6.30	0.83	1.26	1.42	0.39	M5
ST0953-160-HSKA100	0.375	6.30	0.94	1.34	1.65	0.39	M8X1
ST1270-160-HSKA100	0.500	6.30	1.06	1.65	1.85	0.39	M10X1
ST1588-160-HSKA100	0.625	6.30	1.06	1.65	1.97	0.39	M12X1
ST1905-160-HSKA100	0.750	6.30	1.30	2.01	2.05	0.39	M16X1
ST2540-160-HSKA100	1.000	6.30	1.73	2.36	2.44	0.39	M16X1

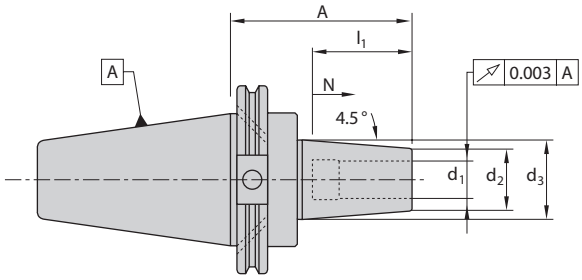
All holders can be run with internal coolant
Please Order Coolant Tube separately
NOTE: Tool Shank Tolerance must be h6 or better, h4 for holders with ID smaller than 5mm



HSK-A100 | ThermoGrip® Standard-METRIC

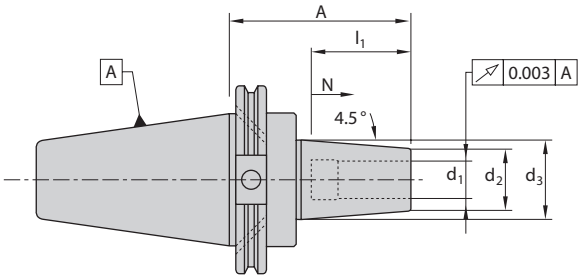
Catalog Number	Dimensions (mm)						
	d_1	A	d_2	d_3	l_1	N	g
STANDARD PROJECTION							
ST0600-85-HSKA100	6	85	21	27	36	10	M5
ST0800-85-HSKA100	8	85	21	27	36	10	M6
ST1000-90-HSKA100	10	90	24	32	42	10	M8x1
ST1200-95-HSKA100	12	95	24	32	47	10	M10x1
ST1400-95-HSKA100	14	95	27	34	50	10	M10x1
ST1600-100-HSKA100	16	100	27	34	50	10	M12x1
ST1800-100-HSKA100	18	100	33	42	50	10	M12x1
ST2000-105-HSKA100	20	105	33	42	52	10	M16x1
ST2500-115-HSKA100	25	115	44	53	58	10	M16x1
LONG PROJECTION							
ST0600-120-HSKA100	6	120	21	27	36	10	M5
ST0800-120-HSKA100	8	120	21	27	36	10	M6
ST1000-120-HSKA100	10	120	24	32	42	10	M8x1
ST1200-120-HSKA100	12	120	24	32	47	10	M10x1
ST1400-120-HSKA100	14	120	27	34	50	10	M10x1
ST1600-120-HSKA100	16	120	27	34	50	10	M12x1
ST1800-120-HSKA100	18	120	33	42	50	10	M12x1
ST2000-120-HSKA100	20	120	33	42	52	10	M16x1
ST2500-120-HSKA100	25	120	44	53	58	10	M16x1
ST3200-120-HSKA100	32	120	44	53	62	10	M16x1
EXTRA LONG PROJECTION							
ST0600-160-HSKA100	6	160	21	32	36	10	M5
ST0800-160-HSKA100	8	160	21	32	36	10	M6
ST1000-160-HSKA100	10	160	24	34	42	10	M8x1
ST1200-160-HSKA100	12	160	24	34	47	10	M10x1
ST1400-160-HSKA100	14	160	27	42	47	10	M10x1
ST1600-160-HSKA100	16	160	27	42	50	10	M12x1
ST1800-160-HSKA100	18	160	33	51	52	10	M12x1
ST2000-160-HSKA100	20	160	33	51	52	10	M16x1
ST2500-160-HSKA100	25	160	44	53	58	10	M16x1
ST3200-160-HSKA100	32	160	44	53	62	10	M16x1

All holders can be run with internal coolant
Please Order Coolant Tube separately
NOTE: Tool Shank Tolerance must be h6 or better, h4 for holders with ID smaller than 5mm



CAT40 | ThermoGrip® Standard-INCH

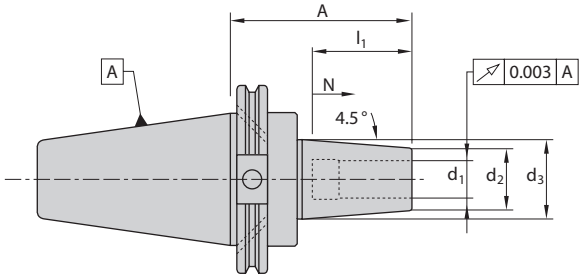
Catalog Number	Dimensions (inch)						
	d_1	A	d_2	d_3	l_1	N	g
STANDARD PROJECTION							
ST0318-95-CAT40	0.125	3.74	0.59	0.79	0.79	0.20	M6
ST0476-95-CAT40	0.187	3.74	0.59	0.79	0.79	0.20	M6
ST0635-95-CAT40	0.250	3.74	0.83	1.06	1.42	0.39	M5
ST0953-95-CAT40	0.375	3.74	0.95	1.26	1.65	0.39	M8x1
ST1270-95-CAT40	0.500	3.74	1.06	1.34	1.85	0.39	M10x1
ST1588-95-CAT40	0.625	3.74	1.06	1.34	1.97	0.39	M12x1
ST1905-95-CAT40	0.750	3.74	1.30	1.65	2.05	0.39	M16x1
ST2540-100-CAT40	1.000	3.94	1.73	2.09	2.44	0.39	M16x1
ST3175-100-CAT40	1.250	3.94	1.73	2.09	2.44	0.39	M16x1
LONG PROJECTION							
ST0318-120-CAT40	0.125	4.73	0.59	0.79	0.79	0.20	M6
ST0476-120-CAT40	0.187	4.73	0.59	0.79	0.79	0.20	M6
ST0635-120-CAT40	0.250	4.73	0.83	1.06	1.42	0.39	M5
ST0953-120-CAT40	0.375	4.73	0.95	1.26	1.65	0.39	M8x1
ST1270-120-CAT40	0.500	4.73	1.06	1.34	1.85	0.39	M10x1
ST1588-120-CAT40	0.625	4.73	1.06	1.34	1.97	0.39	M12x1
ST1905-120-CAT40	0.750	4.73	1.30	1.65	2.05	0.39	M16x1
ST2540-120-CAT40	1.000	4.73	1.73	2.09	2.44	0.39	M16x1
ST3175-120-CAT40	1.25	4.73	1.73	2.09	2.44	0.39	M16x1
EXTRA LONG PROJECTION							
ST0318-160-CAT40	0.125	6.30	0.59	0.79	0.79	0.20	M6
ST0476-160-CAT40	0.187	6.30	0.59	0.79	0.79	0.20	M6
ST0635-160-CAT40	0.250	6.30	0.83	1.26	1.42	0.39	M5
ST0953-160-CAT40	0.375	6.30	0.95	1.34	1.65	0.39	M8x1
ST1270-160-CAT40	0.500	6.30	1.06	1.65	1.85	0.39	M10x1
ST1588-160-CAT40	0.625	6.30	1.06	1.65	1.97	0.39	M12x1
ST1905-160-CAT40	0.750	6.30	1.30	1.75	2.05	0.39	M16x1
ST2540-160-CAT40	1.000	6.30	1.73	2.09	2.44	0.39	M16x1
ST3175-160-CAT40	1.250	6.30	1.73	2.09	2.44	0.39	M16x1



CAT40 | ThermoGrip® Standard-METRIC

Catalog Number	Dimensions (mm)						
	d_1	A	d_2	d_3	l_1	N	g
STANDARD PROJECTION							
ST0300-95-CAT40	3	95	15	20	20	5	M6
ST0400-95-CAT40	4	95	15	20	20	5	M6
ST0500-95-CAT40	5	95	15	20	25	5	M6
ST0600-95-CAT40	6	95	21	27	36	10	M5
ST0800-95-CAT40	8	95	21	27	36	10	M6
ST1000-95-CAT40	10	95	24	32	42	10	M8x1
ST1200-95-CAT40	12	95	24	32	47	10	M10x1
ST1400-95-CAT40	14	95	27	34	47	10	M10x1
ST1600-95-CAT40	16	95	27	34	50	10	M12x1
ST1800-95-CAT40	18	95	33	42	50	10	M12x1
ST2000-95-CAT40	20	95	33	42	52	10	M16x1
ST2500-100-CAT40	25	100	44	53	58	10	M16x1
ST3200-100-CAT40	32	100	44	53	62	10	M16x1
LONG PROJECTION							
ST0600-120-CAT40	6	120	21	27	36	10	M5
ST0800-120-CAT40	8	120	21	27	36	10	M6
ST1000-120-CAT40	10	120	24	32	42	10	M8x1
ST1200-120-CAT40	12	120	24	32	47	10	M10x1
ST1400-120-CAT40	14	120	27	34	47	10	M10x1
ST1600-120-CAT40	16	120	27	34	50	10	M12x1
ST1800-120-CAT40	18	120	33	42	50	10	M12x1
ST2000-120-CAT40	20	120	33	42	52	10	M16x1
ST2500-120-CAT40	25	120	44	53	58	10	M16x1
ST3200-120-CAT40	32	120	44	53	62	10	M16x1
EXTRA LONG PROJECTION							
ST0600-160-CAT40	6	160	21	32	36	10	M5
ST0800-160-CAT40	8	160	21	32	36	10	M6
ST1000-160-CAT40	10	160	24	34	42	10	M8x1
ST1200-160-CAT40	12	160	24	34	47	10	M10x1
ST1400-160-CAT40	14	160	27	42	47	10	M10x1
ST1600-160-CAT40	16	160	27	42	50	10	M12x1
ST1800-160-CAT40	18	160	33	44	50	10	M12x1
ST2000-160-CAT40	20	160	44	53	52	10	M16x1
ST2500-160-CAT40	25	160	44	53	58	10	M16x1
ST3200-160-CAT40	32	160	44	53	62	10	M16x1

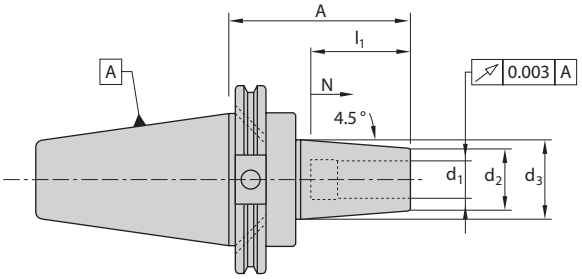
NOTE: All Holders Have 5-8-11 UNC Thread for Retention Knob & DIN FORM B Flange Coolant Delivery Option Standard
NOTE: Tool Shank Tolerance must be h6 or better, h4 for holders with ID smaller than 5mm



CAT50 | ThermoGrip® Standard-INCH

Catalog Number	Dimensions (inch)						
	d_1	A	d_2	d_3	l_1	N	g
STANDARD PROJECTION							
ST0635-95-CAT50	0.250	3.74	0.83	1.06	1.42	0.39	M5
ST0953-95-CAT50	0.375	3.74	0.95	1.26	1.65	0.39	M8x1
ST1270-95-CAT50	0.500	3.74	1.06	1.34	1.85	0.39	M10x1
ST1588-95-CAT50	0.625	3.74	1.06	1.34	1.97	0.39	M12x1
ST1905-95-CAT50	0.750	3.74	1.30	1.65	2.05	0.39	M16x1
ST2540-105-CAT50	1.000	4.13	1.73	2.09	2.44	0.39	M16x1
ST3175-105-CAT50	1.250	4.13	1.73	2.09	2.44	0.39	M16x1
EXTRA LONG PROJECTION							
ST0635-160-CAT50	0.250	6.30	0.83	1.26	1.42	0.39	M5
ST0953-160-CAT50	0.375	6.30	0.95	1.34	1.65	0.39	M8x1
ST1270-160-CAT50	0.500	6.30	1.06	1.65	1.85	0.39	M10x1
ST1588-160-CAT50	0.625	6.30	1.06	1.65	1.97	0.39	M12x1
ST1905-160-CAT50	0.750	6.30	1.30	2.01	2.05	0.39	M16x1
ST2540-160-CAT50	1.000	6.30	1.73	2.36	2.44	0.39	M16x1
ST3175-160-CAT50	1.250	6.30	1.73	2.36	2.44	0.39	M16x1

NOTE: All Holders Have 1-8 UNC Thread for Retention Knob & DIN FORM B Flange Coolant Delivery Option-Standard
NOTE: Tool Shank Tolerance must be h6 or better, h4 for holders with ID smaller than 5mm



CAT50 | ThermoGrip® Standard-METRIC

Catalog Number	Dimensions (mm)						
	d_1	A	d_2	d_3	l_1	N	g
STANDARD PROJECTION							
ST0600-95-CAT50	6	95	21	27	36	10	M5
ST0800-95-CAT50	8	95	21	27	36	10	M6
ST1000-95-CAT50	10	95	24	32	42	10	M8x1
ST1200-95-CAT50	12	95	24	32	47	10	M10x1
ST1400-95-CAT50	14	95	27	34	47	10	M10x1
ST1600-95-CAT50	16	95	27	34	50	10	M12x1
ST1800-95-CAT50	18	95	33	42	50	10	M12x1
ST2000-95-CAT50	20	95	33	42	52	10	M16x1
ST2500-105-CAT50	25	105	44	53	58	10	M16x1
ST3200-105-CAT50	32	105	44	53	62	10	M16x1
EXTRA LONG PROJECTION							
ST0600-160-CAT50	6	160	21	32	36	10	M5
ST0800-160-CAT50	8	160	21	32	36	10	M6
ST1000-160-CAT50	10	160	24	34	42	10	M8x1
ST1200-160-CAT50	12	160	24	34	47	10	M10x1
ST1400-160-CAT50	14	160	27	42	47	10	M10x1
ST1600-160-CAT50	16	160	27	42	50	10	M12x1
ST1800-160-CAT50	18	160	33	51	50	10	M12x1
ST2000-160-CAT50	20	160	33	51	52	10	M16x1
ST2500-160-CAT50	25	160	44	60	58	10	M16x1
ST3200-160-CAT50	32	160	44	60	62	10	M16x1

NOTE: All Holders Have 1-8 UNC Thread for Retention Knob & DIN FORM B Flange Coolant Delivery Option-Standard
NOTE: Tool Shank Tolerance must be h6 or better, h4 for holders with ID smaller than 5mm

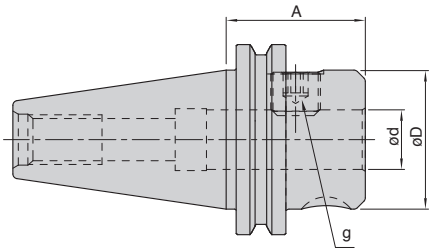
ThermoGrip® Machine: ISG3400TWK-WS

This processor controlled ISG3400TWK unit is simple to use. All that needs to be done is to select the tool diameter range. After the induction coil is positioned around the tool holder, push the start button and the coil heats the tool holder sufficiently. When heat cycle is completed, move the coil upward away from tool. Raise the cooling sleeve and press the cooling button, allowing the tool to cool in seconds.

ISG3400TWK: It is universal shrinking unit for the professional use of shrinking technology. With its unique coil changing system, the power transfer adjusted to different clamping chucks is guaranteed within a short period of time. Compared to other systems, this makes it possible to clamp the smallest diameter tools. This allows for a constant preparation of a high number of tools. Guaranteed.

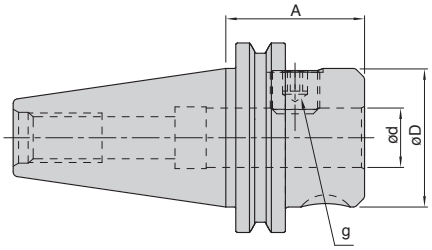
ThermoGrip® Machine: ISG3400TWK-WS

Catalog No.	ISG3400TWK	**Max Tool Length**	400mm 15.75"
Dimensions D x W x H	800mm x 560mm x 950mm 31.5" x 22" x 38"	**Max Cooling Length**	160mm 6.3"
Clamping Range SC	6-32mm 1/8"-1-1/4"	**Cooling Type**	Liquid/ emulsion
Clamping Range HSS	6-32mm 1/4"-1-1/4"	**Cooling Time**	20 Seconds
Coil	Quick Change	**Geometry Independent Cooling**	Yes
Electric Current Supply	3x480V-16A	**Max Machine Interface**	HSK 100 CAT50
Power kW	11 kW	**Required Accessories**	setting pot
Weight	115 lbs	**Optional Accessories**	setting pot

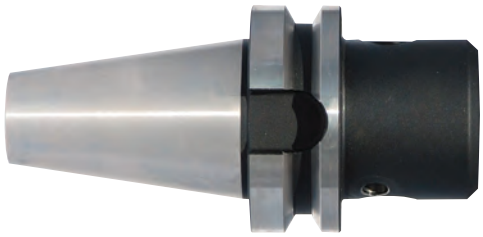


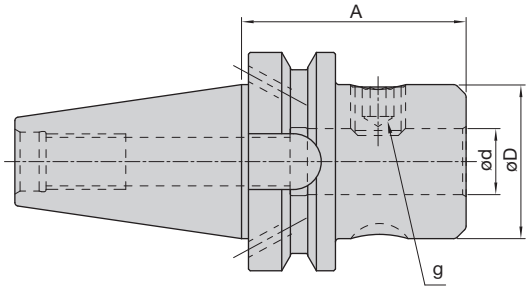
CAT40				Balanced to G6.3 @ 8,000 RPM
Catalog Number	Dimensions			
	d (inch)	D (mm)	A (inch)	g
SSEH-0.125-1.38-CAT40	0.125	17.5	1.38	6-32 UNC
SSEH-0.125-4.50-CAT40	0.125	17.5	4.50	6-32 UNC
SSEH-0.187-1.38-CAT40	0.187	17.5	1.38	8-32 UNC
SSEH-0.187-2.50-CAT40	0.187	17.5	2.50	8-32 UNC
SSEH-0.187-4.50-CAT40	0.187	17.5	4.50	8-32 UNC
SSEH-0.250-1.38-CAT40	0.250	19.8	1.38	1-4-28 UNF
SSEH-0.250-2.50-CAT40	0.250	19.8	2.50	1-4-28 UNF
SSEH-0.250-4.50-CAT40	0.250	19.8	4.50	1-4-28 UNF
SSEH-0.312-1.38-CAT40	0.312	25.4	1.38	5-16-24 UNF
SSEH-0.312-2.50-CAT40	0.312	25.4	2.50	5-16-24 UNF
SSEH-0.312-4.50-CAT40	0.312	25.4	4.50	5-16-24 UNF
SSEH-0.375-1.38-CAT40	0.375	25.4	1.38	3-8-24 UNF
SSEH-0.375-2.50-CAT40	0.375	25.4	2.50	3-8-24 UNF
SSEH-0.375-4.50-CAT40	0.375	25.4	4.50	3-8-24 UNF
SSEH-0.375-6.50-CAT40	0.375	25.4	6.50	3-8-24 UNF
SSEH-0.437-1.75-CAT40	0.437	35.1	1.75	7-16-20 UNF
SSEH-0.437-4.50-CAT40	0.437	35.1	4.50	7-16-20 UNF
SSEH-0.500-1.75-CAT40	0.500	35.1	1.75	7-16-20 UNF
SSEH-0.500-2.62-CAT40	0.500	35.1	2.62	7-16-20 UNF
SSEH-0.500-4.62-CAT40	0.500	35.1	4.62	7-16-20 UNF
SSEH-0.500-6.62-CAT40	0.500	35.1	6.62	7-16-20 UNF
SSEH-0.625-1.75-CAT40	0.625	38.1	1.75	1-2-20 UNF
SSEH-0.625-3.75-CAT40	0.625	38.1	3.75	1-2-20 UNF
SSEH-0.625-5.75-CAT40	0.625	38.1	5.75	1-2-20 UNF
SSEH-0.750-1.75-CAT40	0.750	44.5	1.75	5-8-18 UNF
SSEH-0.750-3.75-CAT40	0.750	44.5	3.75	5-8-18 UNF
SSEH-0.750-5.75-CAT40	0.750	44.5	5.75	5-8-18 UNF
SSEH-0.875-1.75-CAT40	0.875	50.8	1.75	5-8-18 UNF
SSEH-0.875-4.00-CAT40	0.875	50.8	4.00	5-8-18 UNF
SSEH-0.875-6.00-CAT40	0.875	50.8	6.00	5-8-18 UNF
SSEH-1.000-1.75-CAT40	1.000	50.8	1.75	3-4-16 UNF
SSEH-1.000-4.00-CAT40	1.000	50.8	4.00	3-4-16 UNF
SSEH-1.000-6.00-CAT40	1.000	50.8	6.00	3-4-16 UNF
SSEH-1.250-2.00-CAT40	1.250	63.5	2.00	3-4-16 UNF
SSEH-1.250-4.25-CAT40	1.250	63.5	4.25	3-4-16 UNF
SSEH-1.250-6.25-CAT40	1.250	63.5	6.25	3-4-16 UNF
SSEH-1.500-4.62-CAT40	1.500	69.9	4.62	3-4-16 UNF
SSEH-1.500-6.62-CAT40	1.500	69.9	6.62	3-4-16 UNF

Endmill Holders



CAT50				Balanced to G6.3 @ 8,000 RPM
Catalog Number	Dimensions			
	d (inch)	D (mm)	A (inch)	g
SSEH-0.187-2.50-CAT50	0.187	17.5	2.50	8-32 UNC
SSEH-0.187-4.50-CAT50	0.187	17.5	4.50	8-32 UNC
SSEH-0.187-6.50-CAT50	0.187	17.5	6.50	8-32 UNC
SSEH-0.250-2.50-CAT50	0.250	19.8	2.50	1-4-28 UNF
SSEH-0.250-4.50-CAT50	0.250	19.8	4.50	1-4-28 UNF
SSEH-0.250-6.50-CAT50	0.250	19.8	6.50	1-4-28 UNF
SSEH-0.312-2.50-CAT50	0.312	25.4	2.50	5-16-24 UNF
SSEH-0.312-4.50-CAT50	0.312	25.4	4.50	5-16-24 UNF
SSEH-0.312-6.50-CAT50	0.312	25.4	6.50	5-16-24 UNF
SSEH-0.375-2.50-CAT50	0.375	25.4	2.50	3-8-24 UNF
SSEH-0.375-4.50-CAT50	0.375	25.4	4.50	3-8-24 UNF
SSEH-0.375-6.50-CAT50	0.375	25.4	6.50	3-8-24 UNF
SSEH-0.375-8.50-CAT50	0.375	25.4	8.50	3-8-24 UNF
SSEH-0.437-2.50-CAT50	0.437	35.1	2.50	7-16-20 UNF
SSEH-0.500-2.62-CAT50	0.500	35.1	2.62	7-16-20 UNF
SSEH-0.500-4.62-CAT50	0.500	35.1	4.62	7-16-20 UNF
SSEH-0.500-6.62-CAT50	0.500	35.1	6.62	7-16-20 UNF
SSEH-0.500-8.50-CAT50	0.500	35.1	8.50	7-16-20 UNF
SSEH-0.625-3.75-CAT50	0.625	38.1	3.75	1-2-20 UNF
SSEH-0.625-5.75-CAT50	0.625	38.1	5.75	1-2-20 UNF
SSEH-0.625-7.75-CAT50	0.625	38.1	7.75	1-2-20 UNF
SSEH-0.750-3.75-CAT50	0.750	44.5	3.75	5-8-18 UNF
SSEH-0.750-5.75-CAT50	0.750	44.5	5.75	5-8-18 UNF
SSEH-0.750-7.75-CAT50	0.750	44.5	7.75	5-8-18 UNF
SSEH-0.750-10.00-CAT50	0.750	44.5	10.00	5-8-18 UNF
SSEH-0.875-3.75-CAT50	0.875	50.8	3.75	5-8-18 UNF
SSEH-0.875-5.75-CAT50	0.875	50.8	5.75	5-8-18 UNF
SSEH-0.875-7.75-CAT50	0.875	50.8	7.75	5-8-18 UNF
SSEH-1.000-4.00-CAT50	1.000	50.8	4.00	3-4-16 UNF
SSEH-1.000-6.00-CAT50	1.000	50.8	6.00	3-4-16 UNF
SSEH-1.000-8.00-CAT50	1.000	50.8	8.00	3-4-16 UNF
SSEH-1.000-10.00-CAT50	1.000	50.8	10.00	3-4-16 UNF
SSEH-1.250-4.00-CAT50	1.250	63.5	4.00	3-4-16 UNF
SSEH-1.250-6.00-CAT50	1.250	63.5	6.00	3-4-16 UNF
SSEH-1.250-8.00-CAT50	1.250	63.5	8.00	3-4-16 UNF
SSEH-1.250-10.00-CAT50	1.250	63.5	10.00	3-4-16 UNF
SSEH-1.500-4.00-CAT50	1.500	69.9	4.00	3-4-16 UNF
SSEH-1.500-6.00-CAT50	1.500	69.9	6.00	3-4-16 UNF
SSEH-1.500-8.00-CAT50	1.500	69.9	8.00	3-4-16 UNF
SSEH-2.000-5.62-CAT50	2.000	95.3	5.62	1-14 UNS
SSEH-2.000-9.62-CAT50	2.000	95.3	9.62	1-14 UNS

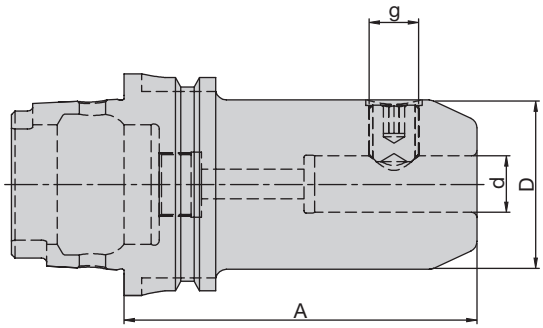




BT30	Balanced to G6.3 @ 8,000 RPM			
Catalog Number	Dimensions			
	d (inch)	D (mm)	A (inch)	g
SSEH-0.125-2.36-BT30	0.125	17.5	2.36	6-32 UNC
SSEH-0.188-2.36-BT30	0.187	17.5	2.36	8-32 UNC
SSEH-0.250-2.36-BT30	0.250	19.8	2.36	1-4-28 UNF
SSEH-0.312-2.36-BT30	0.312	25.4	2.36	5-16-24 UNF
SSEH-0.375-2.36-BT30	0.375	25.4	2.36	3-8-24 UNF
SSEH-0.500-2.36-BT30	0.500	35.1	2.36	7-16-20 UNF
SSEH-0.625-2.36-BT30	0.625	38.1	2.36	1-2-20 UNF
SSEH-0.750-2.36-BT30	0.750	44.5	2.36	5-8-18 UNF

BT40	Balanced to G6.3 @ 8,000 RPM			
Catalog Number	Dimensions			
	d (inch)	D (mm)	A (inch)	g
SSEH-0.250-2.55-BT40	0.250	19.8	2.55	1-4-28 UNF
SSEH-0.312-2.55-BT40	0.312	25.4	2.55	5-16-24 UNF
SSEH-0.375-2.55-BT40	0.375	25.4	2.55	3-8-24 UNF
SSEH-0.500-2.55-BT40	0.500	35.1	2.55	7-16-20 UNF
SSEH-0.500-4.00-BT40	0.500	35.1	4.00	7-16-20 UNF
SSEH-0.625-2.55-BT40	0.625	38.1	2.55	1-2-20 UNF
SSEH-0.750-2.55-BT40	0.750	44.5	2.55	5-8-18 UNF
SSEH-0.875-3.35-BT40	0.875	50.8	3.35	5-8-18 UNF
SSEH-1.000-3.74-BT40	1.000	50.8	3.74	3-4-16 UNF
SSEH-1.000-5.00-BT40	1.000	50.8	5.00	3-4-16 UNF
SSEH-1.250-3.35-BT40	1.250	63.5	3.35	3-4-16 UNF

Endmill Holders

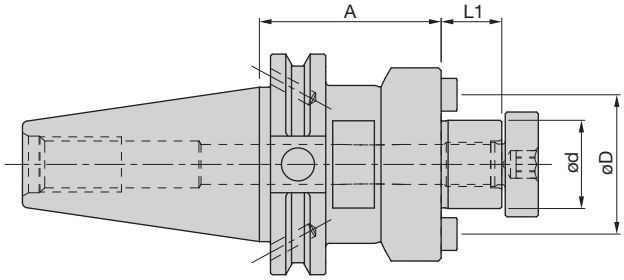


HSK-A63 End Mill Holders with Weldon Notch DIN1835-B Balanced to G6.3 @ 20,000 RPM

Catalog Number	Dimensions			
	d (inch)	D (inch)	A (inch)	g
SSEH-0.250"-3.94"/HSK-A63	0.250	1.00	3.94	1/4-28UNF
SSEH-0.375"-3.94"/HSK-A63	0.375	1.10	3.94	3/8-24UNF
SSEH-0.500"-3.94"/HSK-A63	0.500	1.65	3.94	7/16-20UNF
SSEH-0.625"-3.94"/HSK-A63	0.625	1.89	3.94	1/2-20UNF
SSEH-0.750"-3.94"/HSK-A63	0.750	2.05	3.94	5/8-18UNF
SSEH-1.00"-4.33"/HSK-A63	1.000	2.60	4.33	3/4-16UNF
SSEH-1.250"-4.33"/HSK-A63	1.250	2.83	4.33	3/4-16UNF

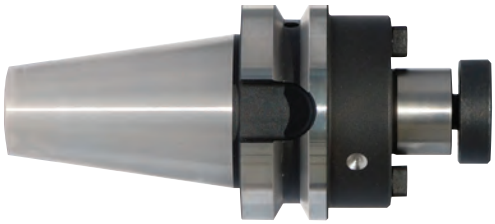
HSK-A100 End Mill Holders with Weldon Notch DIN1835-B Balanced to G6.3 @ 20,000 RPM

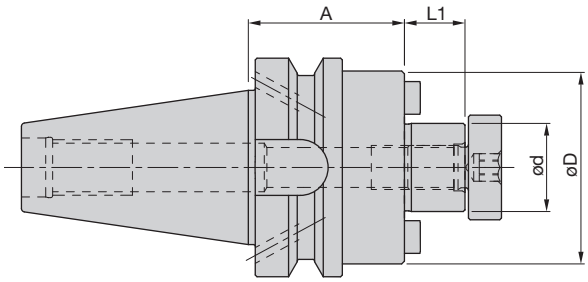
Catalog Number	Dimensions			
	d (inch)	D (inch)	A (inch)	g
SSEH-0.250"-3.15"/HSK-A100	0.250	0.78	3.15"	1/4-28UNF-8
SSEH-0.250"-6.30"/HSK-A100	0.250	0.78	6.30"	1/4-28UNF-8
SSEH-0.312"-3.15"/HSK-A100	0.312	1.00	3.15"	5/16-24UNF-10
SSEH-0.312"-6.30"/HSK-A100	0.312	1.00	6.30"	5/16-24UNF-10
SSEH-0.375"-3.15"/HSK-A100	0.375	1.00	3.15"	3/8-24UNF-9
SSEH-0.375"-6.30"/HSK-A100	0.375	1.00	6.30"	3/8-24UNF-9
SSEH-0.500"-3.15"/HSK-A100	0.500	1.38	3.15"	7/16-20UNF-12
SSEH-0.500"-6.30"/HSK-A100	0.500	1.38	6.30"	7/16-20UNF-12
SSEH-0.625"-3.94"/HSK-A100	0.625	1.50	3.94"	1/2-20UNF-14
SSEH-0.625"-6.30"/HSK-A100	0.625	1.50	6.30"	1/2-20UNF-14
SSEH-0.750"-3.94"/HSK-A100	0.750	1.75	3.94"	5/8-18UNF-14
SSEH-0.750"-6.30"/HSK-A100	0.750	1.75	6.30"	5/8-18UNF-14
SSEH-1.000"-3.94"/HSK-A100	1.000	2.00	3.94"	3/4-16UNF-14
SSEH-1.000"-6.30"/HSK-A100	1.000	2.00	6.30"	3/4-16UNF-14
SSEH-1.250"-3.94"/HSK-A100	1.250	2.50	3.94"	3/4-16UNF-14
SSEH-1.250"-6.30"/HSK-A100	1.250	2.50	6.30"	3/4-16UNF-14



Shell Mill Holders	Balanced to G6.3 @ 8,000 RPM						
Catalog Number	Dimensions						
	d (mm)	d (inch)	D (mm)	A (mm)	A (inch)	L_1 (mm)	D_1 (mm)
CAT40							
SSMH-0.500-1.38-CAT40	12.7	0.50	36.6	35.1	1.38	14.2	25.4
SSMH-0.500-3.50-CAT40	12.7	0.50	36.6	88.9	3.50	14.2	25.4
SSMH-0.750-1.38-CAT40	19.1	0.75	44.4	35.1	1.38	17.5	28.7
SSMH-0.750-3.50-CAT40	19.1	0.75	44.4	88.9	3.50	17.5	28.7
SSMH-0.750-6.00-CAT40	19.1	0.75	44.4	152.4	6.00	17.5	28.7
SSMH-1.000-1.75-CAT40	25.4	1.00	55.6	44.5	1.75	17.5	40.1
SSMH-1.000-2.06-CAT40	25.4	1.00	55.6	52.3	2.06	17.5	40.1
SSMH-1.000-4.00-CAT40	25.4	1.00	55.6	101.6	4.00	17.5	40.1
SSMH-1.000-6.00-CAT40	25.4	1.00	55.6	152.4	6.00	17.5	40.1
SSMH-1.250-2.12-CAT40	31.8	1.25	69.9	53.8	2.12	17.5	50.3
SSMH-1.250-4.00-CAT40	31.8	1.25	69.9	101.6	4.00	17.5	50.3
SSMH-1.500-2.41-CAT40	38.1	1.50	85.9	61.2	2.41	23.9	60.7
SSMH-1.500-4.00-CAT40	38.1	1.50	85.9	101.6	4.00	23.9	60.7
CAT50							
SSMH-0.500-1.50-CAT50	12.7	0.50	36.6	38.1	1.50	14.2	25.4
SSMH-0.500-3.50-CAT50	12.7	0.50	36.6	88.9	3.50	14.2	25.4
SSMH-0.500-5.50-CAT50	12.7	0.50	36.6	139.7	5.50	14.2	25.4
SSMH-0.750-1.50-CAT50	19.1	0.75	44.5	38.1	1.50	17.5	28.7
SSMH-0.750-3.50-CAT50	19.1	0.75	44.5	88.9	3.50	17.5	28.7
SSMH-0.750-5.50-CAT50	19.1	0.75	44.5	139.7	5.50	17.5	28.7
SSMH-0.750-7.00-CAT50	19.1	0.75	44.5	177.8	7.00	17.5	28.7
SSMH-0.750-9.00-CAT50	19.1	0.75	44.5	228.6	9.00	17.5	28.7
SSMH-1.000-10.00-CAT50	25.4	1.00	55.6	254.0	10.00	17.5	40.1
SSMH-1.000-2.00-CAT50	25.4	1.00	55.6	50.8	2.00	17.5	40.1
SSMH-1.000-4.00-CAT50	25.4	1.00	55.6	101.6	4.00	17.5	40.1
SSMH-1.000-6.00-CAT50	25.4	1.00	55.6	152.4	6.00	17.5	40.1
SSMH-1.000-8.00-CAT50	25.4	1.00	55.6	203.2	8.00	17.5	40.1
SSMH-1.250-1.50-CAT50	31.8	1.25	69.9	38.1	1.50	17.5	50.3
SSMH-1.250-3.50-CAT50	31.8	1.25	69.9	88.9	3.50	17.5	50.3
SSMH-1.250-5.50-CAT50	31.8	1.25	69.9	139.7	5.50	17.5	50.3
SSMH-1.250-7.00-CAT50	31.8	1.25	69.9	177.8	7.00	17.5	50.3
SSMH-1.250-9.00-CAT50	31.8	1.25	69.9	228.6	9.00	17.5	50.3
SSMH-1.500-2.40-CAT50	38.1	1.50	85.9	61.0	2.40	23.9	60.7
SSMH-1.500-4.00-CAT50	38.1	1.50	85.9	101.6	4.00	23.9	60.7
SSMH-1.500-6.00-CAT50	38.1	1.50	85.9	152.4	6.00	23.9	60.7
SSMH-1.500-8.00-CAT50	38.1	1.50	85.9	203.2	8.00	23.9	60.7
SSMH-2.000-2.40-CAT50	50.8	2.00	123.9	61.0	2.40	23.9	77.2
SSMH-2.000-4.00-CAT50	50.8	2.00	123.9	101.6	4.00	23.9	77.2
SSMH-2.000-6.00-CAT50	50.8	2.00	123.9	152.4	6.00	23.9	77.2
SSMH-2.000-8.00-CAT50	50.8	2.00	123.9	203.2	8.00	23.9	77.2
SSMH-2.500-2.40-CAT50	63.5	2.50	123.9	61.0	2.40	28.5	92.2
SSMH-2.500-4.00-CAT50	63.5	2.50	123.9	101.6	4.00	28.5	92.2

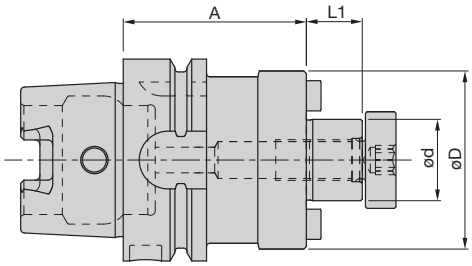
Shell Mill Holders





BT30							Balanced to G6.3 @ 8,000 RPM
Catalog Number	Dimensions						
	d (mm)	d (inch)	D (mm)	A (mm)	A (inch)	L_1 (mm)	D_1 (mm)
SSMH-0.500-1.18-BT30	12.7	0.50	36.6	30.0	1.18	14.2	25.4
SSMH-0.750-1.18-BT30	19.1	0.75	44.5	30.0	1.18	17.5	28.7
SSMH-1.000-1.77-BT30	25.4	1.00	55.6	45.0	1.77	17.5	40.1
SSMH-16-40-BT30	16	–	38	40	–	17	–
SSMH-22-40-BT30	22	–	48	40	–	19	–
SSMH-27-40-BT30	27	–	58	40	–	21	–

BT40							Balanced to G6.3 @ 8,000 RPM
Catalog Number	Dimensions						
	d (mm)	d (inch)	D (mm)	A (mm)	A (inch)	L_1 (mm)	D_1 (mm)
SSMH-0.500-4.00-BT40	12.7	0.50	36.6	101.6	4.00	14.2	25.4
SSMH-0.750-1.77-BT40	19.1	0.75	44.5	45.0	1.77	17.5	28.7
SSMH-0.750-4.00-BT40	19.1	0.75	44.5	101.6	4.00	17.5	28.7
SSMH-0.750-6.00-BT40	19.1	0.75	44.5	152.4	6.00	17.5	28.7
SSMH-1.000-1.77-BT40	25.4	1.00	55.6	45.0	1.77	17.5	40.1
SSMH-1.000-4.00-BT40	25.4	1.00	55.6	101.6	4.00	17.5	40.1
SSMH-1.000-6.00-BT40	25.4	1.00	55.6	152.4	6.00	17.5	40.1
SSMH-1.250-2.36-BT40	31.8	1.25	69.9	59.9	2.36	17.5	50.3
SSMH-1.250-5.00-BT40	31.8	1.25	69.9	127.0	5.00	17.5	50.3
SSMH-1.500-2.36-BT40	38.1	1.50	85.9	59.9	2.36	23.9	60.7
SSMH-1.500-5.00-BT40	38.1	1.50	85.9	127.0	5.00	23.9	60.7
SSMH-16-100-BT40	16	–	38	100	–	17	–
SSMH-16-40-BT40	16	–	38	40	–	17	–
SSMH-22-100-BT40	22	–	48	100	–	19	–
SSMH-22-160-BT40	22	–	48	160	–	19	–
SSMH-22-40-BT40	22	–	48	40	–	19	–
SSMH-27-100-BT40	27	–	58	100	–	21	–
SSMH-27-160-BT40	27	–	58	160	–	21	–
SSMH-27-40-BT40	27	–	58	40	–	21	–
SSMH-32-100-BT40	32	–	78	100	–	24	–
SSMH-32-50-BT40	32	–	78	50	–	24	–
SSMH-40-100-BT40	40	–	88	100	–	27	–
SSMH-40-50-BT40	40	–	88	50	–	27	–



HSKA63						Balanced to G2.5 @ 15,000 RPM
Catalog Number	Dimensions					
	d (mm)	d (inch)	D (mm)	A (mm)	A (inch)	L_1 (mm)
SSMH-0.500-2.00-HSKA63	12.7	0.50	36.6	50.8	2.00	14.2
SSMH-0.750-2.00-HSKA63	19.1	0.75	44.5	50.8	2.00	17.5
SSMH-1.000-2.25-HSKA63	25.4	1.00	55.6	57.2	2.25	17.5
SSMH-1.250-2.25-HSKA63	31.8	1.25	69.9	57.2	2.25	17.5
SSMH-1.500-2.25-HSKA63	38.1	1.50	58.9	57.2	2.25	23.9
SSMH-16-100-HSKA63	16	–	38	100	3.94	17
SSMH-16-50-HSKA63	16	–	38	50	1.97	17
SSMH-22-100-HSKA63	22	–	48	100	3.94	19
SSMH-22-50-HSKA63	22	–	48	50	1.97	19
SSMH-27-100-HSKA63	27	–	58	100	3.94	21
SSMH-27-60-HSKA63	27	–	58	60	2.36	21
SSMH-32-100-HSKA63	32	–	78	100	3.94	24
SSMH-32-60-HSKA63	32	–	78	60	2.36	24
SSMH-40-100-HSKA63	40	–	88	100	3.94	27
SSMH-40-60-HSKA63	40	–	88	60	2.36	27

Clamping Nut – ER to DIN 6499 – Balanced

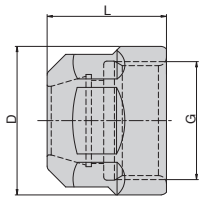


Fig. 1

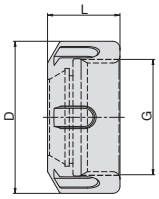
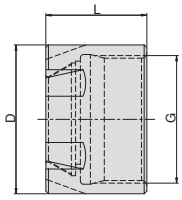


Fig. 2

Catalog Number	Dimensions				Fig
	Size	D	L	G	
ER16-DIN6499	1-10	28.0	17.5	M22x1.5	1
ER20-DIN6499	1-13	34.0	19.0	M25x1.5	1
ER25-DIN6499	2-16	42.0	20.0	M32x1.5	2
ER32-DIN6499	2-20	50.0	22.5	M40x1.5	2
ER40-DIN6499	3-26	63.0	25.5	M50x1.5	2

Clamping Nut – "Mini" ER



Catalog Number	Dimensions				Fig
	Size	D	L	G	
ER11M	1-7	16.0	11.3	M13x0.75	-
ER16M	1-10	22.0	17.0	M19x1.0	-
ER20M	1-13	28.0	19.0	M24x1.0	-
ER25M	2-16	35.0	20.0	M30x1.0	-

Clamping Nut – ER for Sealing Discs

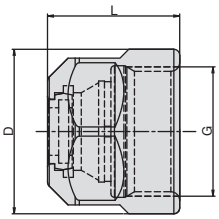


Fig. 1

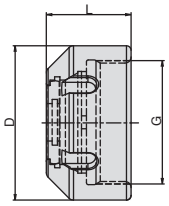


Fig. 2

Catalog Number	Dimensions				Fig
	Size	D	L	G	
ER16-IC	1-10	28.0	22.5	M22x1.5	1
ER20-IC	1-13	34.0	24.0	M25x1.5	1
ER25-IC	2-16	42.0	25.0	M32x1.5	2
ER32-IC	2-20	50.0	27.5	M40x1.5	2
ER40-IC	3-26	63.0	30.5	M50x1.5	2

Sealing Discs for ER-IC Clamping Nuts

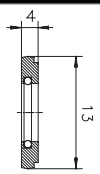


Fig
SD ER 16

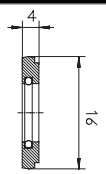


Fig
SD ER 20

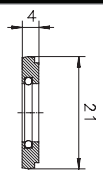


Fig
SD ER 25

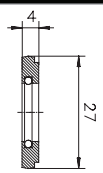


Fig
SD ER 32

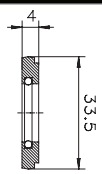


Fig
SD ER 40

Catalog Number	Dimensions	
	Sealing Capacity (mm)	Sealing Capacity (inch)
Sealing Discs for ER16-IC Clamping Nuts (Inch & Metric)		
SD-ER16-3.0-2.5mm	3.0-2.5	0.1181"-0.0984"
SD-ER16-3.5-3.0mm	3.5-3.0	0.1378"-0.1181"
SD-ER16-4.0-3.5mm	4.0-3.5	0.1575"-0.1378"
SD-ER16-4.5-4.0mm	4.5-4.0	0.1772"-0.1575"
SD-ER16-5.0-4.5mm	5.0-4.5	0.1969"-0.1772"
SD-ER16-5.5-5.0mm	5.5-5.0	0.2165"-0.1969"
SD-ER16-6.0-5.5mm	6.0-5.5	0.2362"-0.2160"
SD-ER16-6.5-6.0mm	6.5-6.0	0.2559"-0.2362"
SD-ER16-7.0-6.5mm	7.0-6.5	0.2756"-0.2559"
SD-ER16-7.5-7.0mm	7.5-7.0	0.2953"-0.2756"
SD-ER16-8.0-7.5mm	8.0-7.5	0.3150"-0.2953"
SD-ER16-8.5-8.0mm	8.5-8.0	0.3347"-0.3150"
SD-ER16-9.0-8.5mm	9.0-8.5	0.3543"-0.3347"
SD-ER16-9.5-9.0mm	9.5-9.0	0.3740"-0.3543"
SD-ER16-10.0-9.5mm	10.0-9.5	0.3937"-0.3740"
Sealing Discs for ER20-IC Clamping Nuts (Inch & Metric)		
SD-ER20-3.0-2.5mm	3.0-2.5	0.1181"-0.0984"
SD-ER20-3.5-3.0mm	3.5-3.0	0.1378"-0.1181"
SD-ER20-4.0-3.5mm	4.0-3.5	0.1575"-0.1378"
SD-ER20-4.5-4.0mm	4.5-4.0	0.1772"-0.1575"
SD-ER20-5.0-4.5mm	5.0-4.5	0.1969"-0.1772"
SD-ER20-5.5-5.0mm	5.5-5.0	0.2165"-0.1969"
SD-ER20-6.0-5.5mm	6.0-5.5	0.2362"-0.2160"
SD-ER20-6.5-6.0mm	6.5-6.0	0.2559"-0.2362"
SD-ER20-7.0-6.5mm	7.0-6.5	0.2756"-0.2559"
SD-ER20-7.5-7.0mm	7.5-7.0	0.2953"-0.2756"
SD-ER20-8.0-7.5mm	8.0-7.5	0.3150"-0.2953"
SD-ER20-8.5-8.0mm	8.5-8.0	0.3347"-0.3150"
SD-ER20-9.0-8.5mm	9.0-8.5	0.3543"-0.3347"
SD-ER20-9.5-8.0mm	9.5-9.0	0.3740"-0.3543"
SD-ER20-10.0-9.5mm	10.0-9.5	0.3937"-0.3740"
SD-ER20-10.5-10mm	10.5-10.0	0.4134"-0.3937"
SD-ER20-11.0-10.5mm	11.0-10.5	0.4330"-0.4134"
SD-ER20-11.5-11.0mm	11.5-11.0	0.4528"-0.4330"
SD-ER20-12.0-11.5mm	12.0-11.5	0.4724"-0.4528"
SD-ER20-12.5-12.0mm	12.5-12.0	0.4921"-0.4724"
SD-ER20-13.0-12.5mm	13.0-12.5	0.5118"-0.4921"
SD-ER25-3.0-2.5mm	3.0-2.5	0.1181"-0.0984"
SD-ER25-3.5-3.0mm	3.5-3.0	0.1378"-0.1181"
SD-ER25-4.0-3.5mm	4.0-3.5	0.1575"-0.1378"
SD-ER25-4.5-4.0mm	4.5-4.0	0.1772"-0.1575"
SD-ER25-5.0-4.5mm	5.0-4.5	0.1969"-0.1772"
SD-ER25-5.5-5.0mm	5.5-5.0	0.2165"-0.1969"

Sealing Discs for ER-IC Clamping Nuts

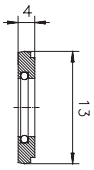


Fig
SD ER 16

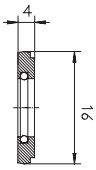


Fig
SD ER 20

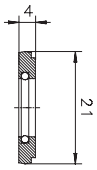


Fig
SD ER 25

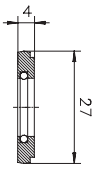


Fig
SD ER 32

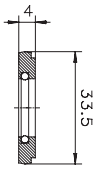


Fig
SD ER 40

Catalog Number	Dimensions	
	Sealing Capacity (mm)	Sealing Capacity (inch)
SD-ER25-6.0-5.5mm	6.0-5.5	0.2362"-0.2160"
SD-ER25-6.5-6.0mm	6.5-6.0	0.2559"-0.2362"
SD-ER25-7.0-6.5mm	7.0-6.5	0.2756"-0.2559"
SD-ER25-7.5-7.0mm	7.5-7.0	0.2953"-0.2756"
SD-ER25-8.0-7.5mm	8.0-7.5	0.3150"-0.2953"
SD-ER25-8.5-8.0mm	8.5-8.0	0.3347"-0.3150"
SD-ER25-9.0-8.5mm	9.0-8.5	0.3543"-0.3347"
SD-ER25-9.5-9.0mm	9.5-9.0	0.3740"-0.3543"
SD-ER25-10.0-9.5mm	10.0-9.5	0.3937"-0.3740"
SD-ER25-10.5-10.0mm	10.5-10.0	0.4134"-0.3937"
SD-ER25-11.0-10.5mm	11.0-10.5	0.4330"-0.4134"
SD-ER25-11.5-11.0mm	11.5-11.0	0.4528"-0.4330"
SD-ER25-12.0-11.5mm	12.0-11.5	0.4724"-0.4528"
SD-ER25-12.5-12.0mm	12.5-12.0	0.4921"-0.4724"
SD-ER25-13.0-12.5mm	13.0-12.5	0.5118"-0.4921"
SD-ER25-13.5-13.0mm	13.5-13.0	0.5315"-0.5118"
SD-ER25-14.0-13.5mm	14.0-13.5	0.5512"-0.5315"
SD-ER25-14.5-14.0mm	14.5-14.0	0.5709"-0.5512"
SD-ER25-15.0-14.5mm	15.0-14.5	0.5905"-0.5709"
SD-ER25-15.5-15.0mm	15.5-15.0	0.6102"-0.5905"
SD-ER25-16.0-15.5mm	16.0-15.5	0.6300"-0.6102"
Sealing Discs for ER32-IC Clamping Nuts (Inch & Metric)		
SD-ER32-3.0-2.5mm	3.0-2.5	0.1181"-0.0984"
SD-ER32-3.5-3.0mm	3.5-3.0	0.1378"-0.1181"
SD-ER32-4.0-3.5mm	4.0-3.5	0.1575"-0.1378"
SD-ER32-4.5-4.0mm	4.5-4.0	0.1772"-0.1575"
SD-ER32-5.0-4.5mm	5.0-4.5	0.1969"-0.1772"
SD-ER32-5.5-5.0mm	5.5-5.0	0.2165"-0.1969"
SD-ER32-6.0-5.5mm	6.0-5.5	0.2362"-0.2160"
SD-ER32-6.5-6.0mm	6.5-6.0	0.2559"-0.2362"
SD-ER32-7.0-6.5mm	7.0-6.5	0.2756"-0.2559"
SD-ER32-7.5-7.0mm	7.5-7.0	0.2953"-0.2756"
SD-ER32-8.0-7.5mm	8.0-7.5	0.3150"-0.2953"
SD-ER32-8.5-8.0mm	8.5-8.0	0.3347"-0.3150"
SD-ER32-9.0-8.5mm	9.0-8.5	0.3543"-0.3347"
SD-ER32-9.5-9.0mm	9.5-9.0	0.3740"-0.3543"
SD-ER32-10.0-9.5mm	10.0-9.5	0.3937"-0.3740"
SD-ER32-10.5-10.0mm	10.5-10.0	0.4134"-0.3937"
SD-ER32-11.0-10.5mm	11.0-10.5	0.4330"-0.4134"
SD-ER32-11.5-11.0mm	11.5-11.0	0.4528"-0.4330"
SD-ER32-12.0-11.5mm	12.0-11.5	0.4724"-0.4528"
SD-ER32-12.5-12.0mm	12.5-12.0	0.4921"-0.4724"
SD-ER32-13.0-12.5mm	13.0-12.5	0.5118"-0.4921"
SD-ER32-13.5-13.0mm	13.5-13.0	0.5315"-0.5118"
SD-ER32-14.0-13.5mm	14.0-13.5	0.5512"-0.5315"

Sealing Discs for ER-IC Clamping Nuts

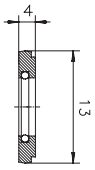


Fig
SD ER 16

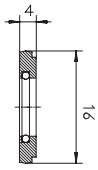


Fig
SD ER 20

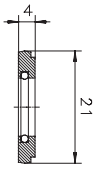


Fig
SD ER 25

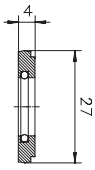


Fig
SD ER 32

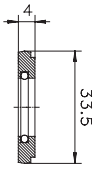


Fig
SD ER 40

Catalog Number	Dimensions	
	Sealing Capacity (mm)	Sealing Capacity (inch)
SD-ER32-14.5-14.0mm	14.5-14.0	0.5709"-0.5512"
SD-ER32-15.0-14.5mm	15.0-14.5	0.5905"-0.5709"
SD-ER32-15.5-15.0mm	15.5-15.0	0.6102"-0.5905"
SD-ER32-16.0-15.5mm	16.0-15.5	0.6300"-0.6102"
SD-ER32-16.5-16.0mm	16.5-16.0	0.6496"-0.6300"
SD-ER32-17.0-16.5mm	17.0-16.5	0.6693"-0.6496"
SD-ER32-19.0-18.5mm	19.0-18.5	0.7480"-0.7284"
SD-ER32-19.5-19.0mm	19.5-19.0	0.7677"-0.7480"
SD-ER32-20.0-19.5mm	20.0-19.5	0.7874"-0.7677"
Sealing Discs for ER40-IC Clamping Nuts (Inch & Metric)		
SD-ER40-3.0-2.5mm	3.0-2.5	0.1181"-0.0984"
SD-ER40-3.5-3.0mm	3.5-3.0	0.1378"-0.1181"
SD-ER40-4.0-3.5mm	4.0-3.5	0.1575"-0.1378"
SD-ER40-4.5-4.0mm	4.5-4.0	0.1772"-0.1575"
SD-ER40-5.0-4.5mm	5.0-4.5	0.1969"-0.1772"
SD-ER40-5.5-5.0mm	5.5-5.0	0.2165"-0.1969"
SD-ER40-6.0-5.5mm	6.0-5.5	0.2362"-0.2160"
SD-ER40-6.5-6.0mm	6.5-6.0	0.2559"-0.2362"
SD-ER40-7.0-6.5mm	7.0-6.5	0.2756"-0.2559"
SD-ER40-7.5-7.0mm	7.5-7.0	0.2953"-0.2756"
SD-ER40-8.0-7.5mm	8.0-7.5	0.3150"-0.2953"
SD-ER40-8.5-8.0mm	8.5-8.0	0.3347"-0.3150"
SD-ER40-9.0-8.5mm	9.0-8.5	0.3543"-0.3347"
SD-ER40-9.5-9.0mm	9.5-9.0	0.3740"-0.3543"
SD-ER40-10.0-9.5mm	10.0-9.5	0.3937"-0.3740"
SD-ER40-10.5-10.0mm	10.5-10.0	0.4134"-0.3937"
SD-ER40-11.0-10.5mm	11.0-10.5	0.4330"-0.4134"
SD-ER40-11.5-11.0mm	11.5-11.0	0.4528"-0.4330"
SD-ER40-12.0-11.5mm	12.0-11.5	0.4724"-0.4528"
SD-ER40-12.5-12.0mm	12.5-12.0	0.4921"-0.4724"
SD-ER40-13.0-12.5mm	13.0-12.5	0.5118"-0.4921"
SD-ER40-13.5-13.0mm	13.5-13.0	0.5315"-0.5118"
SD-ER40-14.0-13.5mm	14.0-13.5	0.5512"-0.5315"
SD-ER40-14.5-14.0mm	14.5-14.0	0.5709"-0.5512"
SD-ER40-15.0-14.5mm	15.0-14.5	0.5905"-0.5709"
SD-ER40-15.5-15.0mm	15.5-15.0	0.6102"-0.5905"
SD-ER40-16.0-15.5mm	16.0-15.5	0.6300"-0.6102"
SD-ER40-16.5-16.0mm	16.5-16.0	0.6496"-0.6300"
SD-ER40-17.0-16.5mm	17.0-16.5	0.6693"-0.6496"
SD-ER40-17.5-17.0mm	17.5-17.0	0.6890"-0.6693"

Sealing Discs for ER-IC Clamping Nuts

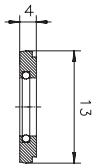


Fig
SD ER 16

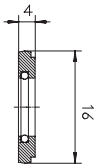


Fig
SD ER 20

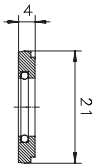


Fig
SD ER 25

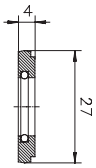


Fig
SD ER 32

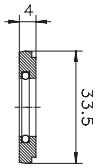
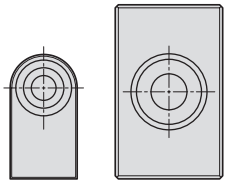


Fig
SD ER 40

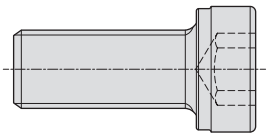
Catalog Number	Dimensions	
	Sealing Capacity (mm)	Sealing Capacity (inch)
SD-ER40-18.0-17.5mm	18.0-17.5	0.7087"-0.6890"
SD-ER40-18.5-18.0mm	18.5-18.0	0.7284"-0.7087"
SD-ER40-19.0-18.5mm	19.0-18.5	0.7480"-0.7284"
SD-ER40-19.5-19.0mm	19.5-19.0	0.7677"-0.7480"
SD-ER40-20.0-19.5mm	20.0-19.5	0.7874"-0.7677"
SD-ER40-20.5-20.0mm	20.5-20.0	0.8070"-0.7874"
SD-ER40-21.0-20.5mm	21.0-20.5	0.8267"-0.8070"
SD-ER40-21.5-21.0mm	21.5-21.0	0.8464"-0.8267"
SD-ER40-22.0-21.5mm	22.0-21.5	0.8661"-0.8464"
SD-ER40-22.5-22.0mm	22.5-22.0	0.8857"-0.8661"
SD-ER40-23.0-22.5mm	23.0-22.5	0.9055"-0.8857"
SD-ER40-23.5-23.0mm	23.5-23.0	0.9251"-0.9055'
SD-ER40-24.0-23.5mm	24.0-23.5	0.9448"-0.9251"
SD-ER40-24.5-24.0mm	24.5-24.0	0.9645"-0.9448"
SD-ER40-25.0-24.5mm	25.0-24.5	0.9842"-0.9645"
SD-ER40-25.5-25.0mm	25.5-25.0	1.0039"-0.9842"
SD-ER40-26.0-25.5mm	26.0-25.5	1.0236"-1.0039"

Drive Key for Inch Shell Mill Holders



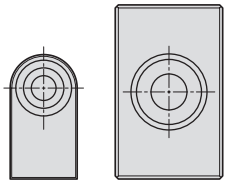
Catalog Number	For Size (inch)
SM64750	0.500"
SM64751	0.750"
SM64752	1.000"
SM64753	1.250"
SM64754	1.500"
SM64755	2.000"
SM64756	2.500"

Locking Screw for Inch Shell Mill Holders



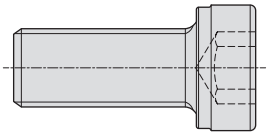
Catalog Number	For Size (inch)
SM64830	0.500"
SM64831	0.750"
SM64832	1.000"
SM64833	1.250"
SM64834	1.500"
SM64835	2.000"
SM64836	2.500"

Drive Key for Metric Shell Mill Holders



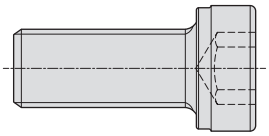
Catalog Number	For Size (mm)
SM16-8x8x14	16
SM22-10x10x17	22
SM27-12x14x20	27
SM32-14x14x22	32
SM40-15.9x16x21	40
SM60-25.4x25x31	60

Locking Screw for Metric Shell Mill Holders Drive Keys



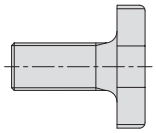
Catalog Number	For Size (mm)
M 3 x 8-DIN 912	16
M 4 X 8-DIN 912	22
M 4 X 14-DIN 912	27
M 5 X 13-DIN 912	32
M 6 X 16-DIN 912	40
M 12 X 25-DIN 912	60

Locking Screw for Metric Shell Mill Holders (Small Counterbore)



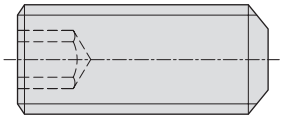
Catalog Number	For Size (mm)
M 8 x 20 DIN 912	16
M 10 x 30 DIN 912	22
M 12 x 35 DIN 912	27
M 16 x 40 DIN 912	32

Locking Screw for Metric Shell Mill Holders (Large Counterbore)



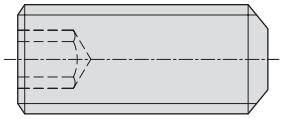
Catalog Number	For Size (mm)
M 8 x 16-DIN 6367	16
M 10 x 22-DIN 6367	22
M 12 x 27-DIN 6367	27
M 16 x 32-DIN 6367	32
M 20 x 40-DIN 6367	40

Locking Screw for End Mill Holders



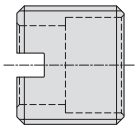
Catalog Number	For Size (inch)
6-32UNSC8	0.125"
8-32UNSC7	0.187"
1/4-28UNF-8	0.250"
5/16-24UNF-10	0.312"
3/8-24UNF-9	0.375"
7/16-20UNF-13	0.437"
7/16-20UNF-12	0.500"
1/2-20UNF-14	0.625"
5/8-18UNF-14	0.750" & 0.875"
3/4-16UNF-14	1.000"
3/4-16UNF-16	1.250" & 1.500"
1-14UNS-23	2.000"

Adjusting Screw Threaded Stud DIN 913 for End Mill Holders



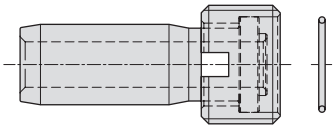
Catalog Number	For Size
M5x5 DIN913	CAT40/50
M5x6 DIN913	BT40
M6x10 DIN913	BT50

Adjusting Screw for ER Collet Chuck Holders



Catalog Number	For Size
M10 x 15-001	ER16
M12 x 15-001	ER20
M16 x 15-001	ER25
M22 x 1.5 x 15-001	ER32 & 40

Coolant Tube for HSK Holders



Catalog Number	For Size
CTHSK 32-10	HSK 32
CTHSK 40-12	HSK 40
CTHSK 50-16	HSK 50
CTHSK 63-18	HSK 63
CTHSK 80-20	HSK 80
CTHSK 100-24	HSK 100

Wrenches for Milling Chucks

Catalog Number	Size (metric & inch)
SC-20	20 & 0.75"
SC-25	25 & 1.000"
SC-32	32 & 1.250"
SC-1.5"	1.5"
SC-2.0"	2.0"

Wrenches for ER Collect Holders

Fig. A

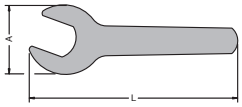


Fig. B

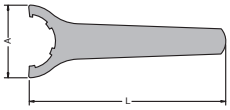
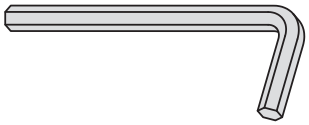


Fig. C

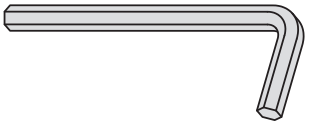
Catalog Number	For Clamping Nut	Dimensions			Fig
		A	L	G	
S-E11M	E11M	16.8	90.0	-	A
S-E16M	E16M	22.5	110.0	-	A
S-E20M	E20M	29.0	120.0	-	A
S-E25M	E25M	36.0	130.0	-	A
S-GS-SW25	ER16-DIN6499	42.0	140.0	-	B
S-E20	ER20-DIN6499	54.0	168.0	-	B
S-E25	ER25-DIN6499	65.0	210.0	-	C
S-E32	ER32-DIN6499	75.0	250.0	-	C
S-E40	ER40-DIN6499	90.0	290.0	-	C

Wrench for Shell Mill Holders Inch Locking Screws



Catalog Number	For Size (inch)
SM 3/16" hex key	0.500
SM 1/4" hex key	0.750
SM 5/16" hex key	1.000 & 1.250
SM 3/8" hex key	1.500
SM 1/2" hex key	2.000 & 2.500

Wrench for Shell Mill Holders Metric Locking Screws (Small Counterbore)

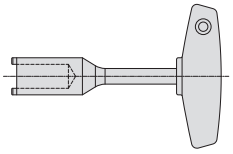


Catalog Number	For Size (mm)
SM6 hex key	16
SM8 hex key	22
SM10 hex key	27
SM14 hex key	32
SM17 hex key	40

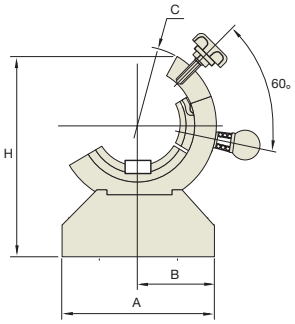
Wrench for Shell Mill Holders Metric Locking Screws (Large Counterbore)

Catalog Number	For Size (mm)
SM-16 DIN 6368	16
SM-22 DIN 6368	22
SM-27 DIN 6368	27
SM-32 DIN 6368	32
SM-40 DIN 6368	40

Wrench for HSK Coolant Tubes



Catalog Number	For Size
S-HSK 32-8.5x115	HSK 32
S-HSK 40-10.5x115	HSK 40
S-HSK 50-14.5x115	HSK 50
S-HSK 63-16.5x136	HSK 63
S-HSK 80-18.5x136	HSK 80
S-HSK 100-22x136	HSK 100



Tool Clamp

- No surface damage such as abrasion and scratch around taper shank closely associated with tool runout
- Easy to assemble and disassemble pull stud bolt
- Convenient and safe when using coolant tube wrench with milling chuck or ER collet chuck

Taper No.	Catalog Number	Dimensions (mm)				Weight (kg)
		A	B	C	H	
BT30	STCP30	125	65	108	135	3.0
BT40	STCP40	160	80	138	180	7.6
BT50	STCP50	180	90	165	205	8.6
SK30	STSK30	125	65	108	135	3.0
SK40	STSK40	160	80	138	180	7.6
SK50	STSK50	180	90	165	205	8.6

Retention Knobs

Catalog Number	Machine Taper	Common Machines
SRKC50-STD	C50	HURCO W/COOLANT
SRKC40-MZC	C40	MAZAK W/COOLANT
SRKC40S-4500	C40	HAAS
SRKC40-STD	C40	FADAL W/COOLANT
SRKC50-4500H	C50	OKK W/COOLANT
SRKC40-1500-ISO	C40	DAEWOO
SRKC40S-4500	C40	HAAS W/COOLANT
SRKC40-1500H	C40	MAKINO W/COOLANT
SRKC50-4500	C50	OKK
SRKC40-STD	C40	FADAL
SRKC40S-9000	C40	MORI-SEKI
SRKC40-4500	C40	OKUMA
SRKC50-MZ	C50	MAZAK W/ O-RING
SRKC50-STD	C50	MAZAK
SRKC50-TOY	C50	TOYOTA W/O-RING

Spindle Cleaners – Professional Series

These easy to use wipers clean your spindles assuring that toolholder tapers make continuous positive contact for repeatable on-center performance. The wiper can also be used for cleaning the bores of collet chucks and Morse Taper holders.

Catalog Number	Description
ISO30	30-Taper Spindle Clean equipped with cleaning blades
ISO40	40-Taper Spindle Clean equipped with cleaning blades
ISO50	50-Taper Spindle Clean equipped with cleaning blades

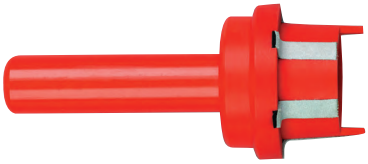
Taper Cleaners for HSK Tool Tapers

For cleaning HSK tool tapers. Plastic body with leather inserts.

For cleaning HSK tool tapers. Plastic body with leather inserts.

Catalog Number	HSK Form A/C/E
76.208.040	40
76.208.050	50
76.208.063	63

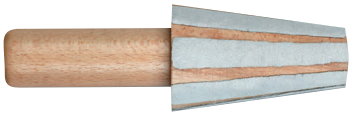
Taper Cleaners for HSK Spindles



For cleaning HSK spindle tapers. Plastic body with leather inserts.

Catalog Number	HSK Form A/C
76.205.032	32
76.205.040	40
76.205.050	50
76.205.063	63
76.205.080	80
76.205.100	100

Taper Cleaners for 7/24 Spindle Tapers (Steep Taper)



For cleaning 7/24 (Steep Taper) spindle tapers. Plastic body with leather inserts.

Catalog Number	CAT Size
76.200.030	30
76.200.040	40
76.200.050	50

SUMITOMO

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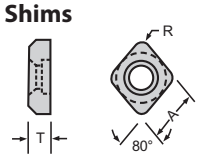
Technical Information & Hardware

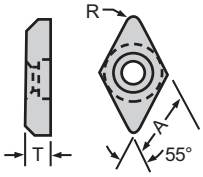
Pages 541-594

80° Diamond Shims



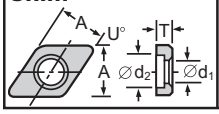
Sumitomo Cat. No.	A Insert I.C.	T	R
ICSN322	.500	.1875	.031
ICSN433	.500	.1875	.047
ICSN533	.625	.1875	.047
ICSN633	.750	.1875	.047

55° Diamond Shims



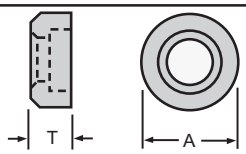
Sumitomo Cat. No.	A Insert I.C.	T	R
IDSN322	.375	.125	.031
IDSN433	.500	.1875	.047
IDSN443	.500	.250	.047
IDSN533	.625	.1875	.047

55°Diamond Shim



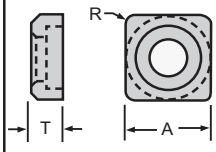
Sumitomo Cat. No.	Size (mm)					
	A	T	d1	d2	–	0°
SDW423	12.65	3.18	6.2	8.0	–	55

Round Shims



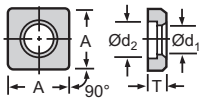
Sumitomo Cat. No.	A Insert I.C.	T	R
IRSN43	.500	.1875	–
IRSN44	.500	.250	–

Square Shims



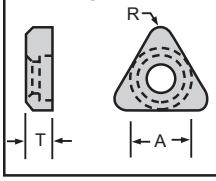
Sumitomo Cat. No.	A Insert I.C.	T	R
ISSN433	.500	.1875	.047
ISSN443	.500	.250	.047
ISSN533	.625	.1875	.047
ISSN543	.625	.250	.047
ISSN633	.750	.1875	.047
ISSN643	.750	.250	.047

Square Shims



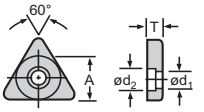
Sumitomo Cat. No.	Size (mm)					
	A	T	d1	d2	–	–
SSW423	12.65	3.18	6.2	8	–	–
SSW433	12.65	4.76	6.2	8		
SSW534	15.85	4.76	7.8	9.7		
SSW635	19	4.76	9	11.5	–	–

Triangle Shims



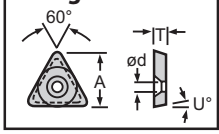
Sumitomo Cat. No.	A Insert I.C.	T	R
ITSN323	.375	.125	.047
ITSN333	.375	.1875	.047
ITSN423	.500	.125	.047
ITSN432	.500	.1875	.031
ITSN433	.500	.1875	.047
ITSN534	.625	.1875	.0625

Triangle Shims



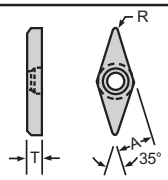
Sumitomo Cat. No.	Size (mm)					
	A	T	d1	d2	–	–
STW323	9.5	3.18	4.7	6.5	–	–
STW333	9.5	4.76	4.7	6.5	–	–
STW434	12.65	4.76	6.2	8	–	–
STW534	15.85	4.76	7.8	9.7	–	–

Triangle Shims



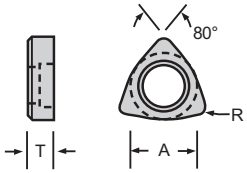
Sumitomo Cat. No.	Size (mm)					
	A	T	d1	d2	–	u°
STPD322	8.4	3.18	3.4	–	–	6
STPD422	11.0	3.18	3.4	–	–	6

35° Diamond Shims



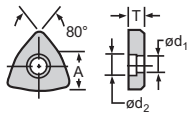
Sumitomo Cat. No.	A Insert I.C.	T	R
IVSN322	.375	.125	.031
IVSN432	.500	.1875	.031
IVSN433	.500	.1875	.047

Trigon Shims



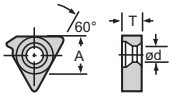
Sumitomo Cat. No.	A Insert I.C.	T	R
IWSN322	.375	.125	.031
IWSN433	.500	.1875	.1875

Trigon Shim



Sumitomo Cat. No.	Size (mm)					
	A	T	d1	d2	–	–
SWW433	12.65	4.76	6.2	8	–	–
SWW544	15.85	5.15	7.8	9.7	–	–

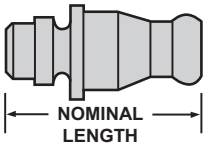
Threading Shim



Sumitomo Cat. No.	Size (mm)					
	A	T	d	–	–	–
LSTE31-0	9.5	2.7	5.2	–	–	–

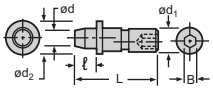
Lock Pins Negative Rake

(Top & Bottom Lock)



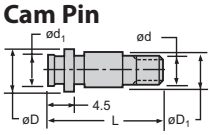
Sumitomo Cat. No.	Insert I.C.	Nominal Length	Hex Wrench	Use With Seat
BWP-46	.500	.578	.094	Yes
NL-23	.250	.328	.0625	No
NL-33	.375	.344	.078	No
NL-33L	.375	.406	.078	No
NL-34	.375	.453	.078	Yes
NL-34L	.375	.516	.078	Yes
NL-44	.500	.516	.094	No
NL-46	.500	.672	.094	Yes
NL-46L	.500	.734	.094	Yes
NL-58	.625	.859	.125	Yes
NL-68	.750	.859	.141	Yes

Cam Pin



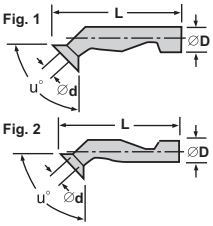
Sumitomo Cat. No.	Size (mm)					
	d	d_1	d_2	L	ℓ	B
CPB33	3.4	4.1	5.5	17	3.4	2.5
CPB43	4.5	5.5	7	19	5	3
CPB43S	4.5	5.5	7	16	5	3
CPB44T	4.5	5.5	7	22	5	3

Cam Pin



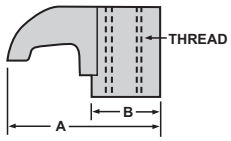
Sumitomo Cat. No.	Size (mm)					
	d	Pitch	L	D	D_1	d_1
MP416	M5	0.8	14	7.5	6	5
MP420	M5	0.8	20	7.5	6	5
MP531	M6	1.0	19.7	9.5	7	6.26
MP534	M6	1.0	26.1	9.5	7	6.76

Clamp Stud



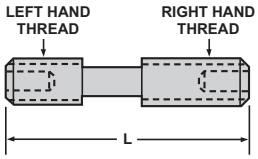
Sumitomo Cat. No.	Size (mm)				
	d	D	L	u°	Shape
SR104B	3	3.4	21	60	Fig. 1
SW43B	4	4.9	27.5	90	Fig. 2
SW42L	4	4.9	22	90	Fig. 2
SW43	4	4.9	27.5	90	Fig. 2
SW53L	4.8	5.9	28.3	90	Fig. 2
SW53R	4.8	5.9	28.3	90	Fig. 2
SW54	4.8	5.9	35.5	90	Fig. 2
SW54B	4.8	5.9	35.5	90	Fig. 2
SW64L	5.5	6.9	33.8	90	Fig. 2
SW64R	5.5	6.9	33.8	90	Fig. 2
SW65	5.5	6.9	44.5	90	Fig. 2
SW65B	5.5	6.9	44.5	90	Fig. 2

Finger Clamp



Sumitomo Cat. No.	A	Thread	B
CL19	.550	10-32	.310
CL6	.580	10-32	.310
CL7	.640	10-32	.310
CL20	.730	1/4-28	.375
CL9	.750	5/16-24	.430
CL12	.880	5/16-24	.430
CL30	1.000	5/16-24	.430

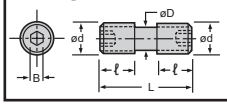
Differential Clamp Screws



Inch

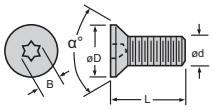
Catalog Number	Thread	L	Wrench Size
XNS35	10-32	.59	3/32
XNS36	10-32	.75	3/32
XNS47	1/4-28	.81	1/8
XNS48	1/4-28	1.00	1/8
XNS58	5/16-24	1.00	5/32
XNS59	5/16-24	1.125	5/32
XNS510	5/16-24	1.25	5/32

Differential Clamp Screw



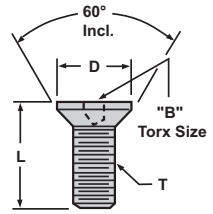
Sumitomo Cat. No.	Size (mm)					
	d	pitch	L	ℓ	D	B
WB613	M6	1.0	13	5	4.5	3
WB616	M6	1.0	16	6	4.5	3
WB820	M8	1.25	22	8.5	6.2	T27
WB8F20	M8	1.0	20	8.5	6.2	4
WB8F30	M8	1.0	3.0	11.5	6.2	4

Torx Insert Screws



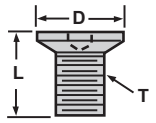
Sumitomo Cat. No.	Size (mm)					
	d	Pitch	L	D	B	α°
BFTX0204	M2	0.4	4.3	2.7	T6	60
BFTX0204A	M2	0.4	4.3	2.7	T6	90
BFTX02205	M2.2	0.45	4.5	3	T6	60
BFTX02506N	M2.5	0.45	5.5	3.45	T8	60
BFTX02507	M2.5	0.45	6.5	3.45	T8	60
BFTX0305A	M3	0.5	5.3	4.3	T10	90
BFTX0306A	M3	0.5	5.8	4.3	T10	90
BFTX0307A	M3	0.5	6.8	4.3	T10	90
BFTX03508	M3.5	0.6	8	5.1	T10	52
BFTX0407A	M4	0.7	7.3	5.6	T15	90
BFTX0409N	M4	0.7	9	5.6	T15	60
BFTX0410A	M4	0.7	10.3	5.6	T15	90
BFTX0509A	M5	0.8	9.3	6.9	T20	90

Torx Insert Screws



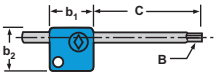
Sumitomo Cat. No.	D	T	L	B
ST21.5	.130	M2.5x.45	.217	T-8
ST32.5	.213	M4x.7	.315	T-15

Shim Screws



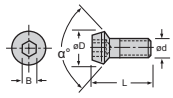
Sumitomo Cat. No.	Insert I.C.	D	L	H	T
S34	.375	.24	.31	.078	10-32
S46	.500	.30	.50	.094	1/4-28
S58	.625	.40	.62	.125	5/16-24
S68	.750	.46	.62	.140	3/8-24

Torx Wrench



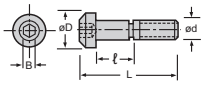
Sumitomo Cat. No.	Size (mm)			
	B	C	b_1	b_2
TRX06	T6	34.5	15	15
TRX08	T8	34.5	19	19
TRX10	T10	42.5	22	22
TRX15	T15	45	22	27
TRX20	T20	49.0	22	30

Flat Button Head Screw



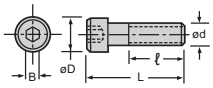
Sumitomo Cat. No.	Size (mm)					
	d	Pitch	L	D	B	α°
BHF0203T	M2	0.4	4	3	1.5	90
BHF0203B	M2	0.4	5.5	3.5	1.5	90
BHF0306R	M3	0.5	6.5	4.4	2	90
BHF0308R	M3	0.5	8	4.4	2	90

Hex Low Head Cap Screw



Sumitomo Cat. No.	Size (mm)					
	d	Pitch	L	ℓ	D	B
BHA0625	M6	1.0	30	11.3	10.5	4
BHA0834	M8	1.25	34.2	12.7	12	5

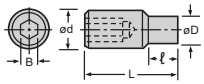
Cap Screw



Sumitomo Cat. No.	Size (mm)					
	d	Pitch	L	ℓ	D	B
BX0414	M4	0.7	14	Full	7	3
BX0512	M5	0.8	12	Full	8.5	4
BX0615	M6	1.0	15	Full	10	5
BX0618	M6	1.0	18	18	10	5
BX0622	M6	1.0	22	18	10	

5

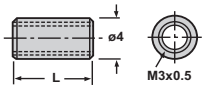
Set Screw



Sumitomo Cat. No.	Size (mm)					
	d	Pitch	L	ℓ	D	B
BTD0520	M5	0.8	10	3	3.5	2.5
BTD0607						
BTD0609	M6	1.0	9	2	4	3
BTD0615	M6	1.0	15	5	4	3
BTD0812	M8	1.25	12	2	5	4
BTD0820	M8	1.25	20	6	5	4
BTD0825	M8	1.25	25	8.5	5	

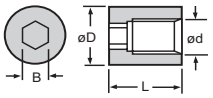
4

Nut



Sumitomo Cat. No.	Size (mm)					
	L	–	–	–	–	–
BNBW2	2	–	–	–	–	–
BNBW4	5	–	–	–	–	–
BNBW7	8	–	–	–	–	–

Nut



Sumitomo Cat. No.	Size (mm)					
	d	L	D	B	–	–
CPM43N	M5	8.5	7	3	–	–
CPM43S	M5	6	7	3	–	–
CPM54N	M6	9	9	4		

Calculating Power Requirement

$$P_c = \frac{v_c \times f \times a_p \times k_c}{60 \times 10^3 \times \eta}$$

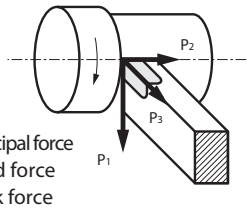
$$H = \frac{P_c}{0.75}$$

P_c : Net power requirement (KW)
v_c : Cutting speed (m/min)
f : Feed rate (mm/rev)
a_p : Depth of cut (mm)
k_c : Specific cutting force (MPa)
H : Required horsepower (HP)
η : Machine efficiency (0.70 to 0.85)

D RoughValue of Kc

Aluminium: 800MPa
General Steel: 2,500 to 3,000MPa
Cast Iron: 1,500MPa

Cutting Force



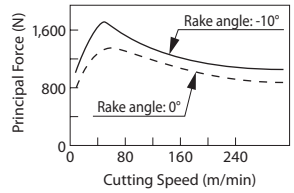
P_1: Principal force
P_2: Feed force
P_3: Back force

D Calculating Cutting Force

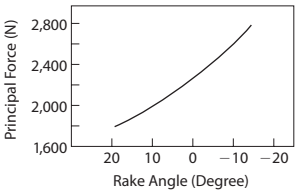
$$P = \frac{K_c \times q}{1{,}000}$$

P : Cutting force (kN)
k_c : Specific cutting force (MPa)
q : Chip area (mm²)

n Relation Between Cutting Speed and Cutting Force



Relation Between Rake Angle and Cutting Force



Calculating Cutting Speed

(1) Calculating rotation speed from cutting speed

$$n = \frac{1{,}000 \times v_c}{\pi \times D_m}$$

n : Spindle speed (min⁻¹)
v_c : Cutting speed (m/min)
D_m : Diameter of work piece (mm)
π : ≒ 3.14

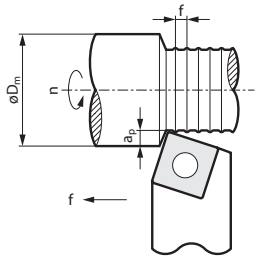
(Ex.) v_c=150m/min, D_m=100mm

$$n = \frac{1{,}000 \times 150}{3.14 \times 100} = 478\ (\text{min}^{-1})$$

(2) Calculating cutting speed from rotational speed

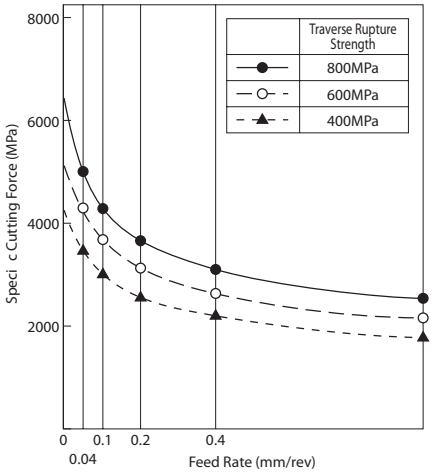
$$v_c = \frac{\pi \times D_m \times n}{1{,}000}$$

Refer to the above table



· n : Spindle speed (min⁻¹)
· v_c : Cutting speed (m/min)
· f : Feed rate (mm/rev)
· a_p : Depth of cut (mm)
· D_m : Diameter of work piece (mm)

Relation Between Feed Rate and Specific Cutting Force (For Carbon Steel)

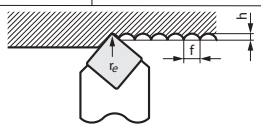


When feed rate decreases, speci c cutting force increases.

Theoretical Surface Finish

$$h = \frac{f^2}{8 \times r_\varepsilon} \times 10^3$$

h : Theoretical surface roughness (μm)
f : Feed rate (mm/rev)
r_ε : Nose radius (mm)



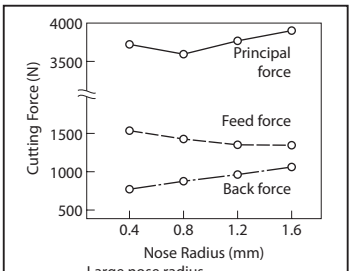
Actual Surface Roughness

Steel:
Theoretical surface finish x 1.5 to 3
Cast iron:
Theoretical surface finish x 3 to 5

Ways to Improve Surface Finish

(1) Use an insert with a larger nose radius.
(2) Optimise the cutting speed and feed rate so that built-up edge does not occur.
(3) Select an appropriate insert grade.
(4) Use wiper insert

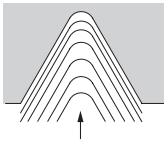
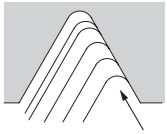
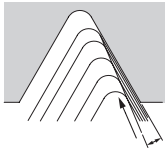
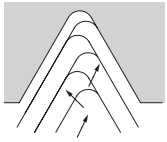
Relation Between Nose Radius and Cutting Force



Large nose radius increases back force.

Work : SCM440(38HS)
Inserts : TNGA2204 SS
Holder : PTGNR2525-43
Cutting Conditions : v_c=100m/min
a_p=4mm
f=0.45mm/rev

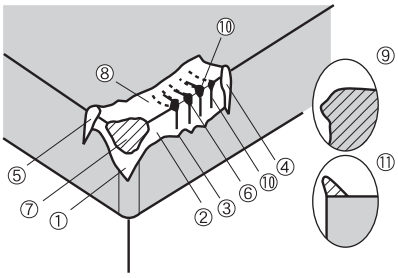
Threading

Machining Method	Characteristics
Radian Infeed 	· Most common threading technique, used mainly for small pitch threads. · Easy to change cutting conditions such as depth of cut, etc. · Wears evenly due to equal cut edge on right and left sides, which also translates into a long contact point and thus a tendency to chatter. · Difficult to control chip evacuation.
Flank Infeed 	· Effective for large pitch threads and blemish-prone work material surfaces. · Chips evacuate from one side for good chip control. · Heavy flank wear on right side.
Corrected Flank Infeed 	· Effective for large pitch threads and blemish-prone work material surfaces. · Chips evacuate from one side for good chip control. · Reduces flank wear on right side.
Alternating Flank Infeed 	· Effective for large pitch threads and blemish-prone work material surfaces. · Wears evenly on right and left cut edges. · Tendency for chip clogging due to alternating left and right flow.

Troubleshooting for Threading

	Failure	Cause	Countermeasures
Cutting Edge Failure	Excessive Cutting Edge Wear	· Tool material	· Select a more wear-resistant grade
		· Cutting condition	· Decrease the cutting speed · Optimise coolant flow · Review number of passes
	Uneven Wear on Right and Left Sides	· Insert attachment	· Optimise lead angle · Attach insert correctly
		· Cutting condition	· Change to alternating flank infeed
	Cutting Edge Chipping	· Cutting condition	· If caused by a built-up edge, increase cutting speed
	Cutting Edge Fracture	· Packing of chips	· Check coolant supply (excessive coolant to cutting edge)
		· Insert attachment	· Check insert and/or work material clamping method
Shape, Poor Accuracy	Poor Surface Roughness	· Cutting condition	· Increase cutting speed
		· Tool material (wear)	· Select a more wear-resistant grade
		· Incorrect lead angle	· Optimise lead angle
	Poor Thread Shape	· Insert attachment	· Inspect insert attachment
		· Thread depth small	· Check cutting depth

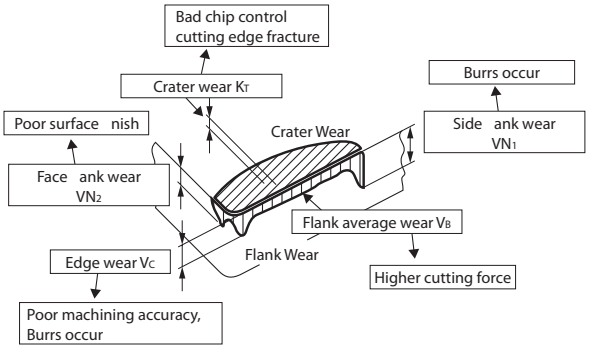
Forms of Tool Failures

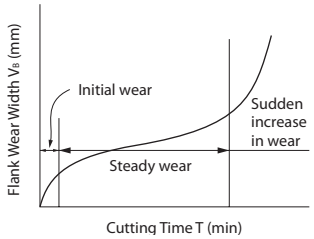
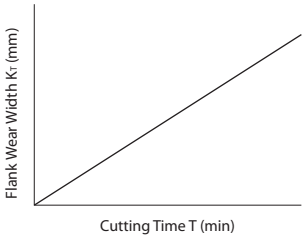


Cat.	No.	Name of Failure	Cause of Failure
Resulting from Mechanical Causes	(1) to (5)	Flank Wear	Due to the scratching effect of hard grains contained in the work material.
	(6)	Chipping	Fine breakages caused by high cutting loads or chattering.
	(7)	Fracture	Due to the impact of an excessive mechanical force acting on the cutting edge.
Resulting from Chemical Reactions	(8)	Crater Wear	Swaft chips removing tool material as it flow over the top face at high temperatures.
	(9)	Plastic Deformation	Cutting edge is depressed due to softening at high temperatures.
	(10)	Thermal Crack	Fatigue from rapid, repeated heating and cooling cycles during machining.
	(11)	Built-up Edge	Work material is pressure welded on the top face of the cutting edge.

Tool Wear

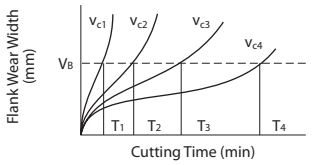
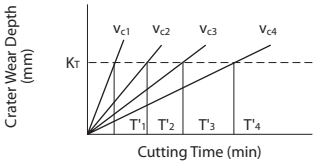
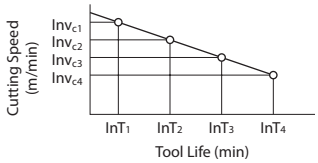
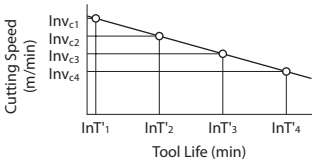
Forms of Tool Wear



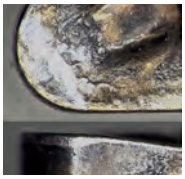
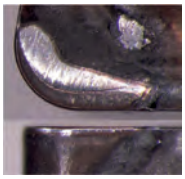
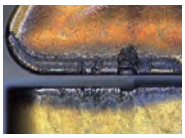
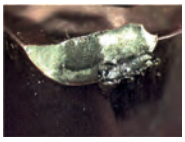
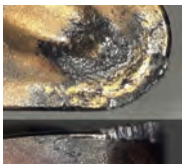
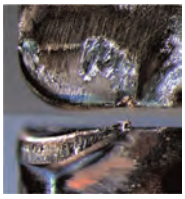
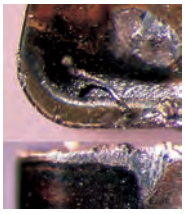
Flank Wear	Crater Wear
	
· Wear is rapid initially, then it proceeds more gradually in proportion with cutting time until a certain limit, beyond which it increases rapidly again.	· Crater wear is more progressive with no sudden breakdown pattern.

Tool Life (V-T)

This double logarithm graph shows the relative tool life of the specified wear over a range of cutting speeds on the X-axis, and the cutting speed along the Y-axis.

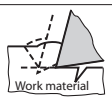
	Flank Wear	Crater Wear
Tool Wear		
Tool Life		

Troubleshooting for Turning

	Failure	Cause	Countermeasures
Tool Edge Failure	Flank Wear 	· Grade lacks wear resistance. · Rake angle is too small. · Cutting speed is too fast. · Feed rate is far too slow.	· Select a wear-resistant grade. P30 → P20 → P10 K20 → K10 → K01 · Use an insert with a larger rake angle. · Decrease the cutting speed · Increase feed rates.
	Crater Wear 	· Grade lacks crater resistance. · Rake angle is too small. · Cutting speed is too fast. · Feed rate is too fast. · Depth of cut is too large.	· Select a crater-resistant grade. · Select a grade with a smooth coating. · Use an insert with a larger rake angle. · Select an appropriate chipbreaker. · Decrease the cutting speed · Reduce feed rates and depth of cut.
	Chipping 	· Grade lacks toughness. · Insert falls off due to chip build-up. · Cutting edge lacks toughness. · Feed rate is too fast. · Depth of cut is too large.	· Select a tougher grade. P10 → P20 → P30 K01 → K10 → K20 · Select a more adhesion-resistant grade. Coated carbide or cermet grades. · Increase amount of honing on cutting edge. · Reduce rake angle. · Reduce feed rates and depth of cut.
	Fracture 	· Grade lacks toughness. · Cutting edge lacks toughness. · Holder lacks toughness. · Feed rate is too fast. · Depth of cut is too large.	· Select a tougher grade. P10 → P20 → P30 K01 → K10 → K20 · Select a chipbreaker with a strong cutting edge. · Select a holder with a larger approach angle. · Select a holder with a larger shank size. · Reduce feed rates and depth of cut.
	Built-up Edge 	· Inappropriate grade selection. · Dull cutting edge. · Cutting speed is too slow. · Feed rate is too slow.	· Select a grade with less affinity to the work material. Coated carbide or cermet grades. · Select a grade with a smooth coating. · Use an insert with a larger rake angle. · Reduce amount of honing. · Increase cutting speeds. · Increase feed rates.
	Plastic Deformation 	· Grade lacks thermal resistance. · Rake angle is too small. · Cutting speed is too fast. · Feed rate is too fast. · Depth of cut is too large. · Not enough cutting fluid.	· Select a thermal-resistant grade. · Use an insert with a larger rake angle. · Decrease the cutting speed · Reduce feed rates and depth of cut. · Supply appropriate amount of coolant.
	Notch Wear 	· Grade lacks wear resistance. · Rake angle is too small. · Cutting speed is too fast. · Feed rate is too fast. · Depth of cut is fixed.	· Select a wear-resistant grade. P30 → P20 → P10 K20 → K10 → K01 · Select a grade with a smooth coating. · Use an insert with a larger rake angle. · Decrease the cutting speed · Reduce feed rate. · Alter depth of cut to shift the notch location.

TECHNICAL GUIDANCE
CHIP CONTROL

Type of Chip Generation

	Spiralling	Shearing	Tearing	Cracking
Shape				
Condition	Continuous chips with good surface finish.	Chip is sheared and separated by the shear angle.	Chips appear to be torn from the surface.	Chips crack before reaching the cutting point.
Application	Steel, Stainless steel	Steel, Stainless steel (Low speed)	Steel, Cast iron (very low speed, very small feed rate)	Cast iron, Carbon
Influence Factor	Easy ← Work deformation → Difficult Large ← Rake angle → Small Small ← D.O.C. → Large Fast ← Cutting speed → Slow			

Type of Chip Control

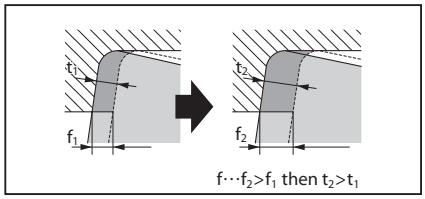
	Depth	A	B	C	D	E
Chip Types	Large					
	Small					
Evaluation	NC Lathe (For Automation)	H	H	S	S	J
	General Lathe (For Safety)	H	S	S	S–J	H

Good: C type, D type

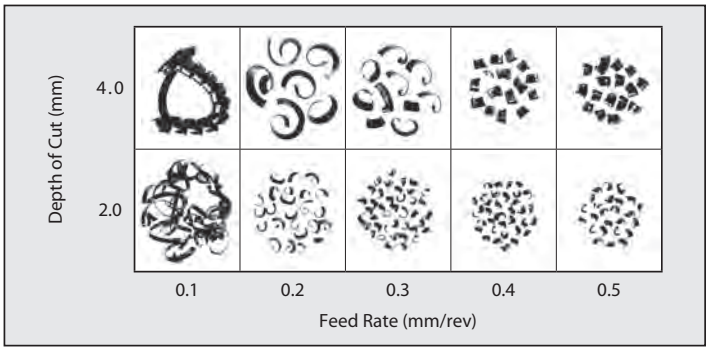
Poor
- A type: Twines around the tool or workpiece, damages the machined surface and affects safety.
- B type: Causes problems in the automatic chip conveyor and chipping occurs easily.
- E type: Causes spraying of chips, poor machined surface due to chattering, chipping, large cutting force and high temperatures.

Factor of Improvement Chip Control

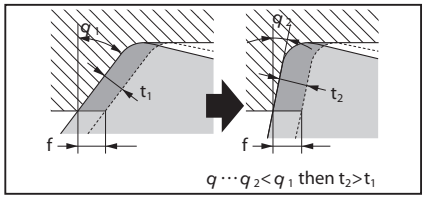
(1) Increase Feed Rate (*f* mm/rev)



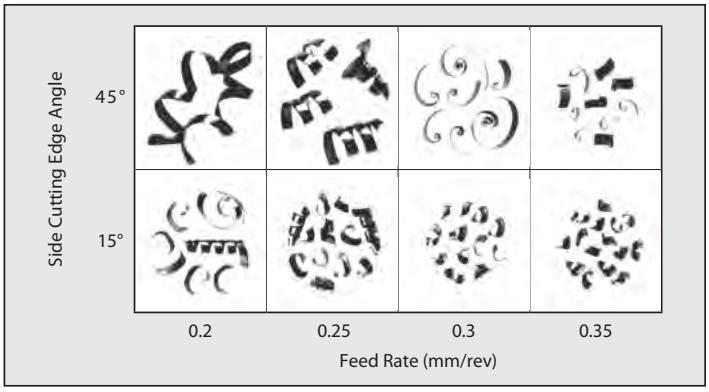
When feed rate increases, chips become thick and chip control improves.



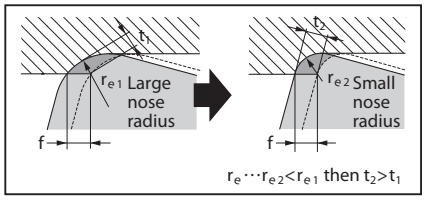
(2) Decrease Side Cutting Edge (*θ*)



Even if feed rate is the same, smaller side cutting edge angle makes chips thick and chip control improves.

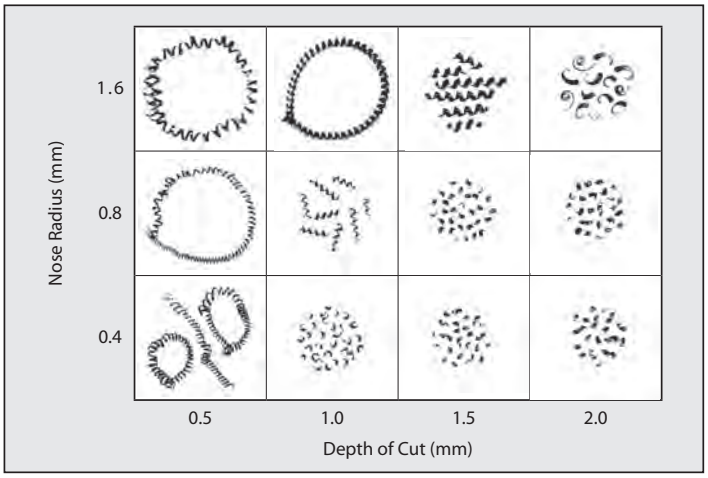


(3) Decrease Nose Radius (*rε*)



Even if feed rate is the same, a smaller nose radius makes chip thick and chip control improves.

* Cutting force increases in proportion with the length of the contact surface. Therefore, a larger nose radius increases back force which induces chattering. With the same feed rate, a smaller nose radius produces a rougher surface finish.



SumiBoron PCBN Grades

Sumitomo Electric is a world leader in the development of polycrystaline diamond and PCBN cutting tool materials and their applications. For you, this means increased productivity, better surface finish, the ability to hold closer tolerances, and longer tool life. Sumitomo offers products in sizes and grades available nowhere else.

In general, polycrystaline cutting tools are recommended for machining ferrous materials that are too hard or abrasive for conventional cutting tools such as tungsten carbide, cermets, or ceramics. Cubic boron nitride is used for ferrous materials and diamond for nonferrous and nonmetal applications.

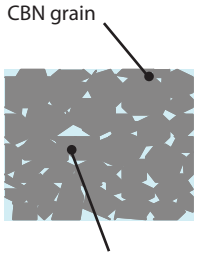
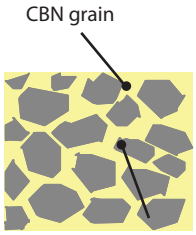
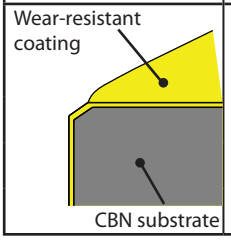
In 1977, Sumitomo successfully developed its own revolutionary CBN sintered material - SumiBoron. Manufactured under ultra-high temperature and pressure sintering of a mixture of cubic boron nitride and a special ceramic binder material. Compared to conventional tooling materials, SumiBoron exhibits higher hardness and exceptional heat resistance, allowing it machining capabilities previously accomplished only by grinding. SumiBoron also achieves excellent efficiency and longer tool life in high speed machining of cast irons.

■ CBN CLASSIFICATIONS

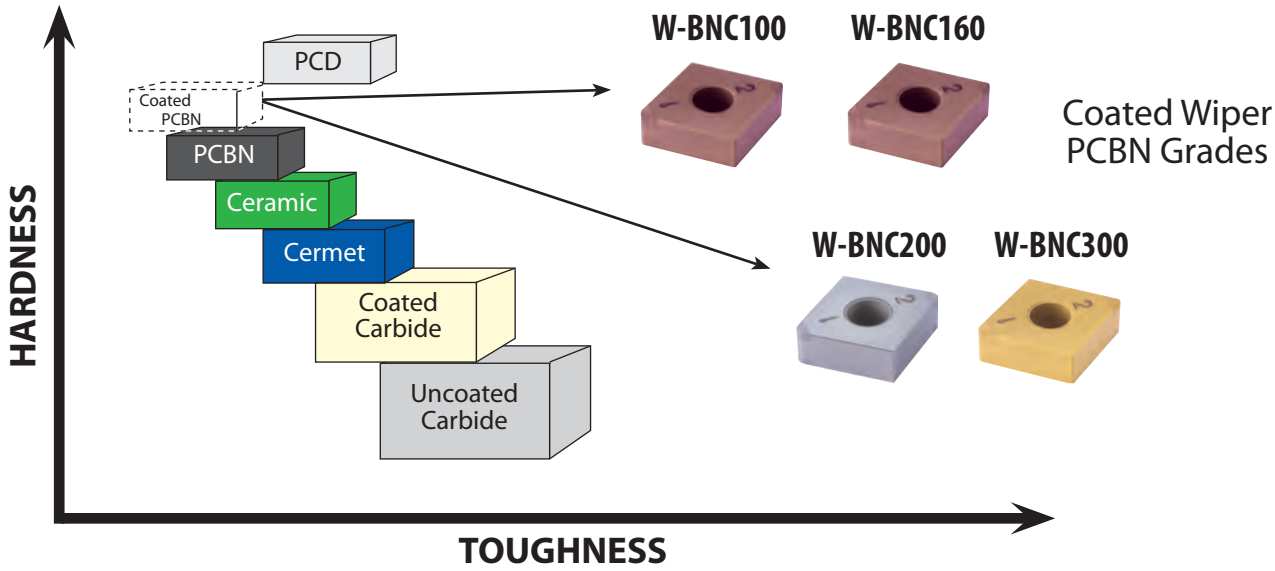
PCBN is generally classified into two groups based on its material microstructure. PCBN particles of the first type are bonded together directly. The percentage of PCBN in this type is very high, resulting in an extremely hard substrate.

SumiBoron, representative of the second type of PCBN materials, consists of PCBN particles bonded together with a ceramic binder. The bonding strength is very high, making the substrate very wear resistant and tough.

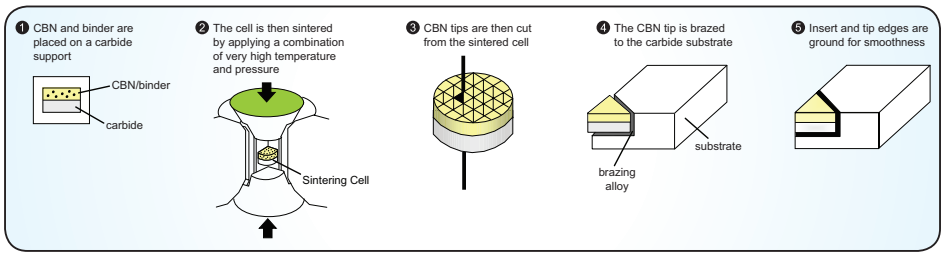
A third type of PCBN features enhancements of ceramic based coatings to new Sumitomo PCBN grades. They offer increased wear resistance as well as the ability to achieve higher speeds and superior surface finishes in a multitude of hardened steel applications.

Structure	Classification	Grades	Main Application
	1) PCBN particles are bonded to each other	**BN7000**	High speed machining of cast irons and exotic materials
		BN700	High speed machining of gray cast iron, powdered metals, and heat resistant alloys
		BN7500	High speed machining of sintered or powdered metals
		BNS800	High speed turning and milling of gray cast iron; turning of chilled iron, Ni-based iron, and ductile iron
	2) PCBN particles are bonded by a ceramic binder	**BN500**	Continuous and interrupted turning of nodular and gray cast iron
		BN2000	Continuous and mild interrupted cutting of hardened steels and cast irons
		BN250	Continuous to moderately interrupted cutting of hardened steels and cast iron
		BN350	Excellent performance in heavy interrupted cutting
		BN1000	High speed continuous cutting of hardened steels
		BNX10	High speed continuous cutting of hardened steels
		BNX20	High speed continuous cutting of hardened steels (HrC 45-68)
		BNX25	High speed interrupted cutting of hardened steels (HrC 45-68)
	3) Sintered CBN substrate with special ceramic coating	**BNC100**	High speed continuous and light interrupted machining of hardened steel
		BNC160	High speed continuous cutting with superior surface finish capabilities
		BNC200	High speed turning of continuous and mild interrupted hardened steels
		BNC300	Excellent performance in a wide range of interrupted hard turning
		BNC500	High speed turning of ductile irons

Coated Grades for Turning - How they compare to other insert materials

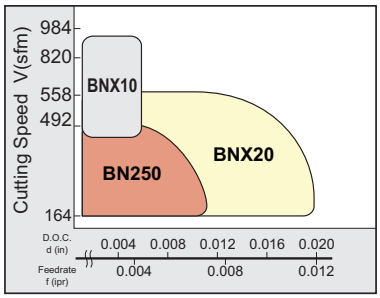


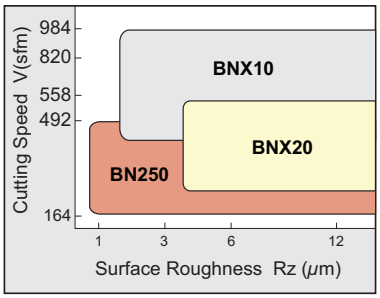
■ MANUFACTURING PROCESS of PcBN



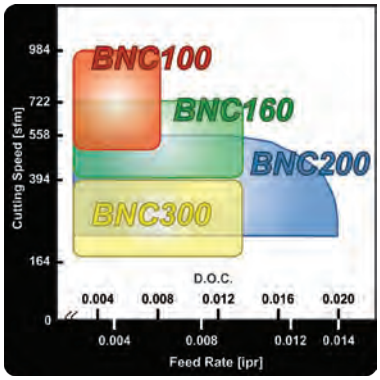
■ APPLICATION RANGE

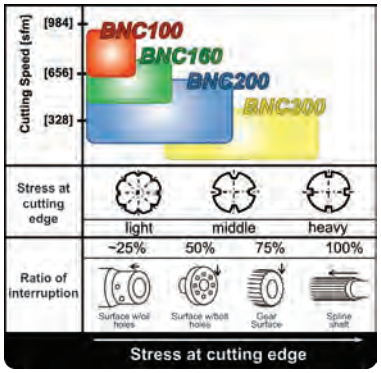
Uncoated SumiBoron

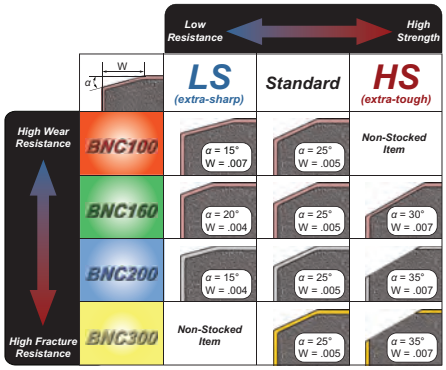




Coated SumiBoron

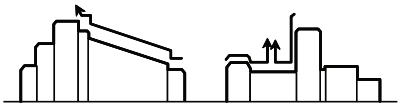
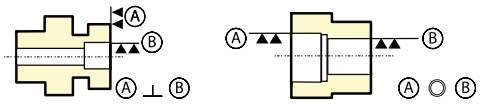




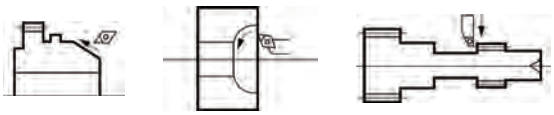


■ BENEFITS OF USING CBN

- ***REDUCTION IN EQUIPMENT COST*** **-** Lathes are generally two to three times less expensive than grinding machines.
- ***INCREASE PRODUCTION CAPACITY*** **-** Automation of turning machine centers means more parts in less time.
- ***SAVE TIME*** **-** By turning, parts with complicated shapes can be machined in one process.
- ***IMPROVED QUALITY*** **-** Turning improves part perpendicularity and concentricity because multiple operations can be performed without re-chucking.
- ***REDUCED SET-UP TIME*** **-** Only simple NC program changes are needed to machine parts of different sizes.
- ***REDUCTION OF INDUSTRIAL WASTE*** **-** Turning eliminates the expense and environmental problems associated with grinding sludge.

	Benefit	Details
Cost	Facility investment is low	• Cheaper machines • Improved efficiency w/less machining required
	Profile finishing in one set-up	
Quality	Improved precision	
Waste Reduction	Less industrial waste	Sludge management vs. chip management (recyclable)

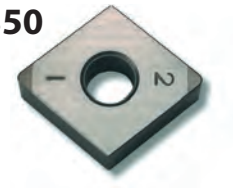
Machining Versatility With CBN



Taper Turning | Internal (Profile) Boring | Grooving/Profiling

Multi-Corner PCBN Grade

BN350



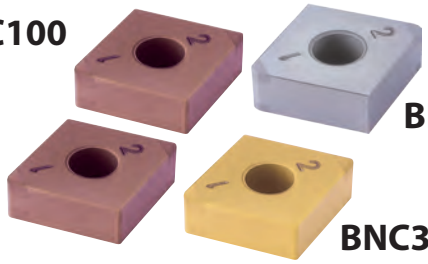
Coated PCBN Grades

BNC100

BNC200

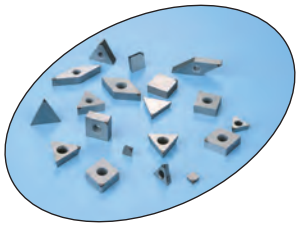
BNC160

BNC300



SumiBoron PCBN Grades

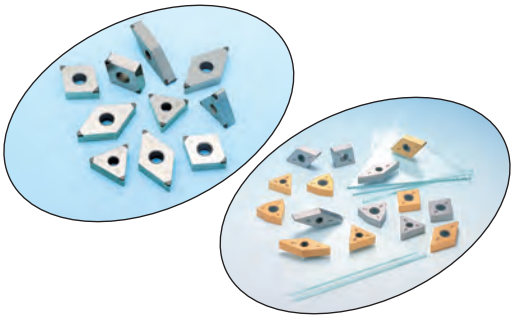
One-use Insert NU Type/NS Type



■ CHARACTERISTICS

- Affordable version of the once expensive sintered CBN material, at its optimal size.
- One-use type eliminates regrinding thus making tool management simple.
- Reduce required storage space with 10 piece packaging.

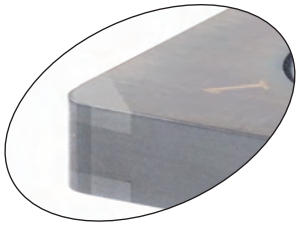
Multi-cornered, One-use Insert



■ CHARACTERISTICS

- Insert with several brazed SUMIBORON one-use corners. Price per edge is more reasonable compared to normal single cornered, one use type insert.
- Coated SUMIBORON is available as a double-faced insert. Diamond shaped inserts have 4 cutting edges and triangle shaped inserts have 6 cutting edges, etc.
- Multi-cornered, one-use type has G-class specification with ground side faces. In addition, all edges are numbered for easy cutting edge management.

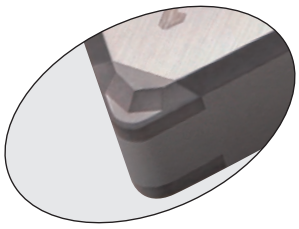
One-use Wiper Insert



■ CHARACTERISTICS

- SUMIBORON one-use insert with wiper edge is for hardened steel machining.
- Excellent surface roughness comparable to grinding.
- Multi-cornered, one-use type has G-class specification with ground side faces. In addition, all edges are numbered for easy cutting edge management.
- Radial wipers, WG & WH improves surface roughness and finish repeatability.

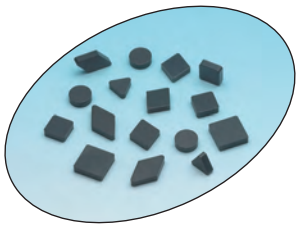
One-use insert with chipbreaker SV, LV, FV Type



■ CHARACTERISTICS

- SUMIBORON One-use insert with chipbreaker, especially for caburized layer removal.
- Breaker included on the CBN edge, chipbreaking effect can be maintained throughout.
- Unique breaker design can be applied to both hardened and non-hardened parts with effective chip control.

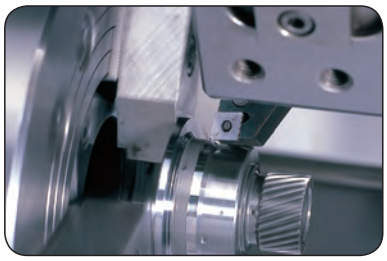
Solid SUMIBORON

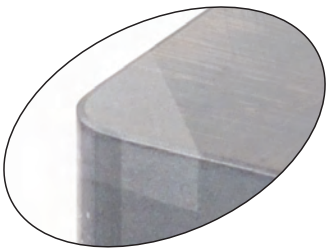


■ CHARACTERISTICS

- 100% solid CBN structure. With no brazed portion, this grade is excellent for the roughing of cast iron at large depth of cut.

SumiBoron One-use Wiper Inserts





■ CHARACTERISTICS

- SUMIBORON one-use insert with wiper flat for Hardened Steel machining.
- Excellent surface finish similar to grinding
- Improved efficiency with higher speeds and feeds
- Radial wipers, WG & WH improves surface roughness and finish repeatability.

■ The issue of standard wiper insert

Tolerance of the side cutting edge angle is ±1 degree.

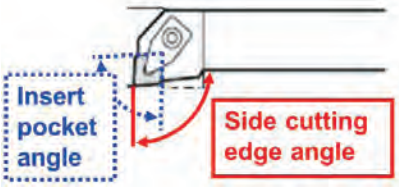
Unstable tool life and surface roughness.

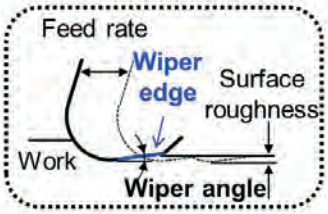
Tolerance variation of standard wiper insert

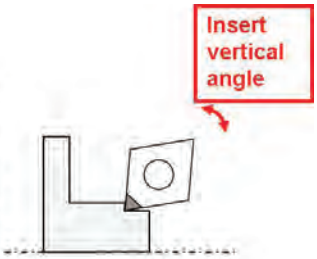
- Wiper angle
- Insert vertical angle

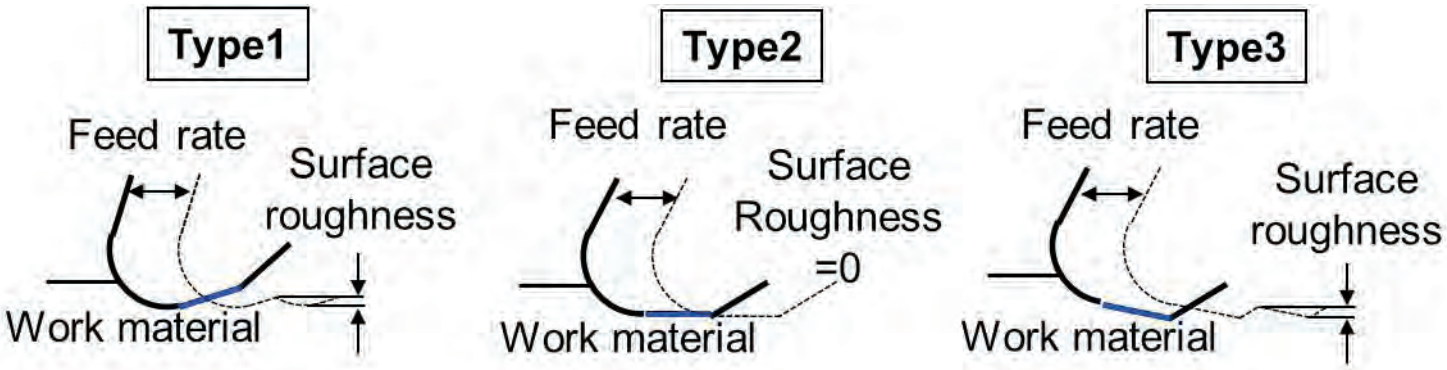
Tolerance variation of holder

- Side cutting edge angle
- Holder vertical angle
- Clamp condition



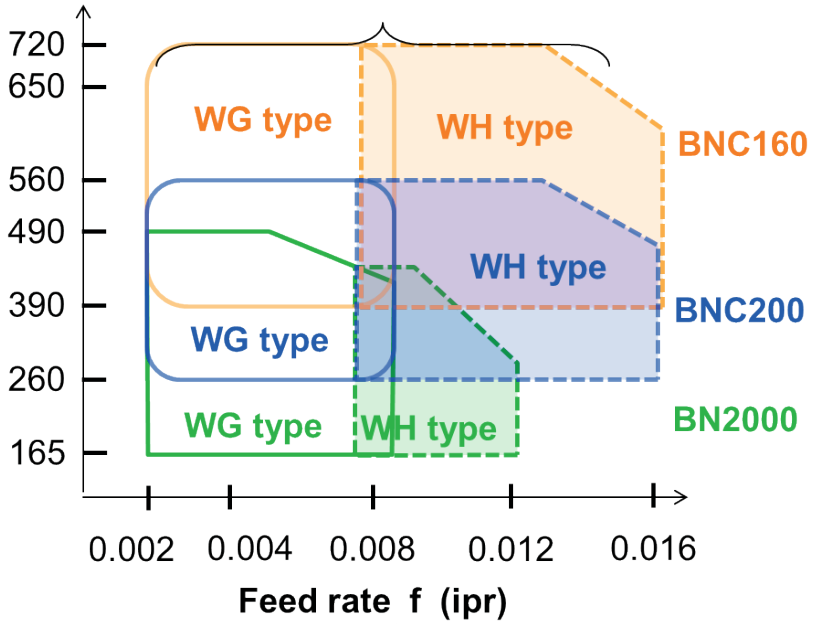






The wiper flat offers good surface finish and improved efficiency.

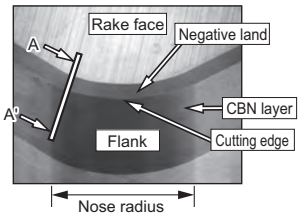
■ Cutting Conditions



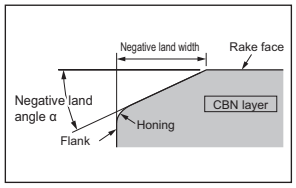
SUMIBORON Insert and Edge Treatment

All SUMIBORON inserts are enhanced with the optimum cutting edge preparation for the various grades and geometries (shown on the right). This is to avoid cutting edge fracture caused by the heavy loads generated during the machining of high hardness materials such as Hardened Steel.
As the pioneer of CBN tools "SUMIBORON," this vast selection of grades and edge treatment combinations is our trump card for Hardened Steel machining.

Close-up of cutting edge



Section A-A'



■ SUMIBORON Insert Cutting Edge Specification List

Series	Work Material	Grade	Negative/ Positive	Standard				Low Resistance Type L					Strong Edge Type H				
				Identification Code	α	W	Honing	Notation	Identification Code	α	W	Honing	Notation	Identification Code	0	W	Honing
SUMIBORON	Hardened Steel	BNX10	Negative/Positive	T01225	25°	0.12	No	-	-	-	-	-	-	-	-	-	-
		BNX20	Negative/Positive	S01225	25°	0.12	Yes	LT	T01215*	15°	0.12	No	-	-	-	-	-
		BNX25	Negative/Positive	S01725	25°	0.17	Yes	-	-	-	-	-	-	-	-	-	-
		BN1000	Negative/Positive	S01225	25°	0.12	Yes	-	-	-	-	-	-	-	-	-	-
		BN250	Negative	S01225	25°	0.12	Yes	LT	T01215	15°	0.12	No	-	-	-	-	-
			Positive	S01235	35°	0.12	Yes	LS	S01225	25°	0.12	Yes					
		BN2000	Negative/Positive	S01225	25°	0.12	Yes	LT	T01215	15°	0.12	No	HS	S01235	35°	0.12	Yes
		BN350	Negative	T01225	25°	0.12	No	-	-	-	-	-	HT	T01235	35°	0.12	No
			Positive	T01235	35°	0.12	No						-	-	-	-	-
	Cast Iron Exotic Alloy	BN500	Negative/Positive	T01215	15°	0.12	No	-	-	-	-	-	-	-	-	-	-
		BN700	Negative/Positive	T01215	15°	0.12	No	LF	Sharp edge	0°	0	No	HS	S01225	25°	0.12	Yes
		BN7000	Negative/Positive	T01215	15°	0.12	No	LF	Sharp edge	0°	0	No	HS	S01225	25°	0.12	Yes
		BN7500	Negative/ Positive	T01215	15°	0.12	No	LF	Sharp edge	0°	0	No	HS	S00525	25°	0.05	Yes
								LE	Sharp edge	0°	0	Yes					
								LS	S00715	15°	0.07	Yes					
		BNS800	Negative	T02020	20°	0.20	No	LF	Sharp edge	0°	0	No	-	-	-	-	-
Coated SUMIBORON	Hardened Steel	BNC100	Negative/Positive	S01225	25°	0.12	Yes	LS	S01715	15°	0.17	Yes	-	-	-	-	-
		BNC160	Negative/Positive	S01225	25°	0.12	Yes	LS	S01020	20°	0.10	Yes	HS	S01730	30°	0.17	Yes
		BNC200	Negative/Positive	S01225	25°	0.12	Yes	LS	S01015	15°	0.10	Yes	HS	S01735	35°	0.17	Yes
		BNC300	Negative/Positive	S01225	25°	0.12	Yes	-	-	-	-	-	HS	S01735	35°	0.17	Yes
	Cast Iron	BNC500	Negative/Positive	S01215	15°	0.12	Yes	-	-	-	-	-	HS	S01225	25°	0.12	Yes

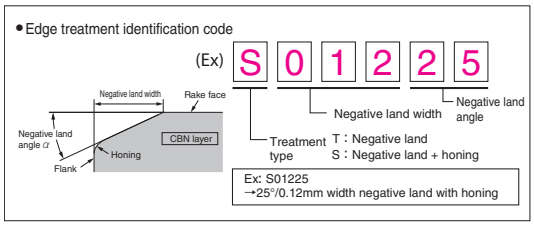
*Identification code will be T00715 for inserts with inscribed circle of less than φ4.76.

■ Cutting Edge Treatment of Inserts with Wipers/Chipbreakers

Series	Work Material	Grade	Other Types					
			Notation	Identification Code	α	W	Honing	Type
SUMIBORON	Hardened Steel	BN2000	WG	S01215	15°	0.12	Yes	Wiper
			WH	S01215	15°	0.12	Yes	Wiper
			N-FV	—	0°	0	Yes	With breaker
			N-LV	S00535	35°	0.05	Yes	With breaker
	Cast Iron Exotic Alloy	BNS800	W	T02020	20°	0.20	No	Wiper
			LFW	Sharp edge	0°	0	No	Wiper Sharp edge
Coated SUMIBORON	Hardened Steel	BNC100	W	S01715	15°	0.17	Yes	Wiper
		BNC160	WG	S01215	15°	0.12	Yes	Wiper
			WH	S01215	15°	0.12	Yes	Wiper
			W	S01215	15°	0.12	Yes	Wiper
			N-FV	—	0°	0	Yes	With breaker
			N-LV	S00535	35°	0.05	Yes	With breaker
			N-SV	S01235	35°	0.12	Yes	With breaker
		BNC200	WG	S01215	15°	0.12	Yes	Wiper
			WH	S01215	15°	0.12	Yes	Wiper
			W	S01215	15°	0.12	Yes	Wiper
			N-FV	—	0°	0	Yes	With breaker
			N-LV	S00535	35°	0.05	Yes	With breaker
			N-SV	S01235	35°	0.12	Yes	With breaker
	Cast Iron	BNC500	W	S01215	15°	0.12	Yes	Wiper

■ Edge Treatment Identification Code

Edge Treatment Notation				
No	Standard type			
L	Low cutting forces	+	F	Sharp edge
			E	Honing
H	Strong edge type		T	Negative land
			S	Negative land + Honing
WG/WH/W	Wiper			
N-FV/N-LV/ N-SV	With Chipbreaker			



Technical Information

GRADE DESCRIPTION

Grades	Hardness (Hv)	T.R.S. (kg/mm²)	Features	Applications
BNX10	2800 | 3200	80 | 90	• High speed wet or dry applications • Better wear and thermal shock resistance than ceramics • Improved surface finish	High speed continuous cutting of hardened steels
BN250	3200 | 3500	100 | 110	• Fine grain CBN with ceramic binder material • Very strong cutting edge • Tough and wear resistant	Continuous to moderately interrupted cutting of hardened steels and cast irons
BNX20	3200 | 3400	95 | 110	• Extremely high thermal resistant binder material • Excellent wear resistance and toughness at high cutting speeds	High speed continuous cutting of hardened steels (HrC 45-68)
BNX25	3000 | 3200	100 | 110	• Tougher CBN material • New secure brazing alloy • High reliability performance against tool breakage	High speed interrupted cutting of hardened steel (HrC 45-68)
BN300	3300 | 3500	110 | 120	• Ultra-fine grain CBN and high strength ceramic binder material • Extremely strong and sharp cutting edge	Heavy interrupted cutting of hardened steels
BN350	3300 | 3500	120 | 130	• Non coated grade • Excellent toughness • Excellent breakage resistance	Excellent performance for heavy Interupted cutting
BN500	3300 | 3500	100 | 110	• CBN sintered with ceramic binder material • Good thermal and wear resistance	Continuous and interrupted turning of nodular and gray cast iron
BN700	4100 | 4400	120 | 130	• High CBN content • Excellent wear resistance and toughness at high cutting speeds • Milling geometries available	High speed machining of cast irons and powdered metals and heat resistant material
BNC160	3200 | 3400	100 | 110	• TiN based coating • Increased notch wear resistance • Excellent surface roughness capability • Multi-corner inserts • Numbered corners	High speed continuous cutting with the ability to achieve superior surface finishes
BNC100	3000 | 3300	100 | 110	• TiCN based coating • Heat resistant substrate • High wear resistant coating	TiCN base coated for high speed machining of hardened steels
BNC200	3400 | 3600	110 | 120	• TiAlN based coating • Excellent wear resistance and toughness at high cutting speeds • Increased flank wear resistance • Multi-cornered inserts • Numbered corners	High speed turning of continuous and mild interrupted hardened steels (HrC 45-68)
BNC300	3300 | 3500	120 | 130	• TiAlN based coating • Micro-grain CBN • High fracture toughness	Excellent performance in a wide range of interrupted hard turning
BNS800	4000 | 4300	100 | 120	• Solid CBN • High thermal resistance • Excellent fracture resistance	High speed turning and milling of gray cast iron Turning of chilled iron, nickel-based iron, and ductile iron

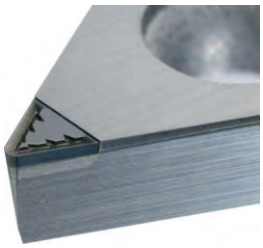
General features

- Excellent chip control by 3D Chipbreaker
- Long tool life by high toughness grade DA1000

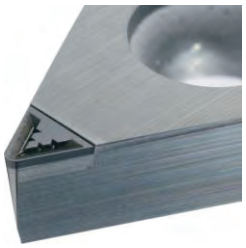
Characteristics/Applications

1 LD/GD type for various types of machining

- LD type for finishing application
- GD type for general purpose-machining



LD type

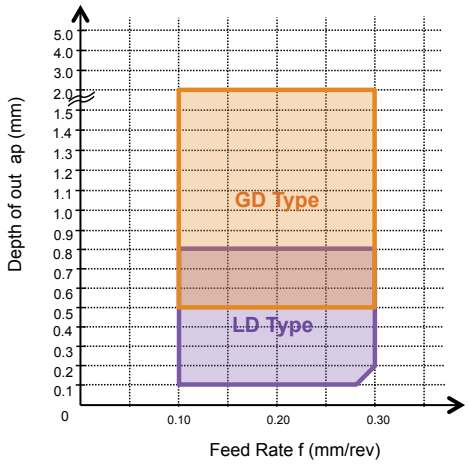


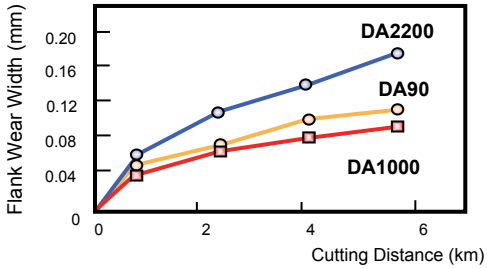
GD type

2 Long tool life – DA1000

- Long, stable tool life and good chipping resistance with high toughness grade DA1000

expanded material (A6061)





Workpiece: A390 (17%Si-Al)
Conditions: Vc=800m/min, f=0.12mm/rev, ap=0.5mm, Wet

Since the introduction of SUMIDIA DA polycrystalline diamond (PCD) blanks in 1978, Sumitomo has continually developed and expanded the product line to offer finished inserts in a wide range of grades, shapes and sizes. SUMIDIA inserts consist of a layer of fine grain synthetic diamond crystals bonded to a tungsten carbide substrate which is securely brazed into the pocket of a standard size insert. A high degree of diamond to diamond bonding is achieved by an ultra high pressure-temperature process. This crystal to crystal bonding provides exceptional hardness and abrasion resistance.

Our closely controlled manufacturing process produces unequaled consistency resulting insuperior tool edge quality.

SUMIDIA DA inserts and wipers are replacing tungsten carbide and natural diamond cutting tools on a worldwide basis. Use of SUMIDIA DA grades will provide dramatically increased tool life, the ability to hold closer part tolerance, and improved surface finish.

New technological advances have given the industry a new style of PCD insert. The optimum size of PCD used in NF-DA2200 offers a less expensive alternative when machining non-ferrous materials.

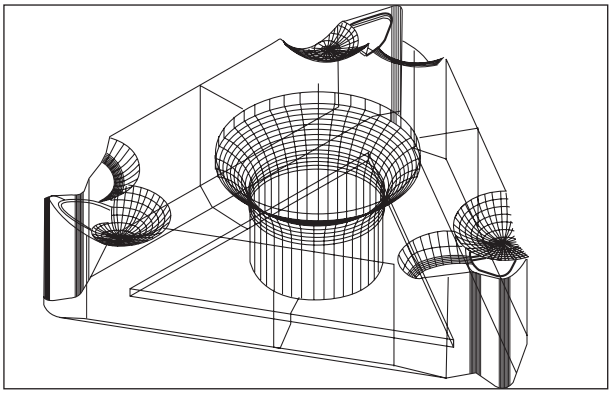
■ GRADE DESCRIPTION

Grade	DA1000	DA2200	DA150	DA90
Average diamond crystal size (microns)	0.5	0.5	5	~ 50
Hardness (Hv)	11,000-12,000	9,000-10,000	10,000-12,000	10,000-12,000
T.R.S. (kg/mm^2)	260	250	200	115
Product Desription	• Ultra-fine grain structure • Superior hardness and wear resistance with sharp edge	• High density sintered material made of ultra-micro diamond particles • Superior hardness and wear resistance with sharp edge	• Fine grain diamond • High abrasion resistance	• Coarser grain • High wear resistance
Applications	• High Silicon Aluminum • Copper • Fiberglass • Hard rubber • Graphite epoxy • Wood • Aluminum alloys (finishing, roughing, interrupted) • Plastics • Carbon	• High silicon Aluminum • Copper • Fiberglass • Hard rubber • Graphite epoxy • Wood • Aluminum alloys (finishing, roughing, interrupted)	• High silicon aluminum • Copper • Fiberglass • Hard rubber • Graphite epoxy • Wood • Carbon	• Sintered carbide • Stone or rock • High silicon aluminum • Green or semi-sintered carbide & ceramic

LAYDOWN THREADING SYSTEM

Sumitomo Electric has developed TME (external) and TMI (internal) threading inserts with a pitch range of 1.0 ~ 3.0 mm and 8~24 threads per inch (TPI) along with applicable LTE type and STI holders. The superior features of the TME and TMI threading inserts include an M-class tolerance and dimple shaped chipbreaker. The M-class tolerance reduces insert cost by eliminating the need for expensive grinding. Furthermore, chip control is greatly improved as a result of the specially designed dimple chipbreakers.

TME Insert Design



■ FEATURES

- A positive rake angle encourages good chip control and reduces cutting resistance.
- Two tier dimple-style chip breakers evacuate chips smoothly and easily.
- M-class tolerance reduces insert cost.
- Four available grades cover a wider range of applications.

■ INSERT GRADES & RECOMMENDED RUNNING CONDITIONS

Application

AC225 (Coated)
- For stainless and general steels
- Stable machining

T130A (Cermet)
- For soft and general steels
- Good surface finish
- Long tool life

A30 (P30 Carbide)
- For low and medium speed cutting of stainless and general steels

EH20Z (PVD Coated)
- For exotic materials

Recommended Running Conditions (SFM)

Work Material \ Insert Grade	AC225	T130A	A30	EH20Z
Soft Steel	500 ~ 660	330 ~ 500	230 ~ 400	—
Carbon Steel	330 ~ 550	260 ~ 430	230 ~ 330	—
Alloy Steel	300 ~ 500	260 ~ 400	230 ~ 330	—
Stainless Steel	230 ~ 450	–	230 ~ 330	—
Exotics	—	—	—	100 ~ 150

Trouble Shooting

- **Chipping**
  T130A ⟶ AC225
- **Excessive Wear**
  A30 ⟶ AC225 ⟶ T130A
- **Plastic Deformation**
  A30 ⟶ AC225 ⟶ T130A

Recommended Infeed Values mm (inch)

Pass \ Pitch (mm) / TPI	1.0	1.25	1.5	1.75	2	2.5	3
	24	19	16	14	12	9	8
1ST	0.25 (.010)	0.25 (.010)	0.30 (.012)	0.30 (.012)	0.30 (.012)	0.35 (.014)	0.35 (.014)
2ND	0.20 (.008)	0.20 (.008)	0.25 (.010)	0.25 (.010)	0.25 (.010)	0.30 (.012)	0.30 (.012)
3RD	0.15 (.006)	0.15 (.006)	0.20 (.008)	0.20 (.008)	0.20 (.008)	0.25 (.010)	0.25 (.010)
4TH	0.10 (.004)	0.15 (.006)	0.15 (.006)	0.15 (.006)	0.20 (.008)	0.20 (.008)	0.20 (.008)
5TH	0.05 (.002)	0.10 (.004)	0.10 (.004)	0.15 (.006)	0.15 (.006)	0.20 (.008)	0.20 (.008)
6TH	—	0.05 (.002)	0.05 (.002)	0.10 (.004)	0.12 (.005)	0.15 (.006)	0.15 (.006)
7TH	—	—	—	0.05 (.002)	0.10 (.004)	0.15 (.006)	0.15 (.006)
8TH	—	—	—	—	0.05 (.002)	0.10 (.004)	0.15 (.006)
9TH	—	—	—	—	—	0.05 (.002)	0.10 (.004)
10TH	—	—	—	—	—	—	0.10 (.004)
11TH	—	—	—	—	—	—	0.05 (.002)

TERMS:

Thread Form – (most common shapes)

60˚ (UN standard, ISO) 55˚ (British standard) 29˚ (Acme standard/stub)

Pitch – Distance from the top of one thread to the next.

Pitch = 1 (inch) / threads per inch, Ex: 20 TPI = 1 / 20 = .050

T.P.I. – Number of threads per inch

TPI = 1 (inch) / pitch, Ex: 1 / .050 (pitch) = 20 tpi

Lead – Movement caused by one revolution of the screw.

(the same as pitch in a single start thread)

Lead = pitch x number of starts

Example: double start thread with .050 pitch = .100 lead

Multi-Start Thread – Thread with more than one starting position. (lead different than pitch)

Helix angle – Angle generated by the helix of the thread at the pitch diameter.

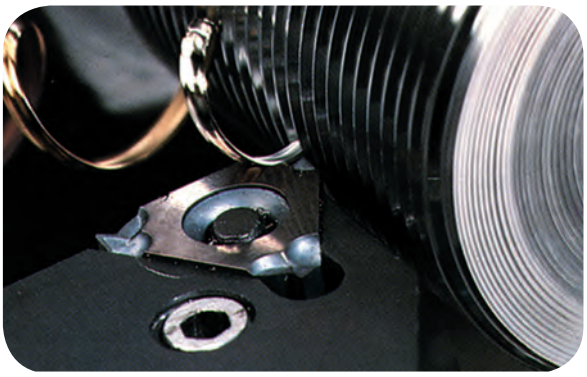
Major Diameter – see drawing below

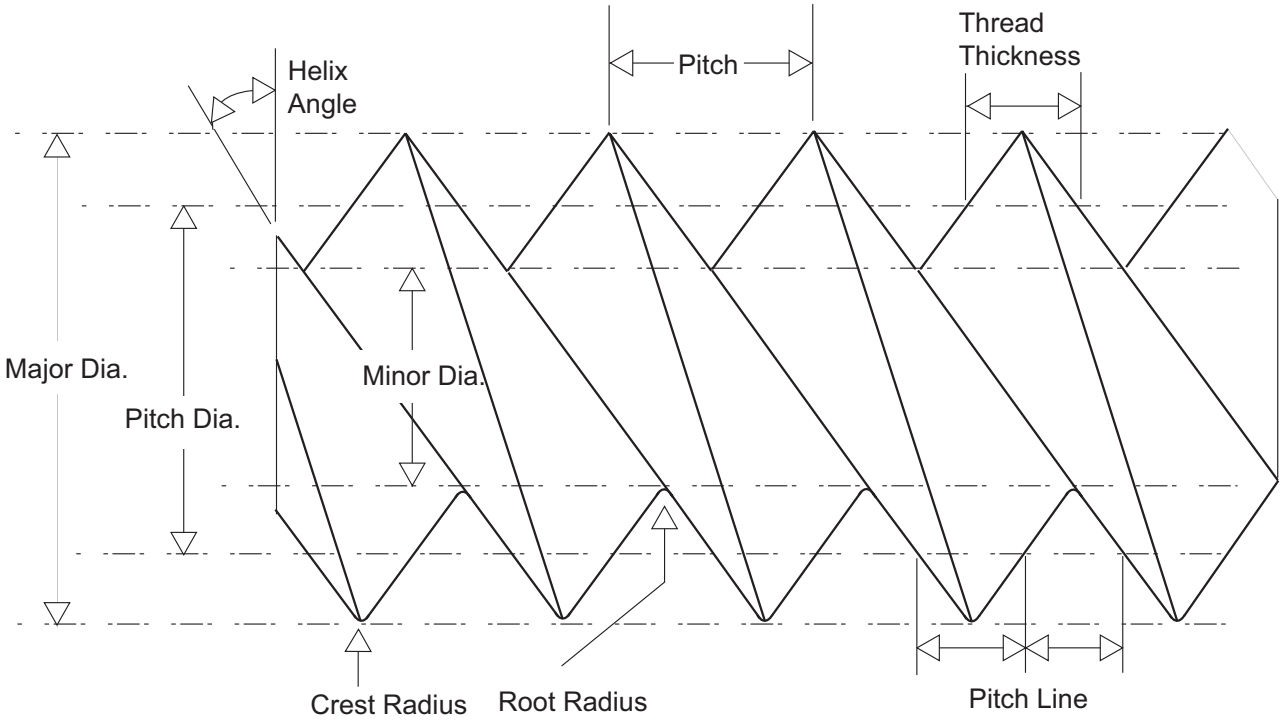
Minor Diameter – see drawing below

Pitch Diameter – see drawing below

Pitch Line – -see drawing below

Crest and Root Radius – see drawing below





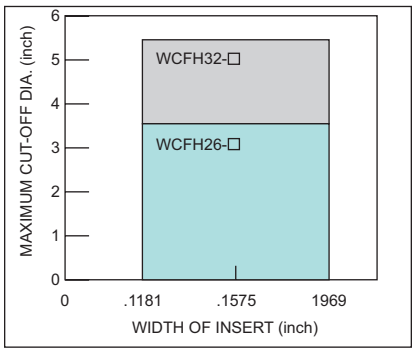
Solid Carbide
Solid Quality
Solid Performance

Because of the **solid tungsten carbide** support blade, Sumitomo cut-off tools are able to perform in the most demanding applications. Tungsten carbide is more rigid than steel so bending, vibration and movement at the cutting edge are all drastically reduced.

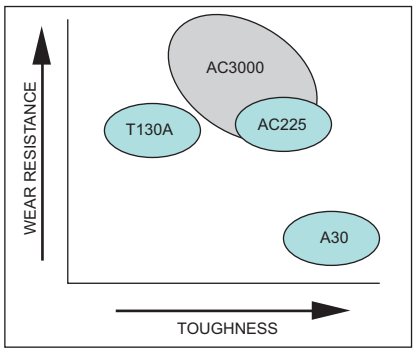
The Sumitomo solid carbide support blades fit in many existing cut-off tool blocks.
The unique positive rake inserts are available in neutral, right hand, and left hand styles. The insert design collapses the width of the chip, breaks it and facilitates chip flow away from the cut, thus welding and wear on the insert corners are greatly reduced, and coolant is easier to direct.
Operating at high speeds and feeds is possible because of longer tool life, and down-time for chip removal is drastically reduced.

NOTE: Sumitomo inserts fit only Sumitomo blades.

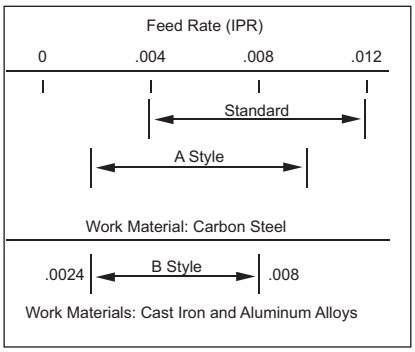
MAXIMUM CUT-OFF DIAMETER



GRADE APPLICATION RANGE



CHIPBREAKER RANGE



GRADE APPLICATION

GRADE	C.B. STYLE	APPLICATION	FEATURE
AC3000	STANDARD	Heavy feed in steel (.0032–.012 ipr)	Coated insert with excellent wear resistance. Standard chipbreaker for low cutting force applications.
AC225	A	Light feed in steel (.0016–.010 ipr) Carbon steel, stainless steel	Coated insert with excellent toughness. A style chipbreaker with good chip control.
T130A	A	Light feed in steel (.0012–.0061 ipr)	Cermet inserts produce excellent surface finish.
A30N	A	Slow speed and feed in steel	Equivalent to C5, C6 carbide.
G10E	A	For exotic materials	C2 carbide for exotic materials.
G10E	B	For cast iron and aluminum alloy	C2 carbide with a sharp cutting edge.

CAUTION
1. Do not use AC3000 for light feed rate applications (Feed rate should be at least .004 ipr)
2. Use AC225 for stainless steel.
3. Use A style chipbreaker for low carbon steel.
4. Use coolant.

RECOMMENDED RUNNING CONDITIONS

GRADE	V (SFM) f (ipr)	STEEL	CARBON STEEL	STAINLESS STEEL	DIE STEEL	CAST IRON	EXOTICS
AC3000	V f	320–720 .004–.012	400–820 .004–.006	260–650 .004–.006	200–500 .004–.006	---	---
AC225	V f	260–650 .0016–.010	320–750 .0016–.008	200–600 .0016–.008	200–500 .0016–.008	---	---
T130A	V f	260–650 .0012–.006	320–750 .0012–.004	200–600 .0012–.004	200–500 .0012–.0032	---	---
A30N	V f	160–400 .002–.008	230–500 .0016–.006	230–500 .0016–.006	160–400 .0016–.006	---	---
G10E	V f	---	---	---	---	160–320 .0024–.008	100–160 .002–.003

RECOMMENDED RUNNING CONDITIONS (SFM)

Material	Application	Hardness	Grade	Low	Low Opt.	High Opt.	High
INDUCTION HARDENED STEEL	Continuous	45-65HrC	BN1000	400	550	650	700
			BNX10	400	500	650	700
			BNC160	400	550	650	800
			BNX20	300	450	550	600
			BNC200	350	500	650	750
			BNC100	400	600	700	1000
			BN2000	300	400	550	600
	Interrupted (DRY)	45-65 HrC	BNX25	400	550	700	750
			BN2000	300	400	550	600
			BN350	300	400	550	600
			BNC300	300	400	550	600
			BNC200	350	400	500	600

Material	Application	Hardness	Grade	Low	Low Opt.	High Opt.	High
CARBURIZED HARDENED STEEL BEARING STEEL	Continuous	45-65 HrC	BNC160	350	450	550	600
			BNX20	250	300	500	600
			BNC200	300	350	550	650
			BNC100	350	425	550	675
			BN2000	300	400	550	600
	Interrupted (DRY)	45-65 HrC	BNX25	400	550	700	750
			BN300	300	400	550	600
			BN350	300	400	550	600
			BNC200	300	400	550	650
			BNC300	300	400	550	600

Material	Application	Hardness	Grade	Low	Low Opt.	High Opt.	High
DIE STEEL HIGH SPEED STEEL	Continuous	55-65 HrC	BN2000	150	250	450	550
			BN1000	250	300	450	650
			BNX10	250	300	400	500
			BNC160	250	300	400	500
			BNX20	150	200	300	450
			BNC200	200	250	350	450
			BNC100	250	300	400	500
	Interrupted (DRY)	55-65 HrC	BN2000	150	200	250	300
			BNX25	300	400	500	550
			BN300	150	200	250	300
			BN350	150	200	250	300
			BNC300	200	250	300	350

FEED RATE

FEED RATE (IPR)		
Finishing	General Purpose	Roughing
0.002 - 0.004	0.004 - 0.006	0.006 - 0.008

Note: Use above speeds for threading and grooving applications.
The recommended feed rate for grooving is 0.001 - 0.002 IPR, while your threading feed rate should be based upon the thread form, but not to exceed 0.006 IPR.

Grade	General Running Parameters* (SFM)			
	Low	Low Opt.	High Opt.	High
BNX10	400	450	650	700
BNC160	400	450	650	720
BNX20	250	400	600	650
BNC200	200	350	650	820
BN250	200	250	400	500
BNX25	450	500	650	700
BN300	200	300	500	550
BN350	200	300	500	550
BNC100	400	525	675	850
BNC300	200	250	400	500

* The above are a general range of running parameters based on grade and material. Please contact your local Sumitomo Sales Representative or the Sumitomo Engineering Department to obtain more application specific running parameters.

Note: Running wiper inserts at the above feed rates will produce a higher quality surface finish when compared to a non-wiper insert.

DEPTH OF CUT

Mini-Tip (NU, NS, NC)	D.O.C. ≤ 0.015″
Medium-Tip (MD)	D.O.C. ≤ 0.020″
Full-Tip	D.O.C. ≤ 0.020″

Note: Depth of cut per pass

PCBN Recommendations for Iron Machining

RECOMMENDED RUNNING CONDITIONS (SFM)

Material	Application	Grade	Low	Low Opt.	High Opt.	High
GRAY CAST IRON	Continuous & Interrupted	BN7000	2600	3000	5000	6500
		BN700	2300	3000	5000	6000
		BNS800	1000	2000	5500	6500
		BNC500	600	1000	2000	2500
		BN500	1500	2000	5500	6000

Material	Application	Grade	Low	Low Opt.	High Opt.	High
DUCTILE IRON 150 -300 HBn	Continuous & Interrupted	BNC500	650	800	1300	1650
		BN7000	300	450	550	650
		BN700	300	450	550	600

Material	Application	Grade	Low	Low Opt.	High Opt.	High
GENERAL SINTERED ALLOY	Continuous & Interrupted	BN700	400	550	800	1000
		BN7000	400	550	800	1000
		BN7500	400	550	650	1000

Material	Application	Grade	Low	Low Opt.	High Opt.	High
HIGH DENSITY SINTERED ALLOY	Continuous & Interrupted	BN7500	65	450	550	750
		BN7000	65	450	550	750
		BN700	65	450	550	750
		BNS800	65	450	550	750

FEED RATE

FEED RATE (IPR)		
Finishing	General Purpose	Roughing
0.002 - 0.004	0.004 - 0.006	0.006 - 0.008

Note: Use above speeds for threading and grooving applications.
The recommended feed rate for grooving is 0.001 - 0.002 IPR, while your threading feed rate should be based upon the thread form, but not to exceed 0.006 IPR.

Grade	General Running Parameters* (SFM)			
	Low	Low Opt.	High Opt.	High
BN500	500	800	1500	2000
BNS800	2000	3000	5000	6000
BN700	2000	3000	5000	6000

* The above are a general range of running parameters based on grade and material. Please contact your local Sumitomo Sales Representative or the Sumitomo Engineering Department to obtain more application specific running parameters.
Coolant should not be used for any interrupted cutting when using PCBN tools

DEPTH OF CUT

Mini-Tip (NU, NS, NC)	D.O.C. ≤ 0.020″
Medium-Tip (MD)	D.O.C. ≤ 0.040″
Full-Tip	D.O.C. ≤ 0.040″
Solid CBN**	D.O.C. ≤ 0.150″

**Depth of cut based on gray cast iron material. For chilled iron, depth of cut should not exceed 0.080″.

PCD Applications

RECOMMENDED RUNNING CONDITIONS

Material	SFM	IPR	D.O.C	Grade Recommendation		
				First	Second	Third
Aluminum Alloys (4% - 8% Si)	3,000 - 10,000	0.004 - 0.025	0.120″	DA1000	DA2200	DA150
Aluminum Alloys (9% - 14% Si)	2,000 - 8,000	0.004 - 0.020	0.120″	DA1000	DA2200	DA150
Aluminum Alloys (15% - 18% Si)	1,000 - 2,300	0.004 - 0.015	0.120″	DA1000	DA2200	DA150
Copper Alloy	3,300	0.002 - 0.008	0.120″	DA1000	DA2200	DA150
Hard Plastic	3,300	0.004 - 0.012	0.080″	DA1000	DA2200	DA150
Wood & Composite	13,000	0.004 - 0.015	–	DA1000	DA2200	DA150
Tungsten Carbide	30 - 70	0.003 - 0.008	0.020″	DA90	DA150	-
Reinforced Plastics	3,300	0.016	0.080″	DA1000	DA2200	DA150

Note: The above running parameters are for turning applications only.

Recommended Running Conditions

Recommended first choice, Recommended second choice, Recommended third choice

Work Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .008 IPR. 005" ~ .060" D.O.C.	Gen. Purpose .008 ~ .020 IPR .040" ~ .200" D.O.C.	Roughing .008 ~ .020 IPR .040" ~ .200" D.O.C.
			CUTTING SPEED SFM		
LOW CARBON STEELS 1005, 1006, 1008, 1009, 1010, 1011, 1012, 1013, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1025, 1026, 1029, 1108, 1109, 1110, 1115, 1116, 1117, 1118, 1119, 1211, 1212, 1213, 1215, 1513, 1518, 1522	<250	T1500A	800~1650	800~1450	–
		T1500Z	800~1750	800~1550	–
		AC805P	800~1750	800~1550	700~1200
		AC810P	800~1600	800~1400	700~1100
		AC820P	500~1200	500~1000	400~900
		AC830P	–	500~900	400~850
	220~350	T1500A	700~1300	700~1200	–
		T1500Z	700~1450	700~1300	–
		AC805P	700~1300	700~1200	600~1100
		AC810P	700~1200	700~1100	600~950
		AC820P	500~1000	500~900	400~800
		AC830P	–	500~800	400~750
	HRc 35~55	T1500A	400~750	400~650	–
		T1500Z	400~800	400~750	–
		AC805P	400~750	400~650	350~600
		AC810P	400~600	400~550	350~550
		AC820P	300~500	300~450	300~450
		AC830P	250~450	200~400	200~400
		NB90S	400~1400	–	–
LOW/MEDIUM CARBON STEEL -- LEADED 10L18, 10L45, 10L50, 11L17, 11L37, 11L41, 11L44, 12L13, 12L14, 12L15	<250	T1500A	1000~1650	1000~1550	–
		T1500Z	1000~1750	1000~1650	–
		AC805P	1000~1650	1000~1550	900~1450
		AC810P	1000~1500	1000~1400	900~1300
		AC820P	800~1400	750~1300	600~1100
		AC830P	–	750~1200	650~1000
	250~ 350	T1500A	900~1350	800~1200	–
		T1500Z	900~1450	800~1300	–
		AC805P	900~1350	800~1200	700~1100
		AC810P	900~1200	800~1100	700~1000
		AC820P	800~1000	700~900	650~900
		AC830P	–	700~900	650~900
	Chipbreaker Preference		ESE/ESU/ELU	EGE/ELU	EME/EMU

Recommended first choice, Recommended second choice, Recommended third choice

Work Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .012 IPR .005" ~ .060" D.O.C.	Gen. Purpose .010 ~ .020 IPR .040" ~ .200" D.O.C.	Roughing .015 ~ .026 IPR 200" D.O.C.
			CUTTING SPEED SFM		
MEDIUM CARBON STEELS 1030, 1033, 1035, 1037, 1038, 1039, 1040, 1042, 1043, 1044, 1045, 1046, 1049, 1050, 1053, 1055, 1132, 1137, 1139, 1140, 1141, 1144, 1145, 1146, 1151, 1524, 1525, 1526, 1527, 1536, 1541, 1547, 1548, 1551, 1552	<250	T1500A	900~1450	900~1300	–
		T1500Z	900~1550	900~1450	–
		AC805P	900~1450	900~1300	800~1100
		AC810P	900~1300	900~1200	800~1000
		AC820P	800~1000	500~900	450~800
		AC830P	–	500~800	400~700
	220~350	T1500A	800~1300	700~1200	–
		T1500Z	800~1450	700~1300	–
		AC805P	800~1300	700~1200	600~1100
		AC810P	800~1200	700~1100	600~1000
		AC820P	600~1000	500~900	450~950
		AC830P	–	500~850	400~800
	HRc 35~55	T1500A	600~1000	400~900	–
		T1500Z	600~1100	400~1000	–
		AC805P	500~1000	400~800	350~800
		AC810P	500~900	400~750	350~700
		AC820P	400~750	350~700	300~550
		AC830P	–	350~600	300~500
		NB90S	400~1400	–	–
MEDIUM HIGH CARBON STEELS --LEADED 41L30, 41L40, 41L45, 41L47, 41L50, 43L40, 41L50, 43640, 51L32, 52L100, 86L20, 86L40	<250	T1500A	800~1550	800~1450	–
		T1500Z	800~1650	800~1550	–
		AC805P	800~1550	800~1450	700~1200
		AC810P	800~1400	800~1300	700~1100
		AC820P	800~1200	700~1000	600~900
		AC830P	–	650~950	550~800
	250~ 350	T1500A	800~1450	750~1300	–
		T1500Z	800~1550	750~1450	–
		AC805P	800~1450	750~1300	650~1100
		AC810P	800~1300	750~1200	650~1000
		AC820P	700~1100	650~1000	550~900
		AC830P	–	600~1000	500~800
	Chipbreaker Preference		ESE/ESU/ELU	EGE/ELU	EME/EMU

Recommended Running Conditions

Recommended first choice, Recommended second choice, Recommended third choice

Work Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .012 IPR .005" ~ .060" D.O.C.	Gen. Purpose .010 ~ .020 IPR .040" ~ .200" D.O.C.	Roughing .015 ~ .026 IPR 200" D.O.C.
			CUTTING SPEED SFM		
ALLOY STEELS– MEDIUM CARBON 1340, 1345, 4042, 4047, 4140, 4142, 4145, 4147, 4340, 50B40, 40B44, 5046, 50B46, 5140, 5145, 5147, 81B45, 8640 ,8642, 8645, 86B45, 8740, 8742, 4150, 4161, 50B50, 4060, 50B60, 5150, 5155, 5160, 51B60, 6150, 8650, 8655, 8660, 9254, 9255, 9260	250~350	T1500A	700~1200	700~1100	–
		T1500Z	700~1300	700~1200	–
		AC805P	700~1200	700~1100	500~900
		AC810P	700~1100	700~1000	500~800
		AC820P	600~950	500~850	450~800
		AC830P	–	500~800	400~700
	<250	T1500A	600~1100	600~1000	–
		T1500Z	600~1200	600~1100	–
		AC805P	600~1100	600~1000	–
		AC810P	600~1000	600~900	–
		AC820P	500~900	450~800	400~750
		AC830P	–	400~750	300~700
	250~350	T1500A	300~650	300~550	–
		T1500Z	300~800	300~650	–
		AC805P	300~650	300~550	200~550
		AC810P	300~600	300~500	200~500
		AC820P	250~500	200~450	150~400
		AC830P	250~400	200~400	150~400
		NB90S	500~900	–	–
HIGH CARBON STEELS 50100, 51100 52100, M-50	<250	T1500A	800~1300	700~1200	–
		T1500Z	800~1450	700~1300	–
		AC805P	800~1400	700~1300	600~1100
		AC810P	800~1250	700~1150	600~1000
		AC820P	450~850	300~750	300~700
		AC830P	–	300~750	300~650
	250~350	T1500A	700~1200	600~1100	–
		T1500Z	700~1300	600~1200	–
		AC805P	700~1300	600~1200	500~900
		AC810P	700~1150	600~1100	500~800
		AC820P	550~850	500~750	400~650
		AC830P	–	450~700	400~600
	Chipbreaker Preference		ESE/ESU/ELU	EGE/ELU	EME/EMU

Recommended first choice, Recommended second choice, Recommended third choice

Work Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .012 IPR .005" ~ .060" D.O.C.	Gen. Purpose .010 ~ .020 IPR .040" ~ .200" D.O.C.	Roughing .015 ~ .026 IPR 200" D.O.C.
			CUTTING SPEED SFM		
TOOL STEELS DIE STEELS	<250	T1500A	500~800	350~800	–
		T1500Z	500~950	350~900	–
		AC805P	500~1000	350~900	300~850
		AC810P	500~900	350~800	300~750
		AC820P	400~700	350~650	300~600
		AC830P	–	350~650	300~600
	250~350	T1500A	650~1000	450~950	–
		T1500Z	500~900	350~900	–
		AC805P	500~1000	450~900	350~850
		AC810P	500~900	450~800	350~750
		AC820P	400~750	400~650	300~600
		AC830P	–	300~650	200~600
	HRc 36-50	T1500A	350~550	300~550	–
		T1500Z	300~600	200~550	–
		AC805P	300~650	200~550	200~550
		AC810P	300~600	200~500	200~500
		AC820P	200~400	200~350	150~300
		AC830P	200~400	200~350	150~300
		NB90S	300~600	–	–
HIGH STRENGTH STEELS 300M, 4340, 4340M 4340V, H13, H11 50100, 51100 52100, M-50	250~300	T1500A	600~1000	450~900	–
		T1500Z	550~1050	450~950	–
		AC805P	500~1050	350~950	300~800
		AC810P	500~950	350~850	300~700
		AC820P	400~700	350~700	300~650
		AC830P	–	350~700	300~600
	HRc 35-45	T1500A	550~900	350~850	–
		T1500Z	500~1000	350~950	–
		AC805P	500~1000	350~950	300~900
		AC810P	500~900	350~850	300~800
		AC820P	400~800	300~700	250~650
		AC830P	–	300~650	250~600
	Chipbreaker Preference		ESE/ESU/ELU	EGE/ELU	EME/EMU

Recommended Running Conditions

Recommended first choice, Recommended second choice, Recommended third choice

Work Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .012 IPR .005″ ~ .060″ D.O.C.	Gen. Purpose .010 ~ .020 IPR .040″ ~ .200″ D.O.C.	Roughing .015 ~ .026 IPR 200″ D.O.C.
			CUTTING SPEED SFM		
STAINLES STEEL 300 SERIES AUSTENITIC	160~280	**T1500A**	350~850	300~650	–
		T1500Z	300~900	300~800	–
		AC510U	400~700	400~650	–
		AC520U	300~550	300~550	300~550
		AC530U	300~500	250~500	250~500
		EH510	300~500	300~500	–
		EH520	–	300~500	300~500
		AC810P	450~750	400~700	–
		AC820P	–	300~600	300~550
		AC830P	–	250~600	200~550
		AC610M	600~800	500~700	400~600
		AC630M	400~650	300~550	300~500
STAINLESS STEEL 400 SERIES MARTENSITIC	160~260	**T1500A**	300~850	300~750	–
		T1500Z	300~950	300~850	–
		AC510U	500~850	450~750	–
		AC520U	400~700	400~600	300~600
		AC530U	300~600	300~550	300~550
		EH510	300~600	300~550	–
		EH520	300~600	300~550	300~500
		AC810P	–	400~700	–
		AC820P	450~650	300~600	300~550
		AC830P	–	250~600	200~550
		AC610M	500~700	500~650	500~600
		AC630M	300~650	300~600	300~550
	Chipbreaker Preference		EEF/ESU	EEG/EEX/EUP	EEG/EMU

Recommended first choice, Recommended second choice, Recommended third choice

Work Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .010 IPR .005" ~ .060" D.O.C.	Gen. Purpose .008 ~ .016 IPR .040" ~ .150"D.O.C.	Roughing .010 ~ .020 IPR 120~250" D.O.C.
			CUTTING SPEED SFM		
STAINLESS STEEL 400 SERIES MARTENSITIC cont.	260~380	T1500A	200~600	200~550	–
		T1500Z	200~700	200~650	–
		AC510U	400~700	400~650	–
		AC520U	300~600	300~600	300~550
		AC530U	300~550	300~500	300~500
		EH510	300~600	300~600	–
		EH520	–	300~550	250~500
		AC810P	350~800	250~750	–
		AC820P	–	200~600	200~600
		AC830P	–	200~600	200~600
		AC610M	500~700	500~650	500~600
		AC630M	300~650	300~600	300~550
	HrC 36~46	T1500A	200~600	200~500	–
		T1500Z	200~700	200~650	–
		AC510U	300~650	250~600	–
		AC520U	300~600	250~550	250~550
		AC530U	250~550	250~500	250~500
		EH510	200~500	200~450	–
		EH520	–	200~450	200~400
		AC810P	200~750	200~700	–
		AC820P	–	200~550	200~500
		AC830P	–	200~550	200~500
		AC610M	400~700	400~650	400~600
		AC630M	200~650	200~600	200~550
	Chipbreaker Preference		EEF/ESU	EEG/EEX/EUP	EEG/EMU

Recommended Running Conditions

Recommended first choice, Recommended second choice, Recommended third choice

Work Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .010 IPR .005″ ~ .060″ D.O.C.	Gen. Purpose .008 ~ .016 IPR .040″ ~ .150″ D.O.C.	Roughing .010 ~ .020 IPR 120~250″ D.O.C.
			CUTTING SPEED SFM		
STAINLESS STEEL PRECIPITATION HARDENING 15-5PH, 16-6PH, 17-4, 17-7PH, 13-8Mo	160~260	T1500A	300~800	250~700	–
		T1500Z	300~900	250~750	–
		AC510U	400~900	350~850	–
		AC520U	400~800	400~750	400~700
		AC530U	300~600	300~550	300~500
		EH510	350~700	325~600	–
		EH520	–	300~650	250~550
		AC810P	400~900	400~800	–
		AC820P	300~750	300~650	300~600
		AC830P	–	300~650	300~600
		AC610M	400~700	400~650	400~600
		AC630M	200~650	200~600	200~550
	25~36	T1500A	200~700	200~600	–
		T1500Z	300~800	300~750	–
		AC510U	300~850	300~750	–
		AC520U	300~750	300~700	300~600
		AC530U	250~600	250~550	250~500
		EH510	250~450	250~400	–
		EH520	–	250~450	250~425
		AC810P	300~800	250~750	–
		AC820P	300~600	200~600	200~550
		AC830P	–	200~600	200~500
		AC610M	500~700	500~650	500~600
		AC630M	300~650	300~600	300~550
	36~46	T1500A	300~650	300~600	–
		T1500Z	300~700	300~650	–
		AC510U	300~650	300~650	–
		AC520U	300~650	300~625	250~600
		AC530U	250~550	250~500	250~500
		AC810P	200~750	200~650	–
		AC820P	200~550	200~525	200~500
		AC830P	–	200~500	200~450
		AC610M	400~700	400~650	400~600
		AC630M	300~650	300~600	300~550
	Chipbreaker Preference		EEF/ESU	EEG/EEX/EUP	EEG/EMU

Recommended Running Conditions

Recommended first choice, Recommended second choice, Recommended third choice

Work Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .010 IPR .005" ~ .060" D.O.C.	Gen. Purpose .008 ~ .016 IPR .040" ~ .150" D.O.C.	Roughing .010 ~ .020 IPR 120~250" D.O.C.
			CUTTING SPEED SFM		
STAINLESS STEEL WROUGHT AUSTENITIC NITRONIC 32 NITRONIC 33 NITRONIC 40 NITRONIC 50 NITRONIC 60	160~260	**T1500A**	200~600	200~550	–
		T1500Z	200~700	200~650	–
		EH510/520	250~600	200~500	150~400
		AC510U	200~750	200~750	300~700
		AC520U	200~750	200~700	200~700
		AC530U	200~600	200~550	200~500
		AC810P	300~850	250~750	250~750
		AC820P	300~600	200~600	200~600
		AC830P	300~700	200~600	300~600
HIGH TEMP. ALLOYS Nickel Base, Wrought Haynes Alloy 263, Incoloy Alloy 901, 903 Inconel Alloy 617, 625, 702, 706, 718, 721, 722, X-750, 751, M252 Nimonic 75, 80 Waspaloy		EH510/520	50~150	30~130	30~100
		AC510U	100~240	100~200	60~180
		AC520U	100~200	80~180	50~150
	25~36	**AC530U**	80~180	80~150	50~120
		WX2000	400~1500	400~1200	400~1000
		EH510/520	40~130	30~110	30~90
		AC510U	90~200	80~180	80~150
		AC520U	90~180	70~150	50~120
		AC530U	80~160	70~140	50~120
		WX2000	400~1500	400~1200	400~1000
Nickel Base, Wrought Hastelloy Alloy		EH510/520	100~190	80~150	70~130
		AC510U	120~230	90~190	80~170
		AC520U	120~230	90~190	80~170
		AC530U	80~180	80~150	50~150
		WX2000	400~1500	400~1200	400~1000
Nickel Base, Wrought Incoloy Alloy 804, 825 Inconel Alloy 600, 601 Refractaloy 26	36~46	EH510/520	60~140	50~130	40~110
		AC510U	80~180	60~150	50~140
		AC520U	80~180	60~150	50~140
		AC530U	70~150	50~140	50~120
		WX2000	400~1500	400~1200	400~1000
Nickel Base, Cast Hastalloy Alloy		EH510/520	60~130	40~120	30~100
		AC510U	70~200	50~180	40~150
		AC520U	70~170	50~150	40~130
		AC530U	60~150	50~130	40~120
		WX2000	400~1500	400~1200	400~1000
	Chipbreaker Preference		EEF/ESU	EEG/EEX/EUP	EEG/EMU

Recommended Running Conditions

Recommended first choice, Recommended second choice, Recommended third choice

Work Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .010 IPR .005" ~ .060" D.O.C.	Gen. Purpose .008 ~ .016 IPR .040" ~ .150" D.O.C.	Roughing .010 ~ .020 IPR 120~250" D.O.C.
			CUTTING SPEED SFM		
HIGH TEMP ALLOYS IRON BASE, WROUGHT	180~230	EH510/520	100~180	90~170	80~140
		AC510U	120~220	100~200	80~180
		AC520U	120~220	100~200	80~180
		AC530U	80~150	80~120	70~100
		WX2000	400~1500	400~1200	400~1000
	250~320	EH510/520	100~170	80~150	65~125
		AC510U	120~210	90~190	75~160
		AC520U	120~210	90~190	75~160
		AC530U	80~180	80~160	50~120
		WX2000	400~1500	400~1200	400~1000
COBALT BASE		EH510/520	90~170	90~150	70~130
		AC510U	110~210	100~180	80~160
		AC520U	110~210	100~180	80~160
		AC530U	80~180	70~150	50~120
		WX2000	400~1500	400~1200	400~1000
STELLITE		EH510/520	100~170	90~155	70~120
		AC510U	110~200	100~170	80~150
		AC520U	110~200	100~170	80~150
		AC530U	80~180	80~150	50~120
		WX2000	300~1500	300~1200	300~1000
PURE TITANIUM		**EH510/520**	90~160	80~130	70~125
		AC510U	100~190	90~170	80~140
		AC520U	100~190	90~170	80~140
		AC530U	80~150	70~130	50~120
TITANIUM ALLOY Ti-6AL-4V		EH510/520	100~180	90~160	70~140
		AC510U	120~210	120~190	100~160
		AC520U	120~210	120~190	100~160
		AC530U	80~170	70~150	50~120
ALUMINUM ALLOYS BRASS ALLOYS		**DA1000***	1000~10000	1000~10000	–
		DA2200*	1000~10000	1000~10000	
		DA150*	1000~10000	1000~10000	–
		EH510/520	800~1700	700~1200	700~1000
		AC510U	500~1500	500~1200	500~1000
		AC520U	500~1500	500~1200	500~1000
		G10E	800~1500	700~1200	700~1000
	Chipbreaker Preference		EEF/ESU	EEG/EEX/EUP	EEG/EMU

* Refer to the PCD section for proper running conditions of PCD grades.

Recommended first choice, Recommended second choice, Recommended third choice

Work Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .012 IPR .005" ~ .100" D.O.C.	Gen. Purpose .008 ~ .020 IPR .040" ~ .120" D.O.C.	Roughing .015 ~ .030 IPR .100"~.180" D.O.C.
			CUTTING SPEED SFM		
COPPER ALLOYS WROUGHT 145, 147, 173, 187, 191, 314, 316, 330, 332, 335, 340, 342, 349, 350, 353, 356, 360, 365, 366, 367, 368, 370, 377, 385, 482, 485, 544, 623, 624, 638, 642, 782		**DA1000***	2000~3300	2000~3300	–
		DA2200*	2000~3300	2000~3300	
		DA150*	2000~3300	2000~3300	–
		EH510/520	800~1300	800~1200	700~1100
		AC510U	1200~1700	1100~1500	900~1300
		AC520U	1200~1700	1100~1500	900~1300
		G10E	800~1100	800~1000	700~900
190, 226, 230, 240, 260, 268,270, 280, 425, 435, 442, 443, 444, 445, 464, 465, 466, 467,613, 618, 630, 632, 651, 655, 667, 675, 687, 694, 770		**DA1000***	2000~3300	2000~3300	–
		DA2200*	2000~3300	2000~3300	
		DA150*	2000~3300	2000~3300	–
		EH510/520	800~1100	600~950	500~850
		AC510U	900~1300	800~1150	700~1000
		AC520U	900~1300	800~1150	700~1000
		G10E	800~900	600~750	500~650
411, 413, 505, 512 ,511, 521, 524, 608, 610 ,614, 619, 625, 674, 688, 706, 710 ,715, 7285, 745		**DA1000***	2000~3300	2000~3300	–
		DA2200*	2000~3300	2000~3300	
		DA150*	2000~3300	2000~3300	–
		EH510/520	250~550	200~500	150~450
		AC510U	450~750	350~650	300~600
		AC520U	450~750	350~650	300~600
		G10E	250~350	200~300	150~250
	Chipbreaker Preference		EEF/ESU	EEG/EEX/EUP	EEG/EMU

* Refer to the PCD section for proper running conditions of PCD grades.

Recommended Running Conditions

Recommended first choice, Recommended second choice, Recommended third choice

Work Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .010 IPR .005" ~ .060" D.O.C.	Gen. Purpose .008 ~ .016 IPR .040" ~ .150" D.O.C.	Roughing .010 ~ .020 IPR 120~250" D.O.C.
			CUTTING SPEED SFM		
COPPER ALLOYS, CAST 834, 836, 938, 842, 844, 848, 852, 8545, 8955, 857, 858, 864, 867, 879, 928, 932, 934, 935, 937, 938, 939, 943, 944, 945, 953, 954, 956, 973, 974, 976, 078		**DA1000***	2000~3300	2000~3300	–
		DA2200*	2000~3300	2000~3300	
		DA150*	2000~3300	2000~3300	–
		EH510/520	1000~1400	850~1250	750~1150
		AC510U	1200~1600	1050~1500	950~1400
		AC520U	1200~1600	1050~1500	950~1400
		G10E	1000~1200	850~1050	750~950
817, 821, 833, 853, 861, 862, 865, 888, 872, 874 ,875, 876, 878, 903, 905, 915, 9022, 923, 9059, 926, 927, 947, 948, 952, 955, 957, 958		**DA1000***	2000~3300	2000~3300	–
		DA2200*	2000~3300	2000~3300	
		DA150*	2000~3300	2000~3300	–
		EH510/520	700~1100	550~850	500~800
		AC510U	950~1350	700~1100	650~1050
		AC520U	950~1350	700~1100	650~1050
		G10E	700~900	550~650	500~600
801, 803, 805, 807, 809, 811, 813, 814, 815, 818, 820 ,822, 824, 825, 826, 827, 828, 863, 902, 907, 909, 910, 911, 913, 916, 917, 962, 963, 964, 966, 993		**DA1000***	2000~3300	2000~3300	–
		DA2200*	2000~3300	2000~3300	
		DA150*	2000~3300	2000~3300	–
		EH510/520	300~600	175~500	150~450
		AC510U	500~850	350~725	325~675
		AC520U	500~850	325~725	325~675
		G10E	300~400	175~300	150~250
GRAY CAST IRON		**BN500***	600~2400	–	–
		BN700*	2000~6000	–	–
		BNS800*	2000~6000	–	–
		SN2000K	1000~3500	800~3500	800~2500
		T2000Z	600~1400	500~1200	–
		AC405K	700~1700	700~1500	600~1400
		AC410K	600~1600	500~1300	400~1000
		AC415K	600~1600	500~1300	400~1000
		AC420K	600~1500	500~1200	400~1000
		AC700G	–	400~1200	400~900
		AC820P	–	600~1000	500~900
		G10E	200~350	150~300	100~250
	Chipbreaker Preference		EEF/ESU	EEG/EEX/EUP	EEG/EMU

* Refer to the PCD section for proper running conditions of PCD grades.

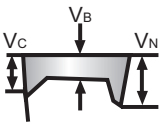
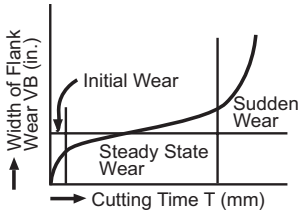
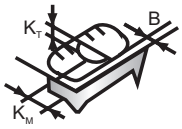
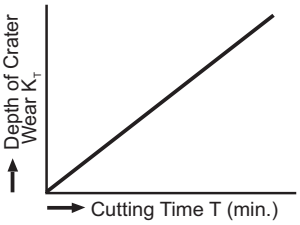
Recommended first choice, Recommended second choice, Recommended third choice

Work Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .010 IPR .005" ~ .060" D.O.C.	Gen. Purpose .008 ~ .016 IPR .040" ~ .150" D.O.C.	Roughing .010 ~ .020 IPR 120~250" D.O.C.
	<220		CUTTING SPEED SFM		
GRAY CAST IRON cont.	>220	BN500*	600~2000	–	–
		BN700*	1900~3100	–	–
		BNS800*	1900~3100	–	–
		SN2000K	1000~3500	800~3500	600~2500
		T1500Z	500~1350	400~1100	–
		AC405K	600~1600	600~1500	600~1400
		AC410K	550~1600	500~1200	450~1000
		AC415K	550~1600	500~1200	450~1000
		AC420K	500~1500	450~1100	400~1000
		AC700G	–	300~1200	400~1000
		AC820P	–	600~1000	500~900
		G10E	200~300	150~300	100~250
DUCTILE IRON NODULAR IRON	<220	BN500*	300~1000	–	–
		T1500Z	350~1000	400~950	–
		SN2000K	600~1700	600~1500	500~1100
		AC405K	600~1700	600~1500	600~1400
		AC410K	500~1500	500~1200	400~1000
		AC415K	500~1500	500~1200	400~1000
		AC420K	500~1400	500~1100	400~1000
		AC700G	–	500~1100	400~1000
		AC820P	–	600~950	600~900
		AC510U	500~800	400~750	350~600
	>220	BN500*	300~900	–	–
		T1500Z	330~900	330~850	–
		SN2000K	500~1700	500~1500	400~1000
		AC405K	500~1700	500~1500	500~1100
		AC410K	400~1300	400~1100	300~1000
		AC415K	400~1300	400~1100	300~1000
		AC420K	400~1100	400~1000	300~900
		AC700G	–	400~900	300~800
		AC820P	–	500~900	450~850
		AC510U	500~800	300~700	300~600
	Chipbreaker Preference		ENZ/FLAT TOP	EGZ/FLAT TOP	EGZ/ FLAT TOP

* Refer to the PCD section for proper running conditions of PCD grades.

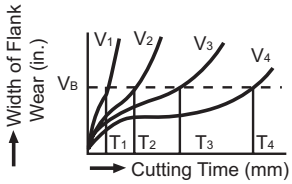
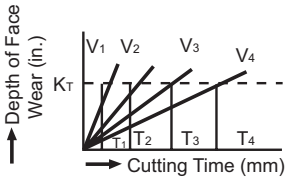
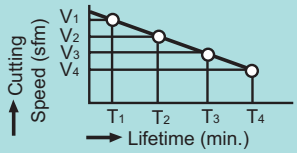
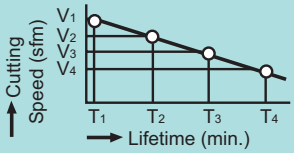
Tool Life

① Wearing Process Curve

Flank Wear		Crater Wear	
			
V_B: Width of Flank Mean Wear V_C: Maximum Wear of Nose Radius V_N: Grooving Wear	• Initial wear very fast, then evens out to a more gradual pattern, until limit is reached; wear is then increased substantially.	K_T: Depth of Crater Wear B: Width of Land K_M: Distance Between The Center of Crater Wear and Cutting Edge	• Crater wear is more progressive; no sudden breakdown pattern.

② Life Curve (V-T Lines)

• At four speeds V_1, V_2, V_3 and V_4, the relative tool lives for a given flank wear V_B or crater K_T are indicated as T_1, T_2, T_3 and T_4 respectively, using log-log graph paper.

	Flank Wear	Face Wear
Wearing Process		
Life Curve		

③ Tool Life Equation

• Tool Life Equation (Taylor's Equation)

$$VT^n = C$$

V: Cutting Speed
T: Tool Life
n, C: Constants determined by work material, tool material, tool design, etc.

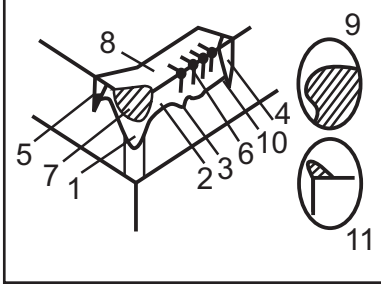
④ Alternative Tool Life Criteria

① When surface finish deteriorates unacceptably.
② When a fixed amount of tool wear is reached (see the right-hand table).
③ When work piece dimension is out of tolerance.
④ When power consumption reaches limit.
⑤ Sparking or chip discoloration and disfigurement.
⑥ Cutting time or component quantity.

• Width of Flank Wear for General Life Determination (For Cemented Carbides)

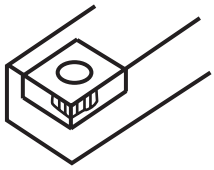
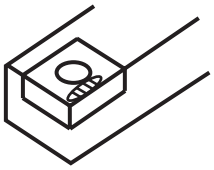
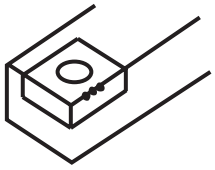
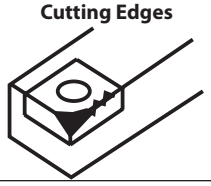
Width of Wear (in.)	Applications
.008	Finish cutting of non-ferrous alloys, fine & light cut, etc.
.016	Cutting of special steels
.028	Normal cutting of cast irons, steels, etc.
.040-.050	Rough cutting of common cast irons

1. Forms of Tool Failure

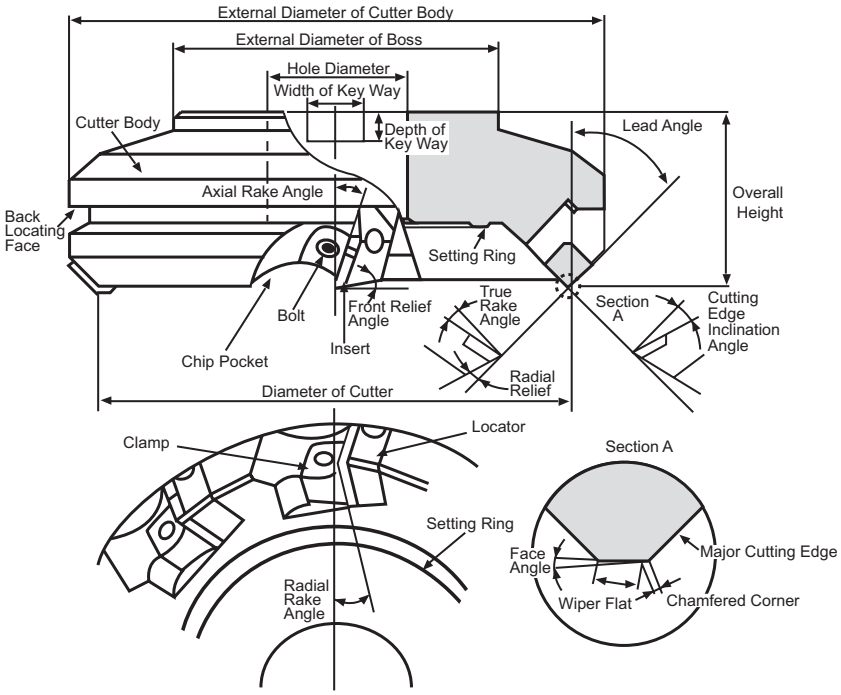


No.	Failure	Cause	
1-5	Flank Wear	Physical	Due to the abrasive effect of hard grains contained in the work material
6	Chipping		Fine chips caused by high-pressure cutting, chatter, vibration, etc.
7	Partial Fracture		Due to the mechanical impact when an excessive force is applied to the cutting edge
8	Crater Wear	Chemical	Carbide particles are removed due to degradation of tool performances and chemical reactions at high temperature
9	Deformation		The cutting edge is deformed due to its softening at high temperature
10	Thermal Crack		Thermal fatigue in the heating and cooling cycle with interrupted cutting
11	Build-Up Edge		A portion of the workpiece material adheres to the insert cutting edge

2. Failure Remedies

	Failure	Basic Remedy		Proven Remedies
Edge Failure	Excessive Flank Wear 	Tool Material Cutting Conditions	• Use a more wear-resistant grade Carbide → { Coated / Cermet • Decrease speed	• Recommended Insert Grade: Steel: Finishing AC810P; Rough ACA20P Cast Iron: Finishing BN700, BN7000, BNC500; Rough AC405K
	Excessive Crater Wear 	Tool Material Tool Design Cutting Conditions	• Use a crater-resistant grade Carbide → { Coated / Cermet • Enlarge the rake angle • Select the correct chip breaker • Decrease speed • Reduce the depth of cut and feed	• Recommended Insert Grade: Steel: Finishing AC810P; Rough ACA20P, AC830P Cast Iron: Finishing BN700, BN7000, BNC500; Rough AC415K, AC420K
	Cutting Edge Chipping 	Tool Material Tool Design Cutting Conditions	• Use tougher grades If carbide, (AC820P → AC830P) • If built-up edge occurs, change to a less susceptible grade (cermet) • Reinforcement of the cutting edge (honing) • Reduce the rake angle • Increase speed (if caused by edge build-up)	• Recommended Insert Grades: Steel: Finishing T2000Z,T1200A; Rough ACA20P, AC830P Cast Iron: Finishing BN700, BN7000, BNC500; Rough AC420K • All coated inserts are honed
	Partial Fracture of Cutting Edges 	Tool Material Tool Design Cutting Conditions	• Use tougher grades If carbide, (AC820P → AC830P) • Use holder with a large approach angle • Use larger shank-size holder • Reduce the depth of cut and feed	• Recommended Insert Grade: Steel: Rough Machining AC820P, AC830P Cast Iron: AC420K
	Built-up Edge	Tool Material Cutting Conditions	• Change to a grade which is adhesion resistant • Increase the cutting speed and feed • Use cutting fluids	• Recommended Insert Grade: Steel: Finishing T2000Z, T1200A; Rough AC820P Cast Iron: Finishing BN700, BN500; Rough AC700G, YB100
	Plastic Deformation	Tool Material Cutting Conditions	• Change to high thermal resistant grades • Reduce the cutting speed and feed	Steel: Finishing T2000Z,AC810P; Rough ACA20P Cast Iron: Finishing AC405K; Rough AC415K, AC420K

■ Illustration of Technical Terms



Calculating Power Requirement

• Power Requirement

$$P_c = \frac{a_e \times a_p \times v_f \times k_c}{60 \times 10^6 \times \eta} = \frac{Q \times k_c}{60 \times 10^3 \times \eta}$$

• Horsepower Requirement

$$H = \frac{P_c}{0.75}$$

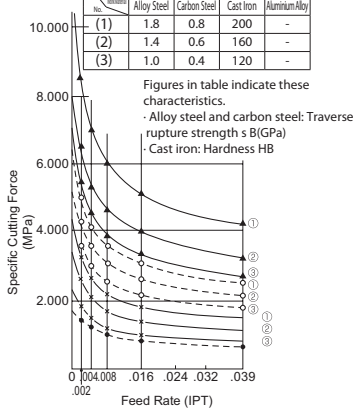
• Chip Removal Amount

$$Q = \frac{a_e \times a_p \times v_f}{1000}$$

P_c: Power requirement (kw)
H : Required horsepower (HP)
Q : Chip removal amount (cm^3/min)
a_e : Cutting width (mm)
v_f : Feed rate (mm/min)
a_p : Depth of cut (mm)
k_c : Specific cutting force (MPa)
Rough value (Steel: 2,500 to 3,000MPa / Cast iron: 1,500MPa / Aluminium: 800MPa)
η : Machine efficiency (about 0.75)

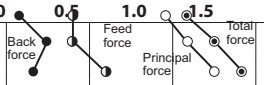
• Relation Between Feed Rate, Work Material, Specific Cutting Force

No. \ Symbol / Workpiece	Alloy Steel	Carbon Steel	Cast Iron	Aluminium Alloy
(1)	1.8	0.8	200	-
(2)	1.4	0.6	160	-
(3)	1.0	0.4	120	-



Cutting Force Comparison of Typical Sumitomo Mills

Cutter Series	Cutting Edge Angle (deg) A.R	R.R	A.A
UFO	+27°	−7°	45°
FPG	+15°	−4°	45°
DPG	+ 8°	−0°	15°



· Work: 4137 (250HB)
· Machine: M/C (15HP)
· Cutting Conditions: vc=394 SFM
fz =0.012 IPT
ap =0.118"

• Calculating Cutting Speed

$$v_c = \frac{\pi \times D_c \times n}{1{,}000}$$

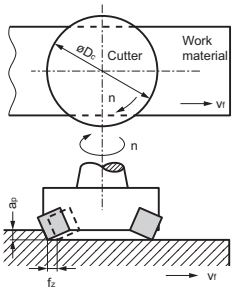
$$n = \frac{1{,}000 \times v_c}{\pi \times D_c}$$

• Calculating Feed Rate

$$v_f = f_z \times z \times n$$

$$f_z = \frac{v_f}{z \times n}$$

v_c : Cutting speed (SFM)
π : ≈ 3.14
D_c : Cutter diameter (inch)
n : Rotational speed (min^{-1})
v_f : Feed rate per minute (IPM)
f_z : Feed rate per tooth (IPT)
z : Number of teeth
f : Feed rate (IPR)



MILLING INSERTS

The following pages contain basic technical data intended to address the use and application of Sumitomo solid carbide, and indexable carbide tooling. Sumitomo has compiled speed, feed, horsepower, material, and grade information in order to help the machinist, programmer, tooling engineer, etc., obtain successful results with our products.

Often feedback is received in regards to Sumitomo's technical information. Customers inquire as to why this information may not yield the best possible results for their respective applications. The following is an explanation on the preferred way to utilize this section.

Perhaps milling, more so than most machining operations, brings forth a greater number of variables to the science of optimizing a successful machining operation. Tool grade, pitch, diameter, effective rake angle, work piece material, hardness, rigidity, machine condition and design all will effect running parameters and overall tool performance. It is therefore not a question of looking up a number in a chart to maximize productivity, but to use the data provided to help customize the running parameters for a particular application.

One of the most valuable keys to ensuring productivity is an experienced machinist. The skill of an accomplished journeyman has yet to be replaced by any computer.

Take the time to check horsepower consumption, speeds, feeds and grade selection before loading a tool into the spindle and pressing "cycle start". Once an operation is completed successfully, then maximum productivity can be addressed.

■ MILLING APPLICATIONS

Work Material	Steels and Stainless Steels						Cast Iron and Non-Ferrous Metals				High Temperature Alloys		
Application	High Speed	Finishing		Medium	Roughing		High Speed	Finishing	Medium Cutting		Finishing	Medium	Roughing
ISO/ANSI		P01/C8	P10/C7	P20/C6	P30/C5A	P40/C5		K01	K10	K20	K01/C4	K10/C3	K20/C2
CBN							BN700						
							BNS800						
							BN500						
Ceramic								SN2100K					
Coated Cermet		T250A											
Coated Carbide		AC230					DL1000						
	ACP100						ACK100						
			AC325					AC211					
			ACP200					ACK200					
			ACZ310					EH520Z					
				ACZ330									
				ACP300					ACK300				
				ACZ350					ACZ310				
Uncoated Carbide				A30N			H1		G10E				
				S30E					EH20				
									EH520				

1. Coated Grades

Grade	Coating Layer	Applications	Color	Old Grade
ACP100	CVD "Super FF" Coating	General to high speed and wet cutting of steels and stainless steels	Gold	AC230
ACP200	PVD "Super ZX" Coating	First choice for general purpose milling of steels and stainless steels	Bronze	ACZ330
ACP300	PVD "Super ZX" Coating	Very tough grade for steels and stainless steels	Bronze	ACZ350
ACK100	CVD "Super FF" Coating	High speed grade for milling gray and ductile cast irons	Gold	
ACK200	CVD "Super FF" Coating	General purpose milling of gray and ductile cast irons	Gold	AC211
ACK300	PVD "Super ZX" Coating	General to heavy cutting of gray and ductile cast irons	Bronze	ACZ310
ACM100	PVD "Super ZX" Coating	For finishing applications of stainless steels and exotics	Bronze	
ACM200	CVD "Super FF" Coating	First choice for general purpose milling of stainless steels and exotics	Gold	AC325
ACM300	PVD "Super ZX" Coating	Tough grade for interrupted machining of stainless steels and exotics	Bronze	
AC325	Double Phase PVD	General purpose milling of steels and stainless steels	Gold	
AC230	Multi-Phase Al_2O_3	High speed milling of steels and stainless steels	Gold	
AC211	Multi-Phase Al_2O_3	General purpose milling of cast iron	Gold	
ACZ120	ZX Coating (TIN/AIN)	Finish milling of heat treated tool steels and alloys	Pink	
ACZ310	ZX Coating (TIN/AIN)	General purpose milling of cast iron	Pink	
ACZ330	ZX Coating (TIN/AIN)	General purpose milling of steels and stainless steels	Pink	
ACZ350	ZX Coating (TIN/AIN)	General purpose milling of steels and stainless steels	Pink	
DL1000	Diamond-Like Carbon	High speed milling of non-ferrous materials	Blue	

2. Cermet Grades

Grade	Hardness (Hv)	T.R.S. (kg/mm²)	Applications
T250A	1430	220	Finish milling of steels and stainless steels
T2500A	1430	220	Finish milling of steels and stainless steels

3. Ceramic Grades

Grade	Composition	Hardness (Hv)	Applications
SN2100K	Si_3N_4	1,600	Milling of cast iron

4. CBN

Grade	Hardness (Hv)	Applications
BN500	3,300-3,500	High speed milling of gray and nodular cast irons
BN700	4,100-4,400	High speed milling of cast iron and powdered metals
BNS800	4,000-4,300	High speed milling of gray cast iron

5. Polycrystalline Diamond (PCD)

Grade	Hardness (Hv)	Applications
DA2200	9,000-10,000	Finishing, roughing and interrupted machining of aluminum and non-ferrous materials
DA200	8,000-10,0000	Milling of non-ferrous alloys and plastics
DA150	10,000-12,0000	Machining of aluminum, copper, wood, rubber, graphite and carbide (soft), plastic, etc.

6. Uncoated Carbide

Grade	Grade	Hardness	T.R.S. (psi)	Applications
C-5A	S30E	91.3	348,000	Milling of steels and stainless steels
	A30N (A30)	90.6	354,000	Rough turning and milling of steel and stainless steel
C3	H1	92.4	352,000	Finishing to semi-finishing of aluminum
C2	G10E	91.0	280,000	Milling of cast iron and aluminum
	H10E	92.3	284,467	Wiper inserts for cast iron and aluminum
	EH20	91.0	474,000	Milling of exotic materials
	EH520	91.8	436,000	Longer tool life for exotic material milling

Grade Descriptions/Applications

Sumitomo Electric Carbide, Inc. continues to introduce new and improved grades for milling. The patented "Super ZX" and "Super FF" coatings are featured on our new ACK and ACP series grades. This technology provides our customers with increased tool life and productivity.

With the introduction of our Wave Ballnose Finishing Endmill (WBMF), Sumitomo developed a ZX coated grade ACZ120 dedicate. The ACZ120 excels in applications involving finish milling of heat treated tool steels and alloys, and is available only for the WBMF cutter.

Sumitomo's idea of constant improvement through technology has once again provided the industry with a new style of insert. The Diamond-Like Carbon (DLC) coating on grade DL1000 excels in high speed non-ferrous milling applications due to its extremely hard coating.

These tools added to Sumitomo's existing milling grades complete the product line, making it easier for the customer when dealing with difficult applications.

Coated Grades

Grade	Coating Layer	Applications	Color
ACP100	CVD "Super FF" Coating	General to high speed and wet cutting of steels and stainless steels	Gold
ACP200	PVD "Super ZX" Coating	First choice for general purpose milling of steels and stainless steels	Bronze
ACP300	PVD "Super ZX" Coating	Very tough grade for steels and stainless steels	Bronze
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ACK300	PVD "Super ZX" Coating	General to heavy cutting of gray and ductile cast irons	Bronze
ACM100	PVD "Super ZX" Coating	For finishing applications of stainless steels and exotics	Bronze
ACM200	CVD "Super FF" Coating	First choice for general purpose milling of stainless steels and exotics	Gold
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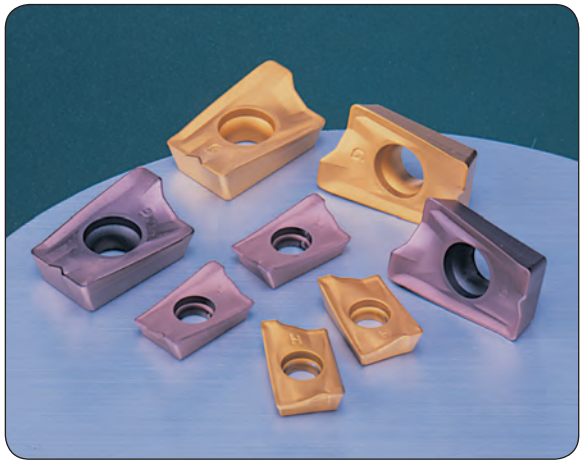
ACZ310	ZX Coating (TIN/AIN)	General purpose milling of cast iron	Pink
ACZ330	ZX Coating (TIN/AIN)	General purpose milling of steels and stainless steels	Pink
ACZ350	ZX Coating (TIN/AIN)	General purpose milling of steels and stainless steels	Pink
DL1000	Diamond-Like Carbon	High speed milling of non-ferrous materials	Blue

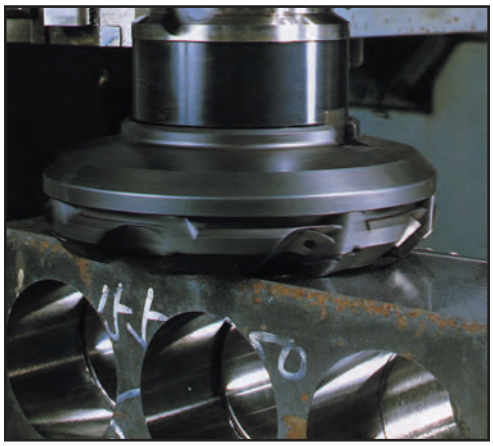


Cermet Grades

Grade	Hardness (Hv)	T.R.S. (kg/mm²)	Applications
T250A	1430	220	Finish milling of steels and stainless steels
T4500A	1430	220	Finish milling of steels and stainless steels

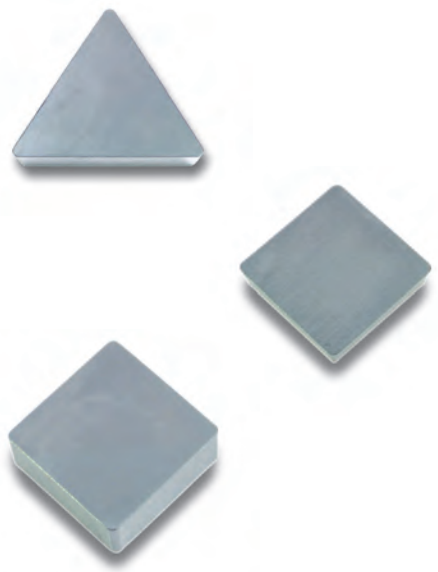
Cermets are a type of cutting tool insert that combine the properties of ceramic and metal materials in their chemical makeup. These tools provide excellent surface finishes and have a high resistance to adhesion due to their sharp cutting edge.

Sumitomos T250A cermet milling grade exhibits excellent toughness in finish milling applications. Also, the T250A is a great economic alternative to coated carbide grades when machining steels and stainless steels.



Ceramic Grades

Grade	Composition	Hardness (Hv)	Applications
SN2100K	Si_3N_4	1,600	Milling of cast iron



Developed using a patented microwave sintering process that produces a very fine-grained microstructure with enhanced characteristics, Sumitomo ceramic grade SN2100K is ideal for machining a cast iron materials.

GRADE FEATURES

Silicon Nitride Ceramic SN2100K

With its high shock and impact resistance, SN2100K is a grade ideally suited for cast iron roughing; use specifically when exceptional toughness and wear resistance is required..

■ Uncoated Carbide

Grade	Grade	Hardness	T.R.S. (psi)	Applications
C-5A	S30E	91.3	348,000	Milling of steels and stainless steels
	A30N (A30)	90.6	354,000	Rough turning and milling of steel and stainless steel
C3	H1	92.4	352,000	Finishing to semi-finishing of aluminum
C2	G10E	91.0	280,000	Milling of cast iron and aluminum
	H10E	92.3	284,467	Wiper inserts for cast iron and aluminum
	EH20	91.0	474,000	Milling of exotic materials
	EH520	91.8	436,000	Longer tool life for exotic material milling

Sumitomo Electric Carbide, Inc's research and development of tungsten carbide grades began in 1927. Since then, we have greatly improved and refined our grades to meet the needs of our customers today.

Our latest uncoated carbide milling grade is the EH520. This extremely tough grade outperforms the competition in applications involving exotic materials.

■ Cubic Boron Nitride (CBN) Grades

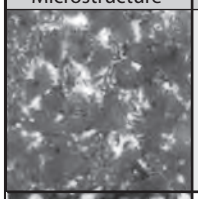
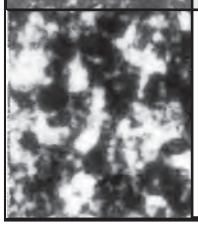
Grade	Hardness (Hv)	Applications
BN7000	4,100-4,400	High speed milling of gray and nodular cast irons
BN700	4,000-4,300	High speed milling of cast iron and powdered metals
BNS800	3,900-4,200	High speed milling of gray cast iron

Sumitomo Electric Carbide, Inc. is a world leader in the development of CBN cutting tool materials and their applications. For you, this means increased productivity, better surface finish, and an ability to hold closer tolerances with longer tool life. Sumitomo offers products, sizes and grades available nowhere else.

BN500, BN700, and BNS800 are three grades produced by Sumitomo and dedicated to machining cast irons. Their wear resistance and high speed capability increases tool life and productivity.

PCBN is generally classified into two groups according to the material microstructure. The CBN particles of the first type are bonded together directly without an additional binder material (BN700/BNS800). This type of CBN contains a large percentage of CBN and is thus extremely hard.

SUMIBORON, representative of the second type of PCBN materials, consists of CBN particles bonded together by a ceramic binder (BN500). The bonding strength is very high and thus is very wear-resistant and tough.

Microstructure	Features	Grades
	CBN particles are bonded to each other	BN700 BNS800
	CBN particles are bonded by a ceramic binder	BN500

PCD Milling Grades

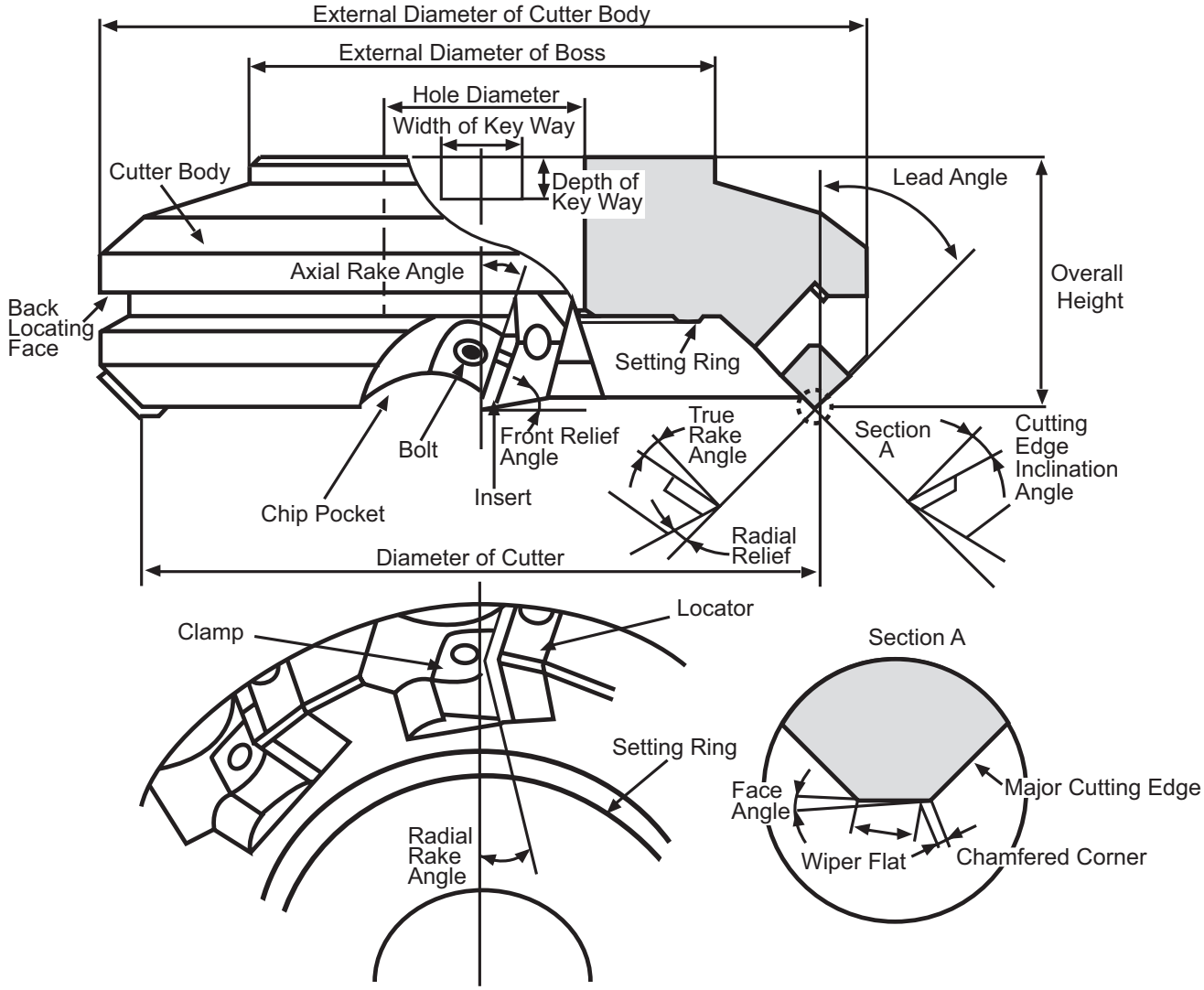
Polycrystaline Diamond				
Grade	DA1000	DA2200	DA150	DA200
Average diamond crystal size (microns)	0.5	0.5	5	0.5
Hardness (Hv)	11,000-12,000	9,000-10,000	10,000-12,000	8,000-10,000
T.R.S. (kg/mm^2)	260	250	200	220
Product Desription	• Ultra-fine grain structure • Superior hardness and wear resistance with sharp edge	• High density sintered material made of ultra-micro diamond particles • Superior hardness and wear resistance with sharp edge	• Fine grain diamond • High abrasion resistance	• Ultra-fine grain structure • Superior tool edge sharpness and toughness
Applications	• High Silicon Aluminum • Copper • Fiberglass • Hard Rubber • Graphite Epoxy • Wood • Aluminum Alloys • Plastics • Carbon (finishing, roughing, interrupted)	• High Silicon Aluminum • Copper • Fiberglass • Hard Rubber • Graphite Epoxy • Wood • Aluminum Alloys (finishing, roughing, interrupted)	• High Silicon Aluminum • Copper • Fiberglass • Hard Rubber • Graphite Epoxy • Wood • Carbon	• Wood • Plastics • Aluminum applications where low microfinish is needed

Since the introduction of SUMIDIA DA polycrystalline diamond (PCD) blanks in 1978, Sumitomo has continually developed and expanded the product line to offer finished inserts in a wide range of grades, shapes and sizes. SUMIDIA inserts consist of a layer of fine grain synthetic diamond crystals bonded to a tungsten carbide substrate which is securely brazed into the pocket of a standard size insert. A high degree of diamond to diamond bonding is achieved by an ultra high pressure-temperature process. This crystal to crystal bonding provides exceptional hardness and abrasion resistance.

Our closely controlled manufacturing process produces unequaled consistency resulting in superior tool edge quality.
SUMIDIA DA inserts and wipers are replacing tungsten carbide and natural diamond cutting tools on a worldwide basis. Use of SUMIDIA DA grades will provide dramatically increased tool life, the ability to hold closer part tolerance, and improved surface finish.

New technological advances have given the industry a new style of PCD insert. The optimum size of PCD used in NF-DA2200 offers a less expensive alternative when machining non-ferrous materials.

■ Illustration of Technical Terms



Horsepower Consumption

This section contains the horsepower consumption formula and the explanation of the associated variables. A list of commonly encountered materials has been added to assist you when determining the required horsepower for a machining operation.

Machine efficiency, drive type, and amount of time that the machine has been running can effect the horsepower and torque availability at the spindle. Without an extensive list of specifications, it is nearly impossible to predict the capabilities of a machine tool. Sumitomo suggests that unless the capabilities of a machine tool are well known, it is wise to limit the attempted operations to those that require no more than 65% of the machine's rated horsepower.

Please take the time to understand the power requirements of an operation before attempting it, unless you are very familiar with the tool, material, and especially the machine being used.

*Note: If the material that you are machining is not found in this list, contact the material manufacturer for further information. Most material suppliers, or mills, have excellent technical resources available. However, if the material in question exhibits machining properties that are similar to a given material, use the corresponding "K" factor.

Horsepower Consumption Formula

$$\text{Horsepower} = \frac{W \times D \times F}{K}$$

W = width of cut (inches)
D = depth of cut (inches)
F = feed rate (inches/minute)
K = 'K' factor for material

'K' factors for some common materials are:

Material	'K'
Magnesium	4.0
Aluminum	4.0
Copper	2.0
Brass	2.5
Bronze	2.0
Malleable iron	1.0
Cast iron	
Ferrite	1.5
Pearlitic	1.0
Chilled	.6
Steel	
up to 150 BHN	1.0
up to 300 BHN	.8
up to 400 BHN	.5
up to 500 BHN	.4

Material	'K'
Stainless steel	
Free machining	1.0
Others	.6
Titanium	
under 100,000 psi	.8
100,000-135,000 psi	.6
135,000 psi and over	.4
High-tensile alloys	
180,000-220,000 psi	.5
220,000-260,000 psi	.4
260,000-300,000 psi	.3
High-temperature alloys	
Nickel base alloys	.4
Cobalt base alloys	.4
Austenitic alloys	.4

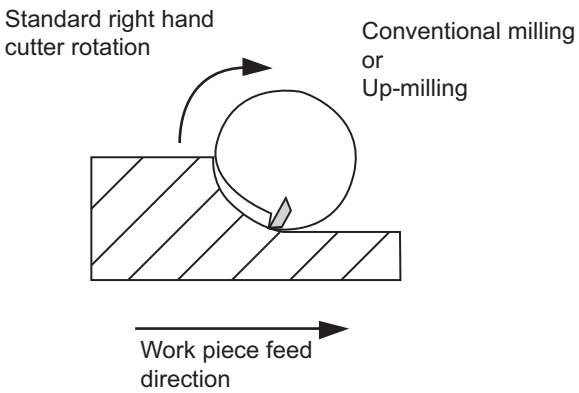
■ COMMENTARY ON GENERAL MACHINING PRACTICES

Despite the influx of computers, Computer Aided Design and Computer Aided Machining in the modern manufacturing environment, general machining practices are almost unchanged from those used decades ago.

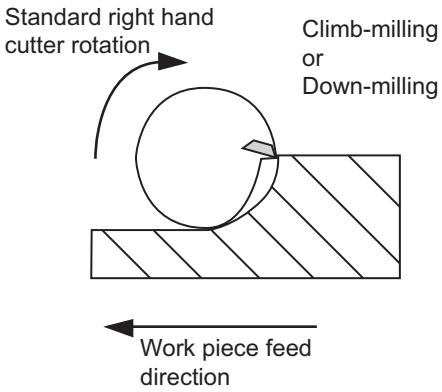
Correct set up of the work piece, tooling and machine are mandatory for high productivity, and more importantly, success. Sumitomo assumes that an enduser's shop practices are proper. Technology cannot replace sound machining practices.

In almost all situations where a CNC machine, or a conventional machine with backlash eliminators is used, modern carbide tooling should be applied with tool paths that climb mill. Conventional milling reduces tool life, promotes vibration and chatter, and prevents maximum performance in most situations.

INCORRECT



CORRECT!



Lead Angle Effect

The lead angle effect is a commonly known phenomenon in tool design. As the lead angle of a tool (the angle at which the insert is rotated away from its axial center line) increases, the actual thickness of the produced chip decreases from the programmed amount. This allows us to take advantage of increased feed rates over standard zero degree (90 degree shoulder) lead tools.

By comparing the following lead angle figures, it is possible to increase the actual feed rate up to 30% over the suggested numbers (depending on the type of tool), thus increasing productivity.

Tool Lead Angle	Percentage of chip thickness from programmed feed rate
15 degrees	96%
20 degrees	94%
30 degrees	86%
45 degrees	71%

To simplify this calculation we have included a chart that allows easy determination of *programmed feed per tooth* by choosing *desired feed per tooth* and then following the column down to the row that matches the lead angle of the tool that is being used.

Example: Find the programmed feed per tooth for a UFO cutter (45 degree lead angle), when the desired feed per tooth is 0.006 IPT.

Answer: Programmed feed per tooth = 0.0085 IPT

Programmed Feed Per Tooth vs. Desired Feed Per Tooth

Tool Lead Angle	Desired Feed Per Tooth (IPT)								
	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.011	0.012
	Programmed Feed Per Tooth (IPT)								
15	0.0042	0.0052	0.0063	0.0073	0.0083	0.0094	0.0104	0.0115	0.0125
20	0.0043	0.0053	0.0064	0.0074	0.0085	0.0096	0.0106	0.0117	0.0128
30	0.0047	0.0061	0.0070	0.0081	0.0093	0.0105	0.0116	0.0128	0.0140
45	0.0057	0.0075	0.0085	0.0099	0.0113	0.0127	0.0141	0.0156	0.0170

■ Radial Chip Thinning

Just as the axial rake of a cutting tool can alter the actual chip thickness, so can radial chip thinning. This occurs whenever the radial width of cut is less than 1/2 the cutter diameter. This is commonly found when making periphery cuts while end milling.

Since both tool life and productivity rely on maintaining full chip thickness, it is important to compensate for this scenario. Rather than using the mathematical process to arrive at a *programmed feed rate*, we have included the following chart.

To use this chart it is necessary to have the following information:

1) Desired feed per tooth (as taken from the end mill speed and feed section)
2) Cutter diameter
3) Radial width of cut

The first step is to divide the radial width of cut by the cutter diameter and find the closest value in the first column on the left. Next find the *desired feed per tooth* at the top of the chart and follow that column down to the row that was found in the first step. This will be the *programmed feed per tooth*.

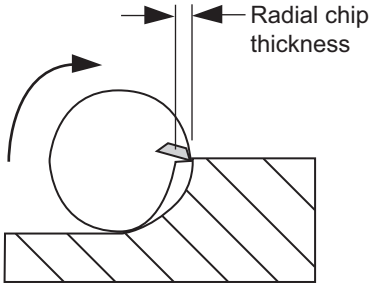
Example: 1.00″ diameter end mill
0.020″ radial width of cut
0.004″ *desired feed per tooth*

Answer: Dividing 0.020″ by 1.00″=0.020

Finding 0.020 in the first column on the left, and then the 0.004″ desired feed per tooth at the top, we find where the two meet and obtain 0.014″ *programmed feed per tooth*.

This results in a large increase in the feed rate. If we use these factors for a four flute tool at 2292 RPM, we have a feed rate of 128 IPM (2292 RPM x 0.014 IPT x 4 Flutes) versus 37 IPM (2292 RPM x 0.004 IPT x 4 Flutes) that might have otherwise been programmed.

As you can see from the illustration below, as radial depth increases, so does chip thickness until we reach 50% of the cutting diameter. At this point we have full, programmed chip load.



■ Radial Chip Thinning Compensation

	Desired Feed Per Tooth (IPT)								
	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.011	0.012
WOC/Dia.	Programmed Feed Per Tooth (IPT)								
0.005	0.0280	0.0350	0.0420	0.0490	0.0560	0.0630	0.0700	0.0770	0.0840
0.010	0.0200	0.0250	0.0300	0.0350	0.0400	0.0450	0.0500	0.0550	0.0600
0.015	0.0164	0.0205	0.0246	0.0287	0.0328	0.0369	0.0410	0.0451	0.0492
0.020	0.0140	0.0175	0.0210	0.0245	0.0280	0.0315	0.0350	0.0385	0.0420
0.025	0.0128	0.0160	0.0192	0.0224	0.0256	0.0288	0.0320	0.0352	0.0384
0.030	0.0116	0.0145	0.0174	0.0203	0.0232	0.0261	0.0290	0.0319	0.0348
0.035	0.0108	0.0135	0.0162	0.0189	0.0216	0.0243	0.0270	0.0297	0.0324
0.040	0.0100	0.0125	0.0150	0.0175	0.0200	0.0225	0.0250	0.0275	0.0300
0.060	0.0084	0.0105	0.0126	0.0147	0.0168	0.0189	0.0210	0.0231	0.0252
0.080	0.0072	0.0090	0.0108	0.0126	0.0144	0.0162	0.0180	0.0198	0.0216
0.120	0.0060	0.0075	0.0090	0.0105	0.0120	0.0135	0.0150	0.0165	0.0180
0.200	0.0052	0.0065	0.0078	0.0091	0.0104	0.0117	0.0130	0.0143	0.0156
0.300	0.0044	0.0055	0.0066	0.0077	0.0088	0.0099	0.0110	0.0121	0.0132

Indexable Milling Cutters

The following chart contains a list of commonly encountered materials, suggested surface speeds, and chip loads (ipt). It is important to note that this is not a complete listing of all materials used in industry. It should be considered a guide to be used when initially setting up a new application, and as a resource for better understanding Sumitomo's cutting tool grades.

As there are tremendous variations in the capabilities and performance of machine tools, and variations in work piece materials as well, individual results can vary considerably. This is where the trained eye of an advanced machinist, or Applications Engineer can markedly improve tool life and productivity. Sumitomo has Sales and Applications personnel for just this purpose. When in doubt of the correct selection of a tool type or grade your sales person can assist in achieving winning results.

When applying carbide grades it is important to understand the characteristics of the different types that Sumitomo offers. A few minutes spent looking at the grade comparison chart on page 83 will shed some light on the differences between them. Coated grades in most situations will provide an increase in tool life, and are the preferred choice in the majority of industry today. Whether coated or not, the harder grades will tend to be more wear resistant, but at the cost of toughness. They generally will be the best choice for easier to machine materials, but will sacrifice tool life in situations that lack machine and/or part rigidity.

When programming an operation with a new grade, or an unfamiliar material, it is wise to start at the low end of the speed and feed range and then work towards the upper ranges. Make any changes one at a time so that the results can be examined accurately.

It is worth noting that modern cutting tool materials will often encounter as many problems when run too slowly, or when programmed at insufficient feed rates as they can when run too fast. Since most of our inserts have been manufactured with edge preparations, feeds below .002, or .003 IPT may diminish tool life. Also, they must have enough speed to operate correctly. Cutting tools require an elevated temperature to perform without chip weld. Proper cutting parameters will insure the heat that is generated will be deposited into, and removed with the chip. Most situations involving steels and alloys the best results are obtained with an air blast versus coolant. In applications cutting exotic alloys, aluminum, brass, grey iron, etc., commonly employ coolant.

Material	Hardness	Insert Grade				Speed SFM			Feed IPT
		Carbide	Cermet	Diamond	Ceramic	.002-.050	.050-.125	.125 and over	
Low and medium carbon steels 1008,1010,1018 1020,1025 etc.	~.250Bhn	ACP200				721-1213	675-1180	600-1125	.006-.0135
		ACP100				775-1310	725-1275	675-1225	.006-.0125
			T250A			700-1310	675-1200	575-1000	.0035-.0075
		ACP300				675-1075	650-1025	525-925	.006-.014
			T4500A			700-1450	675-1350	575-1100	.0035-.0075
Free machining steels and alloys Freemax 15 Freemax 45 12L14, etc.	~.250Bhn	ACP200				725-1300	700-1250	675-1200	.006-.0135
		ACP100				750-1325	725-1275	675-1225	.006-.0135
			T250A			825-1450	825-1375	775-1300	.0035-.0085
			T4500A			825-1600	825-1500	775-1450	.0035-.0085
		ACP300				675-1075	650-1050	650-1025	.006-.014
Medium-high carbon steels 1040,1045 1055,1080 50100,51100 52100,M-50	<.250 Bhn	ACP200				575-950	550-925	500-875	.006-.012
		ACP100				600-975	575-950	550-900	.006-.011
		ACP300				575-950	550-925	500-875	.006-.012
			T250A			450-950	425-850	400-825	.0035-.0075
			T4500A			450-1050	425-950	400-900	.0035-.0075

*NOTE: THESE SPEEDS ARE BASED ON 2/3 THE DIAMETER OF THE CUTTER ENGAGED.

SPEEDS & FEEDS

Material	Hardness	Insert Grade				Speed SFM			Feed IPT
		Carbide	Cermet	Diamond	Ceramic	.002-.050	.050-.125	.125 and over	
Medium carbon alloy steels 4140, 4340 5130, 8620	>.250 Bhn	ACP200				550-900	525-900	500-875	.006-.0115
		ACP100				600-875	575-950	550-900	.006-.0095
		ACP300				525-875	500-825	475-800	.006-.0115
			T250A			450-950	425-850	400-825	.0035-.0075
			T4500A			450-1050	425-950	400-900	.0035-.0075
Tool steels D2, H13, S7, etc.	<.250 Bhn	ACP200				450-820	435-790	425-750	.0047-.011
		ACP300				450-820	425-790	400-725	.0047-.012
		ACP100				475-820	450-790	425-750	.0047-.010
			T250A			450-650	425-600	250-550	.0039-.0079
			T4500A			450-750	425-650	250-600	.0039-.0079
	Bhn 220-350	ACP200				425-750	400-725	375-690	.0045-.010
		ACP300				420-700	420-695	375-685	.0047-.012
		ACP100				400-775	400-735	400-700	.004-.009
	>.33 Hrc	ACP200				325-650	300-625	300-590	.0045-.0095
		ACP100				325-650	300-625	300-590	.003-.007
Martensitic and Ferritic stainless steels 414, 416, 430, 440		ACP300				425-740	275-825	250-800	.004-.012
		ACP200				325-875	300-850	275-825	.004-.011
		ACM200				500-600	400-500	400-500	.0035-.0075
		ACM300				500-600	400-500	350-500	.004-.009
			T250A			550-950	500-900		.0035-.0075
			T4500A			550-1050	500-1000		.0035-.0075
Austenitic and Precipitation hardening stainless steels 303, 304, 316, 321, etc.		ACP300				300-850	275-825	250-800	.004-.012
		ACP200				325-875	300-850	275-825	.004-.011
		ACM200				300-600	300-550	300-500	.003-.008
		ACM300				300-600	300-550	300-500	.003-.009
			T250A			650-950	600-900		.0035-.0075
			T4500A			650-1050	600-1000		.0035-.0075
Titanium alloy		ACM300				100-300	100-275	100-250	.003-.008
		ACK300				100-300	100-275	100-265	.003-.007
Exotic alloys Inconel, Hastalloy Waspalloy, etc.		ACM300				100-300	100-250	100-225	.003-.008
		ACK300				100-160	70-150	60-135	.003-.006
		ACM200				100-300	100-250	100-225	.003-.006
		G10E				70-125	60-110	50-100	.003-.007

*NOTE: THESE SPEEDS ARE BASED ON 2/3 THE DIAMETER OF THE CUTTER ENGAGED.

Material	Hardness	Insert Grade				Speed SFM			Feed IPT
		Carbide	Cermet	Diamond	Ceramic	.002-.050	.050-.125	.125 and over	
Grey Cast Iron	<.250 Bhn	ACK100				700-1250	625-1125	590-925	.004-.014
		ACK200				700-1050	625-925	590-900	.004-.014
		ACK300				600-950	575-875	550-850	.004-.014
					SN2100K	2250-2750	1750-2250	1250-1750	See Cutter
					SN2000K	3000-4200	2500-3500	2300-3300	See Cutter
		G10E				500-800	475-750	425-725	.004-.010
	>.250 Bhn	ACK100				600-1000	625-925	590-850	.004-.014
		ACK200				600-950	525-825	490-800	.004-.014
		ACK300				500-850	475-775	450-750	.004-.014
					SN2100K	1750-2250	1250-1750	1250-1750	See Cutter
					SN2000K	2000-3000	1800-2800	1500-2500	See Cutter
		G10E				400-700	375-650	325-625	.004-.009
Ductile Iron	~.320 Bhn	ACK200				600-925	550-875	490-800	.004-.012
		ACK100				600-1000	625-925	590-850	.004-.012
		ACK300				550-825	550-825	450-750	.004-.012
					SN2100K		1750-2250	1250-1750	See Cutter
Aluminum, Brass, Copper				DA2200/ DA1000		3500-10000	3200-8000	2800-6000	.003-.006
		DL1000				1500-4500	1475-4200	1275-4100	.004-.014
		H1				1500-3800	1300-3700	1200-3600	.004-.014
		G10E				1250-3500	1150-3100	1050-2900	.004-.015
High Silicone Aluminum				DA2200/ DA1000		1800-6500	1700-5500	1600-5000	
		DL1000				1075-3100	950-2950	850-2500	.0035-.0085
		H1				1000-3000	900-2500	800-2000	.0035-.0085
		G10E				900-2900	800-2400	700-1900	.0035-.009

*NOTE: THESE SPEEDS ARE BASED ON 2/3 THE DIAMETER OF THE CUTTER ENGAGED.

Decimal Conversion-Tap Drill Chart

Inch-Wire	Decimal	Tap Size	Prob.% Thread	Inch-Wire	Decimal	Tap Size	Prob.% Thread	Inch-Wire	Decimal	Tap Size	Prob.% Thread	Inch-Wire	Decimal	Tap Size	Prob.% Thread
.1mm	.0039			45	.0820			5	.2055			29/64	.4531	1/2-20	65-72
.2mm	.0079			44	.0860			4	.2090			15/32	.4688	M14x2	76-81
.3mm	.0118			43	.0890	4-40	65-71	3	.2130	1/4-28	72-80	12mm	.4724		
80	.0135			42	.0935	4-48	61-68	7/32	.2188			31/64	.4844	9/16-12	68-72
79	.0145			3/32	.0938			2	.2210			1/2	.5000		
1/64	.0156			41	.0960			1	.2280			13mm	.5118		
.4mm	.0157			40	.0980	M3x.5	70-79	A	.2340			33/64	.5156	9/16-18	58-65
78	.0160			39	.0995			15/64	.2344			17/32	.5312	5/8-11	75-79
77	.0180			38	.1015	5-40	65-72	6mm	.2362			35/64	.5469	M16x2	76-81
.5mm	.0197			37	.1040	5-44	63-71	B	.2380			14mm	.5512		
76	.0200			36	.1065	6-32	71-78	C	.2420			9/16	.5625		
75	.0210			7/64	.1094			D	.2460			37/64	.5871	5/8-18	58-65
74	.0225			35	.1100			1/4	.2500			15mm	.5906		
.6mm	.0236			34	.1110			F	.2570	5/16-18	72-77	19/32	.5938		
73	.0240			33	.1130	M3.5x.6 6-40	72-81 69-77	G	.2610			39/64	.6094		
72	.0250			32	.1160			17/64	.2656	M8x1.25	74-80	5/8	.6250		
71	.0260			3mm	.1181			H	.2660			16mm	.6299		
.7mm	.0276			31	.1200			I	.2720	5/16-24	67-75	41/64	.6406		
70	.0280			1/8	.1250			7mm	.2756			21/32	.6562	3/4-10	68-72
69	.0292			30	.1285	M4x.7	74-82	J	.2770			17mm	.6693		
68	.0310			29	.1360	8-32 8-36	62-69 70-78	K	.2810			43/64	.6719		
1/32	.0312			28	.1405			9/32	.2812			11/16	.6875	3/4-16 M20x2.5	71-77 74-78
.8mm	.0315			9/64	.1406			L	.2900			45/64	.7031		
67	.0320			27	.1440			M	.2950			18mm	.7087		
66	.0330			26	.1470			19/64	.2969			23/32	.7188		
65	.0350			25	.1495	10-24	69-75	N	.3020			47/64	.7344		
.9mm	.0354			24	.1520			5/16	.3125	3/8-16	72-77	19mm	.7480		
64	.0360			23	.1540			8mm	.3150			3/4	.7500		
63	.0370			5/32	.1562			O	.3160			49/64	.7656	7/8-9	72-76
62	.0380			22	.1570			P	.3230			25/32	.7812		
61	.0390			4mm	.1575			21/64	.3281			20mm	.7874		
1mm	.0394			21	.1590	10-32	68-76	Q	.3320	3/8-24 M10x1.5	71-79 76-82	51/64	.7969		
60	.0400			20	.1610			R	.3390			13/16	.8125	7/8-14	62-67
59	.0410			19	.1660	M5x.8	69-77	11/32	.3438			21mm	.8268		
58	.0420			18	.1695			S	.3480			53/64	.8281	M24x3	72-76
57	.0430			11/64	.1719			9mm	.3543			27/32	.8438		
56	.0465			17	.1730			T	.3580			55/64	.8594		
3/64	.0469	0-80	71-81	16	.1770	12-24	66-72	23/64	.3594			22mm	.8661		
55	.0520			15	.1800	12-28	70-78	U	.3680	7/16-24	70-75	7/8	.8750	1-8	73-77
54	.0550			14	.1820			3/8	.3750			57/64	.8906		
53	.0595	1-72	59-67	13	.1850			V	.3770			23mm	.9055		
1/16	.0625	M2x.4	72-79	3/16	.1875			W	.3860			29/32	.9062		
52	.0635			12	.1890			25/64	.3906	7/16-20	65-72	59/64	.9219	1-12	67-72
51	.0670			11	.1910			10mm	.3937			15/16	.9375	1-14	61-67
50	.0700	2-56 2-65	62-69 70-79	10	.1935			X	.3970			24mm	.9449		
49	.0730			9	.1960	M6x1	76-84	Y	.4040	M12x1.75	69-74	61/64	.9531		
48	.0760			5mm	.1968			13/32	.4062			31/32	.9688		
5/64	.0781	3-48	70-77	8	.1990			Z	.4130			25mm	.9842		
47	.0785			7	.2010	1/4-20	70-75	27/64	.4219	1/2-13	73-78	63/64	.9844	1-1/8-7	72-76
2mm	.0787			13/64	.2031			11mm	.4331			1	1.000		
46	.0810	M2.5x.45	69-77	6	.2040			7/16	.4375						

Numerical

A

B

C

D

E

F

G

H

I

K

L

M

SUMITOMO

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