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GENERAL CATALOG

***HIGH PERFORMANCE
CUTTING TOOLS***

HIGH PERFORMANCE CUTTING TOOLS





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4

I.S.O.

C

N

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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							
SHAPE SIZE	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"



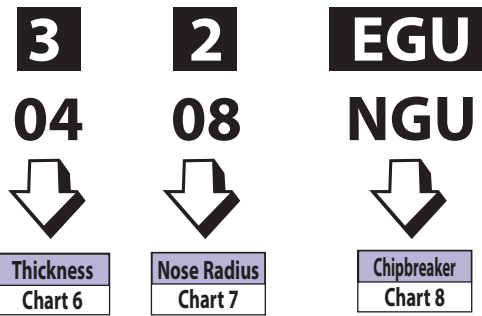


Chart 3.1 "M" and "U" Class Tolerance's

	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	
1 1/4	±.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.



Coated Grades

Grade	Coated Layer	Applications	Color
NEW AC810P	Multi-Phase Al ₂ O ₃	High speed, high efficiency cutting of steels	Gold
AC820P	Multi-Phase Al ₂ O ₃	General purpose turning of steels	Gold
AC830P	Multi-Phase Al ₂ O ₃	Interrupted roughing of steels	Gold
YB100	Multi-Phase Al ₂ O ₃	Interrupted roughing of cast irons/continuous steel and SS finishing	Gold
AC2000	Multi-Phase Al ₂ O ₃	General purpose to roughing of steels and stainless steels	Gold
AC3000	Multi-Phase Al ₂ O ₃	Interrupted roughing of steels and stainless steels	Gold
AC610M	High Strength	High speed, high efficiency SS cutting with a high hardness substrate	Gold
AC630M	High Strength	General SS & low carbon steel cutting grade with a high strength substrate	Gold
NEW AC405K	FF Coating	High speed turning of cast iron	Black
AC410K	FF Coating	Continuous to light interrupted turning of gray and ductile cast iron	Gold & Brown
NEW AC415K	FF Coating	General purpose turning of cast iron	Black
NEW AC420K	FF Coating	Medium to heavy interrupted cutting of gray and ductile cast iron	Black
AC700G	TiC Coating	Interrupted roughing of cast irons/continuous steel and SS finishing	Gold
AC510U	ZX Coating	Finishing of exotic materials	Brown
AC520U	ZX Coating	General purpose turning of exotic materials	Brown
AC530U	ZX Coating	Interrupted cutting of Exotic, General cutting of steels and SS, cut-off and grooving	Pink
AC225	Multi-Phase Al ₂ O ₃	Steel and stainless steel threading and cut-off applications	Gold
ACZ150	ZX Coating	Steel and stainless steel threading and cut-off applications	Pink
ACZ310	ZX Coating	Boring of steels, stainless steels and cast iron	Pink
EH520V	TiAlN Coating	Grooving of steels, stainless steels, cast iron, and high temp alloys	Purple

Cermet Grades

Grade	Hardness (Hv)	T.R.S. (kg/mm ²)	Applications
T1200A	1,680	165	General purpose to finish turning of steels and stainless steels
T2000Z	1,680	165	General purpose to finishing of steels and stainless steels with ZX coating
T3000Z	1,680	165	Medium to finish interrupted machining of steels and SS with ZX coating
T130A	1,550	200	Steel and stainless steel threading and cut-off applications

Ceramic Grades

Grade	Composition	Hardness (Hv)	Applications
WX2000	Al ₂ O ₃ + SiC	1,980	High speed finishign to roughing of super alloy materials
NEW SN2000K	Si ₃ N ₄	1,800	Finishing and roughing of cast iron
NEW SN2100K	Si ₃ N ₄	1,600	Interrupted turning & milling of cast iron



Polycrystalline Cubic Boron Nitride (PcBN) and Coated PcBN

Grade	Hardness (Hv)	Applications
BNX10	2,000 - 3,200	High speed continuous cutting of hardened steels
BNX20	3,200 - 3,400	Continuous cutting of hardened steels
BN250	3,200 - 3,500	Continuous and mild interrupted cutting of hardened steels and cast irons
NEW BN1000	2,700 - 3,100	Continuous and light interrupted cutting of hardened steel
NEW BN2000	3,200 - 3,500	Continuous and mild interrupted cutting of hardened steels and cast irons
BN350	3,300 - 3,500	Heavy interrupted cutting of hardened steels
BNX25	3,000 - 3,200	High speed interrupted cutting of hardened steels
BN500	3,300 - 3,500	High speed turning and milling of gray and nodular cast irons
NEW BNC500	3,200 - 3,400	High speed turning of ductile irons
BN700	4,100 - 4,400	High speed machining of cast irons and powdered metals
NEW BN7000	4,100 - 4,400	High speed machining of cast irons and exotic materials
NEW BN7500	4,100 - 4,400	High speed machining of sintered or powdered metals
BNC30G	3,300 - 3,500	Interrupted grooving of hardened steel
BNC100	2,900 - 3,200	TiCN hybrid coating for continuous to light interrupted high speed finishing of hardened steel
BNC80	3,200 - 3,400	TiN base coated to maintain surface finish longer in steel applications
BNC150	3,000 - 3,300	TiN base coated for high speed machining of hardened steels
BNC160	3,100 - 3,300	TiN base coated for general and high precision finishing of hardened steels
BNC200	3,300 - 3,500	TiN base coated for high wear resistance in hardened steel machining
BNC300	3,300 - 3,500	TiN base coated for interrupted cutting of hardened steels
BNS800	4,000 - 4,300	Solid PcBN for high speed turning of gray cast iron

Polycrystalline Diamond (PCD)

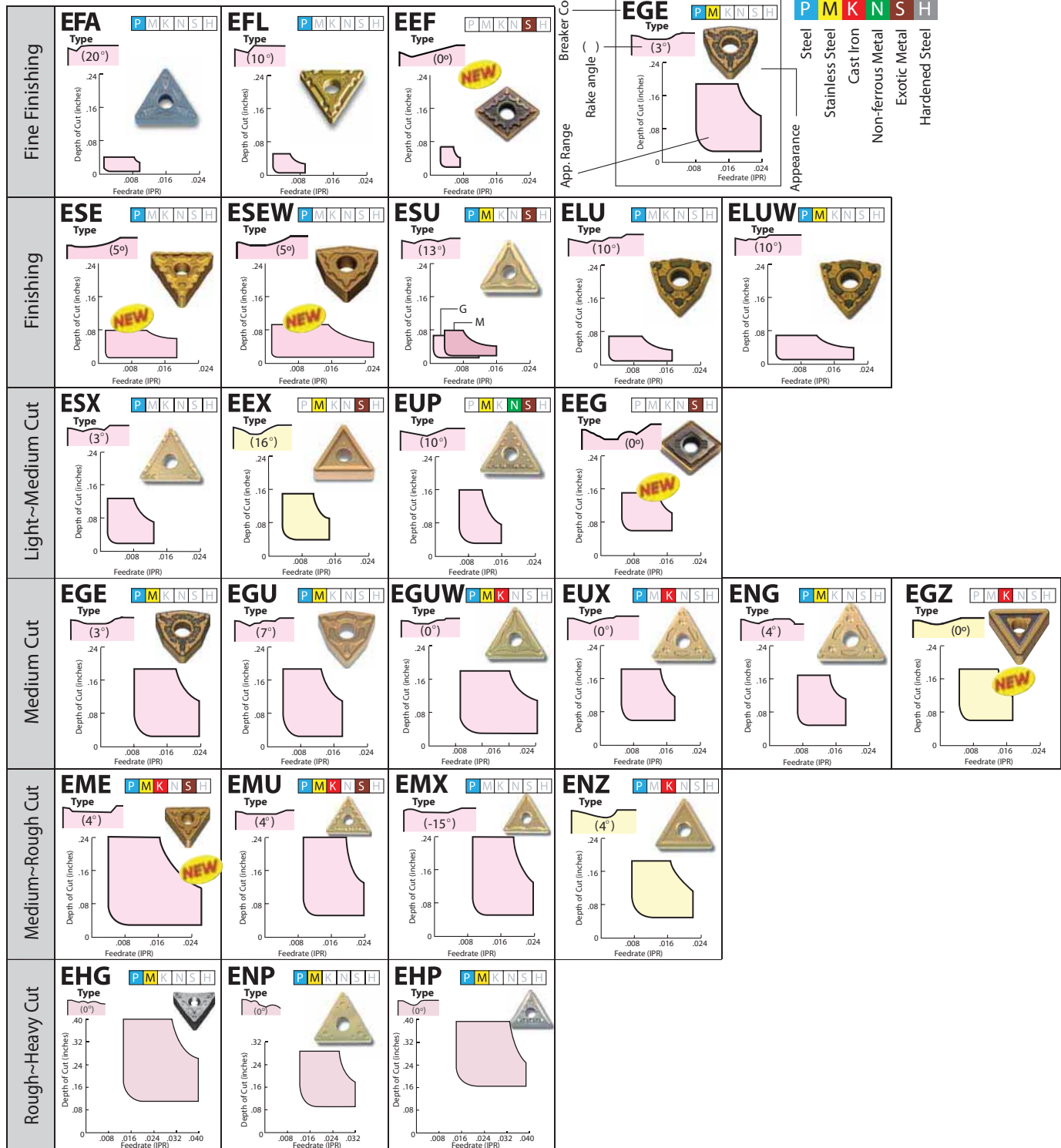
Grade	Hardness (Hv)	Applications
DA1000	11,000 - 12,000	Finishing, roughing, and interrupted machining of aluminum and non-ferrous materials
DA2200	9,000 - 10,000	Finishing, roughing, and interrupted machining of aluminum and non-ferrous materials
DA150	10,000 - 12,000	Machining of aluminum, copper, wood, rubber, graphite, and carbide
DA200	8,000 - 10,000	Interrupted cutting of non-ferrous alloys and plastics
DA90	10,000 - 12,000	High-silicon aluminum alloys, ceramics, and carbide cutting

Uncoated Carbide

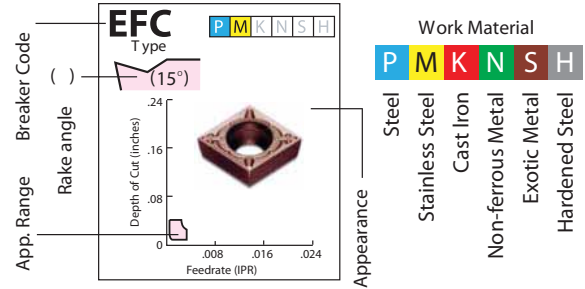
Group	Grade	Hardness (Hv)	T.R.S. (psi)	Applications
C-7	ST10P	91.7	235,000	Finishing to semi-finishing of steels
C-5A	S30E	91.3	348,000	Milling of steels and stainless steels
	A30N (A30)	90.6	354,000	Rough turning and milling of steels and stainless steels
C-3	H1	92.4	252,000	Finishing to semi-finishing of aluminum
	EH10	92.4	460,000	Continuous turning of exotic materials
	EH510	92.6	377,000	Improved wear resistance when turning exotic materials
C-2	G10E	91.0	280,000	Turning and milling of cast iron and aluminum
	EH20	91.0	474,000	Turning and milling of exotic materials
	EH520	91.8	436,000	Longer tool life for exotic material turning and milling



( Bumpy breaker  Standard breaker)



(Legend)



(Bumpy breaker Handed breaker)

Finishing	EFP Type P M K N S H 	EFK Type P M K N S H 	FW Type P M K N S H 	FX Type P M K N S H 	FY Type P M K N S H
Finish~Light Cut	R/L-SD Type P M K N S H 	R/L-SDW Type P M K N S H 	R/L-w Type P M K N S H 	EFM Type P M K N S H 	ENK Type P M K N S H
Light Cut	ESU Type P M K N S H 	ELU Type P M K N S H 	ELUW Type P M K N S H 	NAG Type P M K N S H 	ENS Type P M K N S H
Light~Medium Cut	EMU Type P M K N S H 	ENF Type P M K N S H 			
Rough~Heavy Cut	ESI Type P M K N S H 				

■ TURNING APPLICATIONS



General Steel (Carbon Steel, Alloy Steel) Structural Steel						
Application	High Speed	Finishing~Light	Medium	Roughing~Heavy		
ISO Classification	-	P05	P10	P20	P30 (M30)	P40 (M40)
COATED CARBIDE	NEW AC810P					
			AC820P			
				AC830P		
COATED CERMET		T2000Z				
		T3000Z				
CERMET		T1200A				
CERAMIC						
CARBIDE					A30	
CBN						



Cast Iron				
High Speed	Finishing	Medium		
—	K01	K10	K20	K30
NEW AC405K				
	AC410K			
NEW AC415K				
		AC420K		
			AC820P	
NEW SN2000K				
NEW SN2100K				
		G10E		
	BNS800			
NEW BN7000				
BNC500				



Stainless Steels		
Application	Finishing~Light Cut	Medium~Roughing
COATED CARBIDE	AC610M	
	AC630M	
	AC520U	
	NEW AC530U	
CERMET	T1200A	



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



Hardened Steels			
Application	High Speed	Finishing	Roughing
COATED CBN	BNC100		
	BNC160		
	BNC200		
	BNC300		
CBN	BNX10		
	BN250		
	NEW BN2000		
	BNX25		
		BN350	
CERAMIC		NB90S	



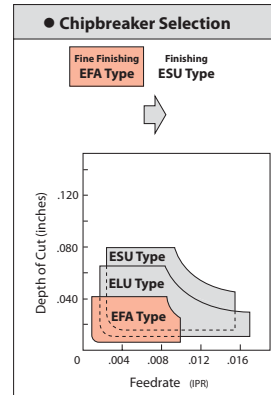
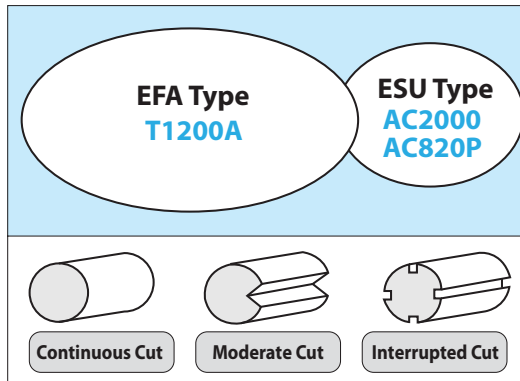
Non-Ferrous Materials		
Application	Finishing~Light Cut	Medium
PCD	DA1000	
	DA150	
CARBIDE		H1
Sintered Materials		
CBN	NEW BN7500	BN350
COATED CARBIDE		AC510U



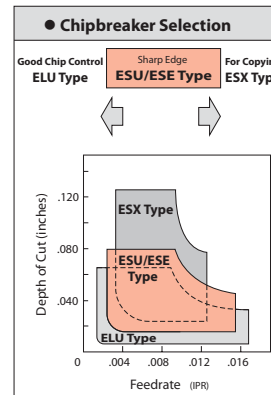
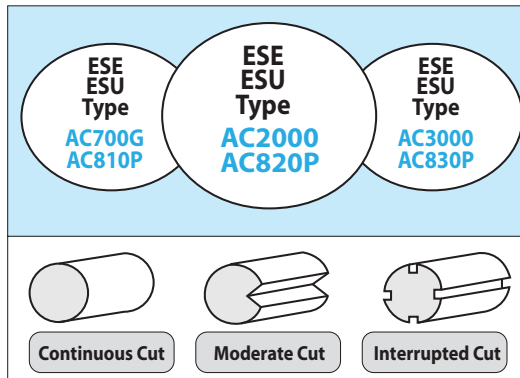
P
Steel

Steel

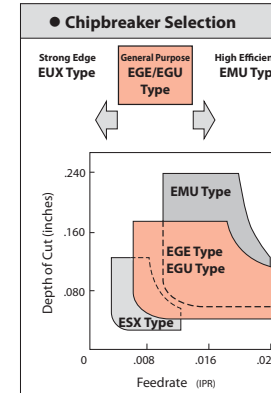
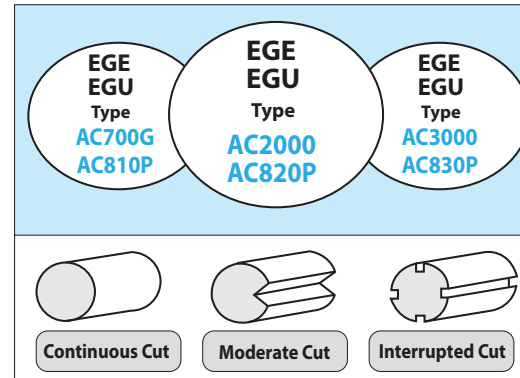
1 Fine
Finishing



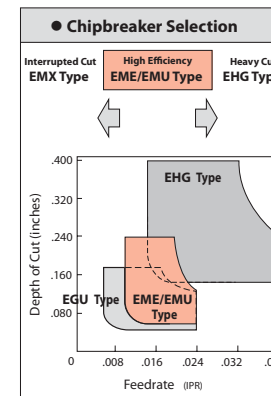
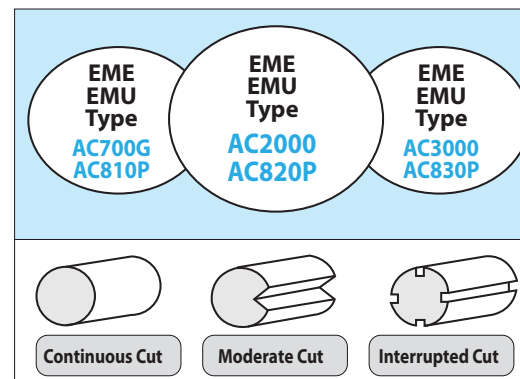
2 Finishing



3 Medium
Cutting



4 Roughing





Stainless Steel

1 Finishing

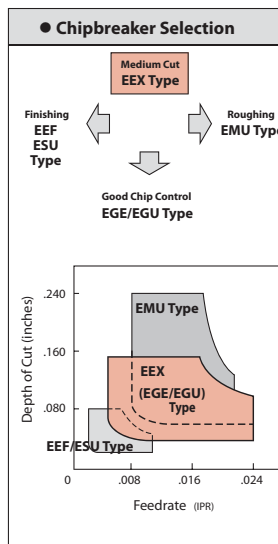
EEF/ESU Type AC610M	EEF/ESU Type AC630M	EEF/ESU Type AC3000 AC830P
Continuous Cut	Moderate Cut	Interrupted Cut

2 Medium Cut

EGU/EGE Type AC610M	EGU/EGE Type AC630M	EGU/EGE Type AC3000 AC830P
Continuous Cut	Moderate Cut	Interrupted Cut

3 Roughing

EMU Type AC610M	EMU Type AC630M	EMU Type AC830P AC520U
Continuous Cut	Moderate Cut	Interrupted Cut



Cast Iron

1 High Speed Finishing
() 2nd Choice

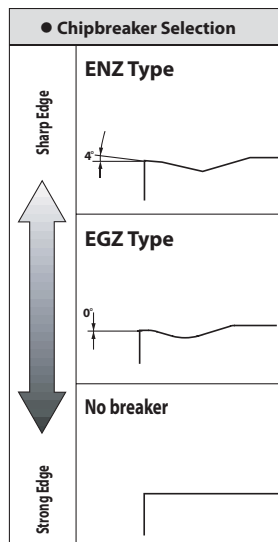
Gray	BN7000 (BNS800)	
Ductile	BNC500	
	Continuous Cut	Moderate Cut

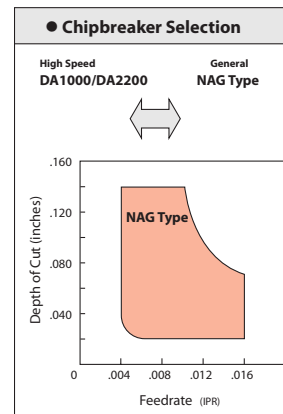
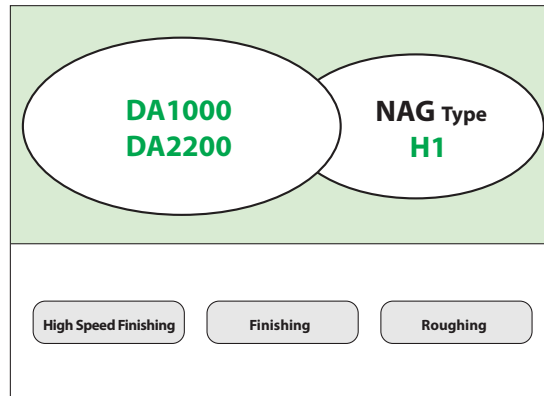
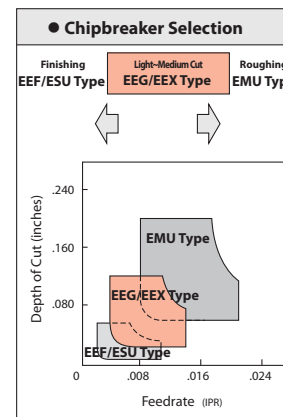
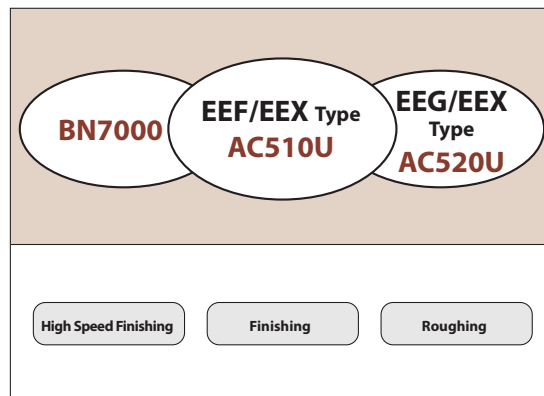
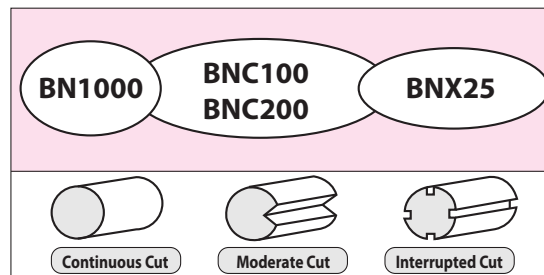
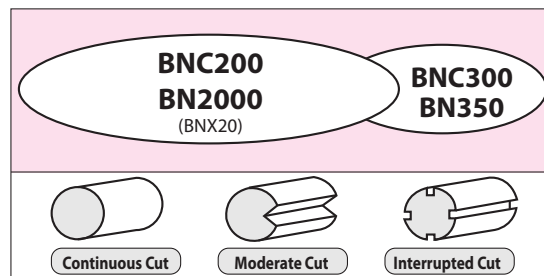
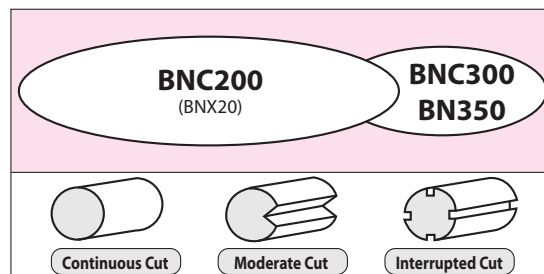
2 Finishing ~Medium Cut

ENZ Type AC405K	EGZ Type AC415K	EGZ Type AC420K
Continuous Cut	Moderate Cut	Interrupted Cut

3 Roughing

ENZ Type AC405K	EGZ Type AC415K	NO Breaker AC420K
Continuous Cut	Moderate Cut	Interrupted Cut



N
Non-ferrous
Metal**Non-ferrous
Metal****S**
Exotic Metal**Exotic Metal****H**
Hardened
Steel**Hardened
Steel****1** High
Speed
Finishing**2** Finishing
() 2nd Choice**3** High
Efficiency



CARBIDE - CBN - DIAMOND

1-800-950-5202

www.sumicarbide.com



Negative
Inserts

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Indexable Inserts:	Pages
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Swiss Tooling Inserts.....	130-131

80° DIAMOND TYPE

NEGATIVE INSERT

Indexable Inserts for Turning

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
- New Product Arriving January 2013

CNMG EFA

Rake Angle: 20°



Cutting Conditions:

Continuous Cut

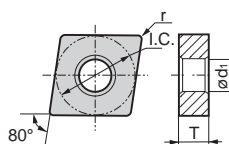
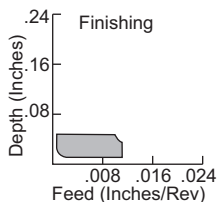
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	Coated	Cermet	Uncoated
CNMG 430.5 EFA	CNMG 120402N-FA			.0078			T2000Z	
CNMG 431 EFA	CNMG 120404N-FA	.500	.1875	.0156	.2031		T3000Z	
CNMG 432 EFA	CNMG 120408N-FA			.0313			T1200A	

CNMG EFL

Rake Angle: 10°



Cutting Conditions:

Continuous Cut

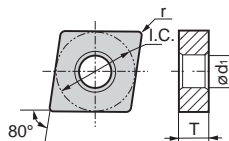
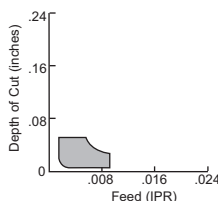
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	Coated	Cermet	Uncoated
CNMG 431 EFL	CNMG 120404N-FL	.500	.1875	.0156	.2031	AC2000	T2000Z	
CNMG 432 EFL	CNMG 120408N-FL			.0313		AC810P	T3000Z	

CNMG EFP

Rake Angle: 10°



Cutting Conditions:

Continuous Cut

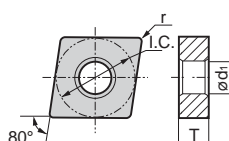
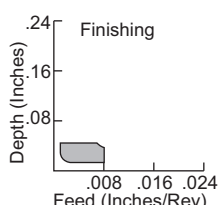
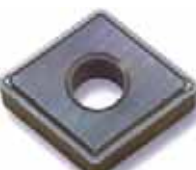
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	Coated	Cermet	Uncoated
CNMG 430.5 EFP	CNMG 120402N-FP			.0078			T1200A	
CNMG 431 EFP	CNMG 120404N-FP	.500	.1875	.0156	.2031			
CNMG 432 EFP	CNMG 120408N-FP			.0313				



CN


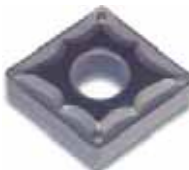
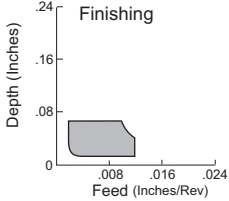
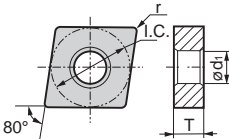
80° Diamond Type

































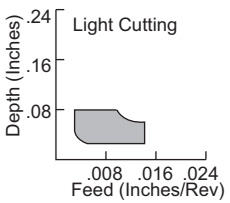
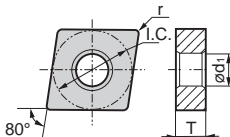
Negative



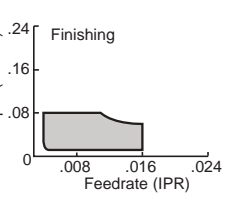
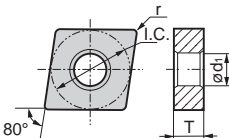
With Insert Hole

- 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
- New Product Arriving January 2013

CNMG		Rake Angle: 13°	Cutting Conditions:						Coated	Cermet	Uncoated
ESP			Continuous Cut								
			Medium Cut								
			Interrupted Cut								
											
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1						
CNMG 431 ESP	CNMG 120404N-SP	.500	.1875	.0156	.2031						
CNMG 432 ESP	CNMG 120408N-SP			.0313							

CNMG ESU		Rake Angle: 13°	Cutting Conditions:						Coated								Cermet			Uncoated			
																							
			Continuous Cut																				
			Medium Cut																				
			Interrupted Cut																				
																							
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC2000	AC3000	AC810P	AC820P	AC830P	AC700G	YB100	AC610M	AC630M	AC530U	AC510U	AC520U	T2000Z	T3000Z	T1 200A	EH510		
CNMG 321 ESU	CNMG 090304N-SU	.375	.125	.0156	.150				★														
CNMG 322 ESU	CNMG 090308N-SU			.0313																			
CNMG 331 ESU	CNMG 090404N-SU			.0156							★												
CNMG 332 ESU	CNMG 090408N-SU	.500	.1875	.0313	.2031				★														
CNMG 430.5 ESU	CNMG 120402N-SU			.0078																			
CNMG 431 ESU	CNMG 120404N-SU			.0156																			
CNMG 432 ESU	CNMG 120408N-SU			.0313		▲	▲	●	●	●	●	▲	●	●	★	●	●	●	●	●	●		
CNMG 433 ESU	CNMG 120412N-SU			.0469				●	●	●	●	▲	●	●		●	●	●	●	●	●		

CNMG		Rake Angle: 5°	Cutting Conditions:						Coated	Cermet	Uncoated
NEW ESE			Continuous Cut								
			Medium Cut								
			Interrupted Cut								
											
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1						
CNMG 431 ESE	CNMG 120404N-SE	.500	.1875	.0156	.2031	AC810P	AC820P	AC830P			
CNMG 432 ESE	CNMG 120408N-SE			.0313							
CNMG 433 ESE	CNMG 120412N-SE			.0469							



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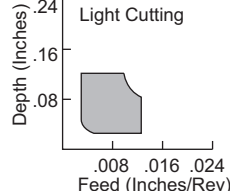
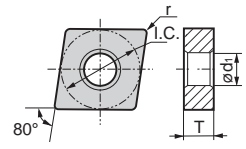






80° Diamond Type

Negative

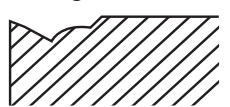




















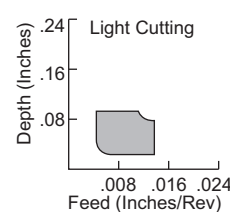
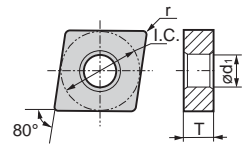
With Insert Hole

- 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
- New Product Arriving January 2013

CNMG ENK		Rake Angle: 10° 	Cutting Conditions:				Coated			Cermet				Uncoated			
  			Continuous Cut														
			Medium Cut														
			Interrupted Cut														
							AC820P			T1200A							
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1												
CNMG 431 ENK	CNMG 120404N-SK			.0156	.2031												
CNMG 432 ENK	CNMG 120408N-SK	.500	.1875	.0313													
CNMG 433 ENK	CNMG 120412N-SK			.0469													

CNMG		Rake Angle: 0°	Cutting Conditions:						Coated			Cermet			Uncoated		
<div>NEW</div> EEF			Continuous Cut														
			Medium Cut														
			Interrupted Cut														
Sumitomo Catalog #		ISO Catalog #	I.C.	T	r	ød1	AC630M	AC510U	AC520U						EH510	EH520	
CNMG 431 EEF		CNMG 120404N-EF			.0156												
CNMG 432 EEF		CNMG 120408N-EF	.500	.1875	.0313	.2031											
CNMG 433 EEF		CNMG 120412N-EF			.0469												
CNMG 543 EEF		CNMG 160612N-EF	.625	.250	.0469	.250											
CNMG 643 EEF		CNMG 190612N-EF	.750		.0469	.3126											

CNMG ESX		Rake Angle: 3° 	Cutting Conditions:						Coated			Cermet			Uncoated																				
			Continuous Cut																																
			Medium Cut																																
			Interrupted Cut																																
									AC2000			AC3000			AC810P			AC820P			AC830P			AC700G			T2000Z			T3000Z			T1200A		
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1																												
CNMG 431 ESX		CNMG 120404N-SX				.0156																													
CNMG 432 ESX		CNMG 120408N-SX		.500	.1875	.0313	.2031																												
CNMG 433 ESX		CNMG 120412N-SX				.0469																													



80° DIAMOND TYPE

NEGATIVE INSERT

Indexable Inserts for Turning

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
 ○ New Product Arriving January 2013

CNMG EUP

Rake Angle: 10°



Cutting Conditions:

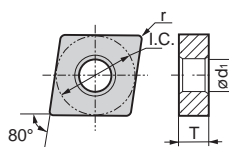
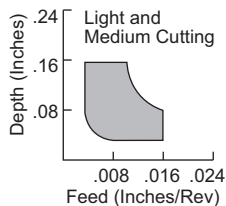
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated



Material	AC2000	AC3000	AC820P	AC830P	AC610M	AC630M	AC530U	AC510U	AC520U	G10E	EH510
Steel	▲	▲	●	●	●	●	★	●	●	●	●
Stainless Steel	▲	▲	●	●	●	●	★	●	●	●	●
Cast Iron	★	●	●	●	●	●	★	●	●	●	●
Non-ferrous	●	●	●	●	●	●	●	●	●	●	●
Exotic Materials	●	●	●	●	●	●	●	●	●	●	●
Hardened Steel	●	●	●	●	●	●	●	●	●	●	●

Sumitomo Catalog #

ISO Catalog #

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CNMG 431 EUP	CNMG 120404N-UP	.500	.1875	.0156	.2031
CNMG 432 EUP	CNMG 120408N-UP			.0313	
CNMG 433 EUP	CNMG 120412N-UP			.0469	
CNMG 542 EUP	CNMG 160608N-UP	.625	.250	.0313	.250
CNMG 543 EUP	CNMG 160612N-UP			.0469	
CNMG 643 EUP	CNMG 190612N-UP	.750		.0469	.3126

CNMG EEG

Rake Angle: 0°



Cutting Conditions:

Continuous Cut

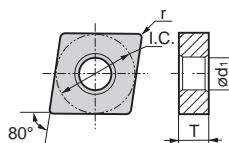
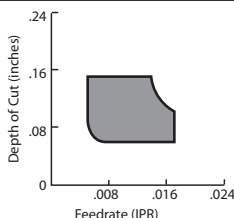
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Material	AC630M	AC510U	AC520U	EH510	EH520
Steel	●	●	●	●	●
Stainless Steel	●	●	●	●	●
Cast Iron	●	●	●	●	●
Non-ferrous	●	●	●	●	●
Exotic Materials	●	●	●	●	●
Hardened Steel	●	●	●	●	●

Sumitomo Catalog #

ISO Catalog #

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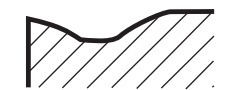
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CNMG 431 EEG	CNMG 120404N-EG	.500	.1875	.0156	.2031
CNMG 432 EEG	CNMG 120408N-EG			.0313	
CNMG 433 EEG	CNMG 120412N-EG			.0469	
CNMG 543 EEG	CNMG 160612N-EG	.625	.250	.0469	.250
CNMG 643 EEG	CNMG 190612N-EG	.750		.0469	.3126

CNMG EEX

Rake Angle: 16°



Cutting Conditions:

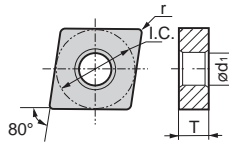
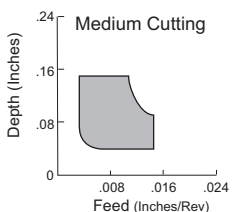
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated



Material	AC610M	AC630M	AC530U	AC510U	AC520U	EH520
Steel	●	●	★	●	●	●
Stainless Steel	●	●	★	●	●	●
Cast Iron	●	●	★	●	●	●
Non-ferrous	●	●	●	●	●	●
Exotic Materials	●	●	●	●	●	●
Hardened Steel	●	●	●	●	●	●

Sumitomo Catalog #

ISO Catalog #

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CNMG 431 EEX	CNMG 120404N-EX	.500	.1875	.0156	.2031
CNMG 432 EEX	CNMG 120408N-EX			.0313	
CNMG 433 EEX	CNMG 120412N-EX			.0469	
CNMG 543 EEX	CNMG 160612N-EX	.625	.250	.0469	.250
CNMG 643 EEX	CNMG 190612N-EX	.750		.0469	.3126



CN



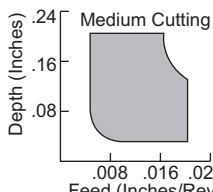
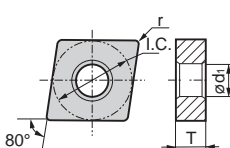
80° Diamond Type




























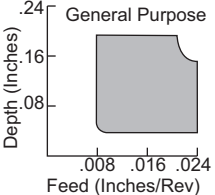
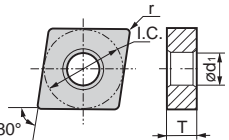
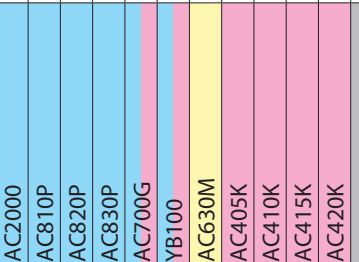


Negative

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
- New Product Arriving January 2013

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	AC2000	AC3000	AC810P	AC820P	AC830P	AC700G	YB100	AC610M	AC630M	AC530U	T1200A				
CNMG 322 EGU		CNMG 090308N-GU		.375	.125	.0313	.150															
CNMG 431 EGU		CNMG 120404N-GU				.0156				●	●	●	●	▲	●	●	★	★				
CNMG 432 EGU		CNMG 120408N-GU				.0313		▲	▲	●	●	●	●	▲	●	●	●	★	★			
CNMG 433 EGU		CNMG 120412N-GU		.500	.1875	.0469	.2031			●	●	●	●	▲	●	●	●	★	★			
CNMG 434 EGU		CNMG 120416N-GU				.0625				●	●	●	●	▲	●	●	●	★	★			
CNMG 542 EGU		CNMG 160608N-GU				.0313				●	●	●	●									
CNMG 543 EGU		CNMG 160612N-GU		.625	.250	.0469	.250			●	●	●	●	▲								
CNMG 544 EGU		CNMG 160616N-GU				.0625		▲	▲	●	●	●	●									

CNMG EGUW Wiper Insert		Rake Angle: 0°		Cutting Conditions:		Coated										Cermet		Uncoated	
				Continuous Cut															
				Medium Cut															
				Interrupted Cut															
																			
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1														
CNMG 432 EGUW	CNMG 120408N-GUW			.0313															
CNMG 433 EGUW	CNMG 120412N-GUW	.500	.1875	.0469	.2031														



CN



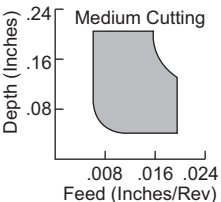
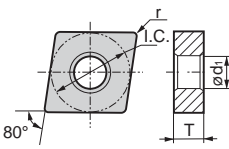
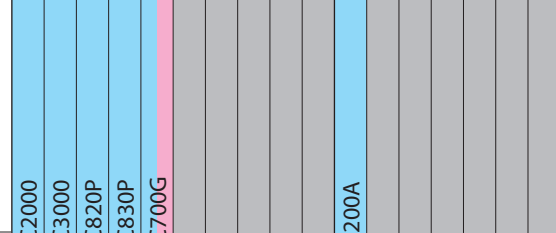
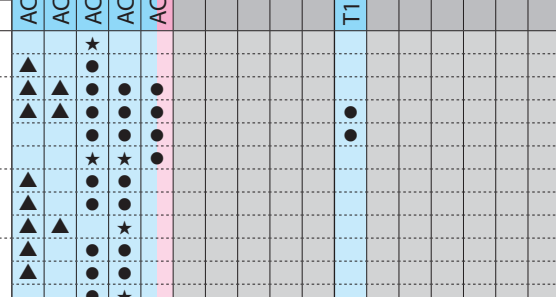
80° Diamond Type

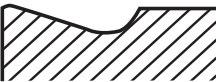

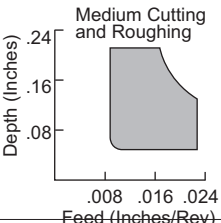
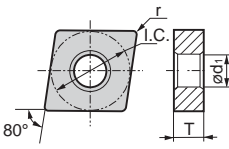
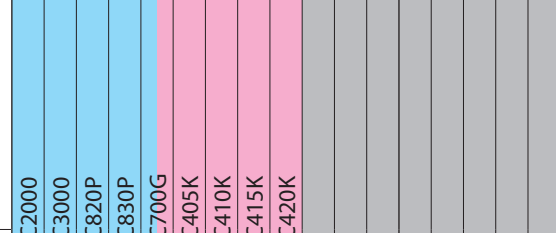
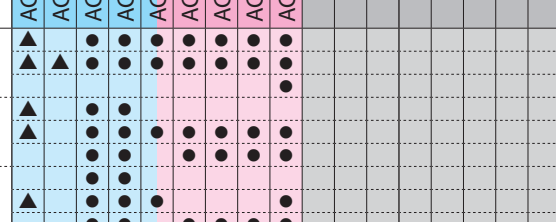
Negative

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
- New Product Arriving January 2013

CNMG ENG		Rake Angle: 4° 		Cutting Conditions:		Coated					Cermets				
						Continuous Cut	Medium Cut	Interrupted Cut							
															
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC2000	AC3000	AC820P	AC830P	AC700G	T1200A				
CNMG 321 ENG	CNMG 090304N-UG	.375	.125	.0156	.150	▲	▲	★	●						
CNMG 322 ENG	CNMG 090308N-UG			.0313				●	●						
CNMG 431 ENG	CNMG 120404N-UG			.0156		▲	▲	●	●						
CNMG 432 ENG	CNMG 120408N-UG			.0313		▲	▲	●	●						
CNMG 433 ENG	CNMG 120412N-UG	.500	.1875	.0469	.2031	▲	▲	●	●		●				
CNMG 434 ENG	CNMG 120416N-UG			.0625				★	★						
CNMG 542 ENG	CNMG 160608N-UG			.0313		▲	▲	●	●						
CNMG 543 ENG	CNMG 160612N-UG	.625	.250	.0469	.250	▲	▲	●	●						
CNMG 544 ENG	CNMG 160616N-UG			.0625		▲	▲	●	★						
CNMG 642 ENG	CNMG 190608N-UG			.0313		▲		●	●						
CNMG 643 ENG	CNMG 190612N-UG	.750	.250	.0469	.3126	▲		●	●						
CNMG 644 ENG	CNMG 190616N-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	AC2000	AC3000	AC820P	AC830P	AC700G	AC405K	AC410K	AC415K	AC420K	
CNMG 432 ENZ	CNMG 120408N-UZ			.0313		▲		●	●	●	●	●	●	●	
CNMG 433 ENZ	CNMG 120412N-UZ	.500	.1875	.0469	.2031	▲	▲	●	●	●	●	●	●	●	
CNMG 434 ENZ	CNMG 120416N-UZ			.0625				●	●	●	●	●	●	●	
CNMG 542 ENZ	CNMG 160608N-UZ			.0313		▲		●	●	●	●	●	●	●	
CNMG 543 ENZ	CNMG 160612N-UZ	.625		.0469	.250	▲		●	●	●	●	●	●	●	
CNMG 544 ENZ	CNMG 160616N-UZ		.250	.0625				●	●	●	●	●	●	●	
CNMG 642 ENZ	CNMG 190608N-UZ			.0313				●	●	●	●	●	●	●	
CNMG 643 ENZ	CNMG 190612N-UZ	.750		.0469	.3126	▲		●	●	●	●	●	●	●	
CNMG 644 ENZ	CNMG 190616N-UZ			.0625				●	●	●	●	●	●	●	



80° DIAMOND TYPE

NEGATIVE INSERT

Indexable Inserts for Turning

CN

80° Diamond Type

Negative

With Insert Hole

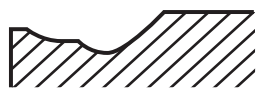
- P** Steel
- M** Stainless Steel
- K** Cast Iron
- N** Non-ferrous
- S** Exotic Materials
- H** Hardened Steel

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- New Product Arriving January 2013

CNMG

EMU

Rake Angle: 4°



Cutting Conditions:

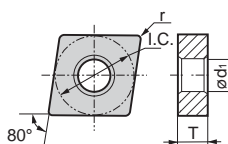
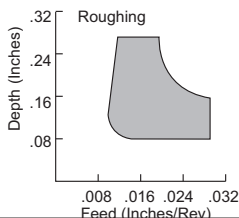
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated



	AC2000	AC3000	AC810P	AC820P	AC830P	AC700G	YB100	AC610M	AC630M	AC530U	AC410K	AC510U	AC520U	EH510	EH520
Continuous Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Medium Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Interrupted Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
CNMG 432 EMU	CNMG 120408N-MU			.0313	
CNMG 433 EMU	CNMG 120412N-MU	.500	.1875	.0469	.2031
CNMG 434 EMU	CNMG 120416N-MU			.0625	
CNMG 542 EMU	CNMG 160608N-MU			.0313	
CNMG 543 EMU	CNMG 160612N-MU	.625		.0469	.250
CNMG 544 EMU	CNMG 160616N-MU		.250	.0625	
CNMG 642 EMU	CNMG 190608N-MU			.0313	
CNMG 643 EMU	CNMG 190612N-MU	.750		.0469	.3126
CNMG 644 EMU	CNMG 190616N-MU			.0625	

CNMG

NEW

EME

Rake Angle: 4°



Cutting Conditions:

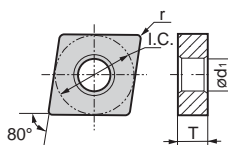
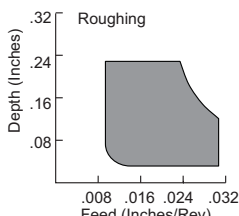
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated



	AC810P	AC820P	AC830P												
Continuous Cut	●	●	●												
Medium Cut	●	●	●												
Interrupted Cut	●	●	●												

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
CNMG 432 EME	CNMG 120408N-ME			.0313	
CNMG 433 EME	CNMG 120412N-ME	.500	.1875	.0469	.2031
CNMG 434 EME	CNMG 120416N-ME			.0625	
CNMG 542 EME	CNMG 160608N-ME			.0313	
CNMG 543 EME	CNMG 160612N-ME	.625		.0469	.250
CNMG 544 EME	CNMG 160616N-ME		.250	.0625	
CNMG 643 EME	CNMG 190612N-ME	.750		.0469	.3126
CNMG 644 EME	CNMG 190616N-ME			.0625	



CN

80° Diamond Type

Negative

With Insert Hole

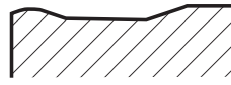
P Steel
M Stainless Steel
K Cast Iron
N Non-ferrous
S Exotic Materials
H Hardened Steel

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- New Product Arriving January 2013

CNMG

EMX

Rake Angle: -15°



Cutting Conditions:

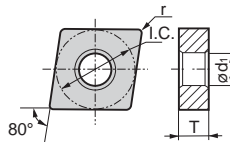
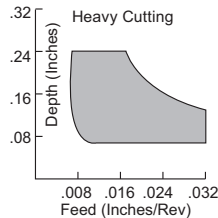
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC2000	AC3000	AC810P	AC820P	AC830P	Coated	Uncoated
CNMG 432 EMX	CNMG 120408N-MX	.500	.1875	.0313	.2031	▲	▲	●	●	●		
CNMG 433 EMX	CNMG 120412N-MX			.0469		▲	▲	●	●	●		
CNMG 434 EMX	CNMG 120416N-MX			.0625		▲	▲	●	●	●		
CNMG 542 EMX	CNMG 160608N-MX	.625	.250	.0313	.250	▲	▲	●	●	●		
CNMG 543 EMX	CNMG 160612N-MX			.0469		▲	▲	●	●	●		
CNMG 544 EMX	CNMG 160616N-MX			.0625		▲	▲	●	●	●		
CNMG 643 EMX	CNMG 190612N-MX	.750		.0469	.3126	▲	▲	●	●	●		
CNMG 644 EMX	CNMG 190616N-MX			.0625		▲	▲	●	●	●		

CNMG

EGZ

Rake Angle: 0°



Cutting Conditions:

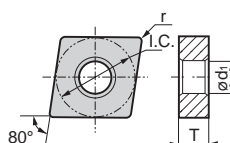
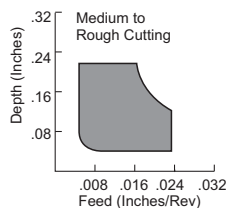
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC405K	AC410K	AC415K	AC420K	Coated	Uncoated
CNMG 431 EGZ	CNMG 120404N-GZ	.500	.1875	.0156	.2031	●	●	●	●		
CNMG 432 EGZ	CNMG 120408N-GZ			.0313		●	●	●	●		
CNMG 433 EGZ	CNMG 120412N-GZ			.0469		●	●	●	●		
CNMG 434 EGZ	CNMG 120416N-GZ	.625	.250	.0625	.250	○	○	○	○		
CNMG 543 EGZ	CNMG 160612N-GZ			.0469		○	○	○	○		
CNMG 544 EGZ	CNMG 160616N-GZ			.0625		○	○	○	○		
CNMG 644 EGZ	CNMG 190616N-GZ	.750		.0625	.3126	○	○	○	○		

CNMG

FNU

Rake Angle: 10°



Cutting Conditions:

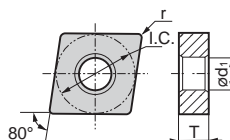
Continuous Cut

Medium Cut

Interrupted Cut

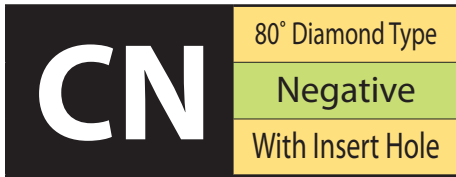
Coated

Uncoated





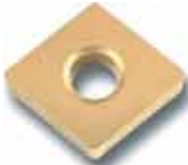
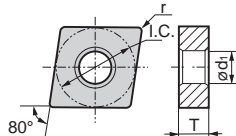
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	G10E	Coated	Uncoated
CNMG 432 FNU	CNMG 120408N-NU	.500	.1875	.0313	.2031	●		





- 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 2013

CNMA		No Breaker	Cutting Conditions:						Coated										Uncoated								
																											
																											
																											
																											
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC700G	YB100	AC405K	AC410K	AC415K	AC420K																
CNMA 431	CNMA 120404			.0156		●	●	●	●	●	●																
CNMA 432	CNMA 120408			.0313		●	▲	●	●	●	●																
CNMA 433	CNMA 120412	.500	.1875	.0469	.2031	●	▲	●	●	●	●																
CNMA 434	CNMA 120416			.0625		●	●	●	●	●	●																
CNMA 543	CNMA 160612			.0313		●	●	●	●	●	●																
CNMA 544	CNMA 160616	.625	.250	.0469	.250	●	●	●	●	●	●																
CNMA 643	CNMA 190612			.0469		●	●	●	●	●	●																
CNMA 644	CNMA 190616	.750		.0625	.3126	●	●	●	●	●	●																



55° DIAMOND TYPE

NEGATIVE INSERT

Indexable Inserts for Turning

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
 ○ New Product Arriving January 2013

DNMG

EFL

Rake Angle: 10°



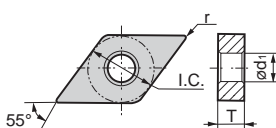
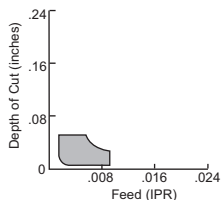
Cutting Conditions:

Continuous Cut

Medium Cut

Interrupted Cut

Coated			Cermet			Uncoated		
●	●	●	●					
●	●	●	●	●				
●	●	●	●					
AC2000	AC820P	YB100	T2000Z	T3000Z				
●	●	▲	●	★				
●	●	▲	●	●				

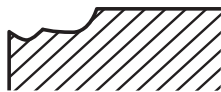


Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
DNMG 431 EFL	DNMG 150404N-FL			.0156	
DNMG 432 EFL	DNMG 150408N-FL	.500	.1875	.0313	.2031
DNMG 433 EFL	DNMG 150412N-FL			.0469	

DNMG

EFP

Rake Angle: 10°



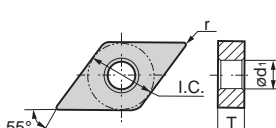
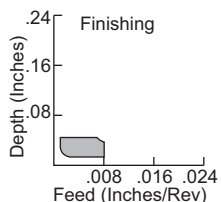
Cutting Conditions:

Continuous Cut

Medium Cut

Interrupted Cut

Coated			Cermet			Uncoated		
			●					
			●					
			●					
			T1200A					
			●					
			●					



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
DNMG 431 EFP	DNMG 150404N-FP			.0156	
DNMG 432 EFP	DNMG 120408N-FP	.500	.1875	.0313	.2031

DNMG

ESP

Rake Angle: 13°



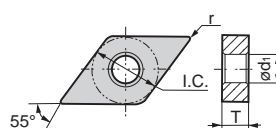
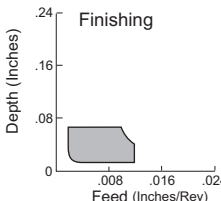
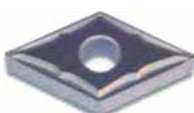
Cutting Conditions:

Continuous Cut

Medium Cut

Interrupted Cut

Coated			Cermet			Uncoated		
			●					
			●					
			●					
			T1200A					
			●					
			●					



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
DNMG 431 ESP	DNMG 150404N-SP			.0156	
DNMG 432 ESP	DNMG 150408N-SP	.500	.1875	.0313	.2031



DN

55° Diamond Type









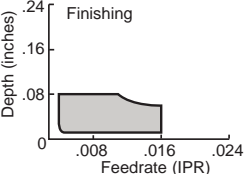
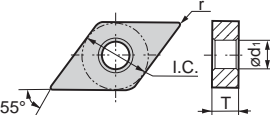









Negative

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
- New Product Arriving January 2013

DNMG ESU		Rake Angle: 13°	Cutting Conditions:					Coated								Cermet		Uncoated					
								Continuous Cut															
								Medium Cut															
								Interrupted Cut															
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC2000	AC810P	AC820P	AC830P	AC700G	YB100	AC610M	AC630M	AC530U	AC510U	AC520U		T2000Z	T3000Z	T1200A	EH510		
DNMG 331 ESU	DNMG 090404N-SU	.375		.0156	.150						▲												
DNMG 332 ESU	DNMG 090408N-SU			.0313			●				▲												
DNMG 431 ESU	DNMG 150404N-SU		.1875	.0156		▲		●	●	●	▲								●	●	●		
DNMG 432 ESU	DNMG 150408N-SU			.0313		▲	●	●	●	●	▲	●	●	★	●	●		●	●	●			
DNMG 433 ESU	DNMG 150412N-SU	.500		.0469	.2031	▲	●	●	●	●	▲	●			●	●			●	●			
DNMG 441 ESU	DNMG 150604N-SU		.250	.0156														★		★			
DNMG 442 ESU	DNMG 150608N-SU			.0313		▲													★		★		

DNMG		Rake Angle: 13°	Cutting Conditions:					Coated										Cermet		Uncoated				
 ESE			Continuous Cut																					
			Medium Cut																					
			Interrupted Cut																					
																								
Sumitomo Catalog #		ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P																
DNMG 332 ESE	DNMG 090408N-SE	.375	.1825	.0313	.150																			
DNMG 431 ESE	DNMG 150404N-SE			.0156																				
DNMG 432 ESE	DNMG 150408N-SE	.500		.0313	.2031																			
DNMG 433 ESE	DNMG 150412N-SE			.0469																				

DNMG ELU		Rake Angle: 10°	Cutting Conditions:		Coated				Cermets			Uncoated			
					Continuous Cut	●	●	●	●	●	●				
					Medium Cut	●	●	●	●	●	●				
					Interrupted Cut	●	●	●	●	●	●				
		Depth of Cut (Inches) Feed (IPR)			AC2000	AC810P	AC820P	AC700G	T2000Z	T3000Z	T1200A				
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1										
DNMG 431 ELU	DNMG 150404N-LU			.0156		●	●	●	●	●	●				
DNMG 432 ELU	DNMG 150408N-LU	.500	.1875	.0313	.2031	●	●	●	●	●	●				
DNMG 433 ELU	DNMG 150412N-LU			.0469		●	●	●	●	●	●				



DN

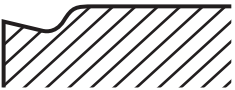





















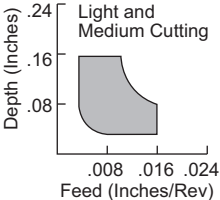
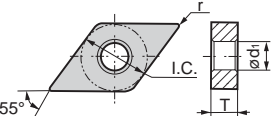
55° Diamond Type

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
- New Product Arriving January 2013

DNMG EUP		Rake Angle: 10°		Cutting Conditions:						Coated						Uncoated					
				Continuous Cut																	
				Medium Cut																	
				Interrupted Cut																	
																					
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC2000	AC3000	AC820P	AC830P	AC530U	AC510U	AC520U						G10E	EH510		
DNMG 431 EUP	DNMG 150404N-UP			.0156		▲		●	●	★	●	●						●			
DNMG 432 EUP	DNMG 150408N-UP	.500	.1875	.0313	.2031	▲		●	●	★	●	●						●	★		
DNMG 433 EUP	DNMG 150412N-UP			.0469		▲		●	●	★	●	●									

DN


















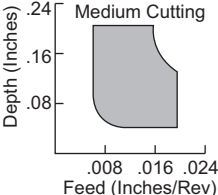
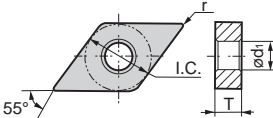
55° Diamond Type

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
- New Product Arriving January 2013

DNMG ENG		Rake Angle: 4°		Cutting Conditions:				Coated				Cermets									
				Continuous Cut																	
				Medium Cut																	
				Interrupted Cut																	
																					
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1	AC2000	AC3000	AC820P	AC830P	AC700G				T1200A					
DNMG 331 ENG	DNMG 110404N-UG	.375	.1875	.0156	.150	.0313		▲		●	★										
DNMG 332 ENG	DNMG 110408N-UG							●	★												
DNMG 431 ENG	DNMG 150404N-UG					.0156	▲	●	●												
DNMG 432 ENG	DNMG 150408N-UG					.0313	▲	●	●	●											
DNMG 433 ENG	DNMG 150412N-UG	.500		.0469	.2031				★	★	●										
DNMG 434 ENG	DNMG 150416N-UG			.0625																	
DNMG 442 ENG	DNMG 150612N-UG			.0313			▲														
DNMG 443 ENG	DNMG 150612N-UG			.0469			▲														
DNMG 542 ENG	DNMG 190608N-UG	.625	.250	.0313	.250				●	●											
DNMG 543 ENG	DNMG 190612N-UG			.0469		▲	▲	●	●												

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
- New Product Arriving January 2013

DNMG		Rake Angle: 0°		Cutting Conditions:		Coated		Cermet		Uncoated	
NEW EGZ				Continuous Cut							
				Medium Cut							
				Interrupted Cut							
						AC405K					
Sumitomo Catalog #		ISO Catalog #		I.C.		T		r		ød1	
DNMG 431 EGZ		DNMG 150404N-GZ									
DNMG 432 EGZ		DNMG 150408N-GZ		.500		.1875		.0156		.2031	
DNMG 433 EGZ		DNMG 150412N-GZ						.0313			
								.0469			

DNMG		Rake Angle: 13°		Cutting Conditions:		Coated		Cermet		Uncoated	
ESU				Continuous Cut							
				Medium Cut							
				Interrupted Cut							
						AC520U		T2000Z		T3000Z	
Sumitomo Catalog #		ISO Catalog #		I.C.		T		r		ød1	
DNMG 430 ESU		DNMG 150401N-SU									
DNMG 430.5 ESU		DNMG 150402N-SU									
DNMG 431 ESU		DNMG 150404N-SU		.500		.1875		.0039		.2031	
DNMG 432 ESU		DNMG 150408N-SU						.0078			
								.0156			
								.0313			

DNMG		Rake Angle: 14°		Cutting Conditions:		Coated		Cermet		Uncoated	
UM				Continuous Cut							
				Medium Cut							
				Interrupted Cut							
								T1200A			
Sumitomo Catalog #		ISO Catalog #		I.C.		T		r		ød1	
DNMG 431 L		DNMG 150404L-UM									
DNMG 431 R		DNMG 150404R-UM									
DNMG 432 L		DNMG 150408L-UM		.500		.1875		.0156		.2031	
DNMG 432 R		DNMG 150408R-UM						.0156			
								.0313			
								.0313			



55° DIAMOND TYPE

NEGATIVE INSERT

Indexable Inserts for Turning

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
 ○ New Product Arriving January 2013

DNMM

EHP

Rake Angle: 0°



Cutting Conditions:

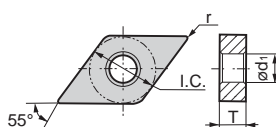
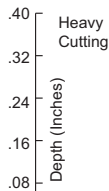
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated



AC830P

Sumitomo Catalog #

ISO Catalog #

I.C.

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DNMM 442 EHP

DNMM 150608N-HP

.500

.250

.0313

.2031

DNMA

No Breaker



Cutting Conditions:

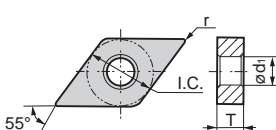
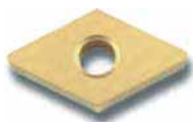
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated



AC700G

AC405K

AC410K

AC415K

AC420K

Sumitomo Catalog #

ISO Catalog #

I.C.

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DNMA 431

DNMA 150404

.500

.1875

.0313

.2031

DNMA 432

DNMA 150408

.500

.1875

.0313

.2031

DNMA 433

DNMA 150412

.500

.1875

.0313

.2031

DNMA 442

DNMA 150608

.500

.1875

.0313

.2031

DNMA 443

DNMA 150612

.500

.1875

.0313

.2031

DNMX

Rake Angle: 13°



Cutting Conditions:

Continuous Cut

Medium Cut

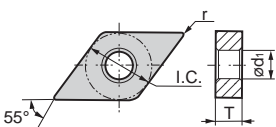
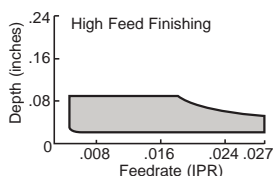
Interrupted Cut

Coated

Cermet

Uncoated

ESEW
Wiper Insert



AC810P

AC820P

T2000Z

Sumitomo Catalog #

ISO Catalog #

I.C.

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DNMX 431 ESEW

DNMX 150404N-SEW

.500

.1875

.0313

.2031

DNMX 432 ESEW

DNMX 150408N-SEW

.500

.1875

.0313

.2031

DNMX 433 ESEW

DNMX 150412N-SEW

.500

.1875

.0313

.2031



ROUND TYPE NEGATIVE INSERT

RN



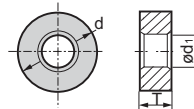


Round Type





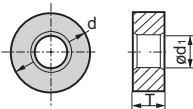
Negative



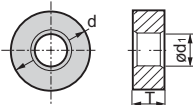






With Insert Hole

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
- New Product Arriving January 2013

RNMG		Rake Angle: 0°	Cutting Conditions:						Coated		Cermet		Uncoated			
ENT			Continuous Cut													
			Medium Cut													
			Interrupted Cut													
									AC830P							
Sumitomo Catalog #		ISO Catalog #	I.C.	T	r	ød1										
RNMG 43 ENT			.500	.1875	-	.2031	●									

RNMG ENU		Rake Angle: 0° 	Cutting Conditions:						Coated	Cermet	Uncoated					
			Continuous Cut													
			Medium Cut 													
			Interrupted Cut 													
									AC830P							
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1									
RNMG 54 ENU				.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	AC3000	AC830P							
RNMG 64 ENV		.750	.250	-	.3126	▲	●							



ROUND TYPE

NEGATIVE INSERT

Indexable Inserts for Turning

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
- New Product Arriving January 2013

RNMG

ENY

Rake Angle: 0°



Cutting Conditions:

Continuous Cut

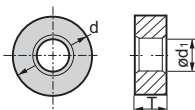
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



AC830P

Sumitomo Catalog #

ISO Catalog #

I.C.

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RNMG 84 ENY

1.00

.250

-

.3622

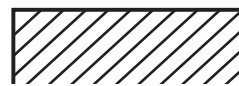
RNMG 86 ENY

.375

-

RNMA

No Breaker



Cutting Conditions:

Continuous Cut

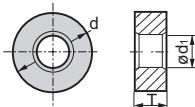
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



AC700G

AC410K

AC415K

Sumitomo Catalog #

ISO Catalog #

I.C.

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r

ød1

RNMA 43

.500

.1875

-

.2031



SN

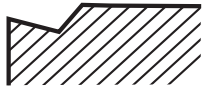
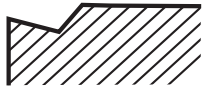
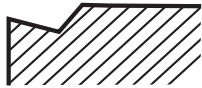

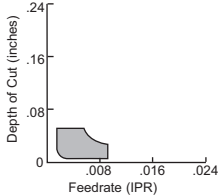
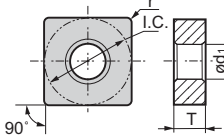
90° Square Type




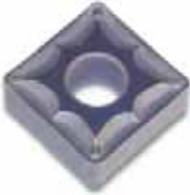
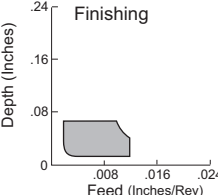
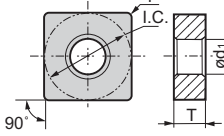
Negative






























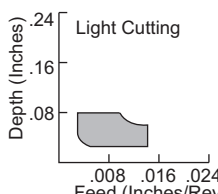
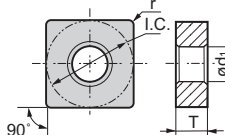
With Insert Hole

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
- New Product Arriving January 2013

SNMG		Rake Angle: 10°		Cutting Conditions:		Coated			Cermet			Uncoated		
EFL				Continuous Cut		●	●		●					
				Medium Cut		●	●		●	●				
				Interrupted Cut		●	●		●					
						AC2000			T2000Z					
						AC820P			T3000Z					
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1									
SNMG 432 EFL	SNMG 120408N-FL	.500	.1875	.0313	.2031	▲	●		★	★				

SNMG		Rake Angle: 13°		Cutting Conditions:		Coated			Cermet			Uncoated		
ESP				Continuous Cut					●					
				Medium Cut					●					
				Interrupted Cut					●					
									T1200A					
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1									
SNMG 432 ESP	SNMG 120408N-SP	.500	.1875	.0313	.2031				●					

SNMG		Rake Angle: 13°		Cutting Conditions:						Coated						Cermet			Uncoated																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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Sumitomo Catalog #		ISO Catalog #		I.C.		T		r		ød1		●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●			●		



90° SQUARE TYPE

NEGATIVE INSERT

Indexable Inserts for Turning

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
 ○ New Product Arriving January 2013

SNMG

Rake Angle: 5°

ESE



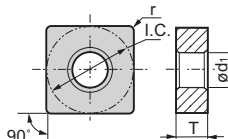
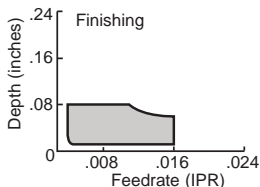
Cutting Conditions:

Continuous Cut

Medium Cut

Interrupted Cut

Coated	Cermet	Uncoated
● ● ●		
● ● ●		
● ● ●		
AC810P		
AC820P		
AC830P		



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
SNMG 432 ESE	SNMG 120408N-SE	.500	.1875	.0313	.2031
SNMG 433 ESE	SNMG 120412N-SE			.0469	

SNMG

Rake Angle: 10°

ELU



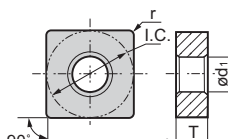
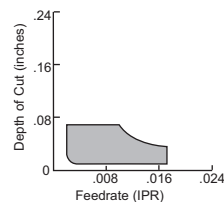
Cutting Conditions:

Continuous Cut

Medium Cut

Interrupted Cut

Coated	Cermet	Uncoated
● ● ●	● ● ●	
● ● ●	● ● ●	
● ● ●	● ● ●	
AC810P		
AC820P		
AC700G		
T2000Z		
T3000Z		



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
SNMG 432 ELU	SNMG 120408N-LU	.500	.1875	.0313	.2031
SNMG 433 ELU	SNMG 120412N-LU			.0469	

SNMG

EFJ



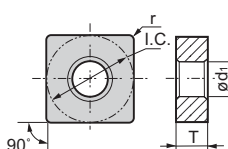
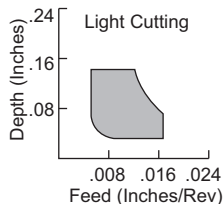
Cutting Conditions:

Continuous Cut

Medium Cut

Interrupted Cut

Coated	Cermet	Uncoated
	● ● ●	
	● ● ●	
	● ● ●	
	T1200A	



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
SNMG 322 EFJ	SNMG 090308N-SJ	.375	.125	.0313	.150
SNMG 431 EFJ	SNMG 120404N-SJ	.500	.1875	.0156	.2031



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
- New Product Arriving January 2013

SNMG ENK		Rake Angle: 10°	Cutting Conditions:						Coated	Cermet	Uncoated			
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC2000	AC820P	T1200A						
SNMG 321 ENK	SNMG 090304N-SK	.375	.125	.0156	.150	●	●	●						
SNMG 322 ENK	SNMG 090308N-SK			.0313		●	●	●						
SNMG 431 ENK	SNMG 120404N-SK	.500	.1875	.0156	.2031	▲	●	●						
SNMG 432 ENK	SNMG 120408N-SK			.0313		▲	●	●						

SNMG EEF		Rake Angle: 0°	Cutting Conditions:						Coated	Cermet	Uncoated			
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC630M	AC510U	AC520U				EH510	EH520	
SNMG 431 EEF	SNMG 150404N-EF			.0156		●	●	●				●	●	
SNMG 432 EEF	SNMG 150408N-EF	.500	.1875	.0313	.2031	●	●	●				●	●	
SNMG 433 EEF	SNMG 150412N-EF			.0469		●	●	●				●	●	
SNMG 543 EEF	SNMG 150612N-EF	.625	.250	.0469	.250	●	●	●				●	●	
SNMG 643 EEF	SNMG 190612N-EF	.750		.0469	.3126	●	●	●				●	●	

SNMG ESX		Rake Angle: 3°	Cutting Conditions:						Coated	Cermet	Uncoated			
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC2000	AC3000	AC810P	AC820P	AC830P	AC700G	T2000Z	T3000Z	T1200A
SNMG 431 ESX	SNMG 120404N-SX			.0156		●	●	●	●	●	●	●	●	●
SNMG 432 ESX	SNMG 120408N-SX	.500	.1875	.0313	.2031	▲	●	●	●	●	●	●	●	●
SNMG 433 ESX	SNMG 120412N-SX			.0469		▲	●	●	●	●	●	●	●	●



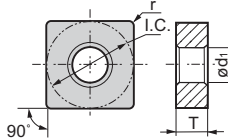
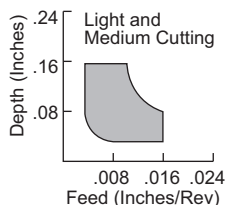
NEGATIVE INSERT

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

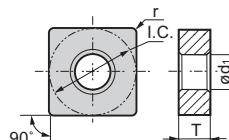
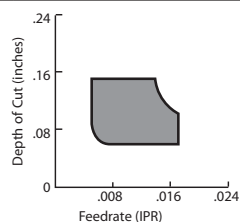
- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- New Product Arriving January 2013

With Insert Hole

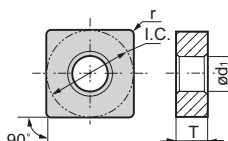
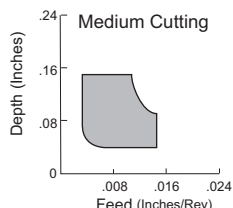
Interrupted Cut

[illegible]

Interrupted Cut

[illegible]

Interrupted Cut

[illegible]

SN

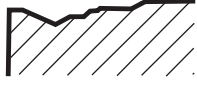
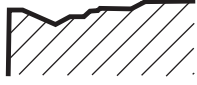
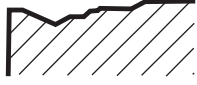

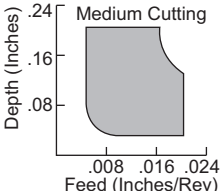
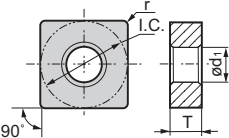
90° Square Type





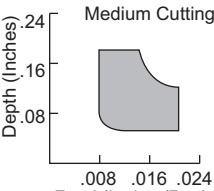
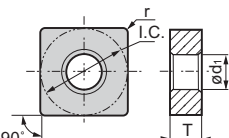
Negative

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
- New Product Arriving January 2013

SNMG		Rake Angle: 7°		Cutting Conditions:		Coated						Cermets			Uncoated		
EGU				Continuous Cut													
				Medium Cut													
				Interrupted Cut													
																	
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	AC700G	YB100	AC610M	AC630M	AC530U	T1200A			
SNMG 321 EGU	SNMG 090304N-GU	.375	.125	.0156	.150	●	●	●	●	●	●	●	●	●			
SNMG 322 EGU	SNMG 090308N-GU			.0313		●	●	●	●	●	●	●	●	●			
SNMG 431 EGU	SNMG 120404N-GU			.0156		●	●	●	●	●	●	●	●	●			
SNMG 432 EGU	SNMG 120408N-GU			.0313		●	●	●	●	●	●	●	●	●			
SNMG 433 EGU	SNMG 120412N-GU	.500	.1875	.0469	.2031	●	●	●	●	●	●	●	●	●			
SNMG 434 EGU	SNMG 120416N-GU			.0625		●	●	●	●	●	●	●	●	●			
SNMG 543 EGU	SNMG 150612N-GU	.625	.250	.0469	.250	●	●	●	●	●	●	●	●	●			

SNMG		Rake Angle: 0°		Cutting Conditions:		Coated						Cermets					
EUX				Continuous Cut													
				Medium Cut													
				Interrupted Cut													
																	
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC2000	AC3000	AC810P	AC820P	AC830P	AC700G	YB100	AC410K				
SNMG 322 AUX	SNMG 090308N-UX	.375	.125	.0313	.150												
SNMG 431 AUX	SNMG 120404N-UX			.0156													
SNMG 432 AUX	SNMG 120408N-UX			.0313													
SNMG 433 AUX	SNMG 120412N-UX	.500	.1875	.0469	.2031	▲	▲	●	●	●	●	▲	●				
SNMG 434 AUX	SNMG 120416N-UX			.0625		▲	▲	●	●	●	●	▲	●				
SNMG 643 AUX	SNMG 190612N-UX	.625	.250	.0469	.250	▲	●	●	●	●	●	▲	●				
SNMG 644 AUX	SNMG 190616N-UX			.0625		▲	●	●	●	●	●	▲	●				

Negative Inserts

C

D

R

S

T

V

W

Swiss Tooling



SN

90° Square Type

Negative

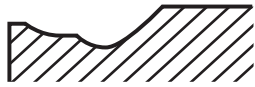
With Insert Hole

- 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
- New Product Arriving January 2013

SNMG EMU

Rake Angle: 4°



Cutting Conditions:

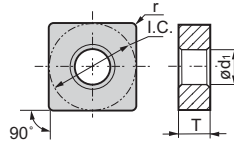
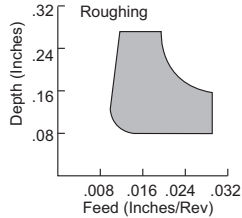
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC2000	AC3000	AC810P	AC820P	AC830P	AC700G	YB100	AC630M	AC530U	AC510U	AC520U	EH520
SNMG 432 EMU	SNMG 120408N-MU			.0313		▲		●	●	●	●	▲	●	★	●		
SNMG 433 EMU	SNMG 120412N-MU	.500	.1875	.0469	.2031			●	●	●	●	●	●	●	●		
SNMG 434 EMU	SNMG 120416N-MU			.0625				●	●	●	●	●	●	●	●		
SNMG 543 EMU	SNMG 160612N-MU			.0469		▲	▲	●	●	●	●	▲	●	●	●		
SNMG 544 EMU	SNMG 160616N-MU	.625	.250	.0625	.250			●	●	●	●	●	●	●	●		
SNMG 643 EMU	SNMG 190612N-MU			.0469			▲	●	●	●	●	●	●	●	●		
SNMG 644 EMU	SNMG 190616N-MU	.750		.0625	.3126			●	●	●	●	▲	●	●	●	●	●



90° SQUARE TYPE

NEGATIVE INSERT

Indexable Inserts for Turning

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
 ○ New Product Arriving January 2013

SNMG

Rake Angle: 4°

NEW EME



Cutting Conditions:

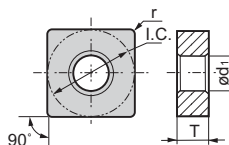
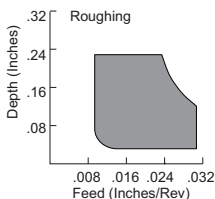
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated



AC810P

AC820P

AC830P

Sumitomo Catalog #

ISO Catalog #

I.C.

T

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SNMG 432 EME

SNMG 120408N-ME

.500

.1875

.0313

.2031

SNMG 433 EME

SNMG 120412N-ME

.625

.250

.0469

.250

SNMG 434 EME

SNMG 120416N-ME

.750

.3126

.0625

.3126

SNMG 543 EME

SNMG 150612N-ME

SNMG 544 EME

SNMG 150616N-ME

SNMG 643 EME

SNMG 190612N-ME

SNMG 644 EME

SNMG 190616N-ME

SNMG

Rake Angle: -15°

EMX



Cutting Conditions:

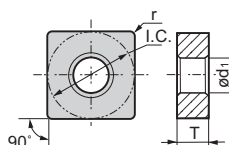
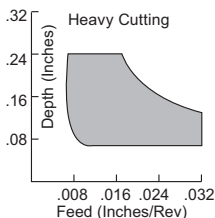
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated



AC2000

AC3000

AC810P

AC820P

AC830P

Sumitomo Catalog #

ISO Catalog #

I.C.

T

r

ød1

SNMG 432 EMX

SNMG 120408N-MX

.500

.1875

.0313

.2031

SNMG 433 EMX

SNMG 120412N-MX

.625

.250

.0469

.250

SNMG 434 EMX

SNMG 120416N-MX

SNMG 543 EMX

SNMG 150612N-MX

SNMG 544 EMX

SNMG 150616N-MX

SNMG 643 EMX

SNMG 190612N-MX

SNMG 644 EMX

SNMG 190616N-MX



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
- New Product Arriving January 2013

SNMG		Rake Angle: 0°		Cutting Conditions:		Coated				Uncoated			
NEW EGZ				Continuous Cut		●	●	●					
				Medium Cut		●	●	●					
				Interrupted Cut				●					
						AC405K	AC410K	AC415K	AC420K				
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1								
SNMG 432 EGZ	SNMG 120408N-GZ			.0313									
SNMG 433 EGZ	SNMG 120412N-GZ	.500	.1875	.0469	.2031	●	●	●	●				
SNMG 434 EGZ	SNMG 120416N-GZ			.0625									
SNMG 543 EGZ	SNMG 150612N-GZ	.625		.0469	.250			○	○				
SNMG 643 EGZ	SNMG 190612N-GZ		.250	.0469				○	○				
SNMG 644 EGZ	SNMG 190616N-GZ	.750		.0625	.3126			○	○				

SNMM		Rake Angle: 0°		Cutting Conditions:		Coated				Uncoated			
ENP				Continuous Cut		●	●	●					
				Medium Cut		●	●	●	●				
				Interrupted Cut		●	●	●	●				
						AC2000	AC3000	AC810P	AC820P	AC830P			
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1								
SNMM 433 ENP	SNMM 120412N-MP	.500	.1875	.0469	.2031	▲							
SNMM 644 ENP	SNMM 190616N-MP	.750	.250	.0625	.3126		▲	★	●				
SNMM 856 ENP	SNMM 250724N-MP		.3125	.0938				★	★	★			
SNMM 866 ENP	SNMM 250924N-MP	1.00	.375	.0938	.3622			★	★	★			

SNMM		Rake Angle: 0°		Cutting Conditions:		Coated				Cermet			
EHG				Continuous Cut		●	●						
				Medium Cut		●	●	●					
				Interrupted Cut		●	●						
						AC810P	AC820P	AC830P					
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1								
SNMM 432 EHG	SNMM 120408N-HG			.0313		★	●	●					
SNMM 433 EHG	SNMM 120412N-HG	.500	.1875	.0469	.2031	★	●	●					
SNMM 434 EHG	SNMM 120416N-HG			.0625		★	●	●					
SNMM 643 EHG	SNMM 190612N-HG			.0469		★	●	●					
SNMM 644 EHG	SNMM 190616N-HG	.750	.250	.0625	.3126	★	●	●					
SNMM 646 EHG	SNMM 190624N-HG			.0938		★	●						



NEGATIVE INSERT

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

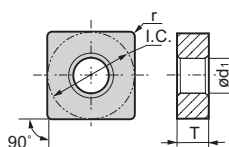
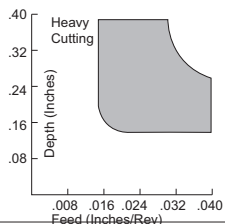
- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- New Product Arriving January 2013

With Insert Hole

EHP

Interrupted Cut

Uncoated



ISO Catalog #

I.C.

T

ød1

AC810P

AC820P	AC830P
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Income

SNMM 643 EHP

SNMM 190612N-HP

750

35

.04

313

SNMM 644 EHP

SNMM 190616N-HP

.750

.25

.06

.3120

SNMM 856 EHP

SNMM 250724N-HP

1.00

312

.09

362

S

T

V

W

Swiss Tooling

SN

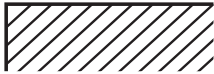

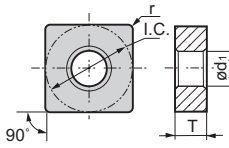
90° Square Type



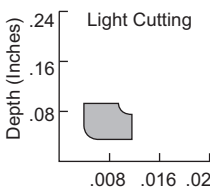
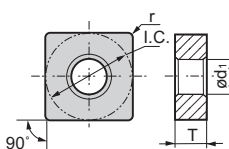
Negative

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
- New Product Arriving January 2013

SNMA		No Breaker	Cutting Conditions:						Coated										Uncoated																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC700G	AC405K	AC410K	AC415K	AC420K																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

SNP _{R/L}		Rake Angle: 0°	Cutting Conditions:						Coated		Cermet		Uncoated					
T																		
			Continuous Cut															
			Medium Cut															
			Interrupted Cut															
																		
Sumitomo Catalog #		ISO Catalog #	I.C.	T	r	ød1												
SNPR 321 T	SNGG 090304R-ST				.0156													
SNPL 321 T	SNGG 090304L-ST				.0156													
SNPR 322 T	SNGG 090308R-ST		.375	.125	.0313	.150												
SNPL 322 T	SNGG 090308L-ST				.0313													
SNPR 323 T	SNGG 090312R-ST				.0469													



TN

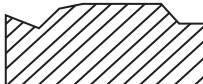








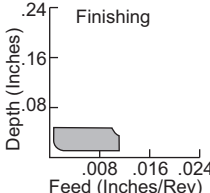
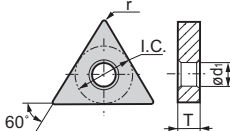
Triangular Type













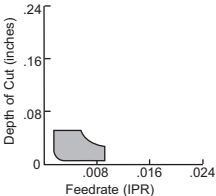
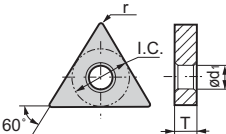











Negative

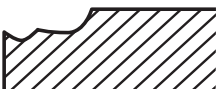




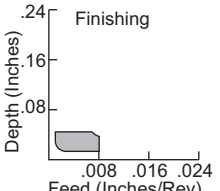
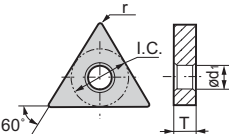

With Insert Hole

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
- New Product Arriving January 2013

TNMG EFA		Rake Angle: 20° 	Cutting Conditions:				Coated		Cermet			Uncoated				
			Continuous Cut													
			Medium Cut													
			Interrupted Cut													
											T2000Z		T3000Z		T1200A	
Sumitomo Catalog #		ISO Catalog #	I.C.	T	r	ød1										
TNMG 330.5 EFA		TNMG 160402N-FA			.0078											
TNMG 331 EFA		TNMG 160404N-FA	.375	.1875	.0156	.150										
TNMG 332 EFA		TNMG 160408N-FA			.0313											

TNMG EFL		Rake Angle: 10°	Cutting Conditions:					Coated		Cermet			Uncoated			
			Continuous Cut													
			Medium Cut													
			Interrupted Cut													
																
Sumitomo Catalog #		ISO Catalog #	I.C.	T	r	ød1	AC2000	AC820P			T2000Z	T3000Z				
TNMG 331 EFL		TNMG 160404N-FL			.0156											
TNMG 332 EFL		TNMG 160408N-FL	.375	.1875	.0313	.150										

TNMG EFP		Rake Angle: 10° 		Cutting Conditions:			Coated		Cermet		Uncoated			
				Continuous Cut										
				Medium Cut										
				Interrupted Cut										
									T1200A					
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1							
TNMG 322 EFP		TNMG 160308N-FP			.125	.0313								
TNMG 332 EFP		TNMG 160408N-FP		.375	.1875	.0313	.150							



TRIANGULAR TYPE

NEGATIVE INSERT

Indexable Inserts for Turning

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
 ○ New Product Arriving January 2013

TNMG

ESP

Rake Angle: 13°



Cutting Conditions:

Continuous Cut

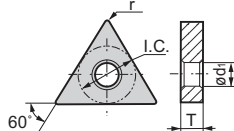
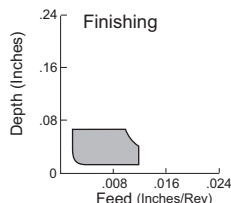
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Sumitomo Catalog #

ISO Catalog #

I.C.

T

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ød1

TNMG 331 ESP

TNMG 160404N-SP

.375

.1875

.0156

.150

TNMG 332 ESP

TNMG 160408N-SP

.375

.1875

.0313

.150

TNMG

ESU

Rake Angle: 13°



Cutting Conditions:

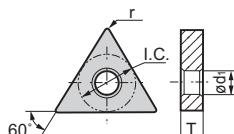
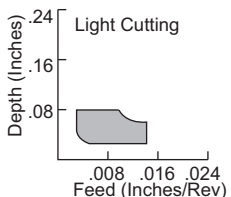
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Cermet



Sumitomo Catalog #

ISO Catalog #

I.C.

T

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TNMG 321 ESU

TNMG 160304N-SU

.375

.125

.0156

.150

TNMG 322 ESU

TNMG 160308N-SU

.375

.125

.0313

.150

TNMG 331 ESU

TNMG 160404N-SU

.375

.1875

.0156

.150

TNMG 332 ESU

TNMG 160408N-SU

.375

.1875

.0313

.150

TNMG 333 ESU

TNMG 160412N-SU

.375

.1875

.0469

.150

TNMG 431 ESU

TNMG 220404N-SU

.500

.1875

.0156

.2031

TNMG 432 ESU

TNMG 220408N-SU

.500

.1875

.0313

.2031

TNMG 433 ESU

TNMG 220412N-SU

.500

.1875

.0469

.2031

TNMG

ESE

Rake Angle: 5°



Cutting Conditions:

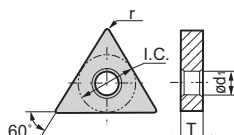
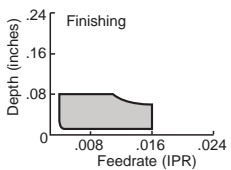
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Cermet



Sumitomo Catalog #

ISO Catalog #

I.C.

T

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TNMG 331 ESE

TNMG 160404N-SE

.375

.1875

.0156

.150

TNMG 332 ESE

TNMG 160408N-SE

.375

.1875

.0313

.150

TNMG 333 ESE

TNMG 160412N-SE

.375

.1875

.0469

.150

TNMG 431 ESE

TNMG 220404N-SE

.500

.1875

.0156

.2031

TNMG 432 ESE

TNMG 220408N-SE

.500

.1875

.0313

.2031

TNMG 433 ESE

TNMG 220412N-SE

.500

.1875

.0469

.2031



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
- New Product Arriving January 2013

TNMG ELU		Rake Angle: 10°		Cutting Conditions:					Coated		Cermet		Uncoated					
				Continuous Cut														
				Medium Cut														
				Interrupted Cut														
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1	AC2000	AC810P	AC820P	AC700G	T2000Z	T3000Z	T1200A				
TNMG 331 ELU		TNMG 160404N-LU				.0156			●	●	●	●	●	★				
TNMG 332 ELU		TNMG 160408N-LU		.375	.1875	.0313	.150		●	●	●	●	●	★				
TNMG 333 ELU		TNMG 160412N-LU				.0469		▲	●	●	●	●	▲	★				

TNMG ENK		Rake Angle: 10°	Cutting Conditions:						Coated			Cermet			Uncoated			
									Continuous Cut									
									Medium Cut									
									Interrupted Cut									
									AC2000	AC820P			T1200A					
Sumitomo Catalog #	ISO Catalog #		I.C.	T	r	ød1												
TNMG 221 ENK	TNMG 110304N-SK		.250		.0156	.089												
TNMG 321 ENK	TNMG 160304N-SK			.125	.0156													
TNMG 322 ENK	TNMG 160308N-SK				.0313													
TNMG 331 ENK	TNMG 160404N-SK		.375		.0156	.150												
TNMG 332 ENK	TNMG 160408N-SK			.1875	.0313													
TNMG 431 ENK	TNMG 220404N-SK				.0156													
TNMG 432 ENK	TNMG 220408N-SK		.500		.0313	.2031												

TNMG		Rake Angle: 0°	Cutting Conditions:						Coated			Cermet			Uncoated																																																								
<div>NEW</div> EEF			Continuous Cut																																																																				
			Medium Cut																																																																				
			Interrupted Cut																																																																				
									<table><tr><td>AC630M</td><td>AC510U</td><td>AC520U</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>									AC630M	AC510U	AC520U																																																			
																		AC630M	AC510U	AC520U																																																			
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1																																																																
TNMG 331 EEF		TNMG 160404N-EF				.0156																																																																	
TNMG 332 EEF		TNMG 160408N-EF		.500	.1875	.0313	.2031																																																																
TNMG 333 EEF		TNMG 160412N-EF				.0469																																																																	



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
- New Product Arriving January 2013

TNMG EEX		Rake Angle: 16°		Cutting Conditions:		Coated					Uncoated				
				Continuous Cut		●	●	●	●	●		●			
				Medium Cut		●	●	●	●	●		●			
				Interrupted Cut		●	●	●	●	●					
						AC610M	AC630M	AC530U	AC510U	AC520U		EH510			
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1										
TNMG 331 EEX	TNMG 160404N-EX			.0156		●	●	●	●	●					
TNMG 332 EEX	TNMG 160408N-EX	.375	.1875	.0313	.150	●	●	★	●	●		★			
TNMG 333 EEX	TNMG 160412N-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	AC2000	AC3000	AC810P	AC820P	AC830P	AC700G	YB100	AC610M	AC630M	AC530U	T1200A									
TNMG 331 EGU		TNMG 160404N-GU		.375	.1875	.0156	.150		▲	●	●	●	●	▲	●	●	★	★									
TNMG 332 EGU		TNMG 160408N-GU				.0313		●	●	●	●	●	●	●	▲	●	●	★	●								
TNMG 333 EGU		TNMG 160412N-GU				.0469		▲	●	●	●	●	●	●	●	●	●	●	★	●							
TNMG 334 EGU		TNMG 160416N-GU		.500	.1875	.0625	.2031				★	★				●											
TNMG 431 EGU		TNMG 220404N-GU				.0156			●	●	●	●	●	●	●	▲		●									
TNMG 432 EGU		TNMG 220408N-GU				.0313			●	●	●	●	●	●	●	●	▲		●								
TNMG 433 EGU		TNMG 220412N-GU				.0469				●	●	●	●			●											

TNMG EGE		Rake Angle: 3°		Cutting Conditions:		Coated					Uncoated				
				Continuous Cut		●	●	●	●	●					
				Medium Cut		●	●	●	●	●					
				Interrupted Cut		●	●	●	●	●					
						AC810P	AC820P	AC830P	AC700G						
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1										
TNMG 331 EGE	TNMG 160404N-GE			.0156		●	●	●	●	●					
TNMG 332 EGE	TNMG 160408N-GE	.375	.1875	.0313	.150	●	●	●	●	●					
TNMG 333 EGE	TNMG 160412N-GE			.0469		●	●	●	●	●					
TNMG 432 EGE	TNMG 220408N-GE	.500		.0313	.2031	●	●	●	●	●					



TN

Triangular Type

Negative

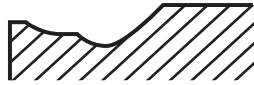
With Insert Hole

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
- New Product Arriving January 2013

TNMG EMU

Rake Angle: 4°



Cutting Conditions:

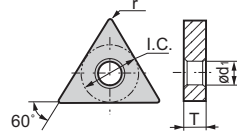
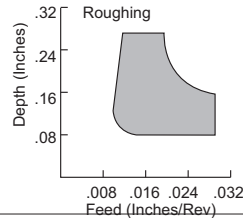
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated



Sumitomo Catalog #

ISO Catalog #

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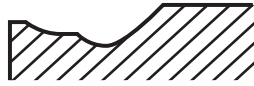
r

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Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC2000	AC3000	AC810P	AC820P	AC830P	AC700G	YB100	AC630M	AC530U	AC510U	AC520U	Uncoated
TNMG 332 EMU	TNMG 160408N-MU	.375		.0313	.150	▲	▲	●	●	●	●	●	●	★	●	●	
TNMG 333 EMU	TNMG 160412N-MU		.1875	.0469		▲	▲	●	●	●	●	●	●	★	●	●	
TNMG 432 EMU	TNMG 220408N-MU			.0313		▲	▲	●	●	●	●	●	●	●	●	●	
TNMG 433 EMU	TNMG 220412N-MU	.500		.0469	.2031	▲	▲	●	●	●	●	●	●	●	●	●	
TNMG 434 EMU	TNMG 220416N-MU			.0625		▲	▲	●	●	●	●	●	●	●	●	●	
TNMG 543 EMU	TNMG 270612N-MU	.625	.250	.0469	.250	▲	▲	●	●	●	●	●	●	●	●	●	
TNMG 544 EMU	TNMG 270616N-MU			.0625		▲	▲	●	●	●	●	●	●	●	●	●	

TNMG EME

Rake Angle: 4°



Cutting Conditions:

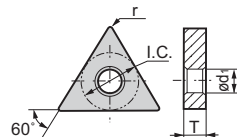
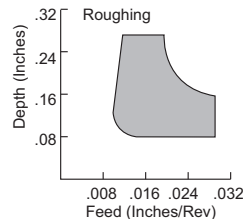
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated



Sumitomo Catalog #

ISO Catalog #

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Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC810P	AC820P	AC830P	Uncoated
TNMG 332 EME	TNMG 160408N-ME	.375		.0313	.150	●	●	●	
TNMG 333 EME	TNMG 160412N-ME		.1875	.0469		●	●	●	
TNMG 432 EME	TNMG 220408N-ME			.0313		●	●	●	
TNMG 433 EME	TNMG 220412N-ME	.500		.0469	.2031	●	●	●	
TNMG 434 EME	TNMG 220416N-ME			.0625		●	●	●	



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
- New Product Arriving January 2013

TNMG NEW EGZ		Rake Angle: 0°	Cutting Conditions:		Coated	Cermet	Uncoated
			Continuous Cut		●		
			Medium Cut		●		
			Interrupted Cut		●		
					AC405K		
					AC410K		
					AC415K		
					AC420K		
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1		
TNMG 331 EGZ	TNMG 160404N-GZ			.0156		●	
TNMG 332 EGZ	TNMG 160408N-GZ	.375		.0313	.150	●	
TNMG 333 EGZ	TNMG 160412N-GZ		.1875	.0469		●	
TNMG 432 EGZ	TNMG 220408N-GZ	.500		.0313	.2031	○	
TNMG 433 EGZ	TNMG 220412N-GZ			.0469		○	

TNMM ENP		Rake Angle: 0°	Cutting Conditions:		Coated	Uncoated
			Continuous Cut		●	
			Medium Cut		●	
			Interrupted Cut		●	
					AC810P	
					AC820P	
					AC830P	
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	
TNMM 332 ENP	TNMM 160408N-MP	.375	.1875	.0313	.150	★

TNMM EHG		Rake Angle: 0°	Cutting Conditions:		Coated	Cermet
			Continuous Cut		●	
			Medium Cut		●	
			Interrupted Cut		●	
					AC810P	
					AC820P	
					AC830P	
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	
TNMM 432 EHG	TNMM 220408N-HG			.0313		★
TNMM 433 EHG	TNMM 220412N-HG	.500	.1875	.0469	.2031	★
TNMM 434 EHG	TNMM 220416N-HG			.0625		★

Negative
Inserts

C

D

R

S

T

V

W

Swiss
Tooling



NEGATIVE INSERT

- 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 2013

Triangular Type
Negative
With Insert Hole

No Breaker



Cutting Conditions:

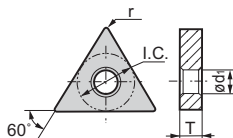
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated

[illegible]

Rake Angle: 14°

Cutting Conditions:

Continuous Cut

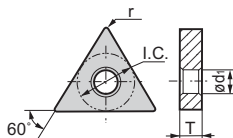
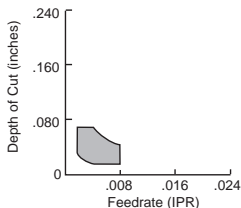
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



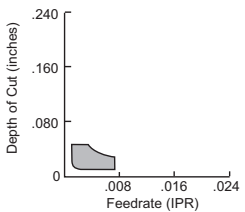
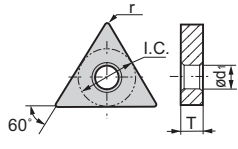
[illegible]



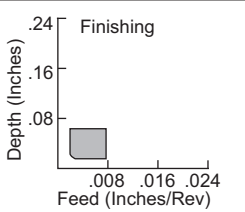
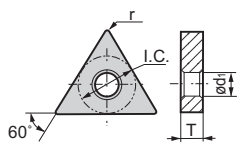
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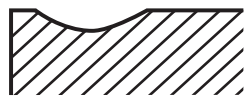

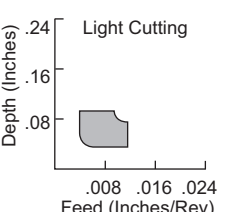
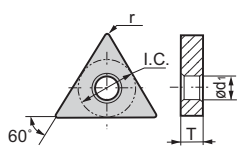
Triangular Type
Negative
With Insert Hole

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
- New Product Arriving January 2013

TNP_{R/L} FY		Rake Angle: 15°		Cutting Conditions:		Coated		Cermet		Uncoated	
				Continuous Cut		○		●			
				Medium Cut		○		●			
				Interrupted Cut		○		●			
						ACZ310		T2000Z			
Sumitomo Catalog #		ISO Catalog #		I.C.		T		r		ød1	
TNPR 330.5 FFY		TNGG 160402R-FY						.0078			
TNPL 330.5 FFY		TNGG 160402L-FY						.0078			
TNPR 331 FFY		TNGG 160404R-FY		.375		.1875		.0156		.150	
TNPL 331 FFY		TNGG 160404L-FY						.0156			

TNP_{R/L} Q		Rake Angle: 0°		Cutting Conditions:		Coated		Cermet		Uncoated	
				Continuous Cut				●			
				Medium Cut				●			
				Interrupted Cut				●			
								T1200A			
Sumitomo Catalog #		ISO Catalog #		I.C.		T		r		ød1	
TNPL 220.5 Q		TNGG 110302L-Q						.0078			
TNPL 221 Q		TNGG 110304L-Q		.325		.125		.0156		.089	

TNP_{R/L} T		Rake Angle: 0°		Cutting Conditions:		Coated		Cermet		Uncoated	
				Continuous Cut				●			
				Medium Cut				●			
				Interrupted Cut				●			
								T1200A		G10E	
Sumitomo Catalog #		ISO Catalog #		I.C.		T		r		ød1	
TNPR 320.5 T		TNGG 160302R-ST						.0078			
TNPL 320.5 T		TNGG 160302L-ST						.0078			
TNPR 321 T		TNGG 160304R-ST						.0156			
TNPL 321 T		TNGG 160304L-ST						.0156			
TNPR 322 T		TNGG 160308R-ST		.375		.125		.0313		.150	
TNPL 322 T		TNGG 160308L-ST						.0313			



TRIANGULAR TYPE

NEGATIVE INSERT

Indexable Inserts for Turning

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
 ○ New Product Arriving January 2013

TNP_{R/L}

M

Rake Angle: 14°



Cutting Conditions:

Continuous Cut

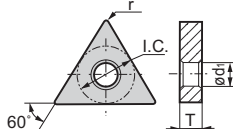
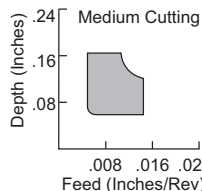
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Sumitomo Catalog #

ISO Catalog #

I.C.

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TNPR 330.5 M	TNGG 160402R-UM			.0078	
TNPL 330.5 M	TNGG 160402L-UM			.0078	
TNPR 331 M	TNGG 160404R-UM			.0156	
TNPL 331 M	TNGG 160404L-UM			.0156	
TNPR 332 M	TNGG 160408R-UM	.375		.0313	
TNPL 332 M	TNGG 160408L-UM		.1875	.0313	
TNPR 333 M	TNGG 160412R-UM			.0469	
TNPL 333 M	TNGG 160412L-UM			.0469	
TNPR 431 M	TNGG 220404R-UM			.0156	
TNPL 431 M	TNGG 220404L-UM			.0156	
TNPR 432 M	TNGG 220408R-UM	.500		.0313	
TNPL 432 M	TNGG 220408L-UM			.0313	

TNG

No Breaker



Cutting Conditions:

Continuous Cut

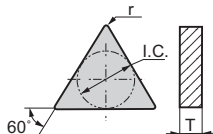
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Sumitomo Catalog #

ISO Catalog #

I.C.

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TNG 322	TNGN 160308	.375	.125	.0313	-
TNG 332	TNGN 160408		.1875	.0313	-



TRM

T-Rex Type

Negative


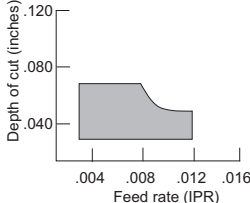
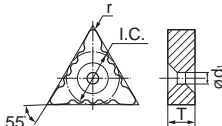

















With Insert Hole

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
- New Product Arriving January 2013

TRM GU		Rake Angle: 7°		Cutting Conditions:		Coated					Cermets			Uncoated		
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød ₁	AC2000	AC3000	AC810P	AC820P	AC8300P	AC700G	AC610M	AC630M			
TRM 551704 GU	TRM 551704-GU			.0156		▲	▲	★	★	★	●	●	●			
TRM 551708 GU	TRM 551708-GU	.394	.197	.0313	.084	▲	▲	★	★	★	●	●	●			
TRM 551712 GU	TRM 551712-GU			.0469		▲	▲	★	★	★	●	●	●			

TRM SU		Rake Angle: 13°		Cutting Conditions:		Coated				Cermet				Uncoated					
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød ₁	AC610M	AC630M												
TRM 551704 SU	TRM 551704-SU			.0156		●	●												
TRM 551708 SU	TRM 551708-SU	.394	.197	.0313	.084	●	●												
TRM 551712 SU	TRM 551712-SU			.0469		●	●												

TRM LU		Rake Angle: 10°		Cutting Conditions:						Coated					Cermets				Uncoated			
						Continuous Cut																
						Medium Cut																
						Interrupted Cut																
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1	AC2000	AC3000	AC810P	AC820P	AC8300P	AC700G	T2000Z								
TRM 551704 LU		TRM 551704-LU				.0156		▲	▲	★	●	★	●		●							
TRM 551708 LU		TRM 551708-LU		.394	.197	.0313	.084	▲	▲	★	●	★	●		●							
TRM 551712 LU		TRM 551712-LU				.0469		▲	▲	★	●	★	●									



VN


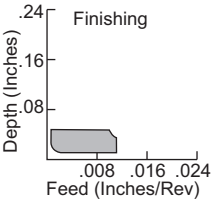
35° Diamond Type


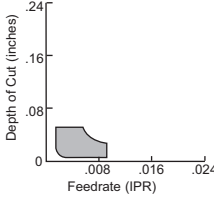
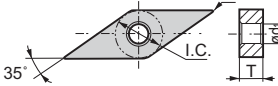
Negative

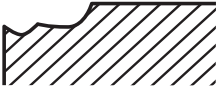




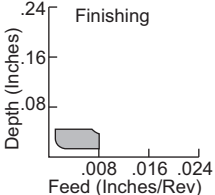
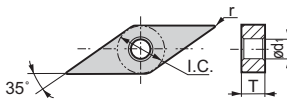

With Insert Hole

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
- New Product Arriving January 2013

VNMG		Rake Angle: 20°	Cutting Conditions:				Coated			Cermet			Uncoated			
EFA			Continuous Cut													
			Medium Cut													
			Interrupted Cut													
																
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1			T2000Z						
VNMG 331 EFA		VNMG 160404N-FA		.375	.1875	.0156	.150			●		★		●		
VNMG 332 EFA		VNMG 160608N-FA				.0313				●		★		●		

VNMG EFL		Rake Angle: 10°		Cutting Conditions:				Coated		Cermet		Uncoated			
								AC820P		T2000Z		T3000Z			
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1								
VNMG 331 EFL		VNMG 160404N-FL		.375	.1875	.0156	.150	●	●	★					
VNMG 332 EFL		VNMG 160408N-FL				.0313		●	★						

VNMG EFP		Rake Angle: 10° 	Cutting Conditions:				Coated	Cermet			Uncoated			
			Continuous Cut											
			Medium Cut											
			Interrupted Cut											
								T1200A						
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1							
VNMG 331 EFP		VNMG 160404N-FP		.375	.1875	.0156	.150							
VNMG 332 EFP		VNMG 160408N-FP				.0313								



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
- New Product Arriving January 2013

VNMG ENG		Rake Angle: 4°		Cutting Conditions:		Coated				Cermet			
						Continuous Cut							
						Medium Cut							
						Interrupted Cut							
						AC2000	AC3000	AC820P	AC830P	AC700G		T1200A	
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1								
VNMG 331 ENG	VNMG 160404N-UG	.375	.1875	.0156	.150	▲	▲	●	●	●		●	
VNMG 332 ENG	VNMG 160408N-UG			.0313		▲	▲	●	●	●		●	

VNMG ENZ/FNZ		Rake Angle: 4°		Cutting Conditions:		Coated				Uncoated			
						Continuous Cut							
						Medium Cut							
						Interrupted Cut							
						AC2000	AC3000	AC820P	AC830P	AC405K	AC410K	AC415K	AC420K
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1								
VNMG 331 ENZ	VNMG 160404N-UZ	.375		.0156	.150	▲		●	●	●	●	●	●
VNMG 332 ENZ	VNMG 160408N-UZ		.1875	.0313				●	●	●	●	●	●
VNMG 333 ENZ	VNMG 160412N-UZ			.0469				●	●	●	●	●	●
VNMG 432 ENZ	VNMG 220408N-UZ	.500		.0313	.2031	▲	▲	●	●	●	●	●	●
VNMG 433 ENZ	VNMG 220412N-UZ			.0469				●	●	●	●	●	●
VNMG 331 FNZ	VNMG 160404N-UZ	.375	.1875	.0156	.150			●	●	●	●	●	●
VNMG 332 FNZ	VNMG 160408N-UZ			.0313				●	●	●	●	●	●

VNMG EUP		Rake Angle: 10°		Cutting Conditions:		Coated				Uncoated			
						Continuous Cut							
						Medium Cut							
						Interrupted Cut							
						AC2000	AC3000	AC820P	AC830P	AC530U	AC510U	AC520U	
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1								
VNMG 331 EUP	VNMG 160404N-UP	.375	.1875	.0156	.150	▲	▲	●	●	★	●	●	
VNMG 332 EUP	VNMG 160408N-UP			.0313		▲	▲	●	●	★	●	●	



35° DIAMOND TYPE

NEGATIVE INSERT

Indexable Inserts for Turning

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
 ○ New Product Arriving January 2013

VNMG

Rake Angle: 0°

NEW EEG



Cutting Conditions:

Continuous Cut

Medium Cut

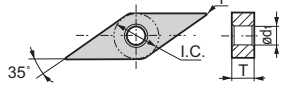
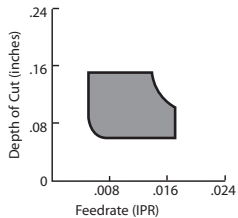
Interrupted Cut

Coated

Cermet

Uncoated

Photo
Coming
Soon



AC630M

AC510U

AC520U

EH510

EH520

Sumitomo Catalog #

ISO Catalog #

I.C.

T

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VNMG 331 EEG

VNMG 160404N-EG

.375

.1875

.0156

.150

VNMG 332 EEG

VNMG 160408N-EG

.375

.1875

.0313

.150

VNMG 333 EEG

VNMG 160412N-EG

.375

.1875

.0469

.150

VNMG

Rake Angle: 16°

EEX



Cutting Conditions:

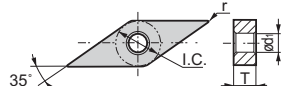
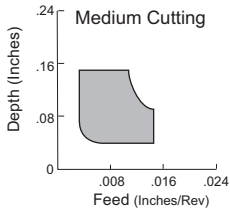
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated



AC610M

AC630M

AC520U

Sumitomo Catalog #

ISO Catalog #

I.C.

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VNMG 331 EEX

VNMG 160404N-EX

.375

.1875

.0156

.150

VNMG 332 EEX

VNMG 160408N-EX

.375

.1875

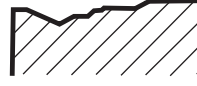
.0313

.150

VNMG

Rake Angle: 7°

EGU



Cutting Conditions:

Continuous Cut

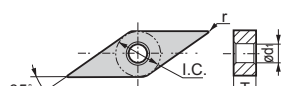
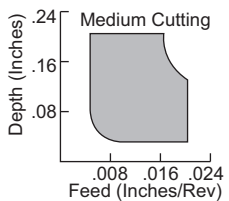
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



AC2000

AC810P

AC820P

AC830P

AC700G

YB100

AC610M

AC630M

AC530U

T1200A

Sumitomo Catalog #

ISO Catalog #

I.C.

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VNMG 331 EGU

VNMG 160404N-GU

.375

.1875

.0156

.150

VNMG 332 EGU

VNMG 160408N-GU

.375

.1875

.0313

.150

VNMG 333 EGU

VNMG 160412N-GU

.375

.1875

.0469

.150



VN



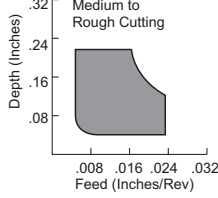
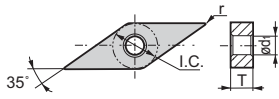
35° Diamond Type



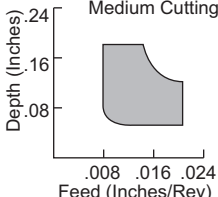
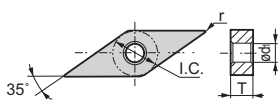
Negative



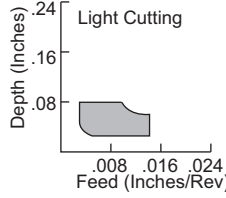
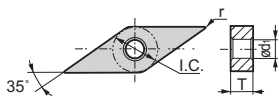
With Insert Hole

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
- New Product Arriving January 2013

VNMG NEW EGZ		Rake Angle: 0°	Cutting Conditions:		Coated				Cermet				Uncoated			
					Continuous Cut	●	●									
					Medium Cut	●	●									
					Interrupted Cut	●	●									
					AC405K	●	●									
					AC415K	●	●									
					AC420K	●	●									
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1											
VNMG 331 EGZ	VNMG 160404N-GZ			.0156												
VNMG 332 EGZ	VNMG 160408N-GZ	.375	.1875	.0313	.150	●	●									
VNMG 333 EGZ	VNMG 160412N-GZ			.0469		●	●									

VNMG EUX		Rake Angle: 0°	Cutting Conditions:		Coated				Cermet				Uncoated			
					Continuous Cut	●	●									
					Medium Cut	●	●									
					Interrupted Cut	●	●									
					AC3000	▲	●									
					AC810P	●	●									
					AC820P	●	●									
					AC830P	●	●									
					AC700G	●	●									
					YB100	●	●									
					AC410K	●	●									
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1											
VNMG 331 EUX	VNMG 160404N-UX			.0156												
VNMG 332 EUX	VNMG 160408N-UX	.375	.1875	.0313	.150	●	●									
VNMG 333 EUX	VNMG 160412N-UX			.0469		●	●									

VNGG ESU		Rake Angle: 13°	Cutting Conditions:		Coated				Cermet				Uncoated			
					Continuous Cut				●							
					Medium Cut	●			●	●						
					Interrupted Cut	●			●	●						
					AC520U	●										
					T2000Z	●										
					T3000Z	●										
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1											
VNGG 330 ESU	VNGG 160401N-SU			.0039												
VNGG 330.5 ESU	VNGG 160402N-SU			.0078												
VNGG 331 ESU	VNGG 160404N-SU	.375	.1875	.0156	.150	●										
VNGG 332 ESU	VNGG 160408N-SU			.0313		●										



35° DIAMOND TYPE

NEGATIVE INSERT

Indexable Inserts for Turning

VN














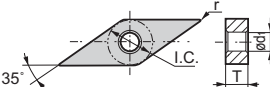
35° Diamond Type

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
- New Product Arriving January 2013

VNMA		No Breaker		Cutting Conditions:						Coated						Uncoated							
				Continuous Cut																			
				Medium Cut																			
				Interrupted Cut																			
																							
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1	AC700G	AC405K	AC410K	AC415K	AC420K											
VNMA 331		VNMA 160404				.0156		★	●	★	●	●											
VNMA 332		VNMA 160408		.375	.1875	.0313	.150	●	●	●	●	●											
VNMA 333		VNMA 160412				.0469		●	●	●	●	●											



WN


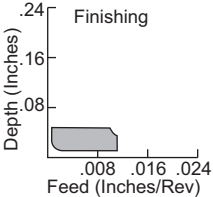
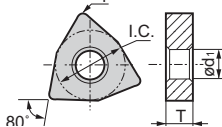
Trigon Type


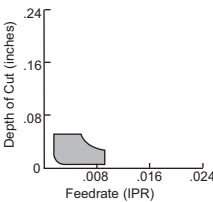
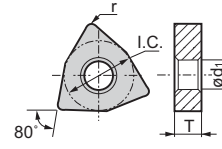
Negative


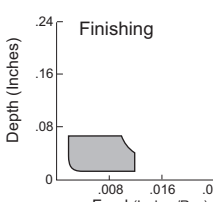
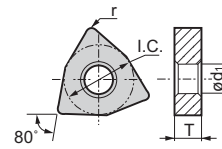
With Insert Hole

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
- New Product Arriving January 2013

WNMG EFA		Cutting Conditions:					Coated	Cermet			Uncoated		
Rake Angle: 20°													
		Continuous Cut						●	●				
		Medium Cut						●	●	●			
		Interrupted Cut						●	●				
  								T2000Z	T3000Z	T1200A			
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1								
WNMG 430.5 EFA	WNMG 080402N-FA			.0078									
WNMG 431 EFA	WNMG 080404N-FA	.500	.1875	.0156	.2031								
WNMG 432 EFA	WNMG 080408N-FA			.0313									

WNMG EFL		Cutting Conditions:					Coated	Cermet			Uncoated		
Rake Angle: 10°													
		Continuous Cut					●	●	●	●			
		Medium Cut					●	●	●	●			
		Interrupted Cut					●	●	●				
  							AC2000	AC810P	AC820P	YB100	T2000Z	T3000Z	
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1								
WNMG 431 EFL	WNMG 080404N-FL	.500	.1875	.0156	.2031								
WNMG 432 EFL	WNMG 080408N-FL			.0313									

WNMG ESP		Cutting Conditions:					Coated	Cermet			Uncoated		
Rake Angle: 13°													
		Continuous Cut						●					
		Medium Cut						●					
		Interrupted Cut						●					
  								T1200A					
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1								
WNMG 431 ESP	WNMG 080404N-SP	.500	.1875	.0156	.2031								
WNMG 432 ESP	WNMG 080408N-SP			.0313									



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
 ○ New Product Arriving January 2013

WNMG ESU

Rake Angle: 13°



Cutting Conditions:

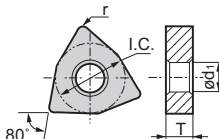
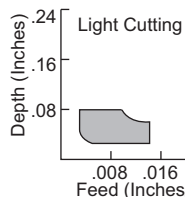
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Cermet



	AC2000	AC3000	AC810P	AC820P	AC830P	AC700G	YB100	AC630M	AC530U	AC510U	AC520U	T2000Z	T3000Z	T1200A
Continuous Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Medium Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Interrupted Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
WNMG 331 ESU	WNMG 060404N-SU	.375		.0156	.150
WNMG 332 ESU	WNMG 060408N-SU		.1875	.0313	
WNMG 431 ESU	WNMG 080404N-SU			.0156	
WNMG 432 ESU	WNMG 080408N-SU	.500		.0313	.2031
WNMG 433 ESU	WNMG 080412N-SU			.0469	

WNMG ESE

Rake Angle: 13°



Cutting Conditions:

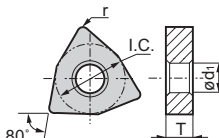
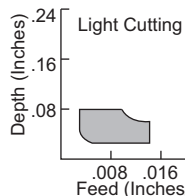
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Cermet



	AC810P	AC820P	AC830P											
Continuous Cut	●	●	●											
Medium Cut	●	●	●											
Interrupted Cut	●	●	●											

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
WNMG 431 ESE	WNMG 080404N-SE			.0156	
WNMG 432 ESE	WNMG 080408N-SE	.500	.1875	.0313	.2031
WNMG 433 ESE	WNMG 080412N-SE			.0469	

WNMG ESEW

Wiper Insert

Rake Angle: 13°



Cutting Conditions:

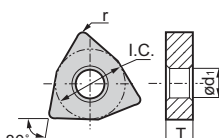
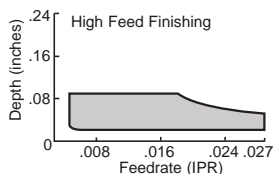
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Cermet



	AC810P	AC820P												
Continuous Cut	●	●												
Medium Cut	●	●												
Interrupted Cut	●	●												

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
WNMG 432 ESEW	WNMG 080408N-SEW		.1875	.0313	
WNMG 433 ESEW	WNMG 080412N-SEW	.500		.0469	.2031



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
- New Product Arriving January 2013

WNMG ELU		Rake Angle: 10°		Cutting Conditions:		Coated		Cermet		Uncoated	
				Continuous Cut		●	●	●	●		
				Medium Cut		●	●	●	●		
				Interrupted Cut		●	●	●	●		
						AC2000	AC810P	AC820P	AC830P	AC700G	T2000Z
Sumitomo Catalog #		ISO Catalog #		I.C.		T		r		ød1	
WNMG 431 ELU		WNMG 080404N-LU									
WNMG 432 ELU		WNMG 080408N-LU		.500		.1875		.0156		.2031	
WNMG 433 ELU		WNMG 080412N-LU						.0313		.0469	

WNMG ELUW Wiper Insert		Rake Angle: 10°		Cutting Conditions:		Coated		Cermet		Uncoated	
				Continuous Cut		●	●	●	●		
				Medium Cut		●	●	●	●		
				Interrupted Cut		●	●	●	●		
						AC2000	AC810P	AC820P	AC700G	YB100	AC630M
Sumitomo Catalog #		ISO Catalog #		I.C.		T		r		ød1	
WNMG 331 ELUW		WNMG 060404N-LUW									
WNMG 332 ELUW		WNMG 060408N-LUW		.375		.1875		.0156		.150	
WNMG 431 ELUW		WNMG 080404N-LUW						.0313			
WNMG 432 ELUW		WNMG 080408N-LUW		.500				.0156		.2031	
WNMG 433 ELUW		WNMG 080412N-LUW						.0313		.0469	

WNMG ENK		Rake Angle: 10°		Cutting Conditions:		Coated		Cermet		Uncoated	
				Continuous Cut		●					
				Medium Cut		●					
				Interrupted Cut		●					
						AC820P					
Sumitomo Catalog #		ISO Catalog #		I.C.		T		r		ød1	
WNMG 431 ENK		WNMG 080404N-SK									
WNMG 432 ENK		WNMG 080408N-SK		.500		.1875		.0156		.2031	

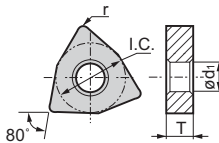
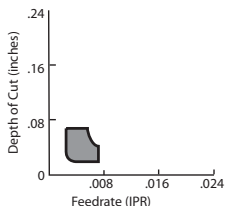


- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- New Product Arriving January 2013

With Insert Hole

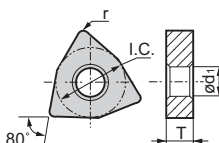
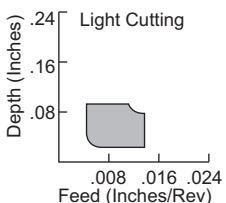
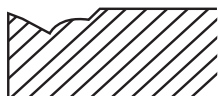
Rake Angle: °

NEW EEF



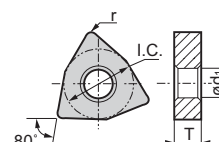
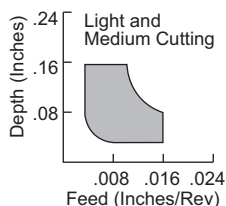
Cutting Conditions:				Coated			Cermet			Uncoated		
Continuous Cut												
Medium Cut												
Interrupted Cut												
				AC630M	AC510U	AC520U				EH510	EH520	
I.C.	T	r	ød1									
.375	.1875	.0156	.150									
		.0313										
		.0156										
.500		.0313	.2031									
		.0469										

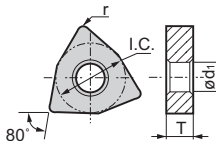
Rake Angle: 3°



Cutting Conditions:				Coated					Cermet			Uncoated				
Continuous Cut																
Medium Cut																
Interrupted Cut																
				AC2000	AC810P	AC820P	AC830P	AC700G		T2000Z	T3000Z	T1200A				
I.C.	T	r	ød1													
.500	.1875	.0156 .0313 .0469	.2031													

Rake Angle: 10°



Cutting Conditions:				Coated										Uncoated		
Continuous Cut				●		●	●	●								
Medium Cut				●	●	●	●	●	●						●	
Interrupted Cut				●	●	●	●		●							
																
				AC820P	AC830P	AC530U	AC630M	AC510U	AC520U							
I.C.	T	r	ød1													
.500	.1875	.0313 .0469	.2031	●	●	★	●	●	●						●	

WN


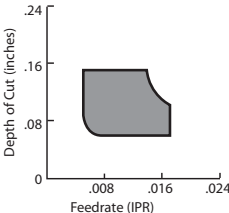
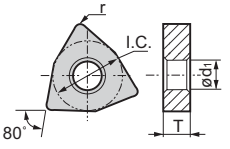
Trigon Type


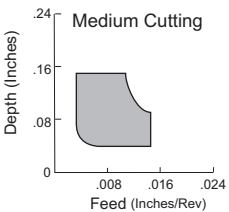
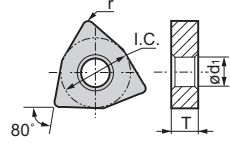
Negative


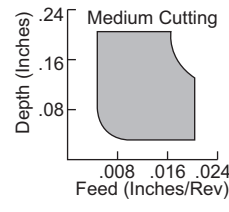
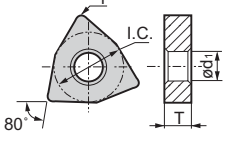
With Insert Hole

- 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
- New Product Arriving January 2013

WNMG		Rake Angle: °		Cutting Conditions:		Coated			Cermet			Uncoated		
NEW EEG														
  														
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1									
WNMG 331 EEG	WNMG 060404N-EG	.375		.0156	.150	●	●	●				●	●	
WNMG 332 EEG	WNMG 060408N-EG			.0313		●	●	●				●	●	
WNMG 431 EEG	WNMG 080404N-EG		.1875	.0156		●	●	●				●	●	
WNMG 432 EEG	WNMG 080408N-EG	.500		.0313	.2031	●	●	●				●	●	
WNMG 433 EEG	WNMG 080412N-EG			.0469		●	●	●				●	●	

WNMG		Rake Angle: 16°		Cutting Conditions:		Coated			Cermet			Uncoated		
EEX														
  														
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1									
WNMG 331 EEX	WNMG 060404N-EX	.375		.0156	.150	●	●	●				●	●	
WNMG 332 EEX	WNMG 060408N-EX			.0313		●	●	●				●	●	
WNMG 431 EEX	WNMG 080404N-EX		.1875	.0156		●	●	●				●	●	
WNMG 432 EEX	WNMG 080408N-EX	.500		.0313	.2031	●	●	●				●	●	
WNMG 433 EEX	WNMG 080412N-EX			.0469		●	●	●				●	●	

WNMG		Rake Angle: 7°		Cutting Conditions:		Coated			Cermet			Uncoated		
EGU														
  														
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1									
WNMG 332 EGU	WNMG 060408N-GU	.375		.0313	.150	●	●	●				●	●	
WNMG 333 EGU	WNMG 060412N-GU			.0469		●	●	●				●	●	
WNMG 431 EGU	WNMG 080404N-GU		.1875	.0156		●	●	●				●	●	
WNMG 432 EGU	WNMG 080408N-GU	.500		.0313	.2031	●	●	●				●	●	
WNMG 433 EGU	WNMG 080412N-GU			.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
- New Product Arriving January 2013

WNMG ENG		Rake Angle: 4°		Cutting Conditions:		Coated				Cermet			
						Continuous Cut		●	●	●			
						Medium Cut		●	●	●	●		
						Interrupted Cut		●	●	●	●		
								AC2000	AC3000	AC820P	AC830P	AC700G	
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1								
WNMG 431 ENG	WNMG 080404N-UG			.0156		▲	▲	●	●	●			
WNMG 432 ENG	WNMG 080408N-UG	.500	.1875	.0313	.2031	▲	▲	●	●	●			
WNMG 433 ENG	WNMG 080412N-UG			.0469				●	●	●			
WNMG 543 ENG	WNMG 160612N-UG	.625	.250	.0469	.250			●	●	●			

WNMG ENZ		Rake Angle: 4°		Cutting Conditions:		Coated				Uncoated			
						Continuous Cut		●	●	●	●		
						Medium Cut		●	●	●	●	●	
						Interrupted Cut		●	●	●	●	●	
								AC3000	AC820P	AC830P	AC700G	AC405K	AC410K
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1								
WNMG 431 ENZ	WNMG 080412N-UZ			.0156				●	●	●	●	●	●
WNMG 432 ENZ	WNMG 080408N-UZ	.500	.1875	.0313	.2031			●	●	●	●	●	●
WNMG 433 ENZ	WNMG 080412N-UZ			.0469		▲		●	●	●	●	●	●
												G10E	

WNMG EMU		Rake Angle: 4°		Cutting Conditions:		Coated				Uncoated			
						Continuous Cut		●	●	●	●	●	
						Medium Cut		●	●	●	●	●	●
						Interrupted Cut		●	●	●	●	●	●
								AC2000	AC3000	AC810P	AC820P	AC830P	AC700G
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1								
WNMG 332 EMU	WNMG 060408N-MU	.375	.1875	.0313	.150	▲	▲	●	●	●	●	●	●
WNMG 333 EMU	WNMG 060412N-MU			.0469				●	●	●	●	●	●
WNMG 432 EMU	WNMG 080408N-MU	.500		.0313	.2031	▲	▲	●	●	●	●	●	●
WNMG 433 EMU	WNMG 080412N-MU			.0469		▲	▲	●	●	●	●	●	●
WNMG 543 EMU	WNMG 160612N-MU	.625	.250	.0469	.250	▲	▲	●	●	●	●	●	●



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
 ○ New Product Arriving January 2013

WNMG

NEW EME

Rake Angle: 3°



Cutting Conditions:

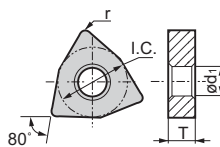
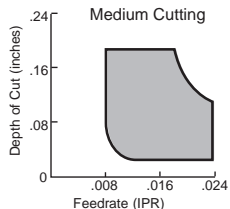
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated



AC810P
 AC820P
 AC830P

Sumitomo Catalog #

ISO Catalog #

I.C.

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WNMG 332 EME	WNMG 060408N-ME	.375		.0313	.150
WNMG 333 EME	WNMG 060412N-ME			.0469	
WNMG 432 EME	WNMG 080408N-ME		.1875	.0313	
WNMG 433 EME	WNMG 080412N-ME	.500		.0469	.2031
WNMG 434 EME	WNMG 080416N-ME			.0625	

WNMG

EMX

Rake Angle: -15°



Cutting Conditions:

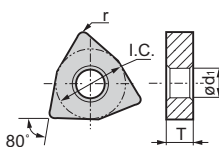
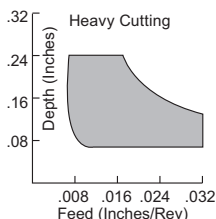
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated



AC820P
 AC830P

Sumitomo Catalog #

ISO Catalog #

I.C.

T

r

ød1

WNMG 432 EMX	WNMG 080408N-MX	.500	.1875	.0313	.2031
WNMG 433 EMX	WNMG 080412N-MX			.0469	

WNMG

NEW EGZ

Rake Angle: 0°



Cutting Conditions:

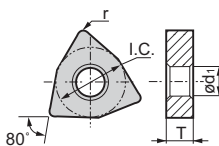
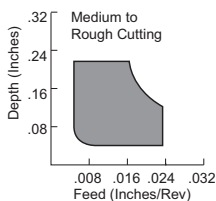
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Uncoated



AC405K
 AC410K
 AC415K
 AC420K

Sumitomo Catalog #

ISO Catalog #

I.C.

T

r

ød1

WNMG 332 EGZ	WNMG 060408N-GZ	.375		.0313	.150
WNMG 333 EGZ	WNMG 060412N-GZ			.0469	
WNMG 431 EGZ	WNMG 080404N-GZ		.1875	.0156	
WNMG 432 EGZ	WNMG 080408N-GZ	.500		.0313	.2031
WNMG 433 EGZ	WNMG 080412N-GZ			.0469	



WN

Trigon Type

















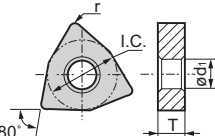
























Negative

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
- New Product Arriving January 2013

WNGG ESU		Rake Angle: 13°		Cutting Conditions:						Coated			Cermet		Uncoated				
		Continuous Cut																	
		Medium Cut																	
		Interrupted Cut																	
								AC520U				T2000Z	T3000Z						
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1												
WNGG 431 ESU		WNGG 080404N-SU		.500	.1875	.0156	.2031												

WNMA		No Breaker		Cutting Conditions:						Coated						Uncoated																																											
				Continuous Cut																																																							
				Medium Cut																																																							
				Interrupted Cut																																																							
																																																											
Sumitomo Catalog #		ISO Catalog #		I.C.		T		r		ød1		AC700G						YB100						AC405K						AC410K						AC415K						AC420K																	
WNMA 432		WNMA 080408		.500		.1875		.0313		.2031																																																	
WNMA 433		WNMA 080412						.0469																																																			
WNMA 434		WNMA 080416						.0625																																																			



80° DIAMOND TYPE

POSITIVE INSERT

Indexable Inserts for Turning

CC

80° Diamond Type

7° Relief

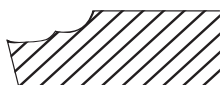
With Insert Hole

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 2013

CCMT
EFP

Rake Angle: 10°



Cutting Conditions:

Continuous Cut

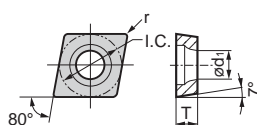
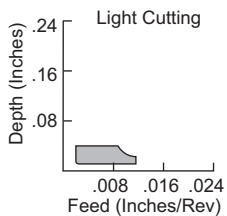
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



T2000Z
 T1200A

Sumitomo Catalog #

ISO Catalog #

I.C.

T

r

ød1

CCMT 21.51 EFP

CCMT 060204N-FP

.250

.094

.0156

.110

CCMT 32.51 EFP

CCMT 09T304N-FP

.375

.156

.0156

.1732

CCMT 32.52 EFP

CCMT 09T308N-FP

.375

.156

.0313

.1732

CCMT
EFM

Rake Angle: 6°



Cutting Conditions:

Continuous Cut

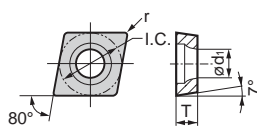
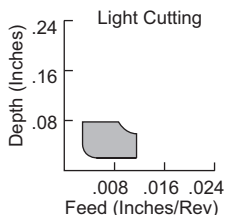
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



AC820P

Sumitomo Catalog #

ISO Catalog #

I.C.

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r

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CCMT 21.51 EFM

CCMT 060204N-SC

.250

.094

.0156

.110

CCMT 32.51 EFM

CCMT 060308N-SC

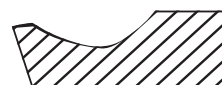
.375

.125

.0313

.1732

CCMT
ESJ



Cutting Conditions:

Continuous Cut

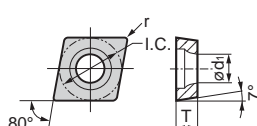
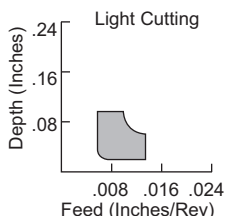
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



T1200A

Sumitomo Catalog #

ISO Catalog #

I.C.

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CCMT 21.51 ESJ

CCMT 060204N-SJ

.250

.094

.0156

.110

CCMT 32.51 ESJ

CCMT 09T304N-SJ

.375

.156

.0156

.1732



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 2013

CCMT ENK		Rake Angle: 8°		Cutting Conditions:		Coated					Cermet			Uncoated		
																
											</					

CC

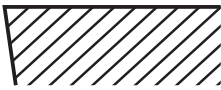
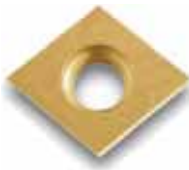
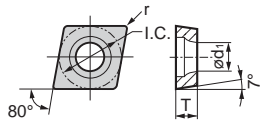
80° Diamond Type



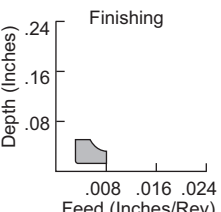
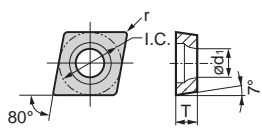
7° Relief

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 2013

CCMA		Rake Angle: 0°	Cutting Conditions:		Coated										Cermet		Uncoated	
					Continuous Cut	●	●	●	●									
					Medium Cut	●	●	●	●									
					Interrupted Cut	●			●									
						AC700G	AC405K	AC410K	AC415K	AC420K								
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1													
CCMA 21.51	CCMA 060204	.250	.094	.0156	.110	●	●	●	●	●								
CCMA 32.51	CCMA 09T304	.375	.156	.0156	.1732	●	●	●	●	●								
CCMA 32.52	CCMA 09T308			.0313		●	●	●	●	●								

CCGT FX		Rake Angle: 15°	Cutting Conditions:		Coated		Cermet		Uncoated									
					Continuous Cut	●	○	●	●									
					Medium Cut	●	○	●	●									
					Interrupted Cut	●		●										
						AC530U	ACZ310	T2000Z	T1200A									
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1													
CCGT 21.5.001 RFX	CCGT 0602003R-FX			.0012		★	▲											
CCGT 21.5.001 LFX	CCGT 0602003L-FX			.0012		★			●									
CCGT 21.50 RFX	CCGT 060201R-FX			.0039		★												
CCGT 21.50 LFX	CCGT 060201L-FX			.0039		★	▲											
CCGT 21.50.5 RFX	CCGT 060202R-FX	.250	.094	.0078	.110	★			●									
CCGT 21.50.5 LFX	CCGT 060202L-FX			.0078		●			●									
CCGT 21.51 RFX	CCGT 060204R-FX			.0156		★												
CCGT 21.51 LFX	CCGT 060204L-FX			.0156		★	▲		●									
CCGT 32.5.001 RFX	CCGT 09T3003R-FX			.0012		★	▲		●									
CCGT 32.5.001 LFX	CCGT 09T3003L-FX			.0012		★			▲									
CCGT 32.50 RFX	CCGT 09T301R-FX			.0039		★	▲		●									
CCGT 32.50 LFX	CCGT 09T301L-FX			.0039		★	▲		●									
CCGT 32.50.5 RFX	CCGT 09T302R-FX	.375	.156	.0078	.1732	★	▲		●									
CCGT 32.50.5 LFX	CCGT 09T302L-FX			.0078		★	▲		●									
CCGT 32.51 RFX	CCGT 09T304R-FX			.0156		★	▲											
CCGT 32.51 LFX	CCGT 09T304L-FX			.0156		★												



80° DIAMOND TYPE

POSITIVE INSERT

Indexable Inserts for Turning

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 2013

CCGT

FZ

Rake Angle: 27°



Cutting Conditions:

Continuous Cut

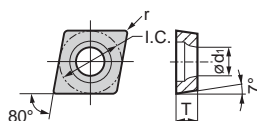
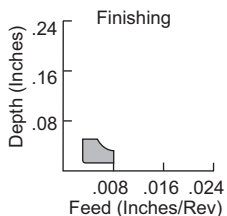
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



ACZ310

Sumitomo Catalog #

ISO Catalog #

I.C.

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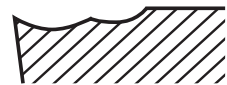
ACZ310

CCGT 21.5.001 RFZ	CCGT 0602003R-FZ			.0012		▲														
CCGT 21.5.001 LFZ	CCGT 0602003L-FZ			.0012		▲														
CCGT 21.50 RFZ	CCGT 060201R-FZ			.0039		▲														
CCGT 21.50 LFZ	CCGT 060201L-FZ			.0039		▲														
CCGT 21.50.5 RFZ	CCGT 060202R-FZ			.0078		▲														
CCGT 21.50.5 LFZ	CCGT 060202L-FZ			.0078		▲														
CCGT 32.5.001 RFZ	CCGT 09T3003R-FZ			.0012		▲														
CCGT 32.5.001 LFZ	CCGT 09T3003L-FZ			.0012		▲														
CCGT 32.50 RFZ	CCGT 09T301R-FZ			.0039		▲														
CCGT 32.50 LFZ	CCGT 09T301L-FZ			.0039		▲														
CCGT 32.50.5 RFZ	CCGT 09T302R-FZ			.0078		▲														
CCGT 32.50.5 LFZ	CCGT 09T302L-FZ			.0078		▲														
CCGT 32.51 RFZ	CCGT 09T304R-FZ			.0156		▲														
CCGT 32.51 LFZ	CCGT 09T304L-FZ			.0313		▲														

CCGT

EFM

Rake Angle: 6°



Cutting Conditions:

Continuous Cut

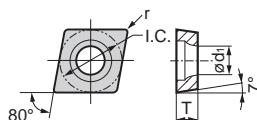
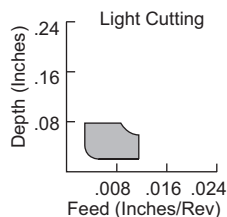
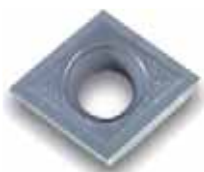
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



AC530U

ACZ310

T2000Z

T1200A

CCGT 21.5.001 EFM	CCGT 0602003N-SC			.0012		★														
CCGT 21.50 EFM	CCGT 060201N-SC			.0039		★														
CCGT 21.50.5 EFM	CCGT 060202N-SC			.0078		★														
CCGT 2.51.50 EFM	CCGT 080201N-SC			.0039		★	▲													
CCGT 2.51.50.5 EFM	CCGT 080202N-SC			.0078		★	▲													
CCGT 32.5.001 EFM	CCGT 09T3003N-SC			.0012		●	▲													
CCGT 32.50 EFM	CCGT 09T301N-SC			.0039		●	▲													
CCGT 32.50.5 EFM	CCGT 09T302N-SC			.0078		●	▲													
CCGT 32.51 EFM	CCGT 09T304N-SC			.0313		●	▲													



CC

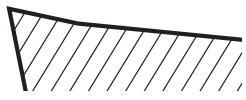



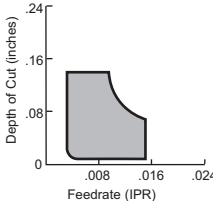
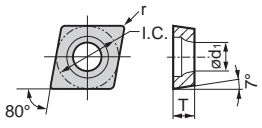
80° Diamond Type






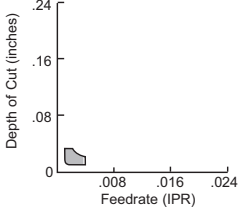
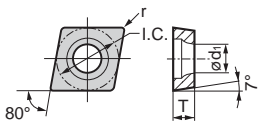
7° Relief














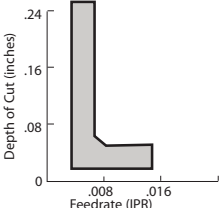
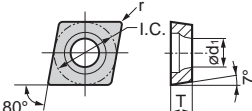


















With Insert Hole

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 2013

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														
CCGT 21.51 NAG	CCGT 060204N-AG	.250	.094	.0156	.110														
CCGT 32.51 NAG	CCGT 09T304N-AG	.375	.156	.0156	.1732														
CCGT 32.52 NAG	CCGT 09T308N-AG			.0078															

CCGT EFC		Rake Angle: 15°	Cutting Conditions:						Coated		Cermet		Uncoated			
			Continuous Cut													
			Medium Cut													
			Interrupted Cut													
						AC530U										
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1											
CCGT 21.50 EFC	CCGT 060201N-FC	.250	.094	.0039	.110											
CCGT 21.50.5 EFC	CCGT 060202N-FC			.0078												
CCGT 21.51 EFC	CCGT 060204N-FC			.0156												
CCGT 32.5.001 EFC	CCGT 09T3003N-FC	.375	.156	.0012	.1732											
CCGT 32.50 EFC	CCGT 09T301N-FC			.0039												
CCGT 32.50.5 EFC	CCGT 09T302N-FC			.0078												
CCGT 32.51 EFC	CCGT 09T304N-FC			.0156												

CCGT		Rake Angle: 15°	Cutting Conditions:						Coated		Cermet			Uncoated				
NEW ESI			Continuous Cut															
			Medium Cut															
			Interrupted Cut															
																		
Sumitomo Catalog #		ISO Catalog #	I.C.	T	r	ød1	AC530U	AC610M	AC630M	AC510U	AC520U							
CCGT 32.50M ESI		CCGT 09T3M01N-SI			.0039													
CCGT 32.50.5M ESI		CCGT 09T3M02N-SI	.375	.156	.0078	.1372												
CCGT 32.51M ESI		CCGT 09T3M04N-SI			.0156													

M = Negative tolerance



Positive
Inserts

C

D

R

S

T

V

W

Swiss
Tooling

CP

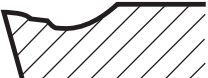













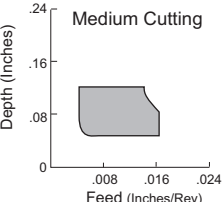
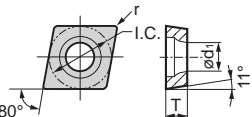

























80° Diamond Type

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 2013

CPMT 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	AC700G	AC410K	AC420K								
CPMT 2.51.51 EMU		CPMT 080204N-MU		.3125	.094	.0156	.134													
CPMT 2.51.52 EMU		CPMT 080208N-MU				.0313														
CPMT 321 EMU		CPMT 090304N-MU				.0156	.1732													
CPMT 322 EMU		CPMT 090308N-MU		.375	.125	.0313														

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 2013

DCMT EFP		Rake Angle: 10°	Cutting Conditions:						Coated	Cermet	Uncoated
			Continuous Cut							●	
			Medium Cut							●	
			Interrupted Cut							●	
		Light Cutting Depth (Inches) .24 .16 .08 Feed (Inches/Rev) .008 .016 .024								T1200A	
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1						
DCMT 21.50.5 EFP	DCMT 070202N-FP	.250	.094	.0078	.110						
DCMT 21.51 EFP	DCMT 070204N-FP			.0156							
DCMT 32.51 EFP	DCMT 11T304N-FP	.375	.156	.0156	.1732						
DCMT 32.52 EFP	DCMT 11T308N-FP			.0313							

DCMT ESJ		Rake Angle: 10°	Cutting Conditions:						Coated	Cermet	Uncoated
			Continuous Cut							●	
			Medium Cut							●	
			Interrupted Cut							●	
		Light Cutting Depth (Inches) .24 .16 .08 Feed (Inches/Rev) .008 .016 .024								T1200A	
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1						
DCMT 21.51 ESJ	DCMT 070204N-SJ	.250	.094	.0156	.110						
DCMT 32.51 ESJ	DCMT 11T304N-SJ			.0156							
DCMT 32.52 ESJ	DCMT 11T308N-SJ	.375	.156	.0313	.1732						

DCMT ENK		Rake Angle: 8°	Cutting Conditions:						Coated	Cermet	Uncoated
			Continuous Cut						●		
			Medium Cut						●		
			Interrupted Cut						●		
		Light Cutting Depth (Inches) .24 .16 .08 Feed (Inches/Rev) .008 .016 .024									
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC2000	AC3000	AC820P	AC830P		
DCMT 21.51 ENK	DCMT 070204N-SK	.250	.094	.0156	.110	▲	▲	●	●		
DCMT 32.51 ENK	DCMT 11T304N-SK			.0156		▲	●	●	●		
DCMT 32.52 ENK	DCMT 11T308N-SK	.375	.156	.0313	.1732	▲	●	●	●		



Positive Inserts

C

D

R

S

T

V

W

Swiss Tooling

55° DIAMOND TYPE

POSITIVE INSERT

Indexable Inserts for Turning

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 2013

DCMT ELU

Rake Angle: 12°



Cutting Conditions:

Continuous Cut

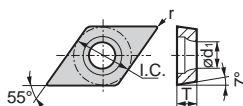
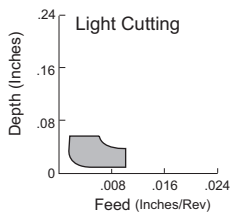
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



AC2000	AC810P	AC820P	AC700G	AC530U	AC630M	ACZ310	T2000Z	T3000Z
▲	●	●	●	★	●	▲	●	●
▲	●	●	●	●	●	▲	●	●
▲	●	●	●	●	●	▲	●	●
●	●	●	●	●	●	▲	●	●

Sumitomo Catalog #

ISO Catalog #

I.C.

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DCMT 21.50.5 ELU	DCMT 070202N-LU	.250	.094	.0078	.110
DCMT 21.51 ELU	DCMT 070204N-LU			.0156	
DCMT 32.50.5 ELU	DCMT 11T302N-LU			.0078	
DCMT 32.51 ELU	DCMT 11T304N-LU	.375	.156	.0156	.1732
DCMT 32.52 ELU	DCMT 11T308N-LU			.0313	

DCMT ESU

Rake Angle: 8°



Cutting Conditions:

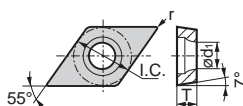
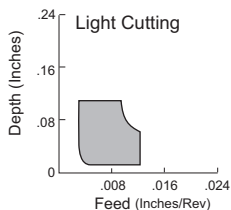
Continuous Cut

Medium Cut

Interrupted Cut

Coated

Cermet



AC2000	AC3000	AC810P	AC820P	AC830P	AC700G	AC530U	AC610M	AC630M	AC410K	AC415K	AC510U	AC520U	T2000Z	T3000Z	T1200A
▲	▲	●	●	●	●	●	●	●	●	●	●	●	●	●	●
▲	▲	●	●	●	●	●	●	●	●	●	●	●	●	●	●
▲	▲	●	●	●	●	●	●	●	●	●	●	●	●	●	●
▲	▲	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Sumitomo Catalog #

ISO Catalog #

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DCMT 21.50.5 ESU	DCMT 070202N-SU	.250	.094	.0078	.110
DCMT 21.51 ESU	DCMT 070204N-SU			.0156	
DCMT 21.52 ESU	DCMT 070208N-SU			.0313	
DCMT 32.50.5 ESU	DCMT 11T302N-SU			.0078	
DCMT 32.51 ESU	DCMT 11T304N-SU	.375	.156	.0156	.1732
DCMT 32.52 ESU	DCMT 11T308N-SU			.0313	



DC


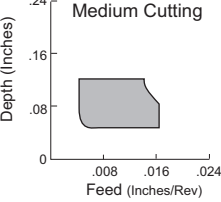
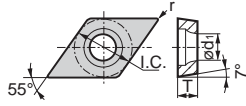
55° Diamond Type













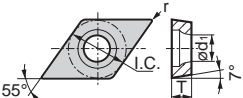

























7° Relief

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 2013

DCMT EMU		Rake Angle: 0°		Cutting Conditions:		Coated								Cermet		Uncoated	
				Continuous Cut		●	●	●	●	●	●	●	●				
				Medium Cut		●	●	●	●	●	●	●	●				
				Interrupted Cut		●	●	●	●	●	●	●	●				
 <div style="display: flex; justify-content: space-around;"> <div> <p>Medium Cutting</p>  </div> <div>  </div> </div>						AC3000	AC810P	AC820P	AC830P	AC700G	AC405K	AC410K	AC415K	AC420K			
		Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1										
		DCMT 32.51 EMU	DCMT 11T304N-MU	.375	.156	.0156	.1732	▲	●	●	●	●	●	●			
		DCMT 32.52 EMU	DCMT 11T308N-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									
DCMA 21.51	DCMA 070204	.250	.094	.0156	.110														
DCMA 21.52	DCMA 070208			.0313															
DCMA 32.51	DCMA 11T304	.375	.156	.0156	.1732														
DCMA 32.52	DCMA 11T308			.0313															



55° DIAMOND TYPE

POSITIVE INSERT

Indexable Inserts for Turning

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 2013

DCGT FX

Rake Angle: 15°



Cutting Conditions:

Continuous Cut

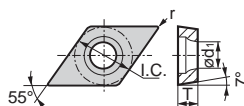
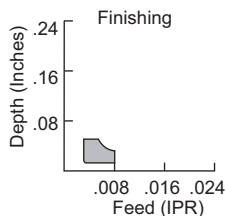
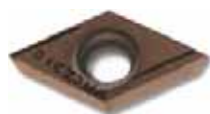
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



AC530U
ACZ310

T1200A

Sumitomo Catalog #

ISO Catalog #

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DCGT 21.5.001 RFX	DCGT 0702003R-FX			.0012		●	▲													
DCGT 21.5.001 LFX	DCGT 0702003L-FX			.0012		●	▲													
DCGT 21.50 RFX	DCGT 070201R-FX			.0039		★	▲													
DCGT 21.50 LFX	DCGT 070201L-FX			.0039		●	▲													
DCGT 21.50.5 RFX	DCGT 070202R-FX			.0078		●	▲													
DCGT 21.50.5 LFX	DCGT 070202L-FX			.0078		●	▲													
DCGT 32.5.001 RFX	DCGT 11T3003R-FX			.0012		●	▲													
DCGT 32.5.001 LFX	DCGT 11T3003L-FX			.0012		★	▲													
DCGT 32.50 RFX	DCGT 11T301R-FX			.0039		★	▲													
DCGT 32.50 LFX	DCGT 11T301L-FX			.0039		★	▲													
DCGT 32.50.5 RFX	DCGT 11T302R-FX			.0078		★	▲													
DCGT 32.50.5 LFX	DCGT 11T302L-FX			.0078		★	▲													

DCGT FY

Rake Angle: 15°



Cutting Conditions:

Continuous Cut

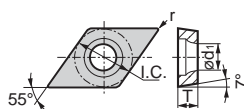
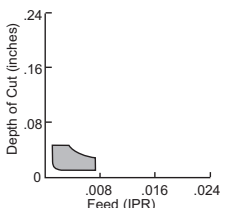
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



AC530U
ACZ310

Sumitomo Catalog #

ISO Catalog #

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DCGT 21.5.001 RFY	DCGT 0702003R-FY			.0012		●	▲													
DCGT 21.5.001 LFY	DCGT 0702003L-FY			.0012		●	▲													
DCGT 21.50 RFY	DCGT 070201R-FY			.0039		●	▲													
DCGT 21.50.5 LFY	DCGT 070202L-FY			.0078		●	▲													
DCGT 21.51 RFY	DCGT 070204L-FY			.0156		★	▲													
DCGT 21.51 LFY	DCGT 070204L-FY			.0156		★	▲													
DCGT 32.5.001 RFY	DCGT 11T3003R-FY			.0012		●	▲													
DCGT 32.5.001 LFY	DCGT 11T3003L-FY			.0012		●	▲													
DCGT 32.50 LFY	DCGT 11T301L-FY			.0039		●	▲													
DCGT 32.50.5 RFY	DCGT 11T302R-FY			.0078		●	▲													
DCGT 32.51 LFY	DCGT 11T304L-FY			.0156		★	▲													



DC

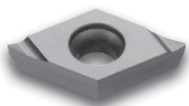
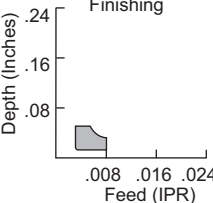
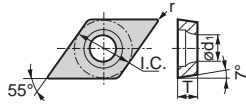
55° Diamond Type


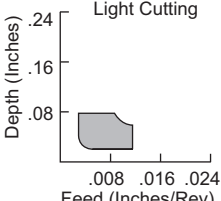
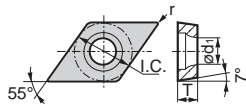
7° Relief

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 2013

DCGT W		Cutting Conditions:					Coated	Cermet			Uncoated		
Rake Angle: 10°													
		Continuous Cut											
		Medium Cut											
		Interrupted Cut											
 <div style="display: flex; justify-content: space-around;"> <div> <p>Finishing</p>  <p>Depth (Inches)</p> <p>Feed (IPR)</p> </div> <div>  </div> </div>													
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1								
DCGT 21.50.5 R	DCGT 070202R-W	.250	.094	.0078	.110								
DCGT 21.50.5 L	DCGT 070202L-W			.0078									
DCGT 21.51 R	DCGT 070204R-W			.0156									
DCGT 21.51 L	DCGT 070204L-W			.0156									
DCGT 32.51 R	DCGT 11T304R-W			.0156									
DCGT 32.51 L	DCGT 11T304L-W	.375	.156	.0156	.1732								
DCGT 32.52 R	DCGT 11T308R-W			.0313									
DCGT 32.52 L	DCGT 11T308L-W			.0313									

DCGT EFM		Cutting Conditions:					Coated	Cermet			Uncoated		
Rake Angle: 6°													
		Continuous Cut											
		Medium Cut											
		Interrupted Cut											
 <div style="display: flex; justify-content: space-around;"> <div> <p>Light Cutting</p>  <p>Depth (Inches)</p> <p>Feed (Inches/Rev)</p> </div> <div>  </div> </div>													
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1								
DCGT 21.5.001 EFM	DCGT 0702003N-SC	.250	.094	.0012	.110								
DCGT 21.50 EFM	DCGT 070201N-SC			.0039									
DCGT 21.50.5 EFM	DCGT 070202N-SC			.0078									
DCGT 21.51 EFM	DCGT 070204N-SC			.0156									
DCGT 21.52 EFM	DCGT 070208N-SC			.0313									
DCGT 2.51.50 EFM	DCGT 090201N-SC	.3125		.0039	.134								
DCGT 2.51.50.5 EFM	DCGT 090202N-SC			.0078									
DCGT 32.5.001 EFM	DCGT 11T3003N-SC			.0012									
DCGT 32.50 EFM	DCGT 11T301N-SC	.375	.156	.0039	.1732								
DCGT 32.50.5 EFM	DCGT 11T302N-SC			.0078									
DCGT 32.51 EFM	DCGT 11T304N-SC			.0156									
DCGT 32.52 EFM	DCGT 11T308N-SC			.0313									



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 2013

DCGT		Rake Angle: 15°		Cutting Conditions:		Coated		Cermet		Uncoated	
NEW ESI				Continuous Cut							
				Medium Cut							
				Interrupted Cut							
						AC530U					
						AC610M					
						AC630M					
						AC510U					
						AC520U					
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1						
DCGT 21.50M ESI	DCGT 0702M01N-SI	.250	.094	.0039	.110	●	○	○	○	○	○
DCGT 21.50.5M ESI	DCGT 0702M02N-SI			.0078		●	○	○	○	○	○
DCGT 21.51M ESI	DCGT 0702M04N-SI			.0156		●	○	○	○	○	○
DCGT 32.50M ESI	DCGT 11T3M01N-SI	.375	.156	.0039		●	●	●	●	●	●
DCGT 32.50.5M ESI	DCGT 11T3M02N-SI			.0078		●	●	●	●	●	●
DCGT 32.51M ESI	DCGT 11T3M04N-SI			.0156		●	●	●	●	●	●
DCGT 32.52M ESI	DCGT 11T3M08N-SI			.0313		○	○	○	○	○	○

Positive Inserts

C

D

R

S

T

V

W

Swiss Tooling



SC





















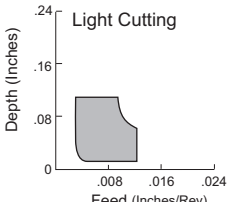
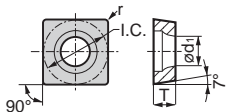
90° Square Type

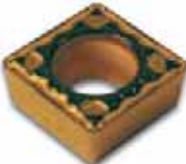



















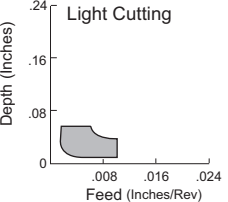
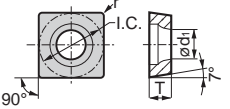














7° Relief
















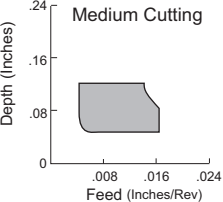
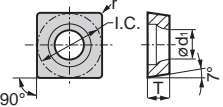
With Insert Hole

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 2013

SCMT ESU		Rake Angle: 8° 	Cutting Conditions:						Coated						Cermet	Uncoated							
			Continuous Cut																				
			Medium Cut																				
			Interrupted Cut																				
			 <p>Light Cutting</p>																				
Sumitomo Catalog #			ISO Catalog #			I.C.	T	r	ød1	AC3000	AC810P	AC820P	AC830P	AC700G	AC610M	AC630M				T2000Z			
SCMT 32.51 ESU			SCMT 09T304N-SU			.375	.156	.0156	.1732	▲	●	●	●	●	▲	●				●			
SCMT 32.52 ESU			SCMT 09T308N-SU					.0313			●	●	●	●	●	●							
SCMT 431 ESU			SCMT 120404N-SU			.500	.1875	.0156	.2165	▲		●	●										
SCMT 432 ESU			SCMT 120408N-SU					.0313				●	★										

SCMT ELU		Rake Angle: 12°		Cutting Conditions:		Coated						Cermet	Uncoated							
				Continuous Cut																
				Medium Cut																
				Interrupted Cut																
																				
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1	AC2000	AC810P	AC820P	AC700G	AC630M					T2000Z	T3000Z		
SCMT 32.51 ELU		SCMT 09T304N-LU		.375	.156	.0156	.1732													
SCMT 32.52 ELU		SCMT 09T308N-LU				.0313														

SCMT EMU		Rake Angle: 0°	Cutting Conditions:					Coated						Cermet		Uncoated				
			Continuous Cut																	
			Medium Cut																	
			Interrupted Cut																	
			<p>Medium Cutting</p> 																	
Sumitomo Catalog #			ISO Catalog #			I.C.	T	r	ød1	AC810P	AC820P	AC700G	AC405K	AC415K	AC420K					
SCMT 32.52 EMU			SCMT 09T308N-MU			.375	.156	.0313	.1732	★	●	★	★	★	●					
SCMT 432 EMU			SCMT 120408N-MU			.500	.1875	.0313	.2165	★	★	★	★	★	●					



90° SQUARE TYPE

POSITIVE INSERT

Indexable Inserts for Turning

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 2013

SCMA

No Breaker



Cutting Conditions:

Continuous Cut

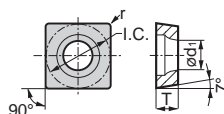
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



AC700G
AC420K

Sumitomo Catalog #

ISO Catalog #

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SCMA 32.52

SCMA 09T308

.375

.156

.0313

.1732

SCMA 432

SCMA 120408

.500

.1875

.0313

.2165

SCMA 433

SCMA 120412

.500

.1875

.0469

.2165

SCGT

Rake Angle: 15°



FX

Cutting Conditions:

Continuous Cut

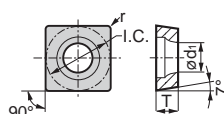
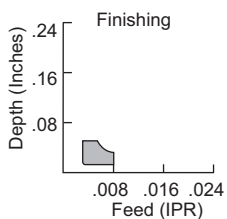
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



AC530U
ACZ310

Sumitomo Catalog #

ISO Catalog #

I.C.

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SCGT 32.50.5 RFX

SCGT 09T302R-FX

.375

.156

.0078

.1732

SCGT 32.50.5 LFX

SCGT 09T302L-FX

.375

.156

.0078

.1732

SCGT 32.51 RFX

SCGT 09T304R-FX

.375

.156

.0156

.1732

SCGT 32.51 LFX

SCGT 09T304L-FX

.375

.156

.0156

.1732

SCGT

Rake Angle: 6°



EFM

Cutting Conditions:

Continuous Cut

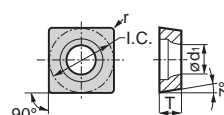
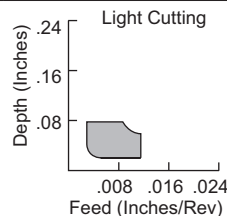
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



AC530U
ACZ310

T1200A

Sumitomo Catalog #

ISO Catalog #

I.C.

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SCGT 2.51.50 EFM

SCGT 070201N-SC

.3125

.094

.0039

.134

SCGT 2.51.50.5 EFM

SCGT 070202N-SC

.3125

.094

.0078

.134

SCGT 32.50 EFM

SCGT 09T301N-SC

.375

.156

.0039

.1732

SCGT 32.50.5 EFM

SCGT 09T302N-SC

.375

.156

.0078

.1732



SP

90° Square Type








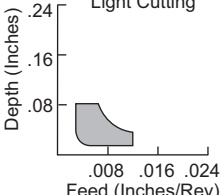
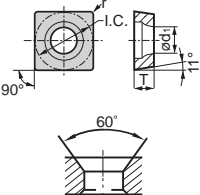






11° Relief

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
- New Product Arriving January 2013

SPMT ENS		Rake Angle: 10°	Cutting Conditions:					Coated	Cermet			Uncoated							
			Continuous Cut																
			Medium Cut																
			Interrupted Cut																
								AC2000	AC630M					A30					
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1												
SPMT 21.51 ENS		SPMT 060204N-US		.250	.094	.0156	.1102												
SPMT 2.522 ENS		SPMT 070308N-US		.3125	.125	.0313	.134												
SPMT 322 ENS		SPMT 090308N-US		.375	.125	.0313	.130												
SPMT 432 ENS		SPMT 120408N-US		.500	.1875	.0313	.2165												

SPMT EFK		Rake Angle: 0° 		Cutting Conditions:			Coated			Cermet			Uncoated								
				Continuous Cut																	
				Medium Cut																	
				Interrupted Cut																	
		<p>Light Cutting</p> 																			
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1	T2000Z			T1200A										
SPMT 321 EFK		SPMT 090304N-FK		.375	.125	.0156	.130														
SPMT 322 EFK		SPMT 090308N-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	AC2000	AC810P	AC820P	AC700G	AC630M						Z3000		
SPMT 321 ELU		SPMT 090304N-LU		.375	.125	.0156	.130													
SPMT 322 ELU		SPMT 090308N-LU				.0313														



90° SQUARE TYPE

POSITIVE INSERT

Indexable Inserts for Turning

SP

90° Square Type

11° Relief

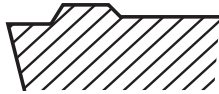
Without Insert Hole

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
- New Product Arriving January 2013

SPMR EFK

Rake Angle: 0°



Cutting Conditions:

Continuous Cut

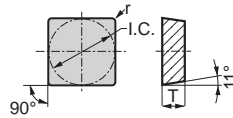
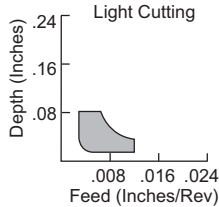
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	Coated	Cermet	Uncoated
SPMR 321 EFK	SPMR 090304N-FK	.375		.0156			●	
SPMR 322 EFK	SPMR 090308N-FK			.0313			●	
SPMR 421 EFK	SPMR 120304N-FK		.125	.0156	-		●	
SPMR 422 EFK	SPMR 120308N-FK	.500		.0313			●	
SPMR 423 EFK	SPMR 120312N-FK			.0469			●	

SPMR ENF

Rake Angle: 0°



Cutting Conditions:

Continuous Cut

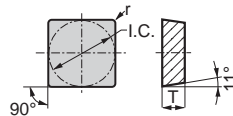
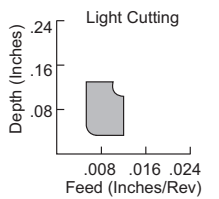
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	Coated	Cermet	Uncoated
SPMR 321 ENF	SPMR 090304N-SF	.375		.0156		▲	●	
SPMR 322 ENF	SPMR 090308N-SF			.0313		▲	●	
SPMR 421 ENF	SPMR 120304N-SF		.125	.0156	-	▲	●	
SPMR 422 ENF	SPMR 120308N-SF	.500		.0313		▲	●	
SPMR 423 ENF	SPMR 120312N-SF			.0469		▲	●	



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
- New Product Arriving January 2013

SPMN		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	AC415K	AC420K	T1200A	A30	G10E			
SPMN 321	SPMN 090304	.375		.0156		●	●	●	●	●	●	●	●			
SPMN 322	SPMN 090308			.0313		●	●	●	●	●	●	●	●			
SPMN 421	SPMN 120304		.125	.0156		●	★	●	●	●	●	●	●			
SPMN 422	SPMN 120308	.500		.0313		●		★	●	●	★	●	●			
SPMN 423	SPMN 120312			.0469		●			●	●	★	●	●			
SPMN 532	SPMN 150408	.625		.0313		●						●	●			
SPMN 533	SPMN 150412			.0469		●						●	●			
SPMN 631	SPMN 190404		.1875	.0156		●						●	●			
SPMN 632	SPMN 190408			.0313		●						●	●			
SPMN 633	SPMN 190412	.750		.0469		●						●	●			
SPMN 634	SPMN 190416			.0625		●						●	●			

SPG		No Breaker	Cutting Conditions:						Coated	Cermet	Uncoated					
			Continuous Cut						●	●						
			Medium Cut						●	●						
			Interrupted Cut						●	●						
									●	●						
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	AC820P					T2000Z	T1200A	G10E			
SPG 321	SPGN 090304	.375		.0156		●					▲	●	●			
SPG 322	SPGN 090308			.0313		●					●	●	●			
SPG 323	SPGN 090312			.0469		●					●	▲	●			
SPG 421	SPGN 120304		.125	.0156		●					●	★	●			
SPG 422	SPGN 120308	.500		.0313		●					●	●	●			
SPG 423	SPGN 120312			.0469		●					●	●	●			
SPG 424	SPGN 120316			.0625		●					●	●	●			
SPG 432	SPGN 120408			.0313		●					●	●	●			
SPG 433	SPGN 120412			.0469		●					●	▲	●			
SPG 632	SPGN 190408	.1875		.0313		●					●	●	●			
SPG 633	SPGN 190412	.750		.0469		●					●	●	●			
SPG 634	SPGN 190416			.0625		●					●	●	●			



TRIANGULAR TYPE

POSITIVE INSERT

Indexable Inserts for Turning

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
 ○ New Product Arriving January 2013

TBGT

FW

Rake Angle: 20°



Cutting Conditions:

Continuous Cut

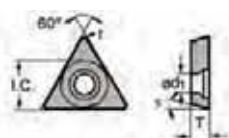
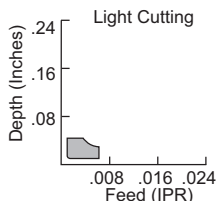
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Sumitomo Catalog #

ISO Catalog #

I.C.

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TBGT 520.5 RFW

TBGT 060102R-FW

TBGT 520.5 LFW

TBGT 060102L-FW

TBGT 521 RFW

TBGT 060104R-FW

TBGT 521 LFW

TBGT 060104L-FW

.156

.0625

.0078

.0078

.0156

.0156

.090

T2000Z

T1200A

TBGT

FX

Rake Angle: 15°



Cutting Conditions:

Continuous Cut

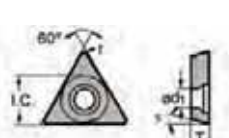
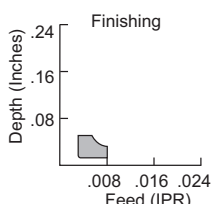
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Sumitomo Catalog #

ISO Catalog #

I.C.

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TBGT 520.5 RFX

TBGT 060102R-FX

TBGT 520.5 LFX

TBGT 060201L-FX

TBGT 521 RFX

TBGT 060104R-FX

TBGT 521 LFX

TBGT 060104L-FX

.156

.0625

.0078

.0078

.0156

.0156

.090

AC820P

AC530U

AC510U

ACZ310



TB











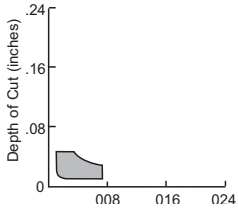
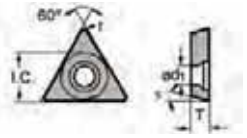
Triangular Type


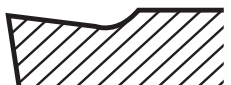














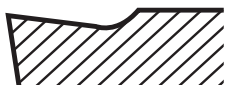
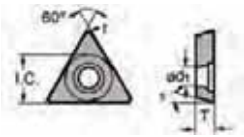














5° Relief

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
- New Product Arriving January 2013

TBGT 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	ACZ310	T1200A						
TBGT 520 RFY	TBGT 060101R-FY	.156	.0625	.0039	.090	★										
TBGT 520 LFY	TBGT 060101L-FY					●	▲									
TBGT 520.5 RFY	TBGT 060102R-FY						▲			▲						
TBGT 520.5 LFY	TBGT 060102L-FY															
TBGT 521 RFY	TBGT 060104R-FY									▲		●				
TBGT 521 LFY	TBGT 060104L-FY									★		●				

TBGT W		Rake Angle: 10°		Cutting Conditions:				Coated		Cermet			Uncoated				
				Continuous Cut													
				Medium Cut													
				Interrupted Cut													
						AC2000		ACZ310									
						T2000Z											
						T3000Z											
						T1200A											
						G10E											
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1										
TBGT 520.5 R		TBGT 060102R-W		.156	.0625	.0078	.090										
TBGT 520.5 L		TBGT 060102L-W				.0078											
TBGT 521 R		TBGT 060104R-W				.0156											
TBGT 521 L		TBGT 060104L-W				.0156											



TRIANGULAR TYPE

POSITIVE INSERT

Indexable Inserts for Turning

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
- New Product Arriving January 2013

TCMT EFP

Rake Angle: 10°



Cutting Conditions:

Continuous Cut

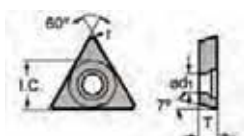
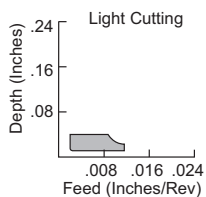
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



T2000Z
T1200A

Sumitomo Catalog #

ISO Catalog #

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TCMT 21.51 EFP	TCMT 110204N-FP	.250	.094	.0156	.110
TCMT 21.52 EFP	TCMT 110208N-FP			.0313	
TCMT 32.51 EFP	TCMT 16T304N-FP	.375	.156	.0156	.1693
TCMT 32.52 EFP	TCMT 16T308N-FP			.0313	

TCMT ESJ



Cutting Conditions:

Continuous Cut

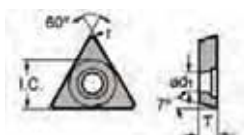
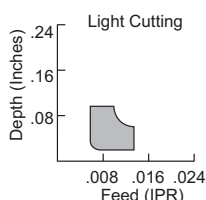
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



T2000Z
T1200A

Sumitomo Catalog #

ISO Catalog #

I.C.

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TCMT 21.51 ESJ	TCMT 110204N-SJ	.250	.094	.0156	.110
TCMT 21.52 ESJ	TCMT 110208N-SJ			.0313	
TCMT 32.51 ESJ	TCMT 16T304N-SJ	.375	.156	.0156	.1693
TCMT 32.52 ESJ	TCMT 16T308N-SJ			.0313	



TC



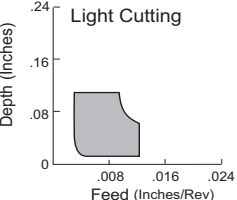
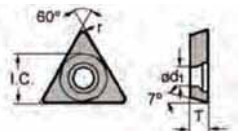
Triangular Type

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
- New Product Arriving January 2013

TCMT ESU		Rake Angle: 8°		Cutting Conditions:						Coated										Cermet		Uncoated	
																							
				Continuous Cut																			
				Medium Cut																			
				Interrupted Cut																			
																							
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1	AC2000	AC3000	AC810P	AC820P	AC830P	AC700G	AC610M	AC630M	AC410K	AC415K	AC510U	AC520U	T2000Z	T3000Z		
TCMT 21.51 ESU	TCMT 110204N-SU			.250	.094	.0156	.110			●	●	●	●	●	●	●	●	●	●	●	●		
TCMT 21.52 ESU	TCMT 110208N-SU					.0313		▲	●	●	●	●	●	●	●	●	●	●	●	●	●		
TCMT 32.51 ESU	TCMT 16T304N-SU					.0156			●	●	●	●	●	●	●	●	●	●	●	●	●		
TCMT 32.52 ESU	TCMT 16T308N-SU			.375	.156	.0313	.1693	▲	●	●	●	●	●	●	●	●	●	●	●	●	●		

TRIANGULAR TYPE

POSITIVE INSERT

Indexable Inserts for Turning

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
 ○ New Product Arriving January 2013

TCMT ESU

Rake Angle: 8°



Cutting Conditions:

Continuous Cut

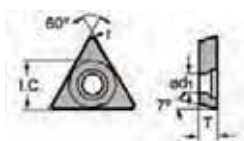
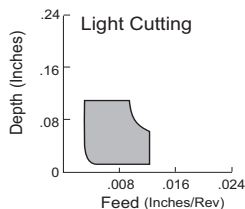
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



	AC2000	AC3000	AC810P	AC820P	AC830P	AC700G	AC610M	AC630M	AC410K	AC415K	AC510U	AC520U	T2000Z	T3000Z				
Continuous Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Medium Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Interrupted Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Sumitomo Catalog #

ISO Catalog #

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TCMT 21.51 ESU	TCMT 110204N-SU	.250	.094	.0156	.110
TCMT 21.52 ESU	TCMT 110208N-SU			.0313	
TCMT 32.51 ESU	TCMT 16T304N-SU	.375	.156	.0156	.1693
TCMT 32.52 ESU	TCMT 16T308N-SU			.0313	

TCMT ELU

Rake Angle: 12°



Cutting Conditions:

Continuous Cut

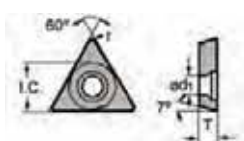
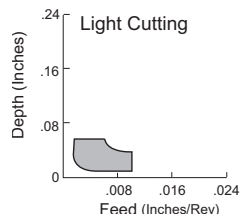
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



	AC2000	AC810P	AC820P	AC700G	AC630M													
Continuous Cut	●	●	●	●	●													
Medium Cut	●	●	●	●	●													
Interrupted Cut	●	●	●	●	●													

Sumitomo Catalog #

ISO Catalog #

I.C.

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TCMT 21.51 ELU	TCMT 110204N-LU	.250	.094	.0078	.110
TCMT 32.52 ELU	TCMT 16T308N-LU	.375	.156	.0156	.1693

TCMT ENK

Rake Angle: 8°



Cutting Conditions:

Continuous Cut

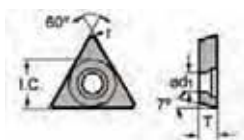
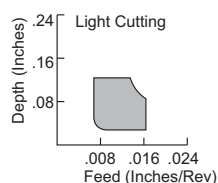
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



	AC2000	AC3000	AC810P	AC820P	AC830P	AC700G												
Continuous Cut	●	●	●	●	●	●												
Medium Cut	●	●	●	●	●	●												
Interrupted Cut	●	●	●	●	●	●												

Sumitomo Catalog #

ISO Catalog #

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TCMT 21.51 ENK	TCMT 110204N-SK	.250	.094	.0156	.110
TCMT 21.52 ENK	TCMT 110208N-SK			.0313	
TCMT 32.51 ENK	TCMT 16T304N-SK			.0156	
TCMT 32.52 ENK	TCMT 16T308N-SK	.375	.156	.0313	.1693
TCMT 32.53 ENK	TCMT 16T312N-SK			.0469	



TC

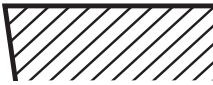









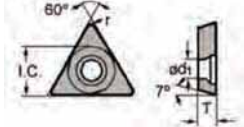
































Triangular Type







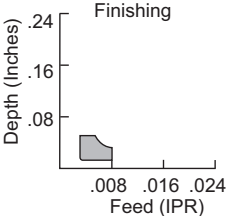
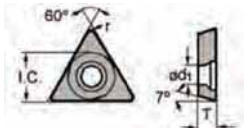
7° Relief

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
- New Product Arriving January 2013

TCMA		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											
TCMA 21.51	TCMW 110204		.250	.094	.0156	.110																
TCMA 21.52	TCMW 110208				.0313																	
TCMA 32.51	TCMW 16T304				.0156																	
TCMA 32.52	TCMW 16T308		.375	.156	.0313	.1693																
TCMA 32.53	TCMW 16T312				.0469																	

TCGT FX		Rake Angle: 15°	Cutting Conditions:						Coated		Cermet			Uncoated										
			Continuous Cut																					
			Medium Cut																					
			Interrupted Cut																					
															AC530U		ACZ310							
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1																	
TCGT 1.81.50 RFX		TCGT 090201R-FX		.219	.094	.0039	.098	★	▲															
TCGT 1.81.50 LFX		TCGT 090201L-FX				.0039		★	▲															
TCGT 1.81.50.5 RFX		TCGT 090202R-FX				.0078		★	▲															
TCGT 1.81.50.5 LFX		TCGT 090202L-FX		.250		.0078	.110	★	▲															
TCGT 21.50 RFX		TCGT 110201R-FX				.0039		★	▲															
TCGT 21.50 LFX		TCGT 110201L-FX				.0039		★	▲															
TCGT 21.50.5 RFX		TCGT 110202R-FX				.0078		★	▲															



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
- New Product Arriving January 2013

TPMT EFK		Rake Angle: 0°		Cutting Conditions:		Coated		Cermet		Uncoated	
				Continuous Cut							
				Medium Cut							
				Interrupted Cut							
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1						
TPMT 221 EFK	TPMT 110304N-FK	.250	.125	.0156	.110			●	●		
TPMT 222 EFK	TPMT 110308N-FK			.0313				●	●		
TPMT 331 EFK	TPMT 160404N-FK	.375	.1875	.0156	.1693			●	●		
TPMT 332 EFK	TPMT 160408N-FK			.0313				●	●		

TPMT ELU		Rake Angle: 12°		Cutting Conditions:		Coated		Cermet		Uncoated	
				Continuous Cut		●	●	●	●	●	●
				Medium Cut		●	●	●	●	●	●
				Interrupted Cut		●	●	●	●	●	●
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1						
TPMT 1.81.50.5 ELU	TPMT 090202N-LU	.219	.094	.0078	.110	▲	●	●	●		
TPMT 1.81.51 ELU	TPMT 090204N-LU			.0156		▲	●	●	●		
TPMT 221 ELU	TPMT 110304N-LU	.250	.125	.0156		▲	●	●	●		
TPMT 222 ELU	TPMT 110308N-LU			.0313		▲	●	●	●		

Positive
Inserts

C

D

R

S

T

V

W

Swiss
Tooling



TRIANGULAR TYPE

POSITIVE INSERT

Indexable Inserts for Turning

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
 ○ New Product Arriving January 2013

TPMT ESU

Rake Angle: 8°



Cutting Conditions:

Continuous Cut

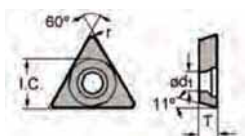
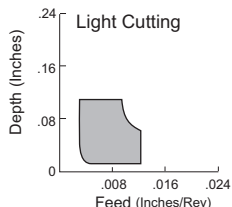
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



	AC2000	AC3000	AC810P	AC820P	AC830P	AC700G	AC610M	AC630M	AC510U	AC520U	T2000Z	T3000Z	T1200A						
Continuous Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Medium Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Interrupted Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
TPMT 1.81.50.5 ESU	TPMT 090202N-SU	.219		.0078	.102
TPMT 1.81.51 ESU	TPMT 090204N-SU			.0156	
TPMT 21.50.5 ESU	TPMT 110202N-SU		.094	.0078	
TPMT 21.51 ESU	TPMT 110204N-SU			.0156	.107
TPMT 21.52 ESU	TPMT 110208N-SU			.0313	
TPMT 220.5 ESU	TPMT 110302N-SU	.250		.0078	
TPMT 221 ESU	TPMT 110304N-SU		.125	.0156	.130
TPMT 222 ESU	TPMT 110308N-SU			.0313	
TPMT 32.51 ESU	TPMT 16T304N-SU		.156	.0156	
TPMT 32.52 ESU	TPMT 16T308N-SU			.0313	
TPMT 331 ESU	TPMT 160404N-SU	.375		.0156	.1693
TPMT 332 ESU	TPMT 160408N-SU		.1875	.0313	

TPMT ENF

Rake Angle: 0°



Cutting Conditions:

Continuous Cut

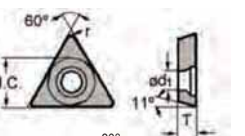
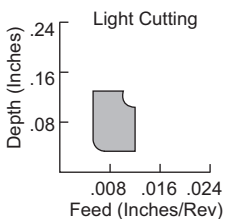
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



	AC2000	AC3000	AC820P	AC830P	AC700G	AC510U													
Continuous Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Medium Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Interrupted Cut	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1
TPMT 221 ENF	TPMT 110304N-SF	.250	.125	.0156	.130
TPMT 222 ENF	TPMT 110308N-SF			.0313	
TPMT 331 ENF	TPMT 160404N-SF			.0156	
TPMT 332 ENF	TPMT 160408N-SF	.375	.1875	.0313	.1693



TP

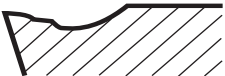
















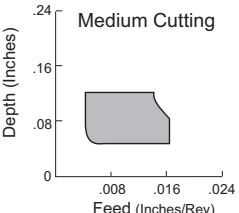
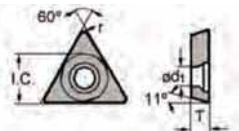
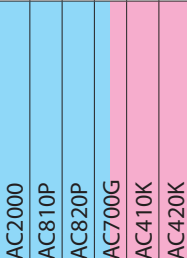
























Triangular Type

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
- New Product Arriving January 2013

TPMT EMU		Rake Angle: 0°		Cutting Conditions:						Coated			Cermet			Uncoated					
				Continuous Cut																	
				Medium Cut																	
				Interrupted Cut																	
																					
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1	AC2000	AC810P	AC820P	AC700G	AC410K	AC420K								
TPMT 221 EMU		TPMT 110304N-MU		.250	.125	.0156	.130														
TPMT 222 EMU		TPMT 110308N-MU				.0313															
TPMT 331 EMU		TPMT 160404N-MU		.375	.1875	.0156	.1693														
TPMT 332 EMU		TPMT 160408N-MU				.0313															

TP






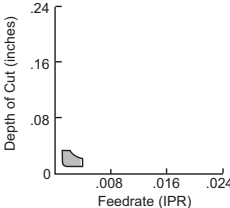
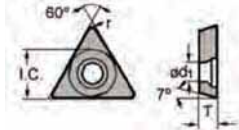
Triangular Type

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
- New Product Arriving January 2013

TPGT EFC		Rake Angle: 15°	Cutting Conditions:					Coated	Cermet			Uncoated		
								Continuous Cut						
								Medium Cut						
								Interrupted Cut						
								AC530U						
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1							
TPGT 220.5 EFC		TPGT 110302N-FC		.250	.125	.0078	.130							
TPGT 221 EFC		TPGT 110304N-FC				.0156								

TPGT		Rake Angle: 15°	Cutting Conditions:						Coated		Cermet			Uncoated				
NEW ESI			Continuous Cut															
			Medium Cut															
			Interrupted Cut															
									AC530U		AC610M		AC630M		AC510U		AC520U	
Sumitomo Catalog #		ISO Catalog #	I.C.	T	r	ød1	AC530U		AC610M		AC630M		AC510U		AC520U			
TPGT 221M ESI		TPGT 1103M04N-SI	.250	.125	.0156	.130	●		●		●		●		●			

M = Negative tolerance

TPGT W		Rake Angle: 10°	Cutting Conditions:						Coated			Cermet			Uncoated				
									Continuous Cut										
									Medium Cut										
									Interrupted Cut										



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
- ▲ USA Limited Availability Item
- New Product Arriving January 2013

TPMR
EFK

Rake Angle: 0°

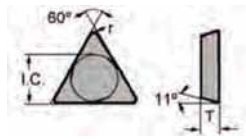
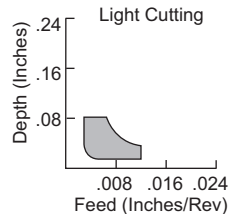


Cutting Conditions:

Continuous Cut

Medium Cut

Interrupted Cut

[illegible]

TPMR
ENF

Rake Angle: 0°

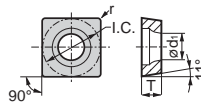
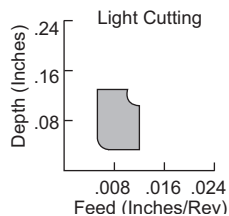


Cutting Conditions:

Continuous Cut

Medium Cut

Interrupted Cut

[illegible]

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
- ▲ USA Limited Availability Item
- New Product Arriving January 2013

TEGE		No Breaker	Cutting Conditions:						Coated	Cermet	Uncoated					
			Continuous Cut													
			Medium Cut													
			Interrupted Cut													
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1											
TEGE 21.50.5	TEGE 110202	.250	.094	.0078	-											
TEGE 21.51	TEGE 110204			.0156												

TEGN		No Breaker	Cutting Conditions:						Coated	Cermet	Uncoated					
			Continuous Cut													
			Medium Cut													
			Interrupted Cut													
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1											
TEGN 220.5	TEGN 110302			.0078												
TEGN 221	TEGN 110304	.250		.0156												
TEGN 222	TEGN 110308		.125	.0313												
TEGN 320.5	TEGN 160302			.0078	-											
TEGN 321	TEGN 160304	.375		.0156												
TEGN 322	TEGN 160308			.0313												
TEGN 431	TEGN 220404	.500	.1875	.0156												



VB

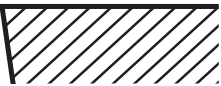









35° Diamond Type

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
- ▲ USA Limited Availability Item
- New Product Arriving January 2013

VBMA		No Breaker	Cutting Conditions:						Coated	Cermet				Uncoated			
																	
			Continuous Cut														
			Medium Cut														
			Interrupted Cut														
																	
																	
Sumitomo Catalog #		ISO Catalog #	I.C.	T	r	ød1											
VBMA 331		VBMA 160404			.0156		AC700G	★	★	●							
VBMA 332		VBMA 160408	.375	.1875	.0313	.1732	AC410K	★	★	●							
							AC420K	★	★	●							

Positive Inserts

C

D

R

S

T

V

W

Swiss Tooling



35° DIAMOND TYPE

POSITIVE INSERT

Indexable Inserts for Turning

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
 ▲ USA Limited Availability Item
 ○ New Product Arriving January 2013

VCMT EFP

Rake Angle: 10°



Cutting Conditions:

Continuous Cut

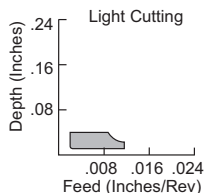
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Sumitomo Catalog #

ISO Catalog #

I.C.

T

r

ød1

VCMT 331 EFP

VCMT 160404N-FP

.375

.1875

.0156
.0313

.1732

T2000Z

T1200A

VCMT ENK

Rake Angle: 8°



Cutting Conditions:

Continuous Cut

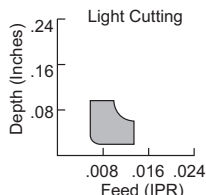
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Sumitomo Catalog #

ISO Catalog #

I.C.

T

r

ød1

VCMT 331 ENK

VCMT 160404N-SK

.375

.1875

.0156
.0313

.1732

AC2000

AC3000

AC820P

AC830P

VCMT ESU

Rake Angle: 8°



Cutting Conditions:

Continuous Cut

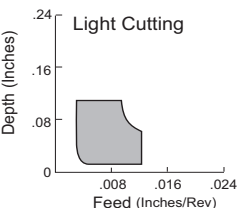
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Sumitomo Catalog #

ISO Catalog #

I.C.

T

r

ød1

VCMT 331 ESU

VCMT 160404N-SU

.375

.1875

.0156
.0313

.1732

AC3000

AC810P

AC820P

AC830P

AC610M

AC630M

AC510U

AC520U



VC





















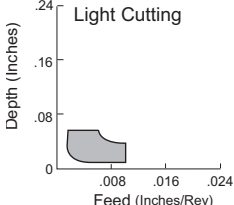

35° Diamond Type





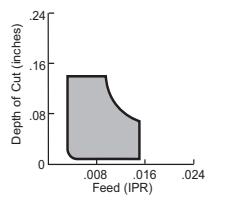





7° Relief






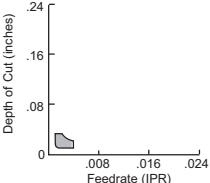


With Insert Hole

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

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- New Product Arriving January 2013

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	AC2000	AC810P	AC820P	AC700G	AC630M					T2000Z	T3000Z		
VCMT 331 ELU		VCMT 160404N-LU			.375	.1875	.0156	.1732													
VCMT 332 ELU		VCMT 160408N-LU					.0313														

VCGT NAG		Rake Angle: 8°		Cutting Conditions:		Coated				Cermets				Uncoated					
				Continuous Cut															
				Medium Cut															
				Interrupted Cut															
  																			
Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1									H1					
VCMT 220.5 NAG	VCMT 110302N-AG	.250	.125	.0078	.134														
VCMT 221 NAG	VCMT 110304N-AG			.0156															
VCMT 332 NAG	VCMT 160408N-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																	
VCGT 220 EFC	VCGT 110301N-FC	.250	.125	.0039	.134																	
VCGT 220.5 EFC	VCGT 110302N-FC			.0078																		
VCGT 221 EFC	VCGT 110304N-FC			.0156																		



Positive
Inserts

C

D

R

S

T

V

W

Swiss
Tooling

35° DIAMOND TYPE

POSITIVE INSERT

Indexable Inserts for Turning

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
 ▲ USA Limited Availability Item
 ○ New Product Arriving January 2013

VC GT

Rake Angle: 15°

NEW ESI



Cutting Conditions:

Continuous Cut

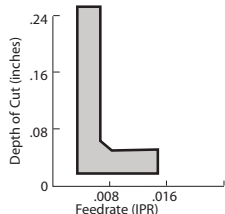
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Material	AC530U	AC610M	AC630M	AC510U	AC520U	Coated	Cermet	Uncoated
Steel	●	○	○	○	○			
Stainless Steel	○	○	○	○	○			
Cast Iron	○	○	○	○	○			
Non-ferrous	○	○	○	○	○			
Exotic Materials	○	○	○	○	○			
Hardened Steel	○	○	○	○	○			

Sumitomo Catalog #

ISO Catalog #

I.C.

T

r

ød1

VC GT 220M ESI
 VC GT 220.5M ESI
 VC GT 221M ESI
 VC GT 222M ESI
 VC GT 330M ESI
 VC GT 331M ESI

VC GT 1103M01N-SI
 VC GT 1103M02N-SI
 VC GT 1103M04N-SI
 VC GT 1103M08N-SI
 VC GT 1604M02N-SI
 VC GT 1604M04N-SI

.250

.125

.0039
 .0078
 .0156
 .0313
 .0039
 .0156

.134

VC GT

Rake Angle: 15°

FX



Cutting Conditions:

Continuous Cut

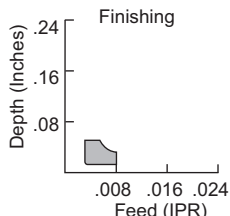
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Material	AC530U	ACZ310	Coated	Cermet	Uncoated
Steel	○	○		○	
Stainless Steel	○	○		○	
Cast Iron	○	○		○	
Non-ferrous	○	○		○	
Exotic Materials	○	○		○	
Hardened Steel	○	○		○	

Sumitomo Catalog #

ISO Catalog #

I.C.

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VC GT 220 RFX
 VC GT 220 LFX
 VC GT 220.5 RFX
 VC GT 220.5 LFX
 VC GT 221 RFX
 VC GT 221 LFX

VC GT 110301R-FX
 VC GT 110301L-FX
 VC GT 110302R-FX
 VC GT 110302L-FX
 VC GT 110304R-FX
 VC GT 110304L-FX

.250

.125

.0039
 .0039
 .0078
 .0078
 .0156
 .0156

.134

VC GT

Rake Angle: 15°

FY



Cutting Conditions:

Continuous Cut

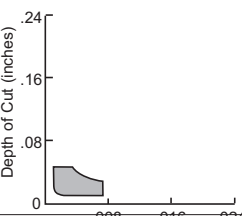
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Material	AC530U	ACZ310	Coated	Cermet	Uncoated
Steel	○	○			
Stainless Steel	○	○			
Cast Iron	○	○			
Non-ferrous	○	○			
Exotic Materials	○	○			
Hardened Steel	○	○			

Sumitomo Catalog #

ISO Catalog #

I.C.

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VC GT 220 RFY
 VC GT 220 LFY
 VC GT 220.5 RFY
 VC GT 220.5 LFY

VC GT 110301R-FY
 VC GT 110301L-FY
 VC GT 110302R-FY
 VC GT 110302L-FY

.250

.125

.0039
 .0039
 .0078
 .0078

.134



VP






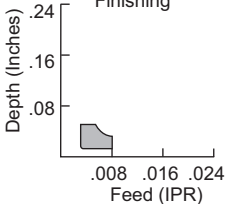

35° Diamond Type

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 2013

VPGT FX		Rake Angle: 15°		Cutting Conditions:						Coated						Cermet		Uncoated	
				Continuous Cut															
				Medium Cut															
				Interrupted Cut															
										ACZ310									
Sumitomo Catalog #		ISO Catalog #		I.C.		T		r		ød1		▲							
VPGT 220 RFX		VPGT 110301R-FX		.250		.125		.0039		.134		▲							
VPGT 220 LFX		VPGT 110301L-FX						.0039											
VPGT 220.5 LFX		VPGT 110302L-FX						.0078				▲							

80° TRIGON TYPE

POSITIVE INSERT

Indexable Inserts for Turning

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
- ▲ USA Limited Availability Item
- New Product Arriving January 2013

WBGT

FW

Rake Angle: 15°



Cutting Conditions:

Continuous Cut

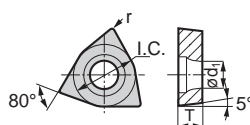
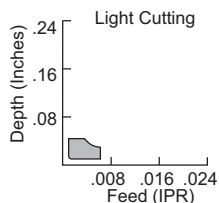
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	Coated	Cermet	Uncoated
WBGT 520.5 RFW	WBGT 030302R-FW			.0078				
WBGT 520.5 LFW	WBGT 030302L-FW			.0078				
WBGT 521 RFW	WBGT 030304R-FW	.156	.0625	.0156				
WBGT 521 LFW	WBGT 030304L-FW			.0156				
WBGT 630.5 RFW	WBGT 060402R-FW			.0078				
WBGT 630.5 LFW	WBGT 060402L-FW	.1875	.094	.0078				
WBGT 631 RFW	WBGT 060404R-FW			.0156				
WBGT 631 LFW	WBGT 060404L-FW			.0156				

WBGT

FX

Rake Angle: 15°



Cutting Conditions:

Continuous Cut

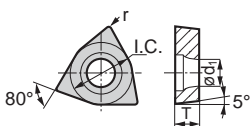
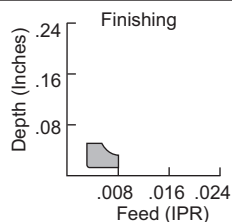
Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	ød1	Coated	Cermet	Uncoated
WBGT 520.5 RFX	WBGT 030302R-FX			.0078				
WBGT 521 RFX	WBGT 030304R-FX	.156	.0625	.0156				
WBGT 630.5 RFX	WBGT 060402R-FX			.0078				
WBGT 630.5 LFX	WBGT 060402L-FX			.0078				
WBGT 631 RFX	WBGT 060404R-FX	.1875	.094	.0156				
WBGT 631 LFX	WBGT 060404L-FX			.0156				



WB








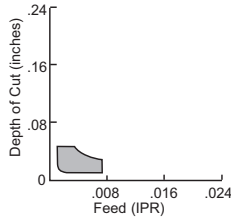
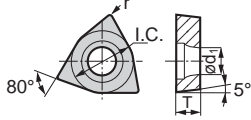




80° Trigon Type








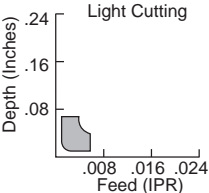
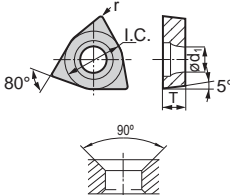







5° Relief

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
- ▲ USA Limited Availability Item
- New Product Arriving January 2013

WBGT		Rake Angle: 15°		Cutting Conditions:		Coated		Cermet				Uncoated			
FY				Continuous Cut											
				Medium Cut											
				Interrupted Cut											
						ACZ310									
Sumitomo Catalog #		ISO Catalog #		I.C.	T		r	ød1	T1200A						
WBGT 520.5 RFY		WBGT 080201R-FY		.156	.0625		.0078	.090							
WBGT 520.5 LFY		WBGT 080201L-FY					.0078								
WBGT 521 RFY		WBGT 110308R-FY					.0156								
WBGT 521 LFY		WBGT 110308L-FY					.0156								

WBGT		Rake Angle: 10°		Cutting Conditions:			Coated			Cermet			Uncoated			
W				Continuous Cut												
				Medium Cut												
				Interrupted Cut												
																
Sumitomo Catalog #		ISO Catalog #		I.C.	T	r	ød1			T2000Z	T1200A					
WBGT 520.5 R	WBGT 030302R-W					.0078										
WBGT 520.5 L	WBGT 030302L-W					.0078										
WBGT 521 R	WBGT 030304R-W					.0156										
WBGT 521 L	WBGT 030304L-W					.0156										



80° TRIGON TYPE

POSITIVE INSERT

Indexable Inserts for Turning

WP

80° Trigon 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 2013

WPMT ESJ

Rake Angle: 0°



Cutting Conditions:

Continuous Cut

Medium Cut

Interrupted Cut

Coated

Cermet

Uncoated

● ●

● ●

●

● ●

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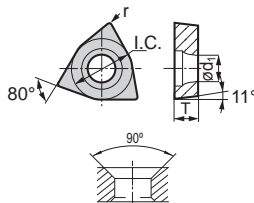
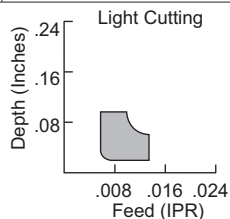
● ●

● ●

● ●

● ●

● ●



Sumitomo Catalog #

ISO Catalog #

I.C.

T

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WPMT 21.50.5 ESJ

WPMT 040202N-SJ

.250

.094

.0078

.110

WPMT 21.51 ESJ

WPMT 040204N-SJ

.250

.094

.0156

.110



Swiss Tooling Inserts

for precision turning applications:

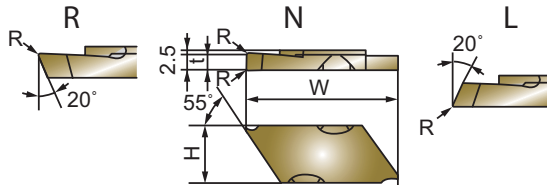
- Cut-off
- Back Turn
- Boring Roughing
- Boring Finishing

- 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 January 2013

CTR

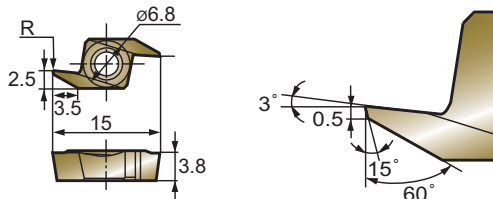
for SCT Type Holder
(p.)



Sumitomo Catalog #	ISO Catalog #	t	R	W	H	ACZ310	Coated	Cermet	Uncoated
CTR121005R	CTR121005R	1.0				●			
CTR121005N	CTR121005N	1.0				●			
CTR121005L	CTR121005L	1.0				●			
CTR121505R	CTR121505R	1.5	0.05	19.0	7.0	●			
CTR121505N	CTR121505N	1.5	0.05	19.0	7.0	●			
CTR121505L	CTR121505L	1.5	0.05	19.0	7.0	●			
CTR122005R	CTR122005R	2.0				●			
CTR122005N	CTR122005N	2.0				●			
CTR122005L	CTR122005L	2.0				●			

BTR

for SBT Type Holder
(p.)



Sumitomo Catalog #	ISO Catalog #	I.C.	T	r	AC530U	Coated	Cermet	Uncoated
BTR3505	BTR3505	6.8	3.8	0.05	●		★	
BTR3515	BTR3515	6.8	3.8	0.15	●		★	

Positive
Inserts

C

D

R

S

T

V

W

Swiss
Tooling



Swiss Tooling Inserts (cont.)

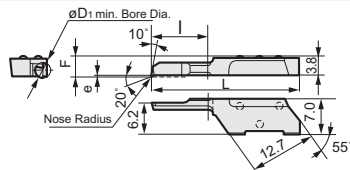
for precision turning applications:

- 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

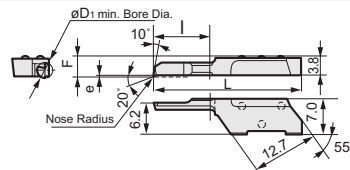
- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- New Product Arriving January 2013

Boring Rough Inserts (p. 205 for holder)



Sumitomo Catalog #	Dimensions (mm)						ACZ310
	Min. Bore Dia.	F	e	Nose Radius	L	ℓ	
KBMXR0103-05	1.0	4.00	0.20	0.05	20.5	3	▲
KBMXR0206-05	2.0	4.05	0.25	0.05	23.5	6	▲
KBMXR0411-05	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	▲
KBMXR0511-20	5.0	4.50	0.70	0.20	28.5	11	▲

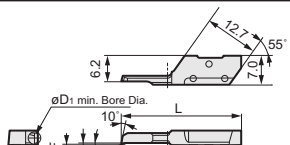
Boring Finishing Inserts (p. 205 for holder)



Sumitomo Catalog #	Dimensions (mm)						ACZ310
	Min. Bore Dia.	F	e	Nose Radius	L	ℓ	
KBMXR0103-05T	1.0	4.00	0.20	0.05	20.5	3	▲
KBMXR0206-05T	2.0	4.05	0.25	0.05	23.5	6	▲
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

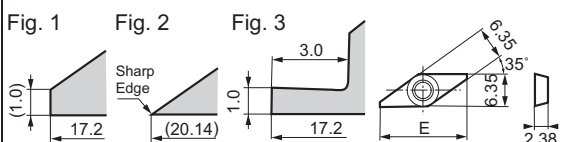
Boring Rough Inserts (p. 205 for holder)



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	▲
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	▲

Blank Inserts for SPB Type holder (p. 205)

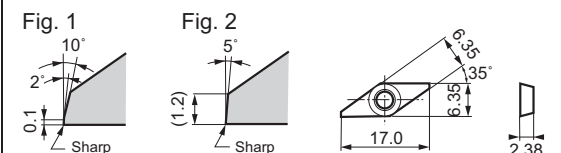
Uncoated



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	●		

Turning Inserts for SPB Type holder (p. 205)

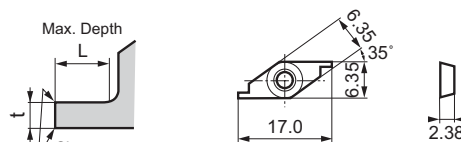
Uncoated



Sumitomo Catalog #	Dim. Cutter Edge (mm)	Wiper Edge	Fig.	BL130		
PBVF1102R	1.0	Yes	1	●		
PBVF1102R	1.0	No	2	●		

Grooving Inserts for SPB Type holder (p. 205)

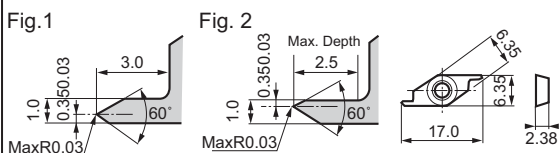
Uncoated



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	●		

Threading Inserts for SPB Type holder (p. 205)

Uncoated



Sumitomo Catalog #	Dimension Pitch (mm)	Fig.	BL130		
PBVT1102R	0.2 ~ 0.5	1	●		
PBVT1102R	0.2 ~ 0.5	2	●		

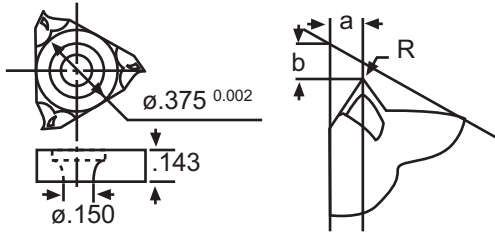




Threading, Grooving, & Cut-off Inserts

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Threading, Grooving, & Cut-off Inserts:	Pages
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Cut-Off Inserts.....	137



- 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
			Uncoated	Coated		Cermet				
			A30	EH20Z	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			
TME250R	2.50	-	●	●	●	●	.0140		.055	
TME300R	3.00	-	●	●	●	●	.0165		.071	

Full Profile (Inch)

Sumitomo Catalog Number	Pitch (mm)	Threads/in	Stock Grade				R	Included Angle θ°	a	b
			Uncoated	Coated		Cermet				
			A30	EH20Z	AC225	AC225				
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	

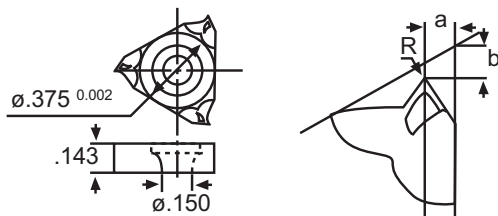
Partial Profile (60°)

Sumitomo Catalog Number	Pitch (mm)	Threads/in	Stock Grade				R	Included Angle θ°	a	b
			Uncoated	Coated		Cermet				
			A30	EH20Z	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
			Uncoated	Coated		Cermet				
			A30	EH20Z	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
			Uncoated	Coated		Cermet				
			A30	EH20Z	AC225	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			
TMI250R	2.50	-	●	●	●	●	.0063		.055	
TMI300R	3.00	-	●	●	●	●	.0080		.071	

Partial Profile (60°)

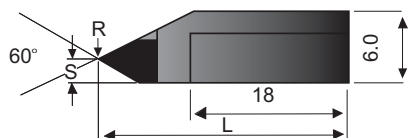
Sumitomo Catalog Number	Pitch (mm)	Threads/in	Stock Grade				R	Included Angle θ°	a	b
			Uncoated	Coated		Cermet				
			A30	EH20Z	AC225	T130A				
TMI1020R	1.0 ~ 2.0	24 ~ 12	●	●	●	●	.0024	60	.039	.047
TMI1530R	1.50 ~ 3.00	16 ~ 8	●	●	●	●	.0035		.060	

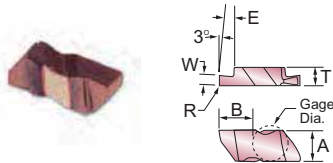
Partial Profile (NPT)

Sumitomo Catalog Number	Pitch (mm)	Threads/in	Stock Grade				R	Included Angle θ°	a	b
			Uncoated	Coated		Cermet				
			A30	EH20Z	AC225	T130A				
TNPT1115R	-	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	BN600				
BNTT1020R	1.0 ~ 2.0	-	●	●	.0024	60	.039	.047
BNTT1530R	1.50 ~ 3.00	-	●	●	.0035		.060	





- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item

SumiNotch GROOVING INSERTS

Left				Dimension (in)							Right				
SG	Coated	CBN		W ± .001	R	E ± .001	T	A	B	Gage Dia.	SG	Coated	CBN		Ceramic
	EH520V	BN2000	BN350									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	.075	.195	.344	.4050	.3750	SG-3047R	●	●	●	●
SG-3062L	●	●	●	.062	.005/.010	.094					SG-3062R	●	●	●	●
SG-3072L	●			.072	.005/.010	.094					SG-3072R	●			
SG-3088L	●			.088	.005/.010	.094					SG-3088R	●			
SG-3094L	●	●	●	.094	.005/.010	.150					SG-3094R	●	●	●	●
SG-3097L	●			.097	.005/.010	.150					SG-3097R	●			
SG-3105L	●			.105	.005/.010	.150					SG-3105R	●			
SG-3110L	●			.110	.005/.010	.150					SG-3110R	●			
SG-3122L	●			.122	.005/.010	.150					SG-3122R	●			
SG-3125L	●	●	●	.125	.005/.010	.150					SG-3125R	●	●	●	●
SG-3142L	●			.142	.005/.010	.150					SG-3142R	●			
SG-3156L	●			.156	.005/.010	.150					SG-3156R	●			
SG-3178L	●			.178	.005/.010	.150					SG-3178R	●			
SG-3185L	●			.185	.020/.025	.150					SG-3185R	●			
SG-3189L	●			.189	.020/.025	.150					SG-3189R	●		●	

Left		Dimension (in)							Right					
	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

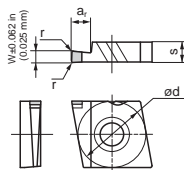
CFB				
Sumitomo Catalog No.	Uncoated	Dimensions (in)		Holder
	G10E	B	T	
CFB3	●	.118	.1875	CF3-3
CFB3T	●			
CFB5T	●			CF4-5



BNC30G



BN2000


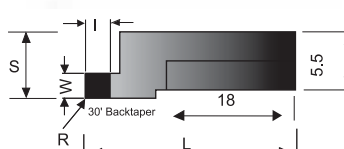


- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item

GROOVING INSERTS FOR GWB HOLDERS

CGA	Coated	Uncoated	Dimensions						
	BNC30G	BN2000	W ± .001 in. ± .025 (mm)	a _r in (mm)	r in (mm)	ød in (mm)	s in (mm)		
CGAR 4062	●	●	.062 (1.575)	.1378 (3.5)	.0078 (.2)	.625 (15.875)	.1875 (4.76)		
CGAL 4062	●	●							
CGAR 4094	●	●	.094 (2.388)	.1575 (4.0)					
CGAL 4094	●	●							
CGAR 4125	●	●	.125 (3.175)	.1969 (5.0)					
CGAL 4125	●	●							
CGAR 6189	●	●	.189 (4.801)				.25 (6.35)		
CGAL 6189	●	●							
CGAR 1504150	●	●	.0591 (1.5)	.1378 (3.5)	.0078 (.2)	.625 (15.875)	.1875 (4.76)		
CGAL 1504150	●	●							
CGAR 1504200	●	●	.0787 (2.0)	.1575 (4.0)					
CGAL 1504200	●	●							
CGAR 1504250	●	●	.0984 (2.5)						
CGAL 1504250	●	●							
CGAR 1504300	●	●	.1181 (3.0)	.1969 (5.0)					
CGAL 1504300	●	●							
CGAR 1504350	●	●	.1378 (3.5)						
CGAL 1504350	●	●							
CGAR 1504400	●	●	.1575 (4.0)						
CGAL 1504400	●	●							
CGAR 1504450	●	●	.1772 (4.5)	.1969 (5.0)					
CGAL 1504450	●	●							
CGAR 1506500	●	●	.1969 (5.0)						
CGAL 1506500	●	●							
CGAR 1506550	●	●	.2165 (5.5)						
CGAL 1506550	●	●							
CGAR 1506600	●	●	.2362 (6.0)						.25 (6.35)
CGAL 1506600	●	●							

GROOVING INSERTS FOR BNGG HOLDERS

BNGNT	CBN			Dimensions (mm)					
	BN250	BN350	BN500	W	I	R	L	S	
BNGNT0200L	●			2.0	4.0	0.2	25.0	6.0	 
BNGNT0200R	●	●	●	2.0	4.0	0.2	25.0	6.0	
BNGNT0250L	●			2.5	4.0	0.2	25.0	6.0	
BNGNT0250R	●		●	2.5	4.0	0.2	25.0	6.0	
BNGNT0300L	●			3.0	5.0	0.4	25.0	6.0	
BNGNT0300R	●	●	●	3.0	5.0	0.4	25.0	6.0	
BNGNT0400L	●			4.0	6.0	0.4	26.0	6.0	
BNGNT0400R	●	●	●	4.0	6.0	0.4	26.0	6.0	
BNGNT0500L	●			5.0	6.0	0.4	26.0	6.0	
BNGNT0500R	●		●	5.0	6.0	0.4	26.0	6.0	
BNGNT0600L	●			6.0	7.0	0.4	27.0	6.0	
BNGNT0600R	●		●	6.0	7.0	0.4	27.0	6.0	

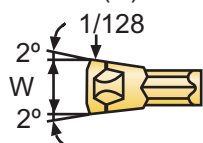


CUT-OFF INSERTS

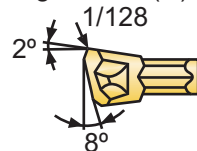
WCF

Indexable Inserts for Cut-off

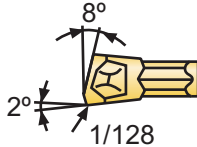
Neutral (N)



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		W	Catalog Number	Uncoated G10E	W
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	●	





Ceramic Inserts

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Ceramic Inserts:	Pages
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CERAMIC INSERTS - NEGATIVE

Advanced Cutting Materials


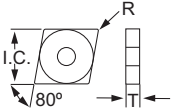
NEW SN2000K*	Finishing and roughing of cast iron
NEW SN2100K*	Interrupted turning /milling of cast iron
NB90S	High speed finishing of hardened steels
WX2000	High speed turning of super alloys


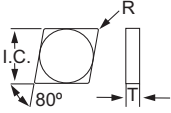
K Cast Iron
S Exotic Materials
H Hardened Steel

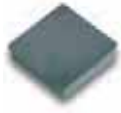
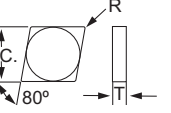
● USA Stocked Item
 ★ Worldwide Warehouse Item
 ▲ USA Limited Availability Item


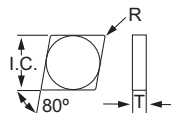
*SN2000K & SN2100K grades not shown in stock can be made to order.
 Call for price and delivery.


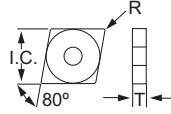
■ NEGATIVE

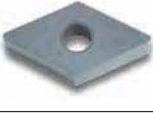
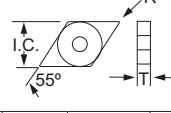
CNMA	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
								
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
CNMA 432	.500	.1875	.0313	.2031	●			
CNMA 433			.0469		●			
CNMA 434			.0625		●			
CNMA 454		.3125	.0625					▲
CNMA 543	.625	.250	.0469	.250	●			
CNMA 544			.0625		●			

CNMN	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
								
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
CNMN 434	.500	.1875	.0625	-	●			

CNMX	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
								
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
CNMX 453	.500	.3125	.0469	-	●			
CNMX 454			.0625		●			

CNG	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
								
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
CNG 432	.500	.1875	.0313	-	●		●	
CNG 433			.0469		●		●	
CNG 434			.0625		●		●	▲
CNG 452		.3125	.0313					▲
CNG 453	.750	.250	.0469	-				▲
CNG 454			.0625					▲
CNG 643			.0469					▲
CNG 644			.0625					▲

CNGA	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
								
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
CNGA 431	.500	.1875	.0156	.2031				▲
CNGA 432			.0313		●	●	●	▲
CNGA 433			.0469		●	●	●	▲
CNGA 434			.0625		●	●	●	
CNGA 542	.625	.250	.0313	.250	●			▲
CNGA 543			.0469		●			▲
CNGA 544			.0625		●			▲
CNGA 643			.0469		●			
CNGA 644	.750		.0625	.3126	●			

DNGA	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
								
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
DNGA 432	.500	.1875	.0313	.2031	●		●	▲
DNGA 433			.0469		●		●	▲
DNGA 434			.0625		●			










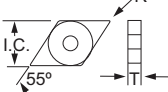



















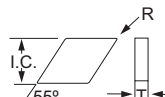
NEW SN2000K*	→	Finishing and roughing of cast iron
NEW SN2100K*	→	Interrupted turning /milling of cast iron
NB90S	→	High speed finishing of hardened steels
WX2000	→	High speed turning of super alloys









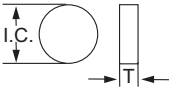



















*SN2000K & SN2100K grades not shown in stock can be made to order.
Call for price and delivery.













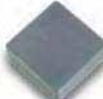
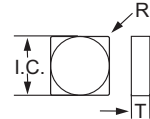








K Cast Iron
S Exotic Materials
H Hardened Steel









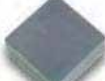
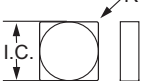








● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item











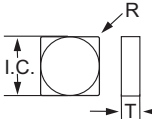












DNMX	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
								
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
DNMX 354	.375	.3125	.0625	.2031				
DNMX 454	.500		.0625					














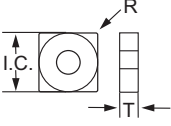
















DNG	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
								
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
DNG 432			.0313	.2031				
DNG 433	.500	.1875	.0469					
DNG 434			.0625					

RNG	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
								
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
RNG 32	.375	.125	-	-				
RNG 33		.1875						
RNG 42		.125						
RNG 43	.500	.1875						
RNG 45								
RNG 55	.625	.3125						
RNG 65	.750							

SNMN	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
								
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
SNMN 434	.500	.1875	.0625	.2031				

SNMX	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
								
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
SNMX 453		.3125	.0781					
SNMX 554	.625		.0625	.250				

SNG	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
								
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
SNG 432			.0313					
SNG 433	.500	.1875	.0469	-				
SNG 434			.0625					

SNGA	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
								
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
SNGA 432			.0313					
SNGA 433	.500	.1875	.0469	.2031				
SNGA 434			.0625					



CERAMIC INSERTS - NEGATIVE

Advanced Cutting Materials

NEW SN2000K*	→	Finishing and roughing of cast iron
NEW 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.

TNG	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
TNG 222	.250	.125	.0313					▲
TNG 322			.0313					▲
TNG 331			.0156					▲
TNG 332			.0313		●			▲
TNG 333	.375	.1875	.0469		●			
TNG 334			.0625					
TNG 352		.3125	.0313					
TNG 353			.0469					
TNG 432			.0313		●			▲
TNG 433	.500	.3125	.0469		●			▲
TNG 434			.0625		●			
TNG 436			.0938		●			

VNGA	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
VNGA 331			.0156					▲
VNGA 332	.375		.0313	.150	●		●	▲
VNGA 333		.1875	.0469		●		●	▲
VNGA 432	.500		.0313	.2031				▲
VNGA 433			.0469					▲

WNGA	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
WNGA 432			.0313		●	●	●	
WNGA 433	.500	.1875	.0469	.2031	●		●	

■ POSITIVE

TNGA	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
TNGA 321		.125	.0156					▲
TNGA 322			.0313					▲
TNGA 332	.375		.0313	.150	●			▲
TNGA 333			.0469		●			▲
TNGA 334			.0625		●			
TNGA 432		.1875	.0313		●			▲
TNGA 433			.0469		●			▲
TNGA 434	.500		.0625	.2031	●			▲
TNGA 436			.0938		●			
TNGA 438			.1250		●			
TNGA 543	.625	.250	.0469	.250				
TNGA 544			.0625					

RCGX	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
RCGX 102	.250	.309			●			
RCGX 103	.375	.309			●			
RCGX 104	.500	.312			●			
RCGX 35	.375	.3125						

RPGX	Cutting Conditions:				Grades			
	Continuous Cut							
	Medium Cut							
	Interrupted Cut							
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
RPGX 35	.375						●	
RPGX 45	.500	.3125					●	













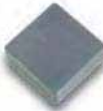
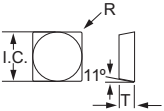



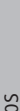



































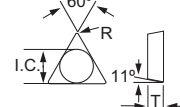
NEW SN2000K*	→	Finishing and roughing of cast iron
NEW SN2100K*	→	Interrupted turning /milling of cast iron
NB90S	→	High speed finishing of hardened steels
WX2000	→	High speed turning of super alloys

K Cast Iron
S Exotic Materials
H Hardened Steel


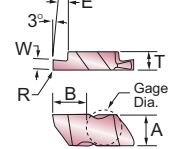
- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item

*SN2000K & SN2100K grades not shown in stock can be made to order.
Call for price and delivery.


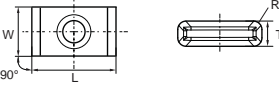
SPG	Cutting Conditions:				Grades							
	Continuous Cut											
	Medium Cut											
	Interrupted Cut											
												
Sumitomo Catalog #	I.C.	T	r	Hole Dia.								
SPG 422	.500	.125	.0313	-								
SPG 423			.0469									
SPG 424			.0625									
SPG 432			.0313									
SPG 433			.0469									
SPG 632	.750	.1875	.0313									
SPG 633			.0469									
SPG 634			.0625									

TPG	Cutting Conditions:				Grades			
	Continuous Cut				●	●	●	●
	Medium Cut				●	●	●	●
	Interrupted Cut				●	●	●	●
					SN2000K	SN2100K	WX2000	NB90S
Sumitomo Catalog #	I.C.	T	r	Hole Dia.	SN2000K	SN2100K	WX2000	NB90S
TPG 221	.250	.125	.0156	-	●	●	●	▲
TPG 222			.0313		●	●	●	▲
TPG 321	.375	.125	.0156	-	●	●	●	▲
TPG 322			.0313		●	●	●	▲
TPG 323			.0156		●	●	●	▲
TPG 332	.500	.1875	.0313	-	●	●	●	▲
TPG 432			.0313		●	●	●	▲
TPG 433			.0469		●	●	●	▲

For GROOVING

SG	Cutting Conditions:							Grades			
	Continuous Cut							●	●	●	●
	Medium Cut							●	●	●	●
	Interrupted Cut							●	●	●	●
								SN2000K	SN2100K	WX2000	NB90S
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:				Grades			
	Continuous Cut				●	●	●	●
	Medium Cut				●	●	●	●
	Interrupted Cut				●	●	●	●
					SN2000K	SN2100K	WX2000	NB90S
Sumitomo Catalog #	L	W	T	R	SN2000K	SN2100K	WX2000	NB90S
LNGX160516PNFN-W	.625	.375	.187	.063	●	●	●	▲





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PCBN & PCD inserts

Table of Contents

PCBN & PCD Inserts:	Pages
PCBN Inserts	145-165
PCD Inserts	165-175



CN

80° Diamond Type

Negative

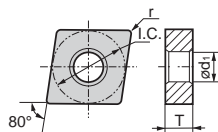
K Cast Iron
S Exotic Materials
H Hardened Steel
S_M Sintered Materials


- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

***EDGE PREPARATIONS:**

Please see page 266
for descriptions and
performance ranges of
CBN edge treatments.

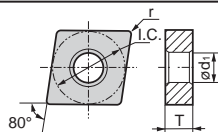
CNMA





		CNMA431	CNMA120404																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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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																Dimensions							
				BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000	BN700	BN5800	BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	
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-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
Multi-Mini Tip		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
		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-CNGA431LE*	2NU-CNGA120404LE																		●		.500	.1875	.0156	.015	.2031
		2NU-CNGA431LF*	2NU-CNGA120404LF																○		●		.500	.1875	.0156	.015	.2031
		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

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.



CN

80° Diamond Type

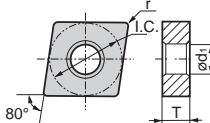

Negative

K Cast Iron
S Exotic Materials
H Hardened Steel
S_M Sintered Materials

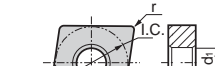

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

***EDGE PREPARATIONS:**



Please see page 266
for descriptions and
performance ranges of
CBN edge treatments.

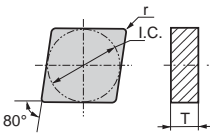

CNGA (cont.)					Coated										Uncoated					Dimensions																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
					H					K	H					K		S	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
					BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350						BN500	BN7000	BN700	BN5800	BN7500																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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Multi-Mini Tip		2NU-CNGA432W*	2NU-CNGA120408W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

CNGG					Coated		Uncoated												Dimensions									
					H		K	H						K		S	Inscribed Circle	Dimensions										
														S		M		Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)							
					BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000	BN700	BN8000	BN7500					
Coated Mini		Catalog No.	ISO Cat. No.						●															.500	.1875	.0313	.015	.2031
		4NC-CNGG432SV	4NC-CNGG120408SV						●															.500	.1875	.0469	.015	.2031
		4NC-CNGG433SV	4NC-CNGG120412SV																									

Note: SV style chipbreaker (see page 262 for more info).

CNGX																			Dimensions										
					Coated		Uncoated																						
					H		K	H						K	S		S	M	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)						
					BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000	BN700	BN800	BN7500						
Solid		Catalog No.	ISO Cat. No.																										
		CNGX433	CNGX120412																										
		CNGX434	CNGX120416																										

CNG					Coated		Uncoated										Dimensions								
					H		K	H				K		S	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ødt)						
					BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25						BN1000	BN2000	BN250	BN350	BN500	BN7000
Solid		Catalog No.	ISO Cat. No.																						
		CNG322	CNGN090308																	●	.375	.125	.0313	.150	-
		CNG322F*	CNGX090308F																	★	.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	-

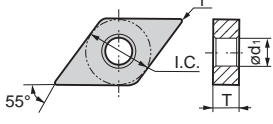





Negative

K Cast Iron
S Exotic Materials
H Hardened Steel
S/MSintered Materials

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

Please see page 266 for descriptions and performance ranges of CBN edge treatments.

DNMA					Coated					Uncoated					Dimensions													
					H					K	H					K	S	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ϕd_1)						
					BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250						BN350	BN500	BN7000	BN700	BN800	BN7500
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				
		NS-DNMA432	NS-DNMA150408								▲									.500	.1875	.0313	.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						Uncoated										S		Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (Ød1)
H					K	H					K		S	M								
BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000	BN700	BN800					

Coated Mini Tip

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-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-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-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-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-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.

DN

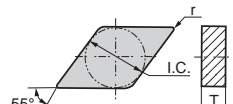
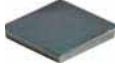
55° Diamond Type

Negative

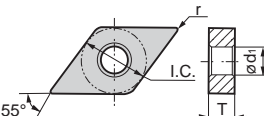

- K **Cast Iron**
- S **Exotic Materials**
- H **Hardened Steel**
- S_M **Sintered Materials**

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

***EDGE PREPARATIONS:**
Please see page 266 for descriptions and performance ranges of CBN edge treatments.

DNG					Coated		Uncoated										Dimensions											
					H		K	H		K		S		S	M	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)								
					BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000						BN2000	BN250	BN350	BN500	BN7000	BN700	BN5800	BN7500
Solid		Catalog No.	ISO Cat. No.																									
		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.

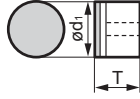
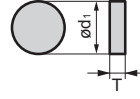

DNGG					Coated		Uncoated										Dimensions											
					H		K	H					K		S	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (Ød1)								
Coated Mini		Catalog No.	ISO Cat. No.	BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000	BN700	BN5800	BN7500						
		4NC-DNGG432SV	4NC-DNGG150408SV					●																	.500	.1875	.0313	.015
		4NC-DNGG433SV	4NC-DNGG150412SV					●																.500	.1875	.0469	.015	.2031

Note: SV style chipbreaker (see page 262 for more info).

RN

Round Type

Negative

RNG			Fig. 1	Fig. 2	Coated		Uncoated										Dimensions																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
					H		K	H		K		S		S	M	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Fig.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
					BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000						BN2000	BN250	BN350	BN500	BN7000	BN700	BN5800	BN7500																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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Note: Holders available for RNG inserts. Contact the Engineering Department.



Square Type

SN

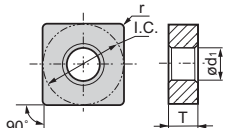



Negative

K Cast Iron**S** Exotic Materials**H** Hardened Steel**S_M** Sintered Materials

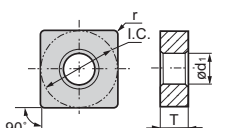



- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

***EDGE PREPARATIONS:**

Please see page 266 for descriptions and performance ranges of CBN edge treatments.

SNMA					Coated										Uncoated					Dimensions				
					H					K	H					K		S	S M	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
					H						H					S								
					BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000	BN700	BN5800	BN7500	
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-SNMA431	NS-SNMA120404							▲									.500	.1875	.0156	.015	.2031	
		NS-SNMA432	NS-SNMA120408							▲									.500	.1875	.0313	.015	.2031	
		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					Coated										Uncoated					Dimensions							
			Catalog No.	ISO Cat. No.	H		K	H		K		S	S	S	S	S	S	S	S	S	S	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-SNGA432F*	2NU-SNGA120408F																●			.500	.1875	.0313	.015	.2031	
		2NU-SNGA432T*	2NU-SNGA120408T																●			.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.



SN

Square Type

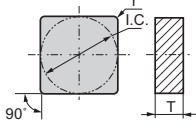

Negative

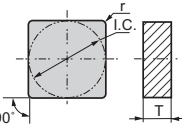


K Cast Iron
S Exotic Materials
H Hardened Steel
S_M Sintered Materials

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

***EDGE PREPARATIONS:**

Please see page 266
for descriptions and
performance ranges of
CBN edge treatments.

SNGX					Coated		Uncoated										Dimensions																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
					H		K	H					K	S	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
					BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25						BN1000	BN2000	BN250	BN350	BN500	BN7000	BN700	BN800	BN7500																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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Solid CBN		Catalog No.	ISO Cat. No.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

SNG					Coated															Uncoated					Dimensions				
					H										K	H				K	S	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)			
					BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000	BN700						BN800	BNZ500	
																													S
Full Tip		Catalog No.	ISO Cat. No.									★			★						.500	.1875	.0313	.020	-				
		SNG432B	SNGN120408B										★									.500	.1875	.0313	.020	-			
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	-				



TN

60° Triangle Type

Negative

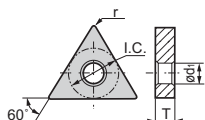
K Cast Iron
S Exotic Materials
H Hardened Steel
S_M Sintered Materials

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

***EDGE PREPARATIONS:**

Please see page 266 for descriptions and performance ranges of CBN edge treatments.

TNMA



Catalog No.

ISO Cat. No.

Coated

Uncoated

Dimensions

H K

H K S

S M

S M

S M

S M

S M

S M

S M

S M

S M

S M

S M

S M

S M

S M

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S M

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S M

S M

Full Tip



Multi-Mid Tip



Mini Tip



Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.



TN

60° Triangle Type

Negative

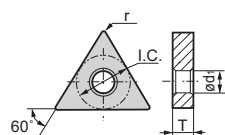
K Cast Iron
S Exotic Materials
H Hardened Steel
S_M Sintered Materials

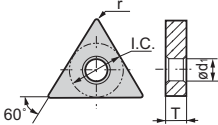
- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

***EDGE PREPARATIONS:**

Please see page 266
for descriptions and
performance ranges of
CBN edge treatments.

TNGA



TNGA						Coated														Uncoated					Dimensions																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
						H						K	H						K		S	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
						BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000						BN700	BN5800	BN7500																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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Catalog No.	ISO Cat. No.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

TN

60° Triangle Type

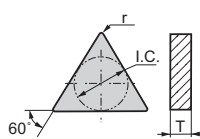
Negative

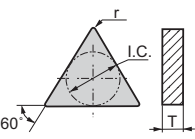


K Cast Iron
S Exotic Materials
H Hardened Steel
S_M Sintered Materials

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

***EDGE PREPARATIONS:**

Please see page 266
for descriptions and
performance ranges of
CBN edge treatments.

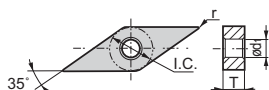
TNG

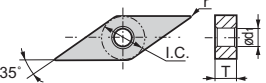



TNG					Coated		Uncoated										Dimensions									
					H		K	H		K		S	M	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)								
					BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500								BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN7000
Mini Tip		TNG331	TNGN160408										★									.375	.1875	.0156	.150	-
		TNG332	TNGN160408										★									.375	.1875	.0313	.150	-
		TNG333	TNGN160412											★								.375	.1875	.0469	.150	-
Solid CBN		TNG222	TNGN110308																●		.250	.125	.0313	.150	-	
		TNG222F*	TNGN110308F																★		.250	.125	.0313	.150	-	
		TNG223	TNGN110312																★		.250	.125	.0469	.150	-	
		TNG223F*	TNGN110312F																★		.250	.125	.0469	.150	-	
		TNG331	TNGN160408																		.375	.1875	.0156	.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

VNMA				Coated		Uncoated										Dimensions										
				H		K	H		K		S		S M	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)								
							BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN250	BN350	BN500	BN7000	BN700	BN5800	BN7500		
Full Tip		VNMA331	VNMA160404										★	●		●	○				.375	.1875	.0156	.020	.150	
		VNMA332	VNMA160408									▲		★	●		●	○	●			.375	.1875	.0313	.020	.150
		VNMA333	VNMA160412									▲										.375	.1875	.0469	.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.



VN

35° Diamond Type

Negative

K Cast Iron

S Exotic Materials

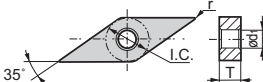
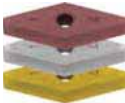

H Hardened Steel

SiM Sintered Materials

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

*EDGE PREPARATIONS:

Please see page 266
for descriptions and
performance ranges of
CBN edge treatments.

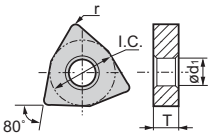

VNGA					Coated										Uncoated										Dimensions				
					H					K	H					K		S	S	M	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)				
					BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000						BN700	BN8000	BN7500	
Coated Mini Tip		Catalog No.	ISO Cat. No.	BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000	BN700	BN8000	BN7500	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)		
		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	

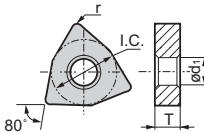


Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

WN

80° Trigon Type

Negative

WNMA				Coated										Uncoated										Dimensions				
				H					K	H					K		S	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)						
				BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350						BN500	BN7000	BN700	BN8000	BN7500	
														●	●	●	●											
														●	●	●												
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				Coated										Uncoated										Dimensions				
				H					K	H					K		S	S	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)					
				BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500						BN7000	BN700	BN8000	BN7500	
				★	●	★		●																				
								★																				
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	
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.



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 January 2013

***EDGE PREPARATIONS:**

Please see page 266
for descriptions and
performance ranges of
CBN edge treatments.

CCGA			Coated										Uncoated					Dimensions				
			H					K					H					Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)
			BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000	BN700	BN7000	BN700	BN7500
Catalog No.			ISO Cat. No.										S									
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-CCGA21.51	2NC-CCGW060204															.250	.094	.0156	.015	.110
		2NC-CCGA32.50.5	2NC-CCGW09T302															.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-CCGA32.52	2NC-CCGW09T308															.375	.156	.0313	.015	.1732
Mini Tip		2NC-CCGA32.52LS	2NC-CCGA32.52LS															.375	.156	.0313	.015	.1732
		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
Multi-Mini Tip		NU-CCGA32.52HS*	2NU-CCGW09T308HS															.375	.156	.0313	.015	.1732
		NU-CCGA32.52LT*	2NU-CCGW09T308LT*															.375	.156	.0313	.015	.1732
		2NU-CCGA21.50.5	2NU-CCGW060202															.250	.094	.0078	.015	.110
		2NU-CCGA21.51	2NU-CCGW060204															.250	.094	.0156	.015	.110
		2NU-CCGA21.52	2NU-CCGW060208															.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-CCGA32.52	2NU-CCGW09T308															.375	.156	.0313	.015	.1732
		2NU-CCGA32.52W	2NU-CCGW09T308W															.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.

CCGE			Coated										Uncoated					Dimensions				
			H					K					H					Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
			BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000	BN700	BN7000	BN700	BN7500
Catalog No.			ISO Cat. No.										S									
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	-

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



S Exotic Materials

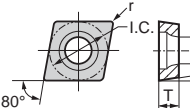
Hardened Steel

S/M Sintered Materials

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

***EDGE PREPARATIONS:**

Please see page 266
for descriptions and
performance ranges of
CBN edge treatments.

CPGA					Coated												Uncoated					Dimensions																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
					H				K	H				K		S	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ødi)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
					BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000						BN250	BN350	BN500	BN7000	BN700	BN5800	BN7500																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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Catalog No.	ISO Cat. No.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

DC

55° Diamond Type

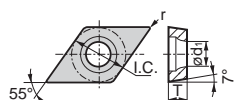
7° Relief

K Cast Iron
S Exotic Materials
H Hardened Steel
S_M Sintered Materials

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

***EDGE PREPARATIONS:**

Please see page 266
for descriptions and
performance ranges of
CBN edge treatments.

**DCGA
DCGD**

Coated Mini Tip



Catalog No. ISO Cat. No.

2NC-DCGA21.50.5 2NC-DCGW070202
 2NC-DCGA21.51 2NC-DCGW070204
 2NC-DCGA21.51LS* 2NC-DCGW070204LS
 2NC-DCGA32.50.5 2NC-DCGW11T302
 2NC-DCGA32.51 2NC-DCGW11T304
 2NC-DCGA32.51LS* 2NC-DCGW11T304LS
 2NC-DCGA32.52 2NC-DCGW11T308
 2NC-DCGA32.52LS* 2NC-DCGW11T308LS

Coated										Uncoated					Dimensions				
H					K	H					K		S	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Dia. (ød1)	
BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350						BN500

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

K Cast Iron
S Exotic Materials
H Hardened Steel
S_M Sintered Materials

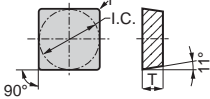


- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

*EDGE PREPARATIONS:

Please see page 266 for descriptions and performance ranges of CBN edge treatments.

RCGA RCGX		RCGA	RCGX	Coated										Uncoated										Dimensions				
				H		K		H		K		S		S		M		S		M		S		Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
Full Tip	RCGA	RCGX	Catalog No.	ISO Cat. No.	BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000	BN700	BN800	BN7500	.354	.250	-	.040	-
			RCGA094	RCGA0906MO												★					○	●		.250	.309	-	.040	-
			RCGX102	RCGX102																	○	●		.375	.309	-	.040	-
			RCGX103	RCGX103																	○	●		.500	.312	-	.040	-

SP		Square Type
		11° Relief

SPG				Coated										Uncoated					Dimensions								
				H					K	H					K		S	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter					
				BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350						BN500	BN7000	BN700	BNS800	BN7500
	SPG221	SPGN060304														●					.250	.125	.0156	.020	-		
	SPG321	SPGN090304														●		●			.375	.125	.0156	.020	-		
	SPG322	SPGN090308														●		●			.375	.125	.0313	.020	-		
	SPG323	SPGN090312														●					.375	.125	.0469	.020	-		
	SPG421	SPGN120304												●		●					.500	.125	.0156	.020	-		
	SPG422	SPGN120308												●		●					.500	.125	.0313	.020	-		
	SPG423	SPGN120312													●						.500	.125	.0469	.020	-		
	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.

SPGA					Coated		Uncoated										Dimensions										
					H		K	H				K		S		Inscribed Circle	Dimensions										
																	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter							
	Catalog No.	ISO Cat. No.	BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000	BN700	BN5800	BN7500						
	SPGA321	SPGW090304													▲	●	●						.375	.125	.0156	.020	.130
	SPGA322	SPGW090308													●	●	●						.375	.125	.0313	.020	.130
	SPGA323	SPGW090312															●						.375	.125	.0469	.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

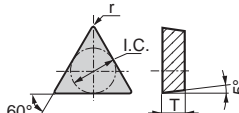
5° Relief

K Cast Iron
S Exotic Materials
H Hardened Steel
S_M Sintered Materials

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

***EDGE PREPARATIONS:**

Please see page 266
for descriptions and
performance ranges of
CBN edge treatments.

TBGE					Coated		Uncoated										Dimensions																	
					H		K	H				K		S	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter															
														M																				
Catalog No.			ISO Cat. No.		BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000	BN700	BN5800	BN7500											
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	-	-	-	-	-	-

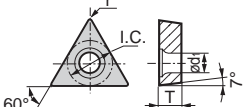

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

BSN = Light edge preparation

TC

60° Triangle Type

7° Relief

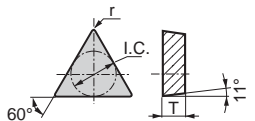

TCGA					Coated		Uncoated										Dimensions																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
					H		K	H				K		S	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
					BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25						BN2000	BN250	BN350	BN500	S	M																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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Coated Mini Tip		Catalog No.	ISO Cat. No.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

TP

60° Triangle Type

11° Relief

TPEE					Coated		Uncoated								Dimensions										
					H		K	H		K		S	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter								
												S						M							
					Catalog No.		ISO Cat. No.	BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN2000	BN250	BN350	BN500	BN7000	BN700	BN5800	BN7500
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



TP

60° Triangle Type

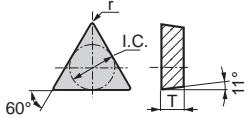



11° Relief

K Cast Iron
S Exotic Materials
H Hardened Steel
S_M Sintered Materials

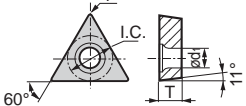


- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

***EDGE PREPARATIONS:**

Please see page 266
for descriptions and
performance ranges of
CBN edge treatments.

TPG					Coated												Uncoated					Dimensions							
					H						K	H					K		S	Inscribed Circle	Dimensions								
																					Thickness	Nose Radius	Max. D. O. C.	Hole Diameter					
			Catalog No.	ISO Cat. No.	BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000	BN700	BN5800	BN7500	.250	.125	.0156	.020	-	
Full Tip		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	-
Multi-Mini Tip		TPG432	TPGN220408										▲			★								.500	.1875	.0313	.020	-	
		TPG432HS*	TPGN220408HS													★								.500	.1875	.0313	.020	-	
		3NU-TPG221	3NU-TPGN110304																●	●				.250	.125	.0156	.015	-	
		3NU-TPG222	3NU-TPGN110308																●	●				.250	.125	.0313	.015	-	
Mini Tip		3NU-TPG321	3NU-TPGN160304																●	●				.375	.125	.0156	.015	-	
		3NU-TPG322	3NU-TPGN160308																●	●				.375	.125	.0313	.015	-	
		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.

TPGA TPGD TPGX					Coated										Uncoated					Dimensions							
		Catalog No.	ISO Cat. No.	BNC80	BNC100	BNC150	BNC160	BNC200	BNX300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000	BN700	BN5800	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-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	

S = Edge preparation for hardened steel boring



TP

60° Triangle Type

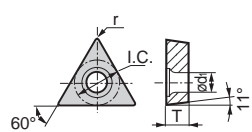
11° Relief

K Cast Iron
S Exotic Materials
H Hardened Steel
S_M Sintered Materials

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

***EDGE PREPARATIONS:**

Please see page 266
for descriptions and
performance ranges of
CBN edge treatments.

TPGA
TPGD
TPGX
(cont.)


Catalog No. ISO Cat. No.

Coated												Uncoated				Dimensions							
H						K	H						K		S	Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter			
BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN500	BN7000						S	M	
											★	●		●					.375	.1875	.0156	.020	.1693
											★								.375	.1875	.0156	.020	.1693
											★	●		●					.375	.1875	.0313	.020	.1693
											★								.375	.1875	.0313	.020	.1693
														●					.375	.1875	.0469	.020	.1693
															○	●		●	.250	.094	.0156	.015	.110
																		●	.250	.094	.0156	.015	.110
																		●	.250	.094	.0156	.015	.110
																○	●	●	.250	.094	.0156	.015	.110
																○	●		.250	.094	.0313	.015	.110
																		●	.250	.125	.0078	.015	.130
																○		●	.250	.125	.0078	.015	.130
																		●	.250	.125	.0156	.015	.130
																		●	.250	.125	.0156	.015	.130
																		●	.250	.125	.0156	.015	.130
																○	●		.250	.125	.0313	.015	.130
											●		●		○	●			.375	.1875	.0156	.015	.1693
											●				○	●			.375	.1875	.0313	.015	.1693
												●							.250	.094	.0078	.015	.110
							●					●							.250	.094	.0156	.015	.110
												●							.250	.094	.0156	.015	.110
											●	●			○	●			.094	.1875	.0078	.015	.090
											●								.094	.1875	.0078	.015	.090
											●								.094	.1875	.0078	.015	.090
											●								.094	.1875	.0078	.015	.090
							★			●	★				○	●			.094	.1875	.0156	.015	.090
										●									.094	.1875	.0156	.015	.090
										●		★							.094	.1875	.0156	.015	.090
										●									.094	.1875	.0156	.015	.090
										●									.094	.1875	.0313	.015	.090
										●									.094	.1875	.0313	.015	.090
										●		●							.219	.094	.0078	.015	.102
										●									.219	.094	.0078	.015	.102
										●		●							.219	.094	.0078	.015	.102
										●									.219	.094	.0156	.015	.102
										●									.219	.094	.0156	.015	.102
										●									.219	.094	.0313	.015	.102
										●									.219	.094	.0078	.015	.102
										●									.219	.094	.0078	.015	.102
										●									.219	.094	.0156	.015	.102
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										●									.219	.094	.0156	.015	.102
										●									.219	.094	.0156	.015	.102

TP

60° Triangle Type

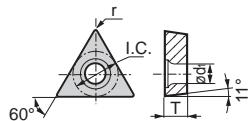
11° Relief

K Cast Iron
S Exotic Materials
H Hardened Steel
S_M Sintered Materials

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

*EDGE PREPARATIONS:

Please see page 266
for descriptions and
performance ranges of
CBN edge treatments.

TPGA
TPGD
TPGX
(cont.)

Catalog No. ISO Cat. No.

	Coated					Uncoated					Dimensions				
	H					H					Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
	BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25					
Mini-Tip															

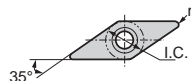
S = Edge preparation for hardened steel boring

VB

35° Diamond Type

5° Relief

VBGA



Catalog No. ISO Cat. No.

	Coated					Uncoated					Dimensions				
	H					H					Inscribed Circle	Thickness	Nose Radius	Max. D. O. C.	Hole Diameter
	BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25					
Coated Mini-Tip															
Multi-Mini-Tip															
Mini-Tip															

Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.



VC

35° Diamond Type

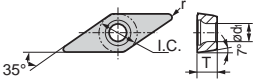

7° Relief

K Cast Iron**S** Exotic Materials**H** Hardened Steel**S_M** Sintered Materials

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

***EDGE PREPARATIONS:**

Please see page 266
for descriptions and
performance ranges of
CBN edge treatments.

VCGA					Coated		Uncoated										Dimensions																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

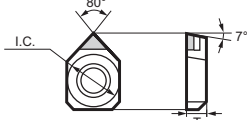

VCMA					Coated		Uncoated										Dimensions																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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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

<div>ZNEX</div>					Coated		Uncoated										Dimensions																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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Note: Maximum depth of cut is based on hardened steel applications. Other materials may allow for increased maximum depths of cut.

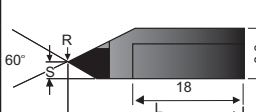



Threading & Grooving

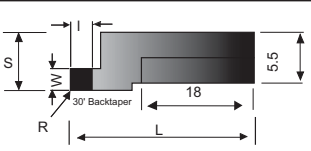
K Cast Iron
S Exotic Materials
H Hardened Steel
S_M Sintered Materials

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

THREADING INSERTS *for BNGG Holder*

<div>BNTT</div>		Coated				Uncoated				Dimensions (mm)											
		H		K	H		K	S	Pitch	R	L	S									
							S	M													
		BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BNT000	BN2000	BN250	BN350	BN500	BN700	BN5800	BN2500		
Catalog No.																					
Full Tip		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			Catalog No.																		Dimensions (mm)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
			Coated									K	Uncoated						K	S	M	W	I	R	L	S																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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			BNC80	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20		BNX25	BN1000	BN2000	BN250	BN350	BN500										BN700	BN5800	BN7500																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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GWB GROOVING INSERTS *for GWB Holder*

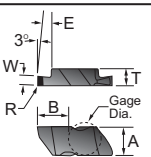
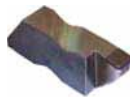
Right			Dimensions (in)					Left		
CGA	CBN							CGA	CBN	
	BN2000	BNC30G	W ±.001 in ±.025 (mm)	a _r in (mm)	r in (mm)	ød in (mm)	s in (mm)		BN2000	BNC30G
	CGAR 4062	● ●	.062 (1.575)	.1378 (3.5)	.0078 (.2)	.625 (15.875)	.1875 (4.76)		CGAL 4062	● ●
	CGAR 4094	● ●	.094 (2.388)	.1575 (4.0)					CGAL 4094	● ●
	CGAR 4125	● ●	.125 (3.175)	.1969 (5.0)					CGAL 4125	● ●
	CGAR 6189	● ●	.189 (4.801)	.25 (6.35)					CGAL 6189	● ●
	CGAR 1504150	● ●	.0591 (1.5)	.1378 (3.5)					CGAL 1504150	● ●
	CGAR 1504200	● ●	.0787 (2.0)	.1875 (4.76)					CGAL 1504200	● ●
	CGAR 1504250	● ●	.0984 (2.5)	.1575 (4.0)					CGAL 1504250	● ●
	CGAR 1504300	● ●	.1181 (3.0)	.1969 (5.0)			CGAL 1504300		● ●	
	CGAR 1504350	● ●	.1378 (3.5)	.25 (6.35)			CGAL 1504350		● ●	
	CGAR 1504400	● ●	.1575 (4.0)	.1875 (4.76)			CGAL 1504400		● ●	
	CGAR 1504450	● ●	.1772 (4.5)	.25 (6.35)			CGAL 1504450		● ●	
CGAR 1506500	● ●	.1969 (5.0)	.1875 (4.76)	CGAL 1506500			● ●			
CGAR 1506550	● ●	.2165 (5.5)	.25 (6.35)	CGAL 1506550			● ●			
CGAR 1506600	● ●	.2362 (6.0)	.1875 (4.76)	CGAL 1506600	● ●					

**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 January 2013

SumiNOTCH GROOVING INSERTS for SS & A-SE Holders

SG			Coated					Uncoated					Dimensions (in)																
			H					K	H					K	S	W ±.001	R	E ±.001	T	A	B	Gage Dia.							
			BNC60	BNC100	BNC150	BNC160	BNC200	BNC300	BNC500	BNX10	BNX20	BNX25	BNT000	BN2000	BN250								BN350	BN500	BN700	BN800	BN7500		
Catalog No.																													
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

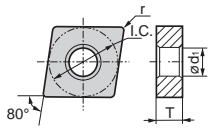
CN

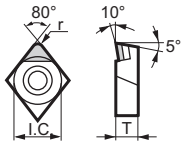
80° Diamond Type

Negative

EDGE PREPARATIONS:

- S Standard
- H Honed
- K Reinforced
- AW Chipbreaker Stud
- WF High Luster "Mirror-Like" Finish

CNMA		Stock					Dimensions					
		N					Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
		DA90	DA150	DA200	DA1000	DA2200						
Catalog No.	ISO Cat. No.											
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		Stock					Dimensions					
		N					Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
		DA90	DA150	DA200	DA1000	DA2200						
Catalog No.	ISO Cat. No.											
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°



DN

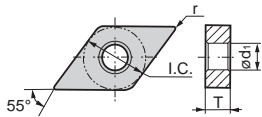


55° Diamond Type

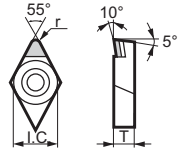
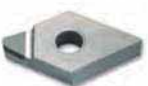

Negative

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 January 2013

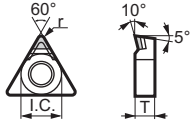


DNMA			Stock					Dimensions								
			N					Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle			
Standard Tip		Catalog No.	ISO Cat. No.		DA90	DA150	DA200							DA1000	DA2200	
		DNMA432	DNMA150408							●	.500	.1875	.0313	.2031	S	0°
		DNMA432H	DNMA150408H							●	.500	.1875	.0313	.2031	H	0°
NF Tip		NF-DNMA432	NF-DNMA150408							●	.500	.1875	.0313	.2031	S	0°
		NF-DNMA432H	NF-DNMA150408H								●	.500	.1875	.0313	.2031	H

DNMX			Stock					Dimensions							
			N					Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle		
Standard Tip		Catalog No.	ISO Cat. No.		DA90	DA150	DA200							DA1000	DA2200
		DNMX431	DNMX150404			●			●	.500	.1875	.0156	.2031	S	10°
		DNMX432	DNMX150408			●			●	.500	.1875	.0313	.2031	S	10°
		DNMX433	DNMX150412			●			●	.500	.1875	.0469	.2031	S	10°
NF Tip		NF-DNMX430.5	NF-DNMX150402					●	●	.500	.1875	.0078	.2031	S	10°
		NF-DNMX431	NF-DNMX150404					●	●	.500	.1875	.0156	.2031	S	10°
		NF-DNMX432	NF-DNMX150408					●	●	.500	.1875	.0313	.2031	S	10°
		NF-DNMX433	NF-DNMX150412					★	★	.500	.1875	.0469	.2031	S	10°

TN

60° Diamond Type

Negative

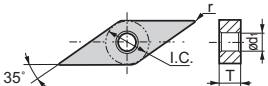
TNMX					Stock					Dimensions					
					N					Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
					DA90	DA150	DA200	DA1000	DA2200						
Standard Tip		Catalog No.	ISO Cat. No.						★	.375	.1875	.0156	.150	S	10°
		TNMX331	TNMX160404						★	.375	.1875	.0313	.150	S	10°
NF Tip		TNMX332	TNMX160408												
		NF-TNMX330.5	NF-TNMX160402					●	●	.375	.1875	.0078	.150	S	10°
		NF-TNMX331	NF-TNMX160404					●	●	.375	.1875	.0156	.150	S	10°
		NF-TNMX332	NF-TNMX160408					●	●	.375	.1875	.0313	.150	S	10°

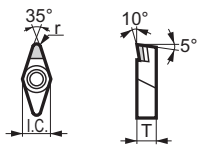


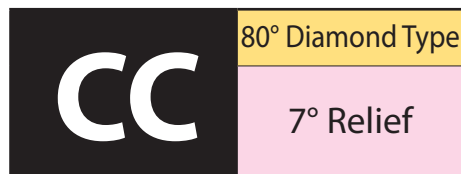
**EDGE PREPARATIONS:**

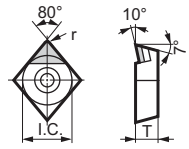

S Standard
H Honed
K Reinforced
AW Chipbreaker Stud
WF High Luster "Mirror-Like"
Finish

● USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item
○ Available January 2013

VNMA			Stock					Dimensions					
			N					Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	Catalog No.	ISO Cat. No.	DA90	DA150	DA200	DA1000	DA2200						
	VNMA333	VNMA160412	●				●	.375	.1875	.0469	.150	S	0°
	VNMA333H	VNMA160412H	●				●	.375	.1875	.0469	.150	H	0°
NF Tip	NF-VNMA332	NF-VNMA160408				●	●	.375	.1875	.0313	.150	S	0°
	NF-VNMA333	NF-VNMA160412				●	●	.375	.1875	.0469	.150	S	0°
	NF-VNMA333H	NF-VNMA160412H					●	.375	.1875	.0469	.150	H	0°

VNMX				Stock					Dimensions					
				N					Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip	Catalog No.	ISO Cat. No.	DA90	DA150	DA200	DA1000	DA2200							
	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°	

PCD INSERTS - POSITIVE

CCMX					Stock					Dimensions					
					N					Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
					DA90	DA150	DA200	DA1000	DA2200						
NF Tip		Catalog No.	ISO Cat. No.												
		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

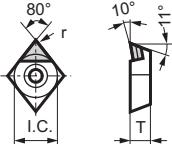
80° Diamond Type


11° Relief

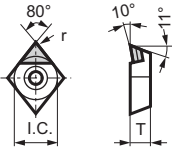

EDGE PREPARATIONS:

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 January 2013

CPMX					Stock					Dimensions					
					N					Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
					DA90	DA150	DA200	DA1000	DA2200						
Catalog No.	ISO Cat. No.														
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-CPMX21.51	NF-CMPT060204				●	●	.250	.094	.0156	.110	S	10°			
NF-CPMX21.52	NF-CMPT060208				●	●	.250	.094	.0313	.110	S	10°			
NF-CPMX32.51	NF-CMPT09T304				●	●	.375	.156	.0156	.1732	S	10°			
NF-CPMX32.52	NF-CMPT09T308				●	●	.375	.156	.0313	.1732	S	10°			
NF-CPMX320.5	NF-CMPT090302				●	●	.375	.125	.0078	.1732	S	10°			
NF-CPMX321	NF-CMPT090304				●	●	.375	.125	.0156	.1732	S	10°			
NF-CPMX322	NF-CMPT090308				●	●	.375	.125	.0313	.1732	S	10°			

CPG			Stock					Dimensions						
			N					Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle	
Standard Tip		Catalog No.	ISO Cat. No.	DA90	DA150	DA200	DA1000	DA2200						
		CPG422	CPGN120308					●	.500	.125	.0313	-	S	0°

CPGA					Stock					Dimensions					
					N										
					DA90	DA150	DA200	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
NF Tip		Catalog No.	ISO Cat. No.					●		.375	.125	.0156	.1732	S	10°
		NF-CPGA321	NF-CMGW090304					●		.375	.125	.0313	.1732	S	10°
		NF-CPGA322	NF-CMGW090308												

CPEW				Stock					Dimensions					
				N										
				DA90	DA150	DA200	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle



DC

55° Diamond Type

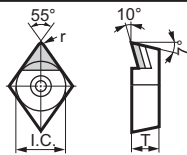
7° Relief

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 January 2013

DCMX



Catalog No.

ISO Cat. No.

Stock
N

Dimensions

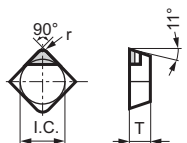
			DA90	DA150	DA200	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip		DCMX21.50					●	.250	.094	.0039	.110	S	10°
		DCMX21.50.5					●	.250	.094	.0078	.110	S	10°
		DCMX21.51					●	.250	.094	.0156	.110	S	10°
		DCMX32.50					●	.375	.156	.0039	.1732	S	10°
		DCMX32.50.5					●	.375	.156	.0078	.1732	S	10°
		DCMX32.51					●	.375	.156	.0156	.1732	S	10°
NF Tip		NF-DCMX21.50					● ●	.250	.094	.0039	.110	S	10°
		NF-DCMX21.50.5					● ●	.250	.094	.0078	.110	S	10°
		NF-DCMX21.51					● ●	.250	.094	.0156	.110	S	10°
		NF-DCMX32.50					● ●	.375	.156	.0039	.1732	S	10°
		NF-DCMX32.50.5					● ●	.375	.156	.0078	.1732	S	10°
		NF-DCMX32.51					● ●	.375	.156	.0156	.1732	S	10°
		NF-DCMX32.52					● ●	.375	.156	.0313	.1732	S	10°
		NF-DCMT11T308											

SP

Square Type

11° Relief

SPG



Catalog No.

ISO Cat. No.

Stock
N

Dimensions

			DA90	DA150	DA200	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
Standard Tip		SPG321		▲	▲			.375	.125	.0156	-	S	0°
		SPG322		●	●			.375	.125	.0313	-	S	0°
		SPG421		●	▲		●	.500	.125	.0156	-	S	0°
		SPG422		●	▲		●	.500	.125	.0313	-	S	0°
NF Tip		NF-SPG321				★	●	.375	.125	.0156	-	S	0°
		NF-SPG322				★	★	.375	.125	.0313	-	S	0°
		NF-SPG421				★	●	.500	.125	.0156	-	S	0°
		NF-SPG422				★	●	.500	.125	.0313	-	S	0°



TB

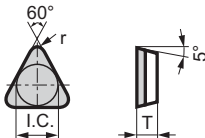


60° Triangle Type

5° Relief

EDGE PREPARATIONS:

S Standard
 H Honed
 K Reinforced
 AW Chipbreaker Stud
 WF High Luster "Mirror-Like" Finish

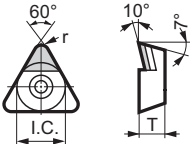


- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item
- Available January 2013

TBGE					Stock					Dimensions					
					N					Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
					DA90	DA150	DA200	DA1000	DA2200						
Standard Tip		Catalog No.	ISO Cat. No.												
		TBGE520.5B	TBGE060102BSN		●			●	.156	.125	.0078	-	S	0°	
		TBGE521B	TBGE060104BSN		●			●	.156	.125	.0156	-	S	0°	
		TBGE522B	TBGE060108BSN				●	.156	.125	.0313	-	S	0°		
NF Tip		NF-TBGE520.5	NF-TBGN060102				●	●	.156	.0625	.0078	-	S	0°	
		NF-TBGE521	NF-TBGN060104				★	★	.156	.0625	.0156	-	S	0°	

TC

60° Triangle Type

7° Relief

TCMX			<div>Stock</div> <div>N</div>					Dimensions					
			DA90	DA150	DA200	DA1000	DA2200	Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
													
Catalog No.			ISO Cat. No.										
Standard Tip		TCMX1.81.50	TCMT090201									S	10°
		TCMX1.81.50.5	TCMT090202									S	10°
		TCMX1.81.51	TCMT090204									S	10°
		TCMX21.50	TCMT110201									S	10°
		TCMX21.50.5	TCMT110202									S	10°
		TCMX21.51	TCMT110204									S	10°
NF Tip		NF-TCMX1.81.50.5	NF-TCMT090202									S	10°
		NF-TCMX1.81.51	NF-TCMT090204									S	10°
		NF-TCMX21.50	NF-TCMT110201									S	10°
		NF-TCMX21.50.5	NF-TCMT110202									S	10°
		NF-TCMX21.51	NF-TCMT110204									S	10°




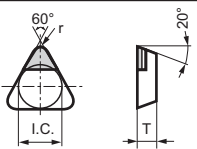
TE

60° Triangle Type

20° Relief

EDGE PREPARATIONS:

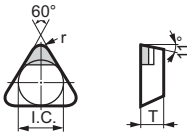

- S Standard
 H Honed
 K Reinforced
 AW Chipbreaker Stud
 WF High Luster "Mirror-Like" Finish
- USA Stocked Item
 ★ Worldwide Warehouse Item
 ▲ USA Limited Availability Item
 ○ Available January 2013

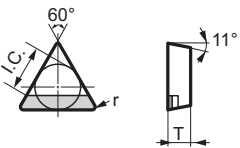

Standard Tip		TEGN			Stock					Dimensions					
					N					Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle
					DA90	DA150	DA200	DA1000	DA2200						

TP

60° Triangle Type

11° Relief

TPG			Stock					Dimensions						
			N					Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle	
			DA90	DA150	DA200	DA1000	DA2200							
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-TPG1.81.50.5	NF-TPGN090202				●		.219	.094	.0078	-	S	0°
		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					Stock		Dimensions								
					N		Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle			
					DA90	DA150							DA200	DA1000	DA2200
														★	★
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°



TP

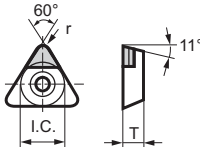


60° Triangle Type



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 January 2013

TPGA TPGD								Stock					Dimensions				
			N					Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle				
			DA90	DA150	DA200	DA1000	DA2200										
Standard Tip		Catalog No.	ISO Cat. No.														
		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°		

TPMX			<div>Stock</div>					<div>Dimensions</div>								
			N					Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle			
			DA90	DA150	DA200	DA1000	DA2200									
Standard Tip		Catalog No.	ISO Cat. No.													
		TPMX22V	TPMT110300						●	.250	.125	.0020	.130	S	0°	
		TPMX220.5	TPMT110302						●	.250	.125	.0078	.130	S	0°	
		TPMX221	TPMT110304						●	.250	.125	.0156	.130	S	0°	
		TPMX222	TPMT110308						●	.250	.125	.0313	.130	S	0°	
		NF-TPMX220	NF-TPMT110301						●	●	.250	.125	.0039	.130	S	0°
NF Tip		NF-TPMX220.5	NF-TPMT110302						●	●	.250	.125	.0078	.130	S	0°
		NF-TPMX221	NF-TPMT110304						●	●	.250	.125	.0156	.130	S	0°
		NF-TPMX222	NF-TPMT110308						●	●	.250	.125	.0313	.130	S	0°
									●	●	.250	.125	.0313	.130	S	0°



VC

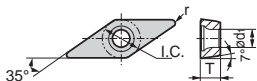
35° Diamond Type

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 January 2013

VCMA

Catalog No.

ISO Cat. No.

DA90**DA150****DA200****DA1000****DA2200**

Stock

N

Dimensions

Inscribed Circle

Thickness

Nose Radius

Hole Diameter

Edge Preparation

Rake Angle

Standard Tip



VCMA333

VCMW160412

●

●

.375

.1875

.0469

.1732

S

0°

VCMA333WF

VCMW160412WF

●

●

.375

.1875

.0469

.1732

WF

0°

VCMA220520

VCMW220520

●

.500

.219

.3125

.1732

S

0°

NF Tip



NF-VCMA332

NF-VCMW160408

●

●

.375

.1875

.0313

.1732

S

0°

NF-VCMA333

NF-VCMW160412

●

●

.375

.1875

.0469

.1732

S

0°

NF-VCMA333H

NF-VCMW160412H

●

.375

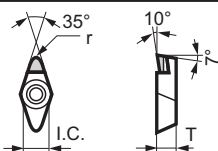
.1875

.0469

.1732

H

0°

VCMX

Catalog No.

ISO Cat. No.

DA90**DA150****DA200****DA1000****DA2200**

Stock

N

Dimensions

Inscribed Circle

Thickness

Nose Radius

Hole Diameter

Edge Preparation

Rake Angle

Standard Tip



VCMX333

VCMT160412

●

.375

.1875

.0469

.1732

S

10°

VCMX333WF

VCMT160412WF

●

.375

.1875

.0469

.1732

WF

10°

NF Tip



NF-VCMX220

NF-VCMT110301

●

●

.250

.125

.0039

.134

S

10°

NF-VCMX220.5

NF-VCMT110302

●

●

.250

.125

.0078

.134

S

10°

NF-VCMX221

NF-VCMT110304

●

●

.250

.125

.0156

.134

S

10°

NF-VCMX331

NF-VCMT160404

●

●

.375

.1875

.0156

.1732

S

10°

NF-VCMX332

NF-VCMT160408

●

●

.375

.1875

.0313

.1732

S

10°

NF-VCMX333

NF-VCMT160412

●

●

.375

.1875

.0469

.1732

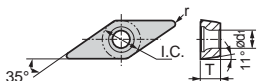
S

10°

VP

35° Diamond Type

11° Relief

VPMA

Catalog No.

ISO Cat. No.

DA90**DA150****DA200****DA1000****DA2200**

Stock

N

Dimensions

Inscribed Circle

Thickness

Nose Radius

Hole Diameter

Edge Preparation

Rake Angle

Standard Tip



VPMA443

VPMW220612

●

.500

.250

.0469

.214

S

0°

VPMA443WF

VPMW220612WF

●

.500

.250

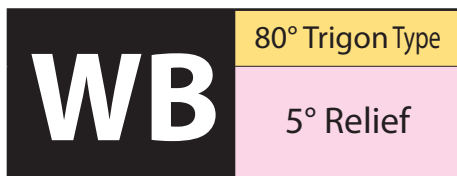
.0469

.214

WF

0°





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 January 2013

WBMX				Stock					Dimensions					
Standard Tip		Catalog No.	ISO Cat. No.	DA90	DA150	DA200	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°



MDE

Dog Bone Type

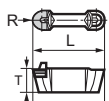
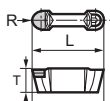
for GDE Style
Toolholders

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 January 2013

MDE

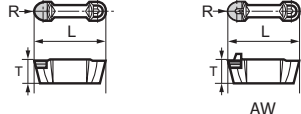



AW

Stock

N

Dimensions

MDE					Stock						Dimensions					
			N						Inscribed Circle	Thickness	Nose Radius	Hole Diameter	Edge Preparation	Rake Angle		
			DA90	DA150	DA200	DA1000	DA2200									
Standard Tip 	Catalog No.	ISO Cat. No.														
	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





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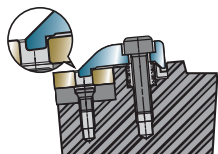
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SumiTurn Capto & T-REX Holder Systems.....	180-181
D Type Toolholders.....	182-183
ANSI Standard Combination Toolholders.....	184-191
Swiss Toolholders.....	192-204

M

Insert Holding

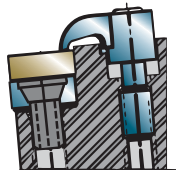
D

Clamp Mechanism



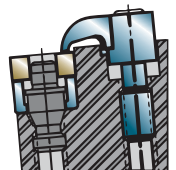
C

Clamp



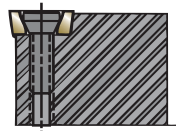
M

Clamp and Lock Pin



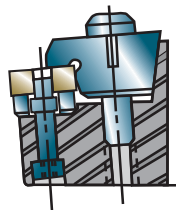
S

Screw Only



W

Wedge Clamp*



W

Insert Shape

C

Diamond



D

Diamond



R

Round



S

Square



T

Triangle



V

Diamond



W

Trigon



L

Toolholder Style



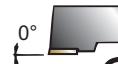
A
0° side cutting
straight shank



C
0° end cutting
straight shank



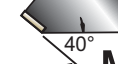
E
30° side cutting
straight shank



G
0° side cutting
offset shank



K
15° end cutting
offset shank



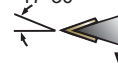
M
40° side cutting
straight shank



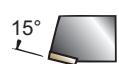
Q
17°30' end cutting
straight shank



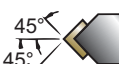
S
45° side cutting
offset shank



V
17°30' side
cutting straight shank



B
15° side cutting
straight shank



D
45° side cutting
straight shank



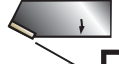
F
0° end cutting
offset shank



J
-3° side cutting
offset shank



L
5° side & end
cutting offset shank



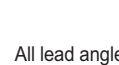
P
27°30' side cutting
straight shank



R
15° side cutting
offset shank



U
-3° end cutting
offset shank



All lead angles
are ±1°

N

Insert Relief Angle

B



C



N



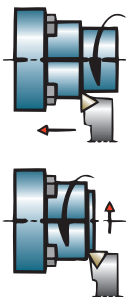
P



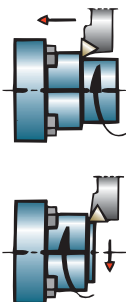
*Sumitomo Standard Only

R
Hand
R

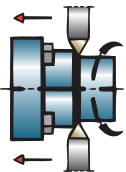
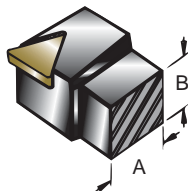
Right Hand


L

Left Hand


N

Neutral Hand


16
Shank Size

Square Shanks

This indicates the A & B dimensions in sixteenths (1/16).

examples:

$$12 = 12/16 = 3/4 \text{ sq.}$$

$$16 = 16/16 = 1.0 \text{ sq.}$$

$$20 = 20/16 = 1-1/4 \text{ sq.}$$

Rectangle Shanks

The first digit indicates the "A" dimension in eighths (1/8).

The second digit indicates the "B" dimension in quarters (1/4).

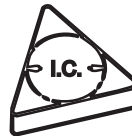
examples:

$$86 = A \times B$$

$$1.0 \times 1-1/2$$

$$85 = A \times B$$

$$1.0 \times 1-1/4$$

4
Insert Size


For equal sided inserts this indicates the inscribed circle (I.C.) in eighths (1/8)

examples,

$$6 = 6/8 = 3/4" \text{ I.C.}$$

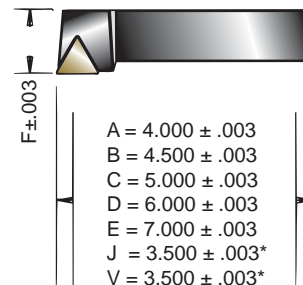
$$4 = 4/8 = 1/2" \text{ I.C.}$$

$$2.5 = 2.5/8 = 5/16 \text{ I.C.}$$

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


$$\begin{aligned} A &= 4.000 \pm .003 \\ B &= 4.500 \pm .003 \\ C &= 5.000 \pm .003 \\ D &= 6.000 \pm .003 \\ E &= 7.000 \pm .003 \\ J &= 3.500 \pm .003^* \\ V &= 3.500 \pm .003^* \end{aligned}$$

*Sumitomo standard only

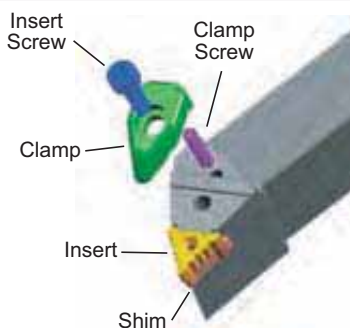
**Master Gage Insert
Nose Radius Chart
for Qualified Holders**

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

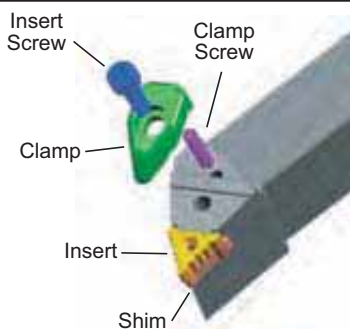
T-Rex Toolholders

- 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**



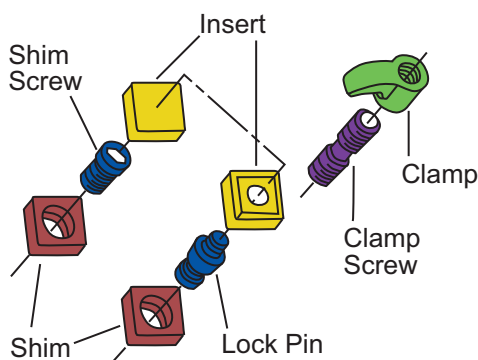
D Type Toolholders

- Stable clamp improves the fracture resistance of the insert
- Better machined workpiece accuracy with improved insert indexing precision
- Easy 1-step insert indexing



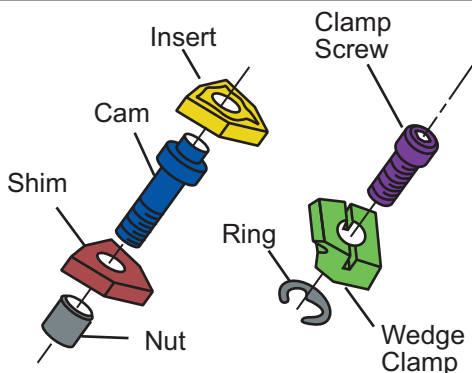
ANSI Standard Combination Toolholders

- 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



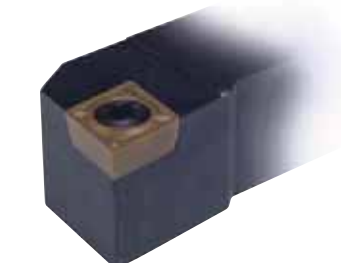
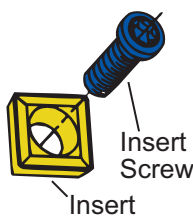
Wedge Clamp Toolholders

- 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



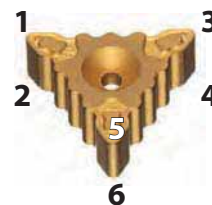
*TORX is a registered trademark of CamCar Division of Textron, Inc.



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

Grade	Speed (SFM)		
	Steels	Stainless Steels	Gray Cast Irons
T2000Z	700 - 1400	600 - 900	-
AC700G	700 - 1200	500 - 800	600 - 1200
AC2000/AC820P	600 - 800	400 - 700	400 - 1000
AC3000/AC30P	300 - 700	300 - 600	-
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

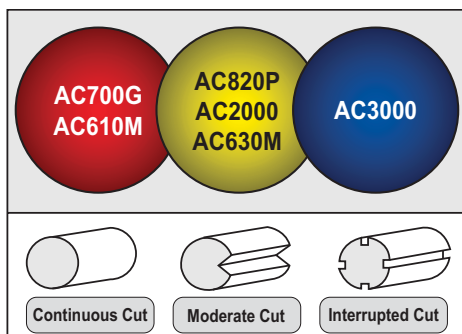


-SU

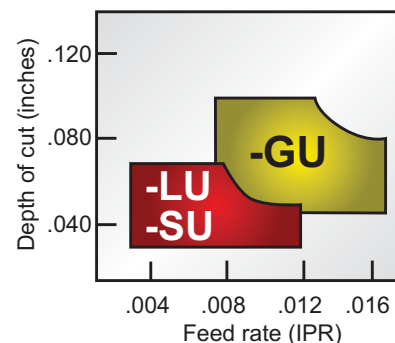
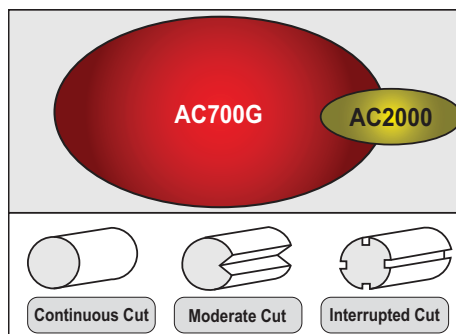


-GU

Steels and Stainless Steels

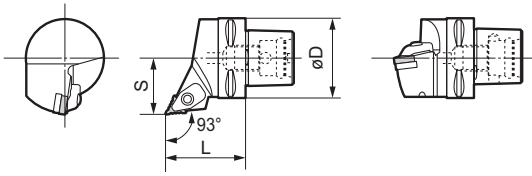


Gray and Ductile Cast Irons



T-REX Sumiturn Capto

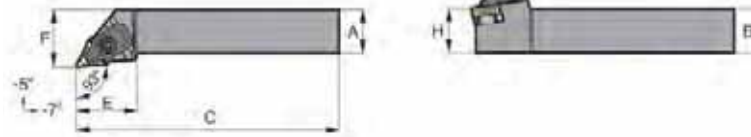
DTR-C Series



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

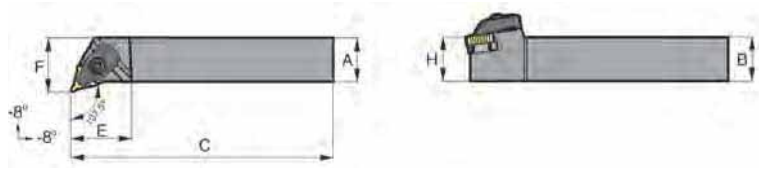
T-REX Toolholder

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"
DTR55CR255M17	DTR55CL255M17	25.0mm	25.0mm	150.0mm	35.0mm	32.0mm	25.0mm

DTR-Q Series

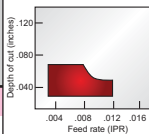


Sumitomo Cat. No.		Dimensions (Inch)					
Right Hand	Left Hand	A	B	C	E	F	H
DTR55QR163D	DTR55QL163D	1.000"	1.000"	6.000"	1.378"	1.260"	1.000"

T-REX Inserts

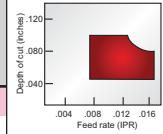
-LU Finishing

Sumitomo Cat. No.	Coated		Dimensions (Inch)		
	AC700G	AC2000	Inscribed Circle	Thickness	Radius
TRM551704LU	•	•	•	0.394	0.197
TRM551708LU	•	•	•	0.394	0.197
TRM551712LU	•	•	•	0.394	0.197



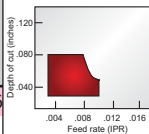
-GU Finishing

Sumitomo Cat. No.	Coated		Dimensions (Inch)		
	AC700G	AC2000	Inscribed Circle	Thickness	Radius
TRM551704GU	•	•	•	0.394	0.197
TRM551708GU	•	•	•	0.394	0.197
TRM551712GU	•	•	•	0.394	0.197

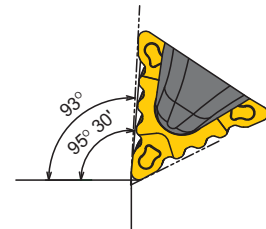


-SU Finishing

Sumitomo Cat. No.	Coated		Dimensions (Inch)		
	AC610M	AC630M	Inscribed Circle	Thickness	Radius
TRM551704SU	•	•	•	0.394	0.197
TRM551708SU	•	•	•	0.394	0.197
TRM551712SU	•	•	•	0.394	0.197



2.5mm (0.100")
Maximum
Depth of cut



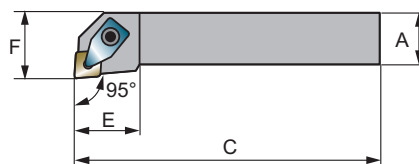
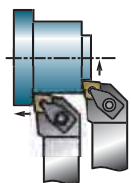
Hardware

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.

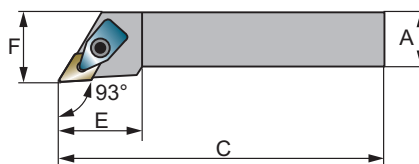
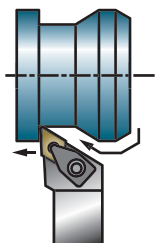


DCL Series



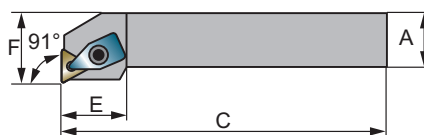
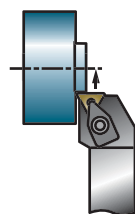
Sumitomo Cat. No.														
Right Hand	Left Hand	Gage Insert	A	B	C	E	F	Clamp	Spring	Cap Screw	Shim	Shim Screw	Wrench	Wrench
DCLNR124B	DCLNL124B	CNMG43-	.750	.750	4.500	1.250	1.000	SCP-2			CNS1204	BFTX0409N	TRX15	LH040
DCLNR164D	DCLNL164D	CNMG43-	1.000	1.000	6.000	1.250	1.250	SCP-2			CNS1204	BFTX0409N	TRX15	LH040

DDJ Series



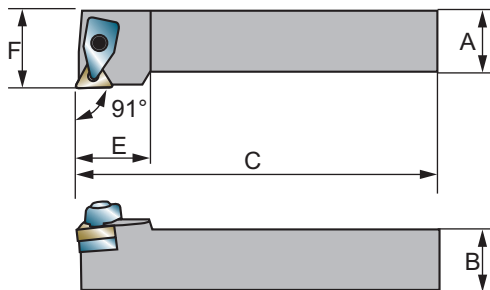
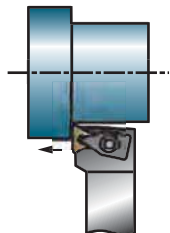
Sumitomo Cat. No.														
Right Hand	Left Hand	Gage Insert	A	B	C	E	F	Clamp	Spring	Cap Screw	Shim	Shim Screw	Wrench	Wrench
DDJNR124B	DDJNL124B	DNMG43-	.750	.750	4.500	1.250	1.000	SCP-2			DNS1504	BFTX0409N	TRX15	LH040
DDJNR164D	DDJNL164D	DNMG43-	1.000	1.000	6.000	1.250	1.250	SCP-2			DNS1504	BFTX0409N	TRX15	LH040









DTF Series



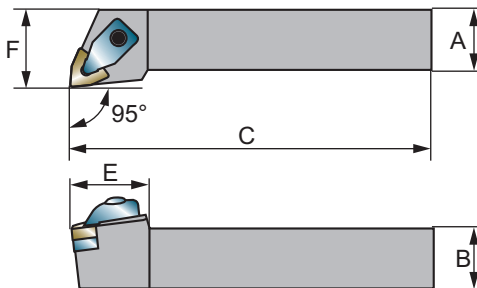
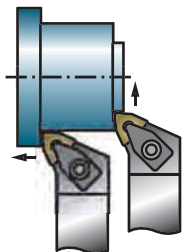
Sumitomo Cat. No.														
Right Hand	Left Hand	Gage Insert	A	B	C	E	F	Clamp	Spring	Cap Screw	Shim	Shim Screw	Wrench	Wrench
DTFNR123B	DTFNL123B	TNMG33-	.750	.750	4.500	1.000	1.000	SCP-1			TNS1604	BFTX0307N	TRX10	LH040
DTFNR163D	DTFNL163D	TNMG33-	1.000	1.000	6.000	1.000	1.250	SCP-1			TNS1604	BFTX0307N	TRX10	LH040









DTG Series

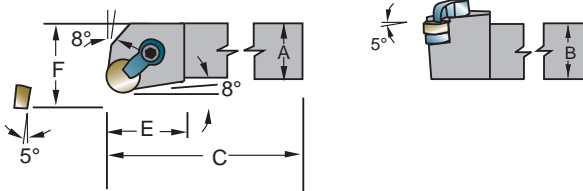







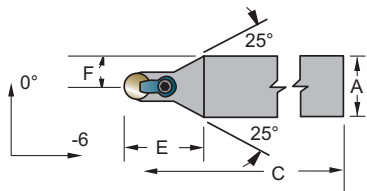
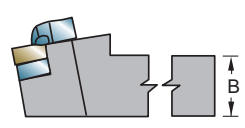





Sumitomo Cat. No.			A	B	C	E	F							
Right Hand	Left Hand	Gage Insert						Clamp	Spring	Cap Screw	Shim	Shim Screw	Wrench	Wrench
DTG NR123B	DTG NL123B	TNMG33-	.750	.750	4.500	1.000	1.000	SCP-1			TNS1604	BFTX0307N	TRX10	LH040
DTG NR163D	DTG NL163D	TNMG33-	1.000	1.000	6.000	1.000	1.250	SCP-1			TNS1604	BFTX0307N	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			WNS0804	BFTX0409N	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			WNS0804	BFTX0409N	TRX15	LH040
DWLNR164D	DWLNL164D	WNMG43-	1.000	1.000	6.000	1.250	1.250	SCP-2			WNS0804	BFTX0409N	TRX15	LH040

CRG Series											
Sumitomo Cat. No.			A	B	C	E	F				
Right Hand	Left Hand	Gage Insert						Shim	Shim Screw	Clamp	Clamp Screw
CRG NR124B	CRG NL124B	RNG N45	.750	.750	4.500	1.250	1.000	IRSN-43	S-46	CL-9	XNS-58
CRG NR164D	CRG NL164D	RNG N45	1.000	1.000	6.000	1.250	1.250	IRSN-43	S-46	CL-9	XNS-510
CRG NR204D	CRG NL204D	RNG N45	1.250	1.250	6.000	1.250	1.500	IRSN-44	S-46	CL-9	XNS-510

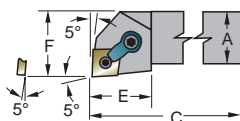
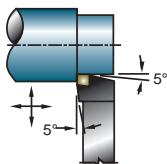
CRD Series											
Sumitomo Cat. No.		A	B	C	E	F					
Neutral Hand	Gage Insert						Shim	Shim Screw	Clamp	Clamp Screw	
CRDNN164D	RNGN45	1.000	1.000	6.000	1.500	0.500	IRSN-43	S-46	CL-9	XNS-510	

ANSI COMBINATION TOOLHOLDERS

Series: MCL • MCK • MCR

ANSI Combination Toolholders

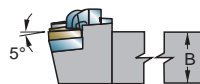
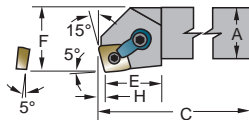
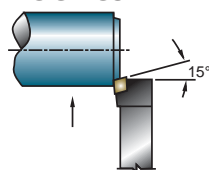
MCL Series



OPTIONAL HARDWARE

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	-

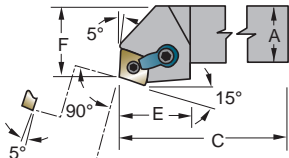
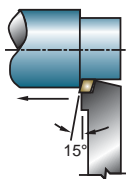
MCK Series



OPTIONAL HARDWARE

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	-

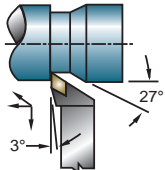
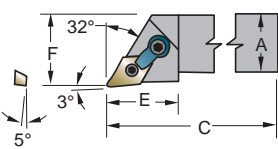








MCR Series

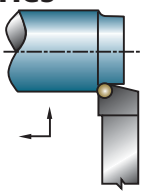
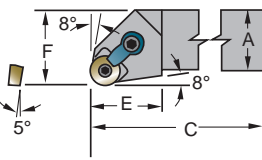
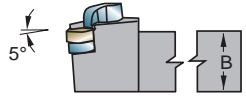









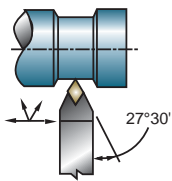
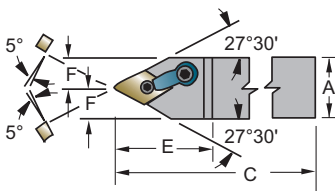
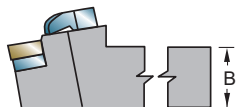







OPTIONAL HARDWARE

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	-

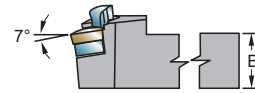
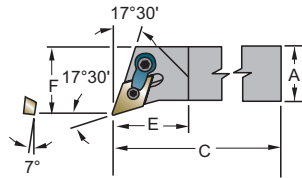
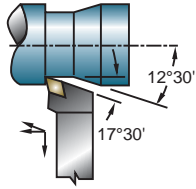


MDJ Series									OPTIONAL HARDWARE					
														
Sumitomo Cat. No.			A	B	C	E	F							
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim	
MDJNR123B	MDJNL123B	DNMG33-	.750	.750	4.500	1.250	1.000	IDSN-322	NL-34L	CL-7	XNS-36	S-34	—	
MDJNR124B	MDJNL124B	DNMG43-	.750	.750	4.500	1.250	1.000	IDSN-443	NL-46	CL-6	XNS-36	S-46	IDSN-443	
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-443	
MDJNR164D	MDJNL164D	DNMG43-	1.000	1.000	6.000	1.250	1.250	IDSN-443	NL-46	CL-20	XNS-48	S-46	IDSN-443	
MDJNR204D	MDJNL204D	DNMG43-	1.250	1.250	6.000	1.250	1.500	IDSN-443	NL-46	CL-20	XNS-48	S-46	IDSN-443	








MRG Series									OPTIONAL HARDWARE					
														
Sumitomo Cat. No.			A	B	C	E	F							
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									OPTIONAL HARDWARE					
														
Sumitomo Cat. No.			A	B	C	E	F							
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-443	

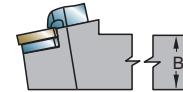
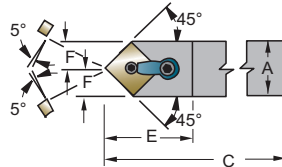
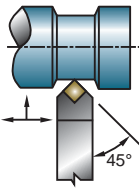
MDQ Series










OPTIONAL HARDWARE

Sumitomo Cat. No.			A	B	C	E	F						
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

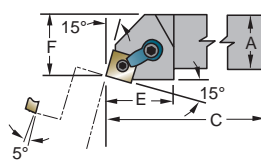
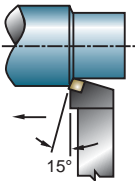
MSD Series










OPTIONAL HARDWARE

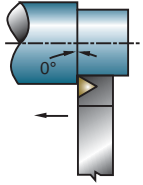
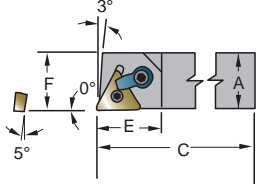








Sumitomo Cat. No.			A	B	C	E	F						
Neutral Hand		Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MSDNN124B		SNMG43-	.750	.750	4.500	1.375	.375	ISSN-433	NL-46	CL-9	XNS-59	S-46	ISSN-443
MSDNN164D		SNMG43-	1.000	1.000	6.000	1.375	.500	ISSN-433	NL-46	CL-9	XNS-59	S-46	ISSN-443

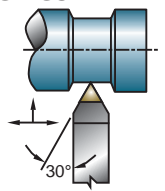
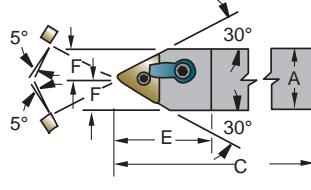
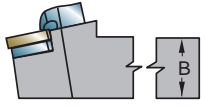







MSR Series

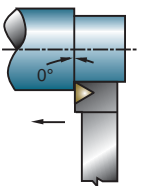
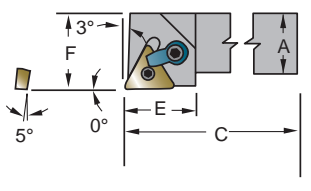
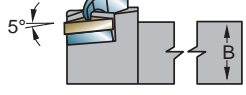









OPTIONAL HARDWARE

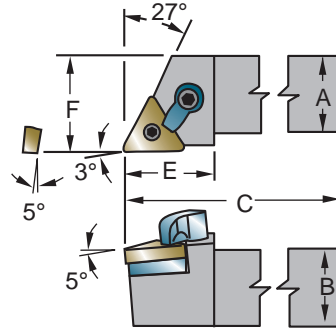
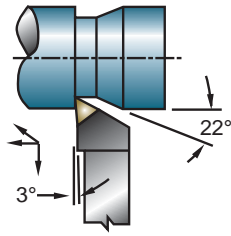
Sumitomo Cat. No.			A	B	C	E	F						
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MSRNR124B	MSRNL124B	SNMG43-	.750	.750	4.500	1.250	.880	ISSN-433	NL-46	CL-9	XNS-59	S-46	ISSN-443
MSRNR164D	MSRNL164D	SNMG43-	1.000	1.000	6.000	1.250	1.130	ISSN-433	NL-46	CL-9	XNS-59	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									OPTIONAL HARDWARE					
														
Sumitomo Cat. No.			A	B	C	E	F							
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									OPTIONAL HARDWARE					
														
Sumitomo Cat. No.			A	B	C	E	F							
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	
MTENN205E		TNMG54-	1.250	1.250	7.000	1.625	.625	ITSN-534	NL-58	CL-9	XNS-510	—	—	

MTG Series									OPTIONAL HARDWARE					
														
Sumitomo Cat. No.			A	B	C	E	F							
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	

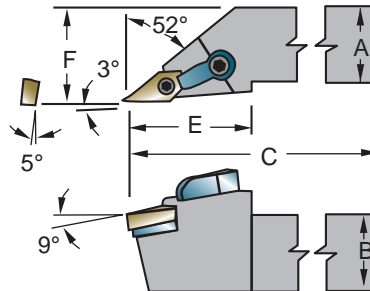
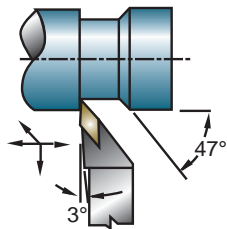
MTJ Series










OPTIONAL HARDWARE

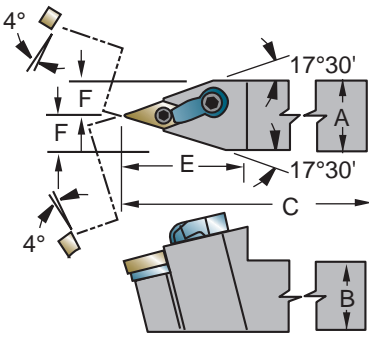







Sumitomo Cat. No.			A	B	C	E	F						
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim
MTJNR123B	MTJNL123B	TNMG32-	.750	.750	4.500	1.120	1.000	ITSN-333	NL-34L	CL-6	XNS-36	S-34	ITSN-323
MTJNR124B	MTJNL124B	TNMG43-	.750	.750	4.500	1.190	1.000	ITSN-433	NL-46	CL-9	XNS-58	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

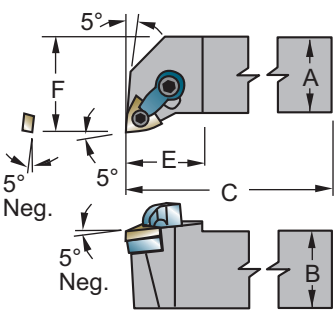









OPTIONAL HARDWARE

Sumitomo Cat. No.			A	B	C	E	F						
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	-

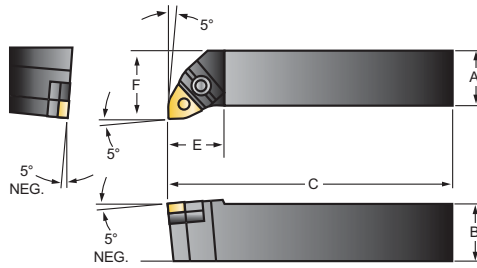
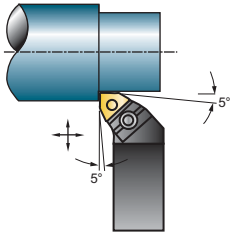
MVV Series												OPTIONAL HARDWARE	
Sumitomo Cat. No.		A	B	C	E	F							
Neutral Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim	
MVVNN123B	VNMG33-	.750	.750	4.500	1.750	.375	IVSN-322	NL-34L	CL-30	XNS-510	S-34	–	
MVVNN163D	VNMG33-	1.000	1.000	6.000	1.750	.500	IVSN-322	NL-34L	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



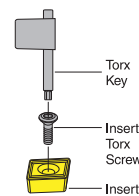
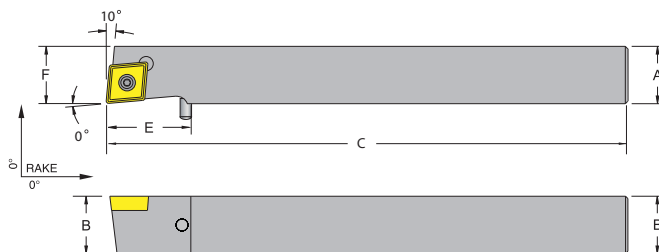
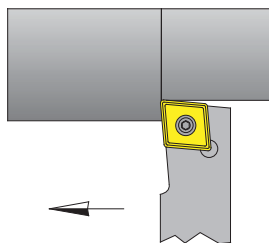
Sumitomo Cat. No.			A	B	C	E	F							OPTIONAL HARDWARE
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Shim	
MWLN124B	MWLN124B	WNMG43-	.750	.750	4.500	1.250	1.000	IWSN-432	NL-46	CL-20	XNS-59	S-46	-	
MWLN163C	MWLN163C	WNMG33-	1.000	1.000	5.000	1.000	1.250	IWSN-322	NL-34L	CL-6	XNS-36	S-34	-	
MWLN163D	MWLN163D	WNMG33-	1.000	1.000	6.000	1.000	1.250	IWSN-322	NL-34L	CL-7	XNS-36	-	-	
MWLN164C	MWLN164C	WNMG43-	1.000	1.000	5.000	1.125	1.250	IWSN-433	NL-46	CL-20	XNS-48	-	-	
MWLN164D	MWLN164D	WNMG43-	1.000	1.000	6.000	1.250	1.250	IWSN-432	NL-46	CL-9	XNS-59	S-46	-	
MWLN204D	MWLN204D	WNMG43-	1.250	1.250	6.000	1.250	1.500	IWSN-432	NL-46	CL-20	XNS-59	S-46	-	
MWLN243D	MWLN243D	WNMG33-	1.500	1.500	6.000	1.000	2.000	IWSN-322	NL-34L	CL-7	XNS-36	-	-	
MWLN244D	MWLN244D	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

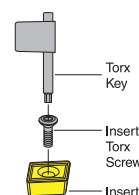
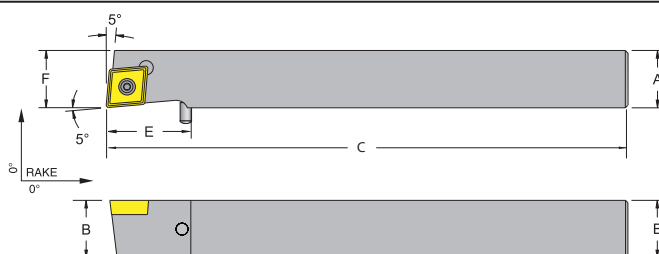
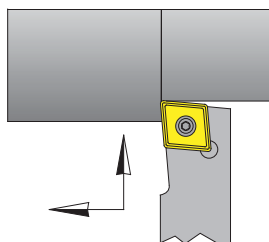
SCAC Series



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								
SCACR 062B	SCACL 062B	0.375	0.375	4.500	1.000	0.375	CC__-21.51	TS25.45-6M2	TRX08
SCACR 083B	SCACL 083B	0.500	0.500	4.500	1.000	0.500	CC__-32.52	TS4.7-10M1	TRX15
SCACR 103B	SCACL 103B	0.625	0.625	4.500	1.000	0.625			
SCACR 123B	SCACL 123B	0.750	0.750	4.500	1.000	0.750			

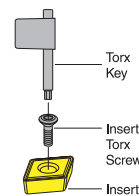
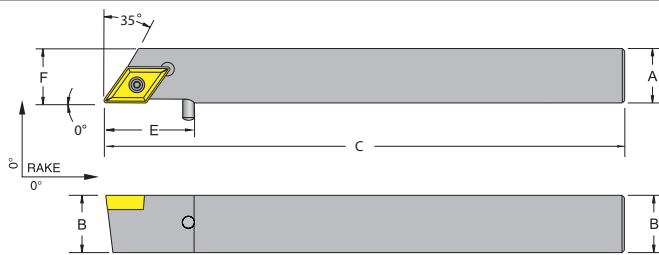
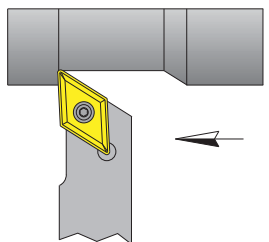
SCNC Series



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								
SCNCR 062B	SCNCL 062B	0.375	0.375	4.500	1.000	0.375	CC__21.51	TS25.456M2	TRX08
SCNCR 082B	SCNCL 082B	0.500	0.500	4.500	1.000	0.500	CC__32.52	TS4.710M1	TRX15
SCNCR 083B	SCNCL 083B	0.500	0.500	4.500	1.000	0.500			
SCNCR 103B	SCNCL 103B	0.625	0.625	4.500	1.000	0.625			

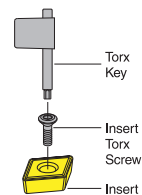
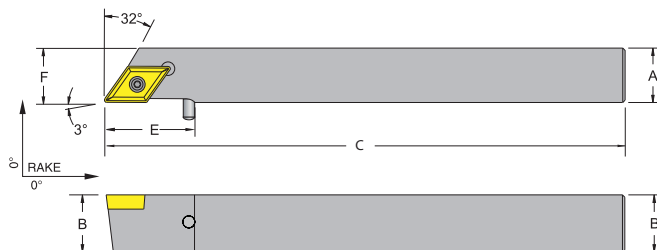
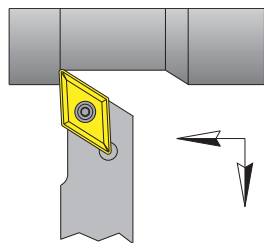
SDAC Series



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								
SDACR 062B	SDACL 062B	0.375	0.375	4.500	1.000	0.375	DC__21.51	TS25.456M2	TRX08
SDACR 082B	SDACL 082B	0.500	0.500	4.500	1.000	0.500			
SDACR 083B	SDACL 083B	0.500	0.500	4.500	1.000	0.500	DC__32.52	TS4.710M1	TRX15
SDACR 103B	SDACL 103B	0.625	0.625	4.500	1.000	0.625			
SDACR 123B	SDACL 123B	0.750	0.750	4.500	1.000	0.750			

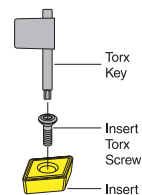
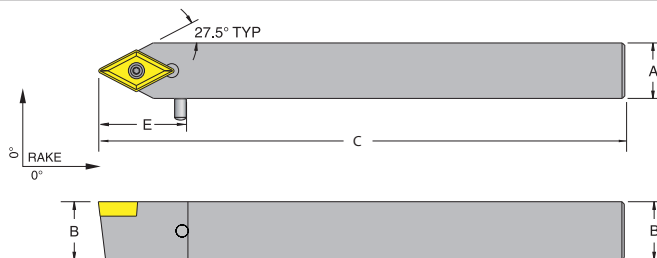
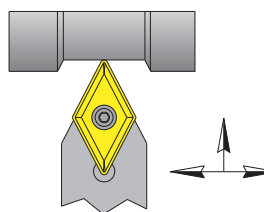
SDNC Series



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								
SDNCR 062B	SDNCL 062B	0.375	0.375	4.500	1.000	0.375	DC__21.51	TS25.456M2	TRX08
SDNCR 082B	SDNCL 082B	0.500	0.500	4.500	1.000	0.500			
SDNCR 103B	SDNCL 103B	0.625	0.625	4.500	1.000	0.625	DC__32.52	TS4.710M1	TRX15

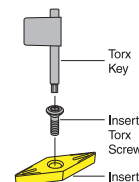
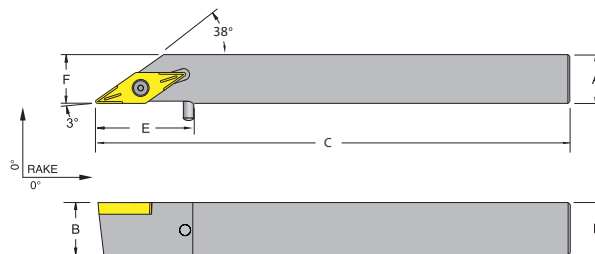
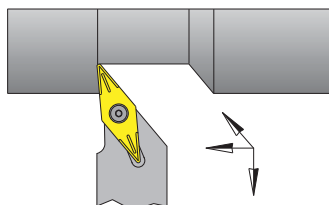
SDPC Series



Neutral Hand Shown

Catalog Number	A	B	C	E (Tool Stop)	Gage Insert	Insert Torx Screw	Torx Key
Neutral							
SDPCN 062B	0.375	0.375	4.500	1.000	DC__21.51	TS25.456M2	TRX08
SDPCN 082B	0.500	0.500	4.500	1.000			
SDPCN 083B	0.500	0.500	4.500	1.000	DC__32.52	TS4.710M1	TRX15
SDPCN 103B	0.625	0.625	4.500	1.000			

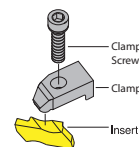
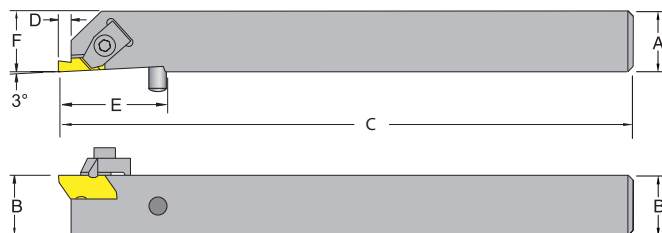
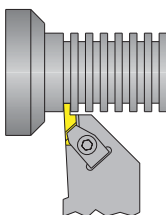
SVNB Series



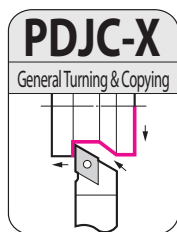
Right Hand Shown, Left Hand Opposite

Catalog Number		A	B	C	E (Tool Stop)	F	Gage Insert	Insert Torx Screw	Torx Key
Right Hand	Left Hand								
SVNBR 062B	SVNBL 062B	0.375	0.375	4.500	1.000	0.375	VB__21.51	TS25.456M2	TRX08
SVNBR 082B	SVNBL 082B	0.500	0.500	4.500	1.000	0.500			
SVNBR 103B	SVNBL 103B	0.625	0.625	4.500	1.000	0.625	VB__32.52	TS4.710M1	TRX15

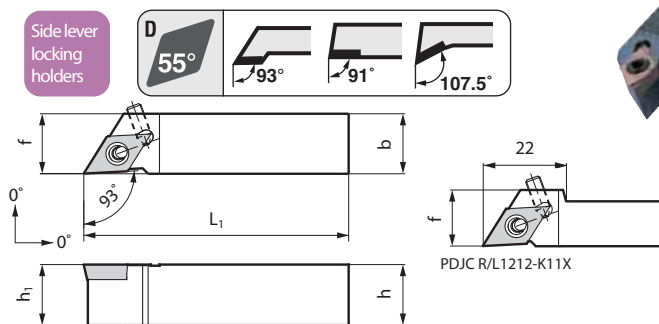
NS Series



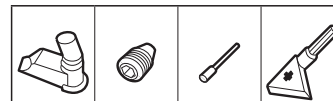
Catalog Number		A	B	C	E (Tool Stop)	F	Gage Insert	Insert Torx Screw	Torx Key
Right Hand	Left Hand								
NSR 062B	NSL 062B	0.375	0.375	4.500	1.000	0.375	SG2R*	CM182*	S310M
NSR 082B	NSL 082B	0.500	0.500	4.500	1.000	0.500	SG2L**	CM183	
NSR 102B	NSL 102B	0.625	0.625	4.500	1.000	0.625	SG2R* SG2L**	CM182* CM183	S310M



■ Holder

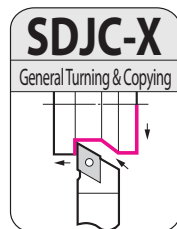


■ Parts

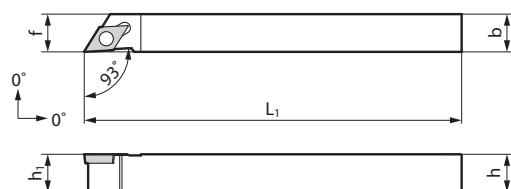


Catalog Number	Stock		Dimensions (mm)						Applicable Insert	Lever Pin	Set Screw	Pin	Wrench
	R	L	h	b	L ₁	f	h ₁						
PDJC R/L1010-K07X	★		10	10	125	10	10		DC_T21.5	LCL06	BTT0407	LP04	TH020
PDJC R/L1212-K11X	★		12	12	125	15	12		DC_T32.5	LCL09	BTT0411	LP07	TH020
PDJC R/L1616-K11X	★		16	16	125	16	16		DC_T32.5				

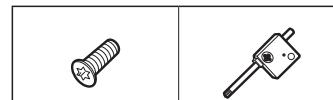
Above figures show right hand tools.



■ Holder



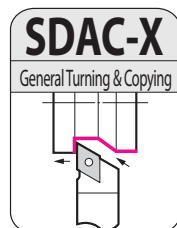
■ Parts



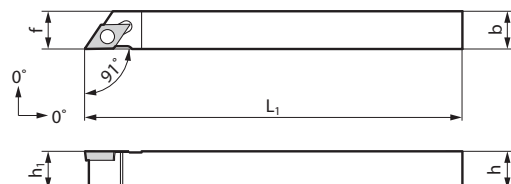
Catalog Number	Stock		Dimensions (mm)						Applicable Insert	Screw	Wrench
	R	L	h	b	L ₁	f	h ₁				
SDJC R/L1010-H07X	★	★	10	10	100	10	10		DC_T21.5	BFTX02506N	TRX08
SDJC R/L1215-K11X	★	★	12	15	125	15	12		DC_T32.5		
SDJC R/L1215-F11X	★	★	12	15	85	15	12		DC_T32.5	BFTX0409N	TRX15

Above figures show right hand tools.

85mm Shank



■ Holder



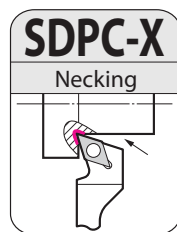
■ Parts



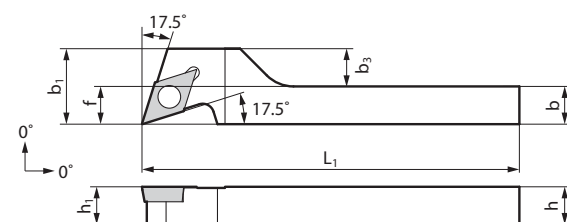
Catalog Number	Stock		Dimensions (mm)						Applicable Insert	Screw	Wrench
	R	L	h	b	L ₁	f	h ₁				
SDAC R/L1010-H07X	★	★	10	10	100	10	10		DC_T21.5	BFTX02506N	TRX08
SDAC R/L1215-K11X	★	★	12	15	125	15	12		DC_T32.5		
SDAC R/L1215-F11X	★	★	12	15	85	15	12		DC_T32.5	BFTX0409N	TRX15

Above figures show right hand tools.

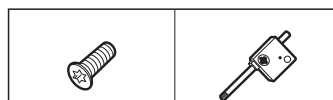
85mm Shank



■ Holder



■ Parts



Catalog Number	Stock		Dimensions (mm)							Applicable Insert	Screw	Wrench
	R	L	h	b	L ₁	f	h ₁	b ₁	b ₃			
SDPC R/L1010-H11X	★	★	10	10	100	10	10	20	10	DC_T32.5	BFTX0409N	TRX15

Above figures show right hand tools.

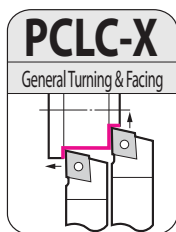
Swiss Toolholders Zero Offset

Swiss

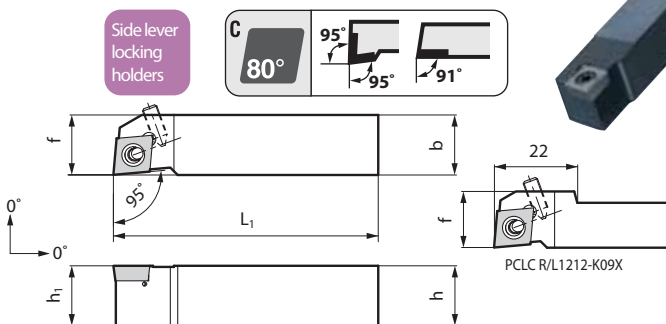
TOOLHOLDERS

Series: PCLC • SCLC • SCAC • SDPC

★ = Worldwide Warehouse item

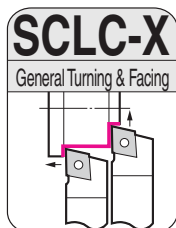


Holder

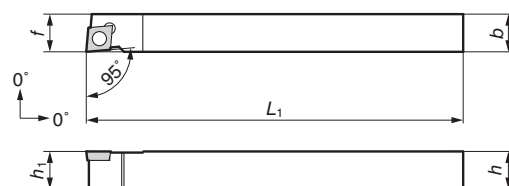


Above figures show right hand tools.

Catalog Number	Stock		Dimensions (mm)						Applicable Insert	Parts			
	R	L	h	b	L ₁	f	h ₁			Lever Pin	Set Screw	Pin	Wrench
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				



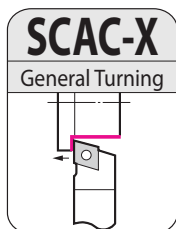
Holder



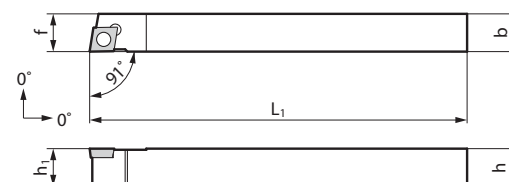
Above figures show right hand tools.

Catalog Number	Stock		Dimensions (mm)						Applicable Insert	Parts	
	R	L	h	b	L ₁	f	h ₁			Screw	Wrench
SCLC R/L1010-H06X	★	★	10	10	100	10	10		CC_T21.5	BFTX02506N	TRX08
SCLC R/L1215-K09X	★	★	12	15	125	15	12		CC_T32.5	BFTX0409N	TRX15
SCLC R/L1215-F09X	★	★	12	15	85	15	12		CC_T32.5		

85mm Shank



Holder

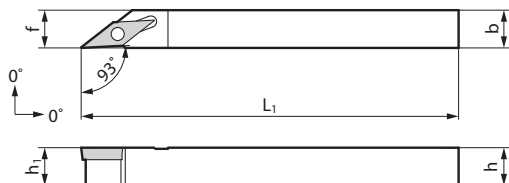
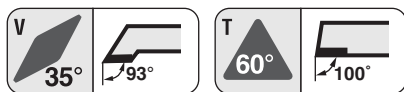
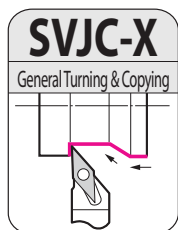


Above figures show right hand tools.

Catalog Number	Stock		Dimensions (mm)						Applicable Insert	Parts	
	R	L	h	b	L ₁	f	h ₁			Screw	Wrench
SCAC R/L1010-H06X	★	★	10	10	100	10	10		CC_T21.5	BFTX02506N	TRX08
SCAC R/L1215-K09X	★	★	12	15	125	15	12		CC_T32.5	BFTX0409N	TRX15
SCAC R/L1215-F09X	★	★	12	15	85	15	12		CC_T32.5		

85mm Shank





■ Holder

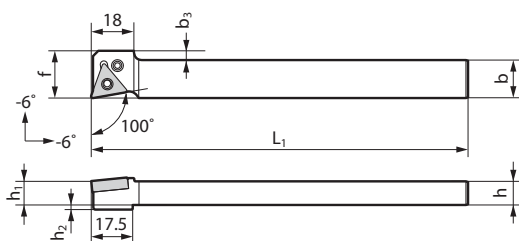
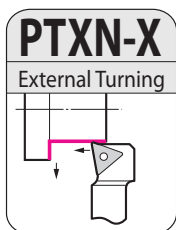
Above figures show right hand tools.

Catalog Number	Stock		Dimensions (mm)							Applicable Insert
	R	L	h	b	L ₁	f	h ₁			
SVJC R/L1010-H11X	D	D	10	10	100	10	10			VC_T22
SVJC R/L1212-K11X	D	D	12	12	125	12	12			VC_T22
SVJC R/L1212-F11X	D	D	12	12	85	12	12			VC_T22

85mm Shank

■ Parts

Screw	Wrench
BFTX02506N	TRX08



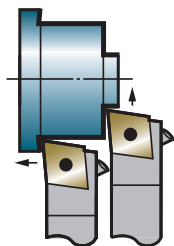
■ Holder

Catalog Number	Stock	Dimensions (mm)							Applicable Insert
		h	b	L ₁	f	h ₁	h ₂	b ₃	
PTXN R1016-X16X	D	10	16	120	20	10	2	4	TN□□33
PTXN R1216-X16X	D	12	16	120	20	12	0	4	TN□□33
PTXN R1616-X16X	D	16	16	120	20	16	0	4	TN□□33
PTXN R2020-X16X	D	20	20	120	20	20	0	0	TN□□33

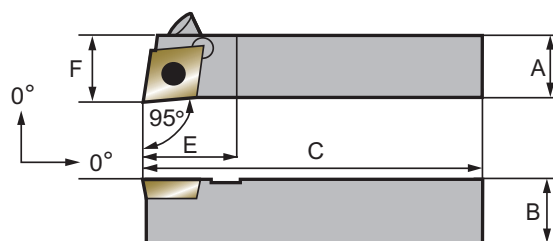
■ Parts

Lever Pin	Screw	Wrench
LCL33NT	LCS33NT	LH020NT

PCLC R/LSeries



Side lever locking holders

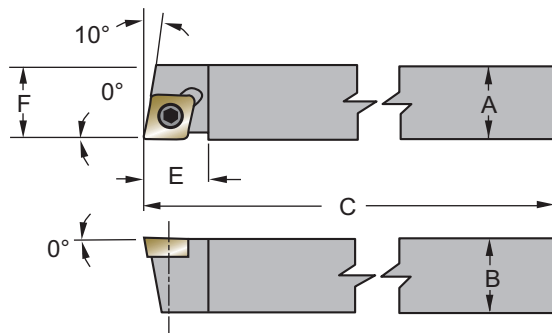
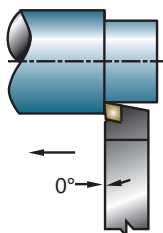


Sumitomo Cat. No.			Dimensions (inch/mm)									
Right Hand	Left Hand	7° Positive Gage Insert	Stock	A	B	C	E	F	Lever Pin	Clamp Bolt	Pin	Wrench
PCLCR062D	PCLCL062D	CCMT21.51	•	.375	.375	6.000	.472	.395	LCL06	BTT0407	LP07	TH020
PCLCR083D	PCLCL083D	CCMT32.52	•	.500	.500	6.000	.591	.520	LCL09	BTT0407	LP06	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

SCAC R/LSeries



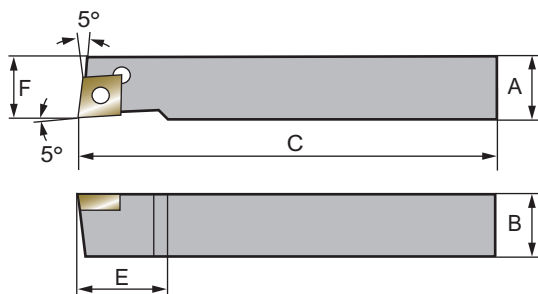
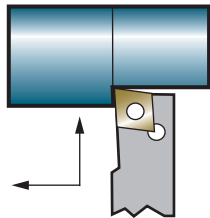
Sumitomo Cat. No.			Dimensions (inch/mm)							
Right Hand	Left Hand	7° Positive Gage Insert	Stock	A	B	C	E	F	Insert Screw	Torx Wrench
SCACR062D	SCACL062D	CCMT21.51	•	.375	.375	6.000	0.440	0.375	ST-21.5	TRX08
SCACR083D	SCACL083D	CCMT32.52	•	.500	.500	6.000	0.625	0.500	ST-32.5	TRX15
SCACR103D	SCACL103D	CCMT32.52	•	.625	.625	6.000	0.500	0.625	ST-32.5	TRX15
SCACR1010-06	SCACL1010-06	CCMT21.51	★	10.0	10.0	100.0	18.0	10.5	ST-21.5	TRX08
SCACR1212-09	SCACL1212-09	CCMT32.52	★	12.0	12.0	100.0	18.0	12.5	ST-32.5	TRX15
SCACR1616-09	SCACL1616-09	CCMT32.52	★	16.0	16.0	100.0	18.0	16.5	ST-32.5	TRX15




• = USA stocked item

★ = Worldwide Warehouse item



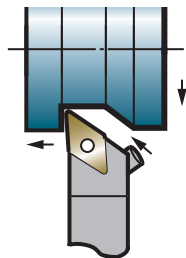
SCNC R/L Series



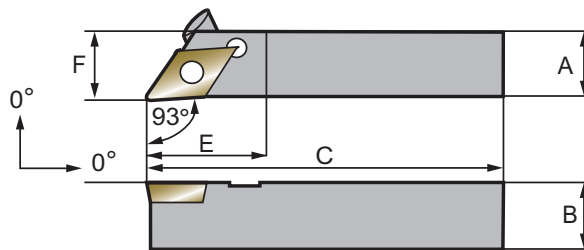
Sumitomo Cat. No.			Dimensions (inch/mm)							
Right Hand	Left Hand		Stock	A	B	C	E	F		
SCNCR062D	SCNCL062D	CCMT21.51	•	.375	.375	6.000	0.500	0.375	ST-21.5	TRX08
SCNCR083D	SCNCL083D	CCMT32.52	•	.500	.500	6.000	0.620	0.500	ST-32.5	TRX15
SCNCR103D	SCNCL103B	CCMT32.52	•	.625	.625	6.000	0.500	0.625	ST-32.5	TRX15
SCNCR1010-06	SCNCL1010-06	CCMT21.51		10.0	10.0	150.0	18.0	10.5	ST-21.5	TRX08
SCNCR1212-09	SCNCL1212-09	CCMT32.52		12.0	12.0	150.0	18.0	12.5	ST-32.5	TRX15
SCNCR1616-09	SCNCL1616-09	CCMT32.52		16.0	16.0	150.0	18.0	16.5	ST-32.5	TRX15






• = USA stocked item

PDJC R/L Series



Side lever locking holders

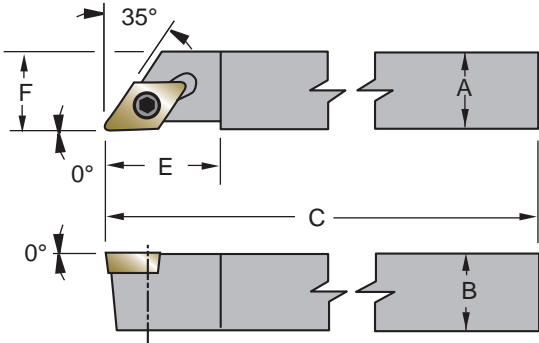





Sumitomo Cat. No.			Dimensions (Inch/mm)									
Right Hand	Left Hand		Stock	A	B	C	E	F				
PDJCR062D	PDJCL062D	DCMT21.51	•	.375	.375	6.000	.472	.395	LCL06	BTT0407	LP04	TH020
PDJCR083D	PDJCL083D	DCMT32.52	•	.500	.500	6.000	.787	.520	LCL09	BTT0407	LP07	TH020
PDJCR103D	PDJCL103D	DCMT32.52	•	.625	.625	6.000	.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



SDAC R/LSeries										
Sumitomo Cat. No.			Dimensions (inch/mm)							
Right Hand	Left Hand	7° Positive Gage Insert	Stock	A	B	C	E	F	Insert Screw	Torx Wrench
SDACR062D	SDACL062D	DCMT21.51	●	.375	.375	6.000	0.625	0.375	ST-21.5	TRX08
SDACR082D	SDACL082D	DCMT21.51	●	.500	.500	6.000	0.875	0.500	ST-32.5	TRX15
SDACR103D	SDACL103D	DCMT32.52	●	.625	.625	6.000	0.875	0.625	ST-32.5	TRX15
SDACR1010-07	SDACL1010-07	DCMT21.51	★	10.0	10.0	100.0	18.0	10.5	ST-21.5	TRX08
SDACR1212-11	SDACL1212-11	DCMT32.52	★	12.0	12.0	100.0	18.0	12.5	ST-32.5	TRX15
SDACR1616-11	SDACL1616-11	DCMT32.52	★	16.0	16.0	100.0	18.0	16.5	ST-32.5	TRX15

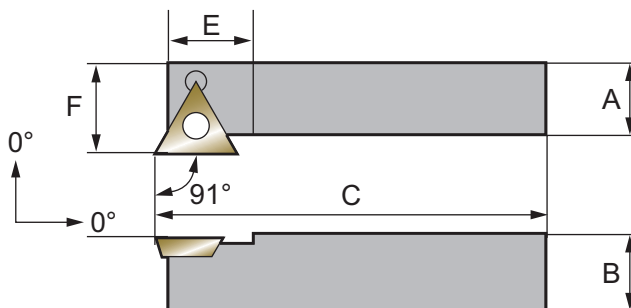
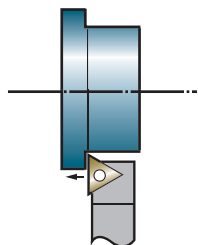
• = USA stocked item




★ = Worldwide Warehouse item

SDPCN Series									
Sumitomo Cat. No.		Dimensions (inch/mm)							
Neutral Hand	7° Positive Gage Insert	Stock	A	B	C			Insert Screw	Torx Wrench
SDPCN062D	DCMT21.51	•	.375	.375	6.000			ST-21.5	TRX08
SDPCN083D	DCMT32.52	•	.500	.500	6.000			ST-32.5	TRX15
SDPCN103D	DCMT32.52	•	.625	.625	6.000			ST-32.5	TRX15
SDPCN1010-07	DCMT21.51		10.0	10.0	150.0			ST-21.5	TRX08
SDPCN1212-11	DCMT32.52		12.0	12.0	150.0			ST-32.5	TRX15
SDPCN1616-11	DCMT32.52		16.0	16.0	150.0			ST-32.5	TRX15

• = USA stocked item

STAC R/L Series

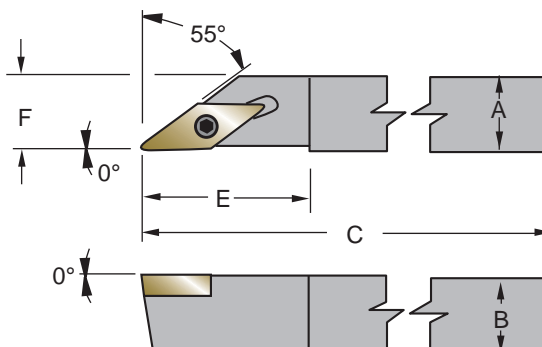
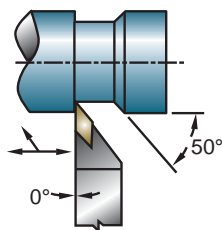





Sumitomo Cat. No.			Dimensions (inch/mm)							
Right Hand	Left Hand		Stock	A	B	C	E	F		
STACR062D	STACL062D	TCMT21.51	•	.375	.375	6.000	0.625	0.375	ST-21.5	TRX08
STACR082D	STACL082D	TCMT21.51	•	.500	.500	6.000	0.625	0.500	ST-21.5	TRX08
STACR103D	STACL103D	TCMT32.52	•	.625	.625	6.000	0.750	0.625	ST-32.5	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	TRX08
STACR1616-16	STACL1616-16	TCMT32.52	★	16.0	16.0	100.0	16.0	20.0	ST-32.5	TRX15

• = USA stocked item

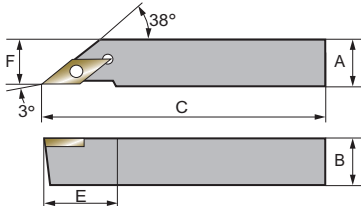



★ = Worldwide Warehouse item

SVAB R/L Series

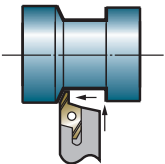
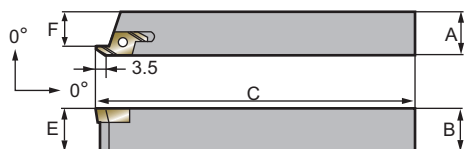





Sumitomo Cat. No.			Dimensions (inch/mm)							
Right Hand	Left Hand		Stock	A	B	C	E	F		
SVABR062D	SVABL062D	VBMT221	•	.375	.375	6.000	0.875	0.375	ST-21.5	TRX08
SVABR082D	SVABL082D	VBMT221	•	.500	.500	6.000	0.875	0.500	ST-21.5	TRX08
SVABR103D	SVABL103D	VBMT332	•	.625	.625	6.000	1.375	0.625	ST-32.5	TRX15
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	22.0	12.0	ST-21.5	TRX08
SVABR1616-16	SVABL1616-16	VBMT332		16.0	16.0	150.0	35.0	16.0	ST-32.5	TRX15

• = USA stocked item

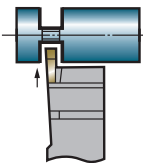
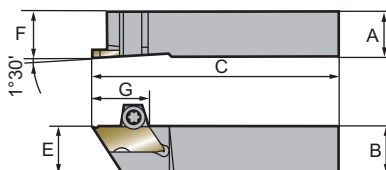



SVNB R/LSeries										
Sumitomo Cat. No.			Dimensions (inch/mm)							
Right Hand	Left Hand	5° Positive Gage Insert	Stock	A	B	C	E	F	Insert Screw	Torx Wrench
SVNBR062D	SVNBL062D	VBMT22-	●	.375	.375	6.000	0.940	0.375	ST-21.5	TRX08
SVNBR082D	SVNBL082D	VBMT22-	●	.500	.500	6.000	0.940	0.500	ST-21.5	TRX08
SVNBR103D	SVNBL103D	VBMT33-	●	.625	.625	6.000	1.440	0.620	ST-32.5	TRX15
SVNBR1010-11	SVNBL1010-11	VBMT22-		10.0	10.0	150.0	24.0	10.0	ST-21.5	TRX08
SVNBR1212-11	SVNBL1212-11	VBMT22-		12.0	12.0	150.0	24.0	12.0	ST-21.5	TRX08
SVNBR1616-16	SVNBL1616-16	VBMT33-		16.0	16.0	150.0	37.0	16.0	ST-32.5	TRX15

• = USA stocked item

SBT R Series			Back Turning Holders								
			See page for inserts								
Sumitomo Cat. No.			Dimensions (Inchmm)								
Right Hand	Left Hand	Gage Insert	Stock	A	B	C	E	F	Insert Screw	Torx Wrench	
SBTR3506		BTR35	●	.375	.375	6.000	.375	7.500	BFTX0307N	TRX10	
SBTR3508		BTR35	●	.500	.500	6.000	.500	9.500	BFTX0307N	TRX10	
SBTR3510		BTR35	●	.625	.625	6.000	.625	13.500	BFTX0307N	TRX10	
SBTR351010		BTR35	★	10.0	10.0	150.0	10.0	7.5	BFTX0307N	TRX10	
SBTR351212		BTR35	★	12.0	12.0	150.0	12.0	9.5	BFTX0307N	TRX10	
SBTR351616		BTR35	★	16.0	16.0	150.0	16.0	13.5	BFTX0307N	TRX10	

• = USA stocked item

★ = Worldwide Warehouse item

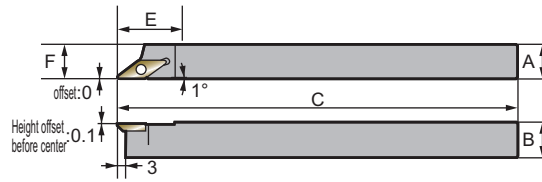
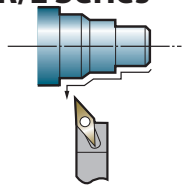
SCT R/LSeries			Cut-Off Holders									
												
			See page for inserts									
Sumitomo Cat. No.			Dimensions (Inchmm)									
Right Hand	Left Hand	Gage Insert	Stock	A	B	C	E	F	G	Insert Screw		Torx Wrench
										Right hand	Left hand	
SCTR08	SCTL08	CTR12	●	.500	.500	6.000	.500	.500	.591	BFTX0410T8R	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

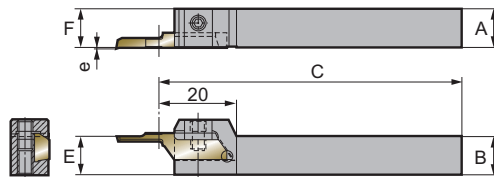
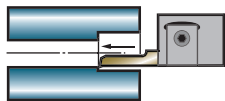


Sumitomo Cat. No.			Dimensions (Inch/mm)						Insert Screw	Torx Wrench
Right Hand	Left Hand	Gage Insert	Stock	A	B	C	E	F		
SPBR063D	SPBL063D	PBV1102	•	.375	.375	6.000	.669	.375	BFTX02505N	LT08-06
SPBR083D	SPBL083D	PBV1102	•	.500	.500	6.000	.669	.500	BFTX02505N	LT08-06
SPBR1010-60	SPBL1010-60	PBV1102	★	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

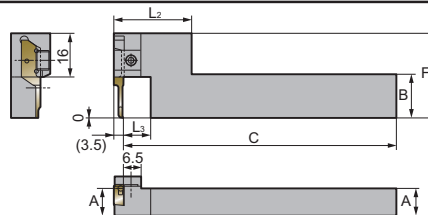
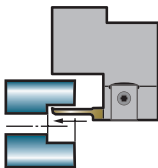


Sumitomo Cat. No.			Dimensions (Inch/mm)						Clamp	Clamp Screw	Wrench
		Gage Insert	Stock	A	B	C	E	F			
CKBR062D		KBMXR	•	.375	.375	6.000	.375	.375	CKBW16	WB4-8	LH020
CKBR082D		KBMXR	•	.500	.500	6.000	.500	.500	CKBW16	WB4-8	LH020
CKBR102D		KBMXR	•	.625	.625	6.000	.625	.625	CKBW16	WB4-8	LH020
CKBR1010-16		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)							Clamp	Clamp Screw	Wrench
Right Hand		Gage Insert	Stock	A	B	C	F	L ₂	L ₃			
CKBSR062D		KBMXL	•	.375	.625	6.000	1.220	1.125	.393	CKBW16	WB4-8	LH020
CKBSR082D		KBMXL	•	.500	.625	6.000	1.220	1.125	.393	CKBW16	WB4-8	LH020
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

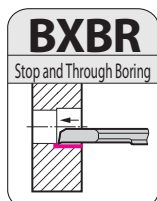
• = USA stocked item

★ = Worldwide Warehouse item





Small Hole Finishing



■ Brazed Boring Bar

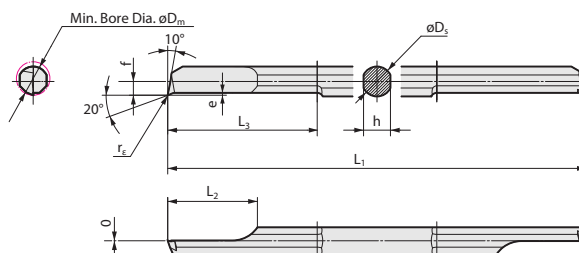
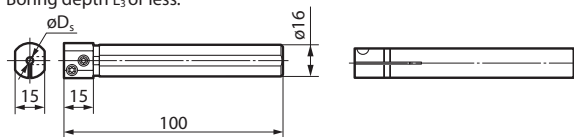


Figure shows tool with breaker.

	Catalog Number	Stock	*Min. Bore Dia.	Dimensions (mm)								Applicable Sleeve
		ACZ150	$\varnothing D_m$	$\varnothing D_s$	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 L₃ or less.






■ Adaptor Sleeve

Cat. No.	Stock	Dimensions (mm)	Applicable Bar
		øD _S	
HBX 2016	★	2.0	BXBR 0205SR(-NB)
HBX 2516	★	2.5	BXBR 0255SR(-NB)
HBX 3016	★	3.0	BXBR 0305SR(-NB)
HBX 3516	★	3.5	BXBR 0355SR(-NB)
HBX 4016	★	4.0	BXBR 0405SR(-NB)
HBX 4516	★	4.5	BXBR 0455SR(-NB)
HBX 5016	★	5.0	BXBR 0505SR(-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



CARBIDE - CBN - DIAMOND

1-800-950-5202

www.sumicarbide.com



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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

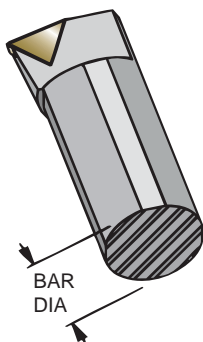
J



Heavy Metal Bar with 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

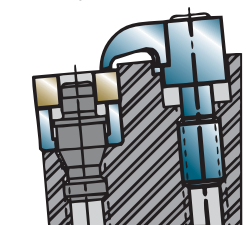
24 = 24/16 = 1-1/2" Diameter

M

Insert Holding

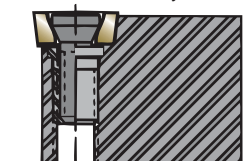
M

Clamp and Lock Pin



S

Screw Lock Only



C

Insert Shape

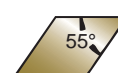
C

Diamond



D

Diamond



R

Round



S

Square



T

Triangle



V

Diamond



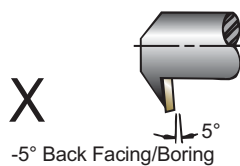
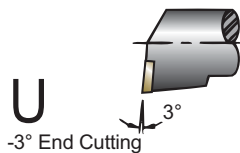
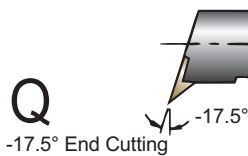
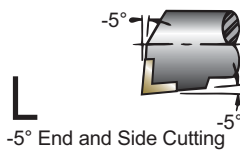
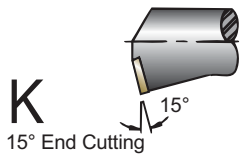
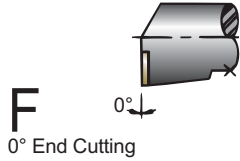
W

Trigon



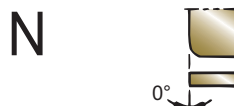
L

Boring Bar Style



N

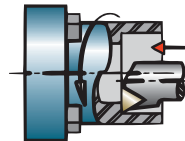
Insert Relief Angle



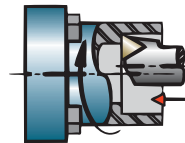
R

Hand

R
Right Hand

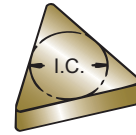


L
Left Hand



4

Insert Size



For equal sided inserts this indicates the inscribed circle (I.C.) in eighths (1/8).

examples,

$$6 = 6/8 = 3/4" \text{ I.C.}$$

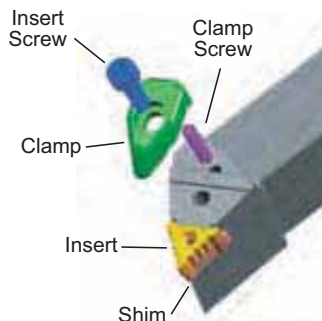
$$4 = 4/8 = 1/2" \text{ I.C.}$$

$$2.5 = 2.5/8 = 5/16" \text{ I.C.}$$

Overview – Insert Holding Methods

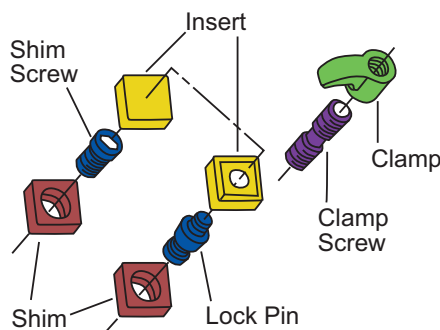
T-Rex Boring Bars

- 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



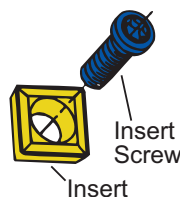
ANSI Standard Combination Boring Bars with through coolant

- 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



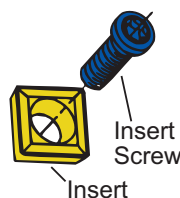
ANSI/ISO "Screw-On" Boring Bars

- 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, 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



T-REX Boring Bar

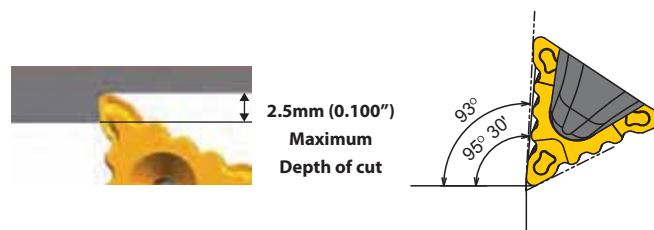
A-DTR Series							
Sumitomo Cat. No.		Dimensions (Inch)					
Right Hand	Left Hand	D	C	F	H	K	Min. Bore
A20DTR55CR3	A20DTR55CL3	1.250"	10.000"	0.875"	0.309"	-12°	1.750"
A24DTR55CR3	A24DTR55CL3	1.500"	12.000"	1.000"	0.309"	-10°	2.000"

T-REX Inserts

-LU Finishing	Coated				Dimensions (Inch)		
	AC700G	AC2000	AC820P	AC830P	Inscribed Circle	Thickness	Radius
Sumitomo Cat. No.	AC700G	AC2000	AC820P	AC830P	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	Coated				Dimensions (Inch)		
	AC700G	AC2000	AC820P	AC830P	Inscribed Circle	Thickness	Radius
Sumitomo Cat. No.	AC700G	AC2000	AC820P	AC830P	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	Coated				Dimensions (Inch)		
	AC610M	AC630M			Inscribed Circle	Thickness	Radius
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



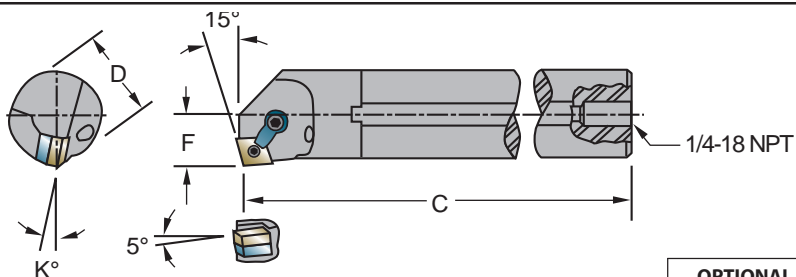
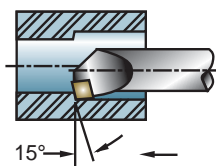
Hardware

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.

BORING BARS

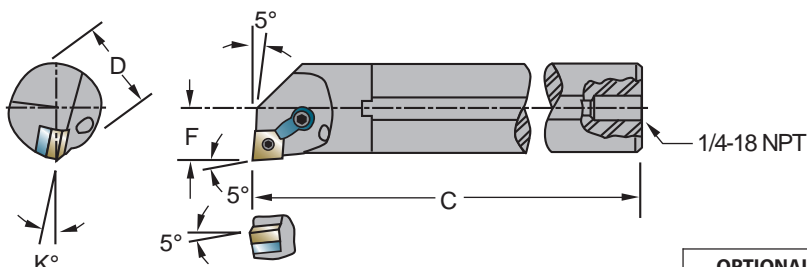
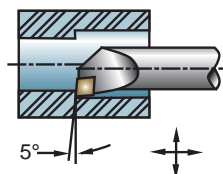
Series: A-MCK • A-MCL

ANSI Standard Combination Boring Bars
with through coolant**A-MCK**

Solid steel bar with coolant hole

**OPTIONAL
HARDWARE**

Sumitomo Cat. No.			D	C	F	K°	Min. Bore						
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

**OPTIONAL
HARDWARE**

Sumitomo Cat. No.			D	C	F	K°	Min. Bore						
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

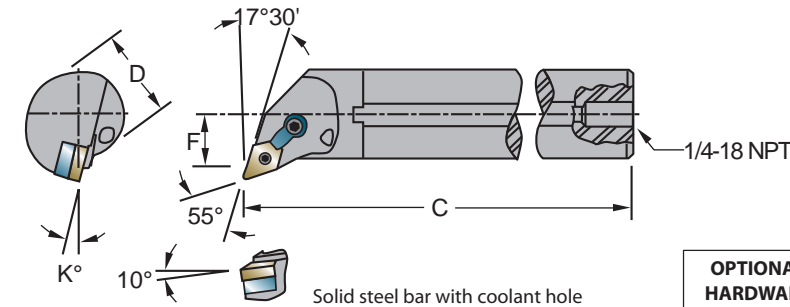









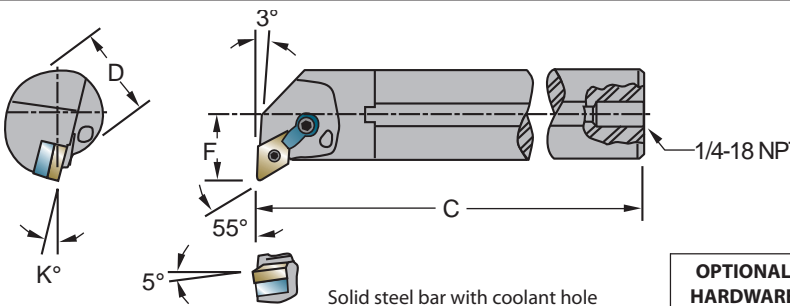







ANSI Standard Combination Boring Bars with through coolant

ANSI STANDARD COMBINATION

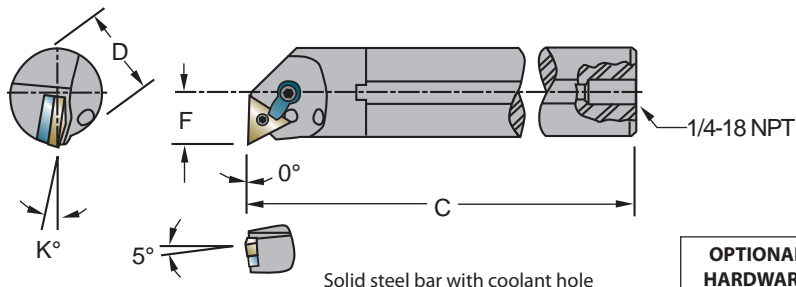
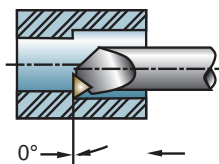
BORING BARS

Series: A-MDQ • A-MDU

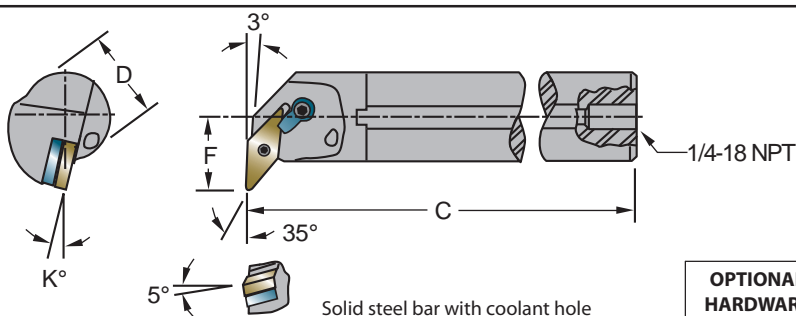
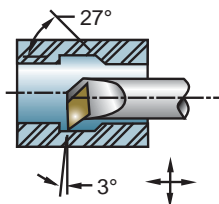
A-MDQ														OPTIONAL HARDWARE	
Sumitomo Cat. No.			D	C	F	K°	Min. Bore								
Right Hand	Left Hand	Gage Insert						Shim	Lock Pin	Clamp	Clamp Screw	Shim	Shim Screw		
A20MDQNR4	A20MDQNL4	DNMG432	1.250	14.000	1.000	12°	1.705	IDSN-443	NL-46L	CL-12	XNS-59	IDSN-433	S-46		
A24MDQNR4	A24MDQNL4	DNMG432	1.500	14.000	1.125	8°	2.000	IDSN-443	NL-46L	CL-12	XNS-59	IDSN-433	S-46		

A-MDU													OPTIONAL HARDWARE	
Sumitomo Cat. No.			D	C	F	K°	Min. Bore							
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	



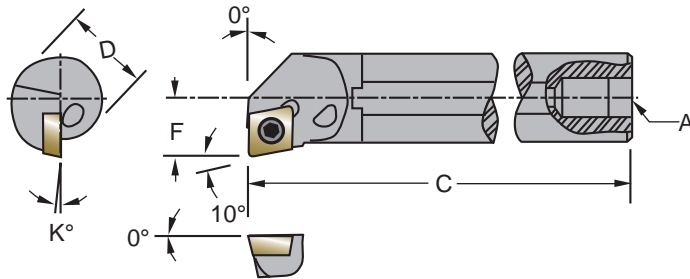
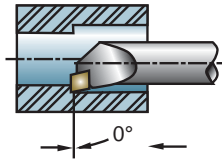
A-MTF**OPTIONAL
HARDWARE**

Sumitomo Cat. No.		Gage Insert	D	C	F	K°	Min. Bore	OPTIONAL HARDWARE					
Right Hand	Left Hand							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**OPTIONAL
HARDWARE**

Sumitomo Cat. No.		Gage Insert	D	C	F	K°	Min. Bore	OPTIONAL HARDWARE					
Right Hand	Left Hand							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

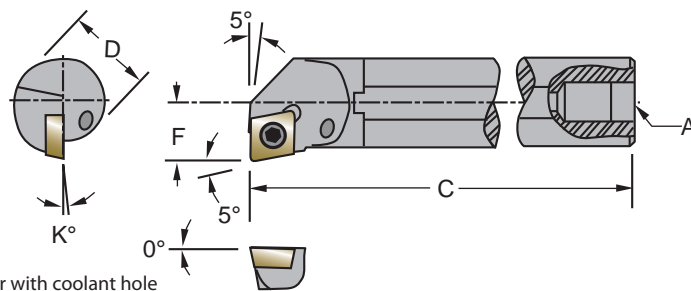
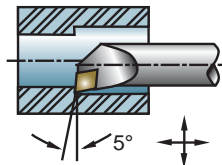


A-SCFP



Solid steel bar with coolant hole

Sumitomo Cat. No.		11° Positive Gage Insert	D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand									
A06SCFPR2	A06SCFPL2	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	A12SCFPL3	CPMT32.52	.750	10.000	.500	0°	.930	1/8-27 NPT	ST32.5	TRX15
A16SCFPR3	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

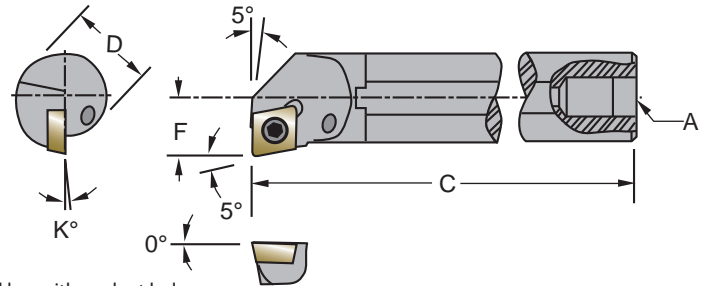
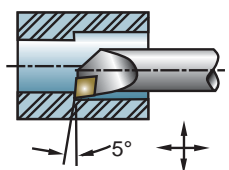



Sumitomo Cat. No.		7° Positive Gage Insert	D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand									
A06SCLCR2	A06SCLCL2	CCMT21.51	.375	6.000	.250	-15°	.480	1/8*	ST21.5	TRX08
A08SCLCR2	A08SCLCL2	CCMT21.51	.500	6.000	.312	-13°	.600	1/16-27 NPT	ST21.5	TRX08
A10SCLCR2	A10SCLCL2	CCMT21.51	.625	10.000	.406	-10°	.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.

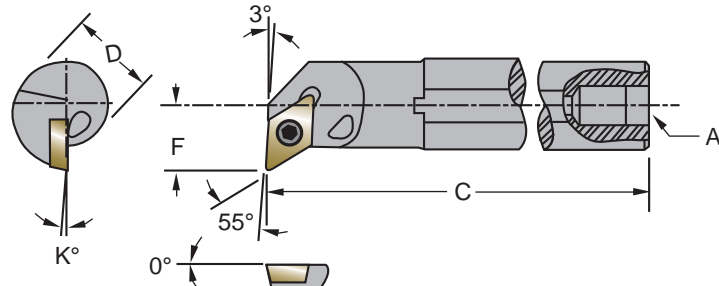
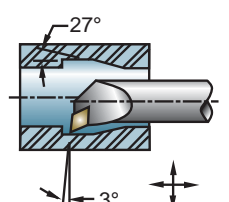



ANSI-ISO Boring Bars with through coolant

ANSI-ISO BORING BARS

Series: A-SCLP • A-SDUP

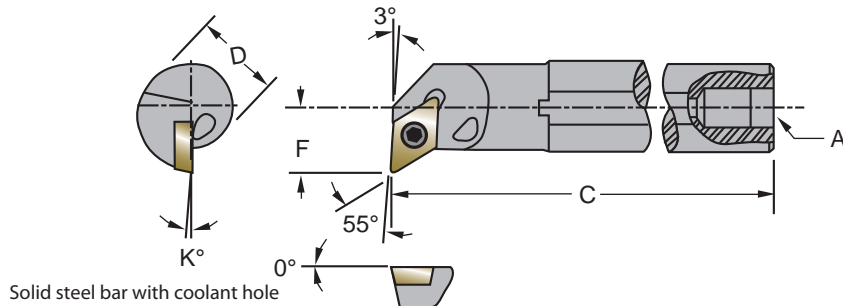
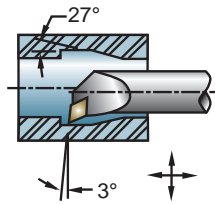
A-SCLP										
			Solid steel bar with coolant hole							
Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand									
		11° Positive Gage Insert							Insert Screw	Torx Wrench
A06SCLPR2	A06SCLPL2	CPMT21.51	.375	6.000	.250	-6°	.480	1/8*	ST21.5	TRX08
A08SCLPR2	A08SCLPL2	CPMT21.51	.500	8.000	.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

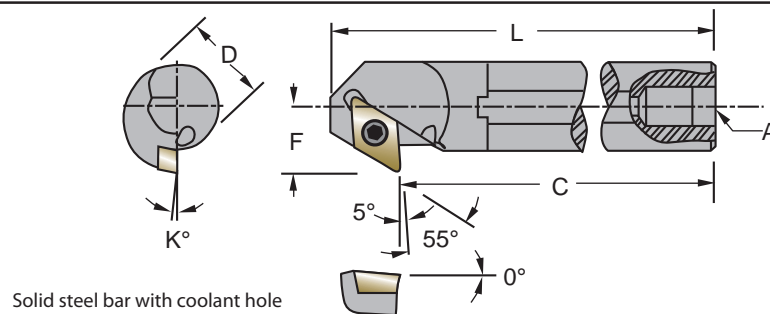
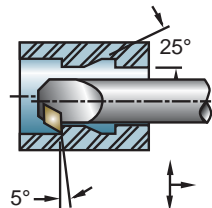
*Through hole only. No threads.



A-SDUC

Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A	Insert Screw	Torx Wrench
Right Hand	Left Hand	7° Positive Gage Insert								
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.

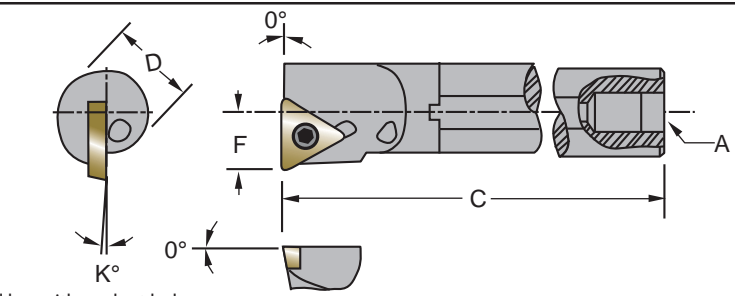
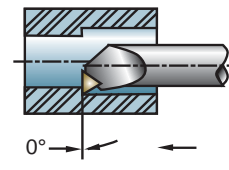


A-SDXP

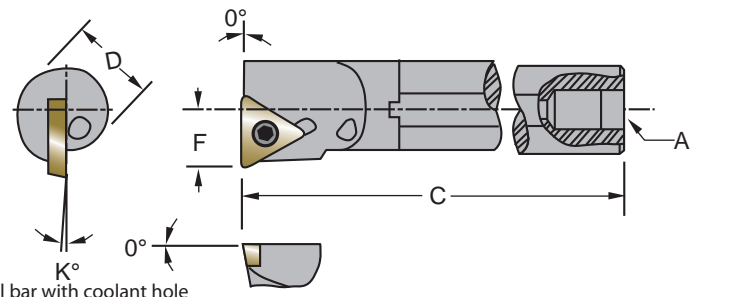
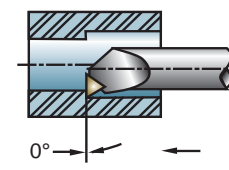


Sumitomo Cat. No.			D	C	F	L	K°	Min. Bore	A	Insert Screw	Torx Wrench
Right Hand	Left Hand	11° Positive Gage Insert									
A08SDXPR2	A08SDXPL2	DPMT21.51	.500	8.000	.437	8-1/2	0°	.730	1/16-27 NPT	ST21.5	TRX08
A10SDXPR2	A10SDXPL2	DPMT21.51	.625	10.000	.500	10-1/2	0°	.850	1/8-27 NPT	ST21.5	TRX08
A12SDXPR3	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

ANSI-ISO Boring Bars with through coolant

ANSI-ISO BORING BARS

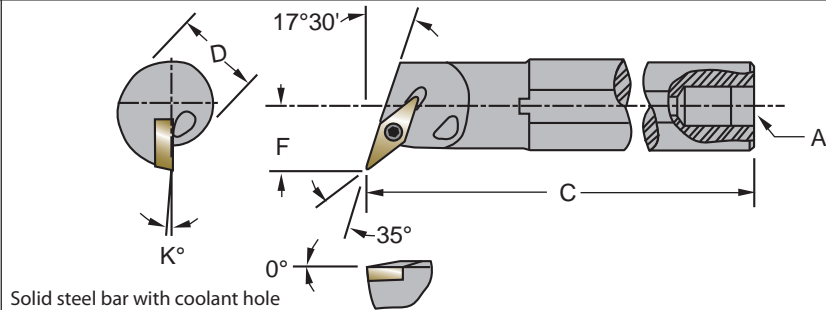
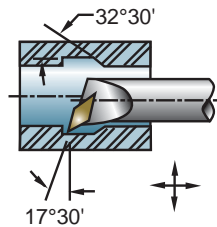
Series: A-STFC • A-STFP



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								
A08STFCR2	A08STFCL2	TCMT21.51	.500	6.000	.312	-13°	.600	1/16-27 NPT	ST21.5	TRX08
A10STFCR2	A10STFCL2	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

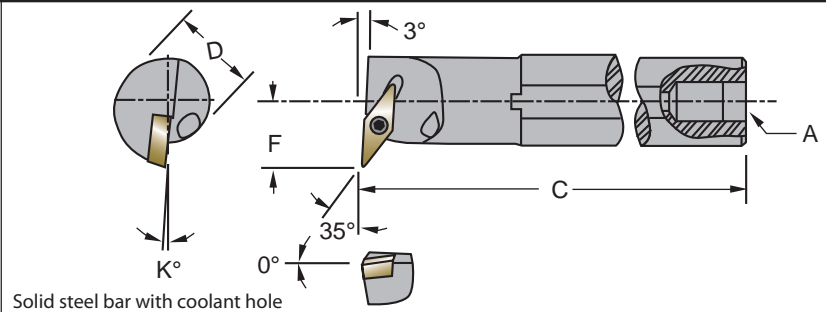
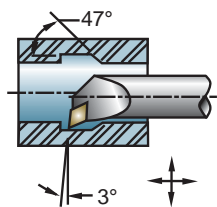
A-STFP										
			Solid steel bar with coolant hole							
Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand	11° Positive Gage Insert								
A05STFPR1.8	A05STFPL1.8	TPMT1.81.51	.3125	5.000	.219	-8°	.415	3/32*	ST21.5	TRX08
A06STFPR2	A06STFPL2	TPMT21.51	.375	6.000	.250	-4°	.480	1/8*	ST21.5	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.

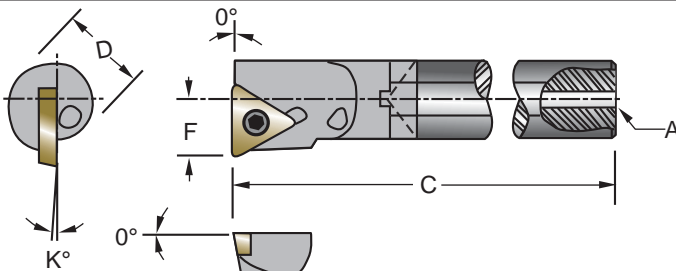
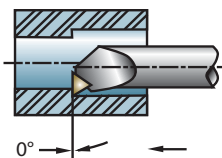


A-SVQB

Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand	5° Positive Gage Insert								
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	A16SVQBL3	VBMT332	1.000	12.000	.750	-5°	1.300	1/4-18 NPT	ST32.5	TRX15

A-SVUB

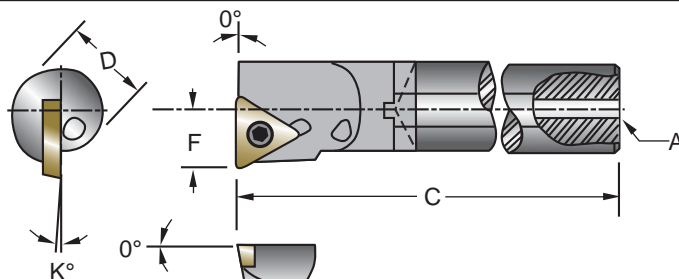
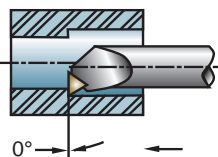
Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand	5° Positive Gage Insert								
A12SVUBR2	A12SVUBL2	VBMT221	.750	10.000	.562	-6°	.980	1/8-27 NPT	ST21.5	TRX08
A16SVUBR3	A16SVUBL3	VBMT332	1.000	12.000	.750	-6°	1.300	1/4-18 NPT	ST32.5	TRX15
A20SVUBR3	A20SVUBL3	VBMT332	1.250	14.000	1.000	-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

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									
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									
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	E12STFCL3	TCMT32.52	.750	10.000	.500	-8°	.930	.142*	ST32.5	TRX15
E16STFCR3	E16STFCL3	TCMT32.52	1.000	12.000	.640	-7°	1.200	.193*	ST32.5	TRX15

*Through hole only. No threads.

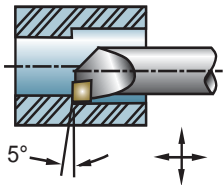
ANSI-ISO Heavy Metal Shank Boring Bars with through coolant

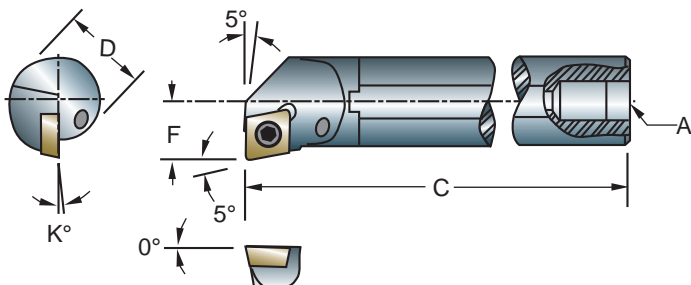
ANSI-ISO HEAVY METAL SHANK

BORING BARS




Series: J-SCLC • J-STFC

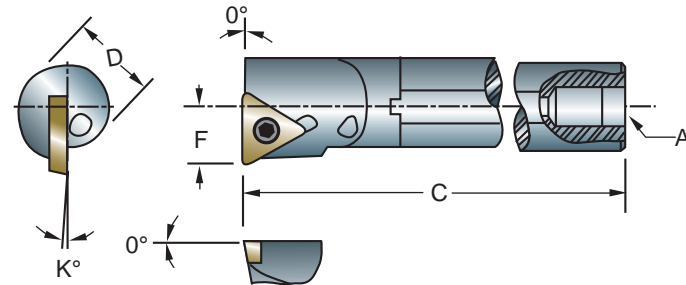



J-SCLC





Heavy metal shank with coolant hole

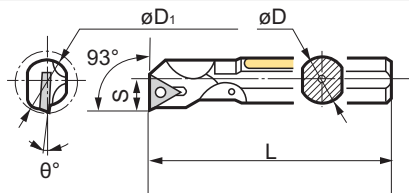
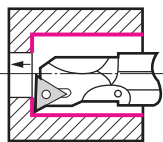
Sumitomo Cat. No.			D	C	F	K°	Min. Bore	A		
Right Hand	Left Hand									
J08SCLCR2	J08SCLCL2	CCMT21.51	.500	6.000	.312	-13°	.600	1/16-27 NPT	ST21.5	TRX08
J10SCLCR3	J10SCLCL3	CCMT32.52	.625	8.000	.406	-10°	.770	1/8-27 NPT	ST32.5	TRX15
J12SCLCR3	J12SCLCL3	CCMT32.52	.750	10.000	.500	-8°	.930	1/8-27 NPT	ST32.5	TRX15
J16SCLCR3	J16SCLCL3	CCMT32.52	1.000	12.000	.640	-7°	1.200	1/4-18 NPT	ST32.5	TRX15

J-STFC			 Heavy metal shank 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
J06STFCR2	J06STFCL2	TCMT21.51	.375	6.000	.250	-15°	.480	1/8*	ST21.5	TRX08
J08STFCR2	J08STFCL2	TCMT21.51	.500	6.000	.312	-13°	.600	1/16-27 NPT	ST21.5	TRX08
J10STFCR2	J10STFCL2	TCMT21.51	.625	8.000	.406	-10°	.770	1/8-27 NPT	ST21.5	TRX08
J12STFCR3	J12STFCL3	TCMT32.52	.750	10.000	.500	-8°	.930	1/8-27 NPT	ST32.5	TRX15
J16STFCR3	J16STFCL3	TCMT32.52	1.000	12.000	.640	-7°	1.200	1/4-18 NPT	ST32.5	TRX15

*Through hole only. No threads.



D-STUP

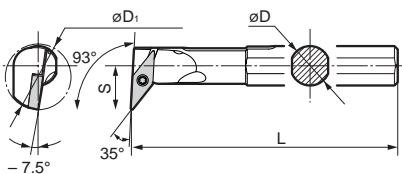
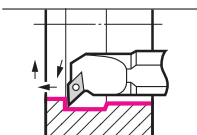


GAGE INSERT

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

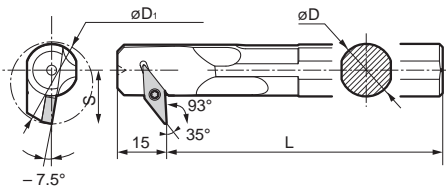
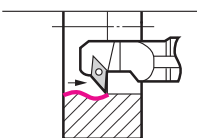


GAGE INSERT

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

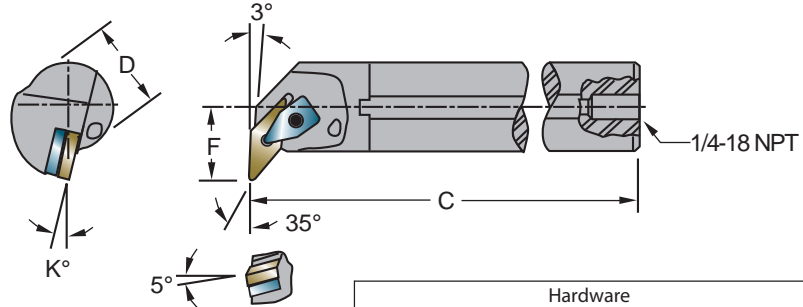
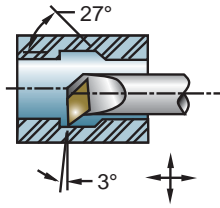
SumiTurn X-Bar Availability-NEGATIVE

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	CNS0804B	BFTX0409N
D20TDCLNR4	D20TDCLNL4	CNMG432	1.250	12"	0.765	14°	1.470"				
D24UDCLNR4	D24UDCLNL4	CNMG432	1.500	12"	0.890	14°	1.760"				

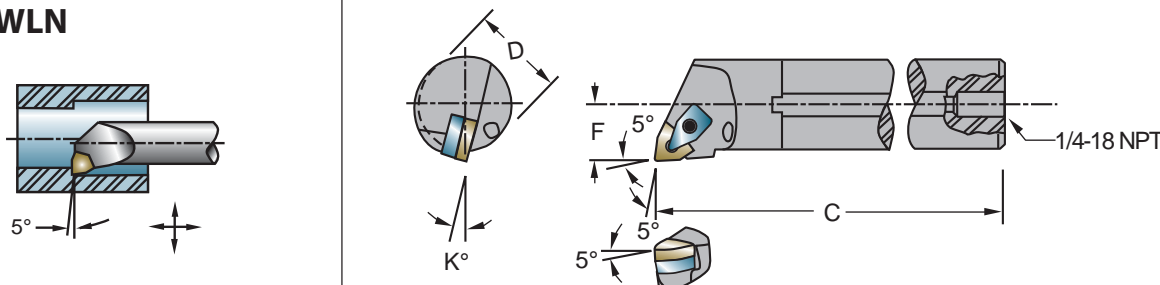





D-DDQN											
Sumitomo Cat. No.			D	C	F	K°	Min. Bore	Hardware			
Right Hand	Left Hand	Gage Insert						Clamp Set	Wrench	Shim	Screw
D20TDDQNR4	-	DNMG432	1.250	12"	1.000	12°	1.705"	SCP-2	LH040 LH025	DNS1506B	BFTX0409N
D24UDDQNR4	-	DNMG432	1.500	12"	1.125	8°	2.000"				

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"				

D-DVUN



Sumitomo Cat. No.		Gage Insert	D	C	F	K°	Min. Bore	Hardware			
Right Hand	Left Hand							Clamp Set	Wrench	Shim	Screw
D20TDVUNR4	-	VNMG332	1.250	12"	1.125	12°	2.000"	SCP-2	LH040 LH025	VNS1604	BFTX0307N
D24UDVUNR4	-	VNMG332	1.500	12"	1.250	12°	2.350"				



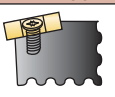
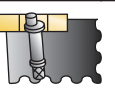
D-DWLN								Hardware			
Sumitomo Cat. No.			D	C	F	K°	Min. Bore				
Right Hand	Left Hand	Gage Insert						Clamp Set		Wrench	Shim
D16TDWLN4	-	WNMG432	1.000	12"	0.640	14°	1.325"	SCP-1	LH040 LH025	WNS0804B	BFTX0409N
D20TDWLN4	-	WNMG432	1.250	12"	0.765	14°	1.470"				
D24UDWLN4	-	WNMG432	1.500	12"	0.890	14°	1.760"				

SUMITOMO BORING BAR NOMENCLATURE




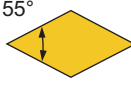
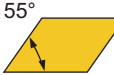
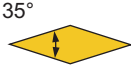

1 Type of Bar

Solid Steel	Solid Carbide
B	C







2 Clamping System

	
C Clamp Lock	M Multiple Lock
	
S Screw Clamp	
	
P Pin Lock	

3 Insert Shape

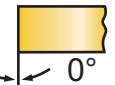

	
S	T
	
C	D
	
K	V
	
W	

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

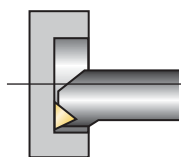
I.C. Size in 1/8 inch increments.

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

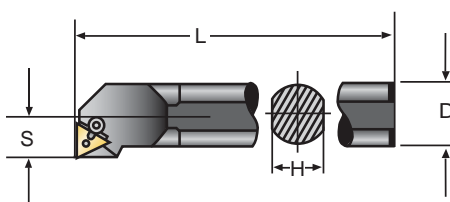


BMTFN Series

For Internal Boring

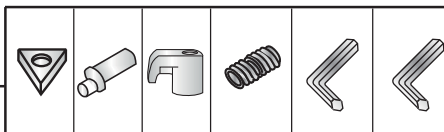


MIN BORE



GAGE INSERT

TNMG□□□



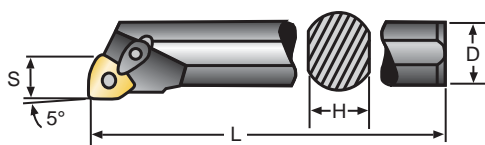
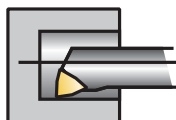
These figures show right hand tools.

Sumitomo Cat. No.	STKD.		Dimensions					Insert		Shim	Cam	Clamp	Clamp Screw	Wrench	Wrench
	R	L	D	Min. Bore B	L	S	H	Shape	Size						
BMTFNR/L 243	•	•	1.500	2.063	14.000	1.031	1.340	TN□□	32□	STW323	CPB33	CCM8	WB8-30	LH025	LH040
BMTFNR/L 284	•	•	1.750	2.313	14.000	1.156	1.575		43□	STW434	CPB44T			LH030	
BMTFNR/L 324	•	•	2.000	2.563	16.000	1.281	2.850								

Maximum overhang=3 x D

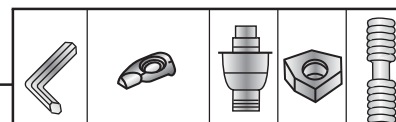
BMWLN Series

For Internal Boring



GAGE INSERT

WNMG432



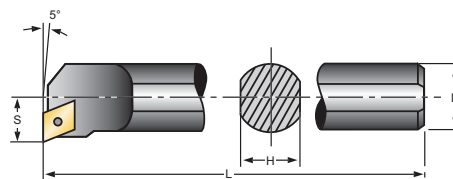
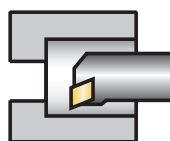
These figures show right hand tools.

Sumitomo Cat. No.	STKD.		Dimensions						Insert		Wrench	Clamp	Pin	Shim	Screw
	R	L	Min. Bore B	D	L	S	H	θ°	Shape	Shape					
BMWLNLR/L 164	●	●	1.25	1.000	12.000	.625	.875	−15°	WN□□	43□	LH030	BCH05RM6L	BWP46	SWB422	WB6-16
BMWLNLR/L 204	●	●	1.53	1.250	14.000	.765	1.132	−14°			LH025				
BMWLNLR/L 244	●	●	1.78	1.500	14.000	.890	1.382	−12°							

Maximum overhang=3 x D

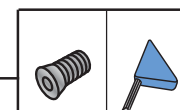
BSCLO Series

For Internal Boring



GAGE INSERT

CPGM□□□



These figures show right hand tools.

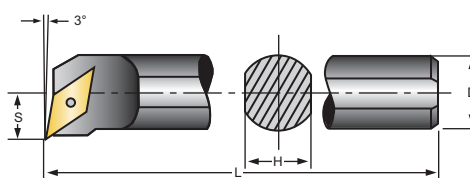
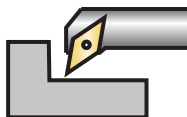
Sumitomo Cat. No.	STKD.		Dimensions						Insert		Screw	Wrench
	R	L	Min. Bore B	D	L	S	H	θ°	Shape	Size		
BSCLO/L 062	●	●	.500	.375	6.000	.250	.336	-5°	CP□□	2.51.5□	BFTX0305A	TRX10
BSCLO/L 082	●	●	.625	.500	6.000	.313	.462	-2°				
BSCLO/L 103	●	●	.750	.625	6.500	.375	.586	-2°	CP□□	32□	BFTX0407A	TRX15
BSCLO/L 123	●	●	1.000	.750	10.000	.500	.672	0°				
BSCLO/L 164	●	●	1.125	1.000	12.000	.563	.882	-1°	CP□□	43□	BFTX0509A	TRX20

Maximum overhang = 3 x D



BSDJO Series

For Internal Boring

**GAGE INSERT****DCGT□□□**

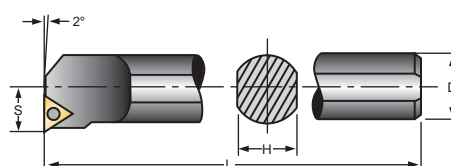
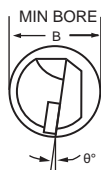
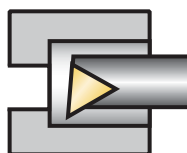
These figures show right hand tools.

Sumitomo Cat. No.	STKD.		Dimensions						Insert		Screw	Wrench
	R	L	Min. Bore B	D	L	S	H	θ°	Shape	Size		
BSDJOR/L 061	•	•	.516	.375	5.000	.306	.336	-6°	DC□□	21.5□	BFTX02056	TRX08
BSDJOR/L 081	•	•	.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.

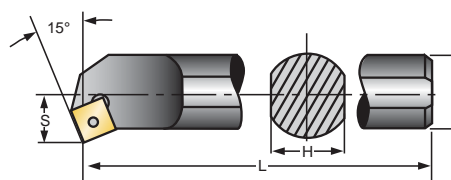
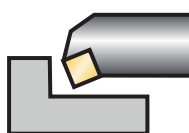
Sumitomo Cat. No.	STKD.		Dimensions						Insert		Screw	Wrench
	R	L	Min. Bore B	D	L	S	H	θ°	Shape	Size		
BSTJOR/L 065	•	•	.313	.375	5.000	.156	.336	-12°	TBG□	52□	BFTX0204A	TRX06
BSTJOR/L 066	•	•	.375	.375	5.000	.188	.336	-8°	TPG□	63□		
BSTJOR/L 062	•	•	.500	.375	6.000	.250	.336	-5°		22□	BFTX0306A BFTX0307A	TRX10
BSTJOR/L 082	•	•	.625	.500	6.000	.312	.462	-4°				
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°				

NOTE: Right Hand Boring Bar requires Left Hand Insert. Left Hand Boring Bar requires Right Hand Insert.

Maximum overhang = 3 x D

BSSKO Series

For Internal Boring

**GAGE INSERT****SPGG322L**

These figures show right hand tools.

Sumitomo Cat. No.	STKD.		Dimensions						Insert		Screw	Wrench
	R	L	Min. Bore B	D	L	S	H	θ°	Shape	Size		
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°				

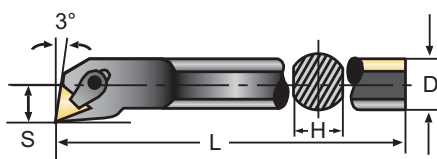
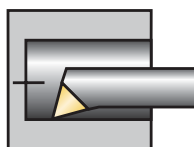
NOTE: Right Hand Boring Bar requires Left Hand Insert. Left Hand Boring Bar requires Right Hand Insert.

Maximum overhang = 3 x D



BCTJP Series

For Internal Boring



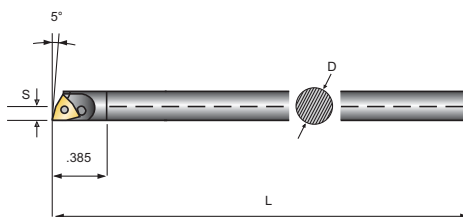
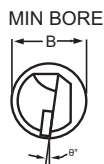
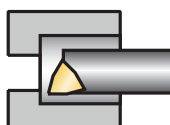
These figures show right hand tools.

Sumitomo Cat. No.	STKD.		Dimensions					Insert		Seat	Seat Screw	Clamp	Clamp Bolt	Chip Breaker Piece	Wrench
	R	L	Min. Bore B	D	L	S	H	Shape	Size						
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			STPD322	BF0308		WB6-16	CBT43	
BCTJPR/L 203	•	•	1.531	1.250	14.000	.765	1.100					CCM8F	WB8F-30	CBT44	
BCTJPR 243	•		1.781	1.500	14.000	.890	1.315								
BCTJPR 283	•		2.031	1.750	14.000	1.015	1.570	TPG	43□	STPD422				LH040	
BCTJPR 324	•		2.563	2.000	16.000	1.281	1.810								
BCTJPR 404	•		3.063	3.063	16.000	1.531	2.315								

Maximum overhang = 3 x D

BSWJO Series

For Internal Boring



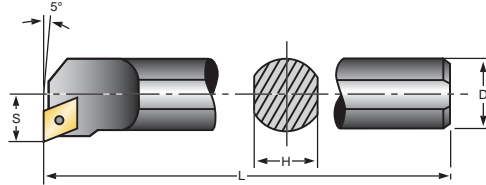
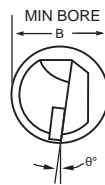
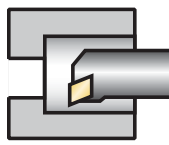
These figures show right hand tools.

Sumitomo Cat. No.	STKD.	Dimensions							Insert	Screw	Wrench
		Min. Bore B	D	H	L	S	θ°	ℓ			
BSWJOR 035	•	.228	.187	—	2.500	.062	-12°	—	WBGT 52□L	BHF0203T	TH015

Note: Right hand boring bar requires left hand insert. Maximum overhang = 5 x D

CSCLO Series

For Internal Boring



Solid carbide bar with fixed steel head

**GAGE INSERT**

CPGP□□□



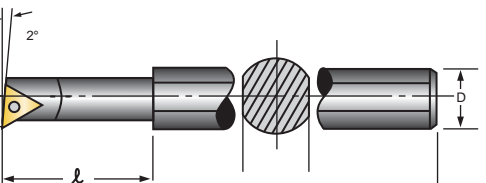
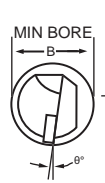
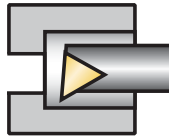
These figures show right hand tools.

Sumitomo Cat. No.	STKD.		Dimensions						Insert		Screw	Wrench
	R	L	Min. Bore B	D	L	S	H	θ°	Shape	Size		
CSCLO/L 062	•	•	.500	.375	6.000	.250	.336	-5°	CP□□	2.51.5□	BFTX0305A	TRX10
CSCLO/L 082	•	•	.625	.500	6.000	.313	.462	-2°	CP□□	32□	BFTX0407A	TRX15
CSCLO/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□□□LFW

These figures show right hand tools.

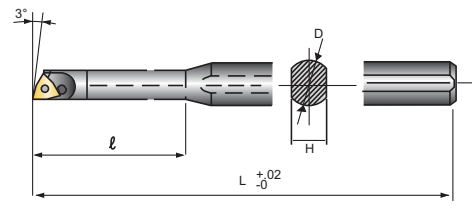
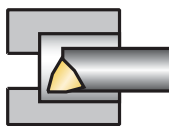
Sumitomo Cat. No.	STKD.		Dimensions							Insert		Screw	Wrench
	R	L	Min. Bore B	D	L	S	H	ℓ	θ°	Shape	Size		
CSTJOR/L 065	•	•	.313	.375	5.000	.1560	.336	1.781	−12°	TBG□	52□	BFTX0204A	TRX06
CSTJOR/L 066	•	•	.375	.375	5.000	.1880	.336	1.781	−8°		63□	BFTX0306A	
CSTJOR/L 062	•	•	.500	.375	7.000	.2500	.336	–	−5°	TPG□	22□	BFTX0307A	TRX10
CSTJOR/L 082	•	•	.625	.500	8.000	.3125	.462	–	−2°		22□	BFTX0410A	TRX15
CSTJOR/L 102	•	•	.750	.625	10.000	.3750	.586	–	−2°		33□		
CSTJOR/L 123	•	•	1.000	.750	10.000	.5000	.672	–	−2°				

NOTE: Right Hand Boring Bar requires Left Hand Insert. Left Hand Boring Bar requires Right Hand Insert.

Maximum overhang = 5 x D

CSWJO Series

For Internal Boring



Solid carbide bar with fixed steel head

**GAGE INSERT**
WBG521L

These figures show right hand tools.

Sumitomo Cat. No.	STKD.	Dimensions						ℓ	Insert	Screw	Wrench
		Min. Bore B	D	H	L	S	θ°				
CSWJOR 055	•	.234	.375	.276	5.000	.117	-12°	1.18	WBG□ 52□L	BFTX0203A	TRX06
CSWJOL 055	•	.234							WBG□ 52□R		

NOTE: Right Hand Boring Bar requires Left Hand Insert. Left Hand Boring Bar requires Right Hand Insert.

Maximum overhang = 5 x D

SUMI-UFO Boring Bars Nomenclature

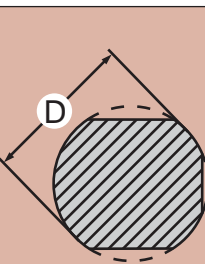
The SUMI-UFO bars feature a wider more rigid cross section for deeper cutting (up to 5 times with steel bars, up to 7 times with carbide bars) without chatter, an ultra high positive cutting edge for freer cutting and a larger chip groove for better chip flow. With these features, SUMI-UFO bars give you the ability to bore deeper holes with better surface finishes and improved chip control.

Boring Bar Identification System

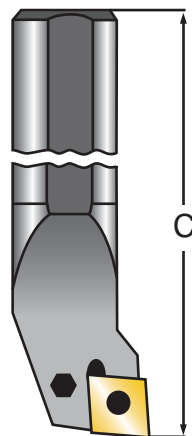
1 Type of Bar

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	Symbol
(inch) mm	
(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

S	T
C	D
K	V
W	

6 Bar Style

L	K
F	U
Q	

7 Insert Clearance Angle

B	C
N	P

9 Insert I.C.

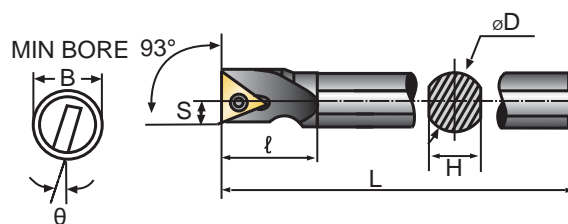
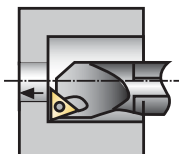
5 = 5/32
6 = 3/16
7 = 7/32
8 = 1/4
0 = 5/16

8 Hand of Tool

R	L

S-STUP Series

For Internal Boring



Steel shank bar

**GAGE INSERT**
TPGT□□□LFW

These figures show right hand tools.

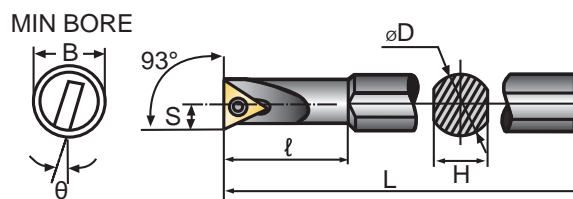
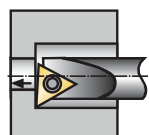
Sumitomo Cat. No.	STKD.		Dimensions							Insert		Screw	Wrench
	R	L	Min. Bore B	D	L	H	S	ℓ	θ°	Shape	Size		
S06K-STUPR/L6	•	•	.375	.375	5.000	.336	.1875	1.250	-10°	TPG□	63□	BFTY02205	TRX06
S06M-STUPR/L8	•	•	.500	.375	6.000	.336	.250	—	-8°	TPG□	21.5□	BFTX02507	TRX08
S08M-STUPR/L8	•	•	.625	.500	6.000	.461	.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	

NOTE: Right Hand Boring Bar requires Left Hand Insert. Left Hand Boring Bar requires Right Hand Insert.

Maximum overhang = 5 x D

S-STUB Series

For Internal Boring



Steel shank bar

**GAGE INSERT**
TBGT520LFW

These figures show right hand tools.

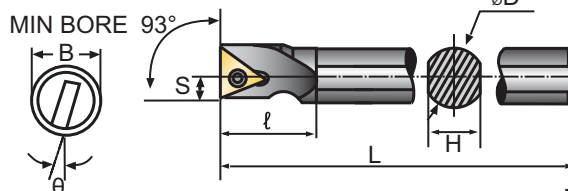
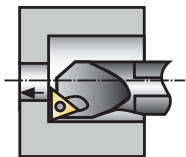
Sumitomo Cat. No.	STKD.		Dimensions							Insert		Screw	Wrench
	R	L	Min. Bore B	D	L	H	S	ℓ	θ°	Shape	Size		
S06K-STUBR/L5	•	•	.313	.375	5.000	.336	.156	1.0	-12°	TBG□	52□	BFTX0204A	TRX06

NOTE: Right Hand Boring Bar requires Left Hand Insert. Left Hand Boring Bar requires Right Hand Insert.

Maximum overhang = 5 x D

C-STUP Series

For Internal Boring

**GAGE INSERT**
TPGT□□□LFW

Solid carbide bar with fixed steel head



These figures show right hand tools.

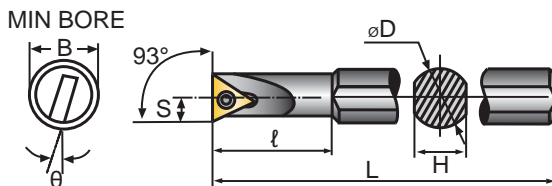
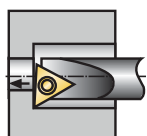
Sumitomo Cat. No.	STKD.		Dimensions							Insert		Screw	Wrench	Replacement Head
	R	L	Min. Bore B	D	L	H	S	ℓ	θ°	Shape	Size			
C06K-STUPR/L6	•	•	.375	.375	5.000	.336	.188	1.800	-10°	TPG□	63□	BFTX0204A	TRX06	RH06STUPR/L6
C06Q-STUPR/L8	•	•	.500	.375	7.000	.336	.250	—	-8°	TPG□	21.5□	BFTX02507	TRX08	RH06STUPR/L8
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

NOTE: Right Hand Boring Bar requires Left Hand Insert. Left Hand Boring Bar requires Right Hand Insert.

Maximum overhang = 7 x D

C-STUB Series

For Internal Boring

**GAGE INSERT**
TBGT520LFW

Solid carbide bar with fixed steel head



These figures show right hand tools.

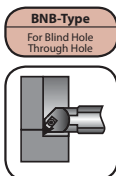
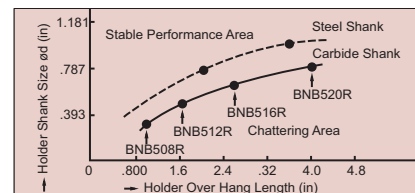
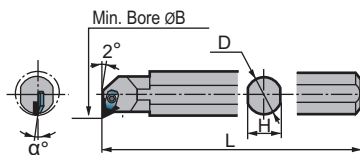
Sumitomo Cat. No.	STKD.		Dimensions							Insert		Screw	Wrench	Replacement Head
	R	L	Min. Bore B	D	L	H	S	ℓ	θ°	Shape	Size			
C06K-STUBR/L5	•	•	.313	.375	5.00	.336	.156	1.800	-12°	TBG□	52□	BFTX0204A	TRX06	RH06STUBR/L5

NOTE: Right Hand Boring Bar requires Left Hand Insert. Left Hand Boring Bar requires Right Hand Insert.

Maximum overhang = 7 x D

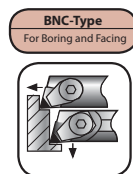
CBN Boring Series

- Solid carbide shank and head adds rigidity.
- Max. overhang, $L = 5 \times D$
- Minimal bar deformation produces excellent boring accuracy.
- Minimal vibration produces a superior surface finish.



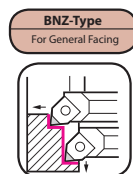
Sumitomo Cat. No.	Dimensions					Hardware				Insert			
Right Hand	Min. Bore ØB	D	L	H	α°	Clamp	Clamp Screw	Wrench	Nut	I.C.	Thick	Cat. No.	
BNB508R	.394" (10mm)	.315" (8mm)	5.5" (140mm)	.275" (7mm)	-9°	BNBC	BH0306	TH020	BNB W2	.156	.125	TBGE52-	
BNB512R	.591" (15)	.472" (12)	6.3" (160)	.433" (11)	-6°				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).

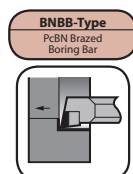


Sumitomo Cat. No.	Dimensions					Hardware				Insert		
Right Hand	Min. Bore øB	D	L	H	α°	Clamp	Clamp Screw	Wrench	Nut	I.C.	Thick	Cat. No.
BNC508R	.394" (10mm)	.315" (8mm)	5.5" (140mm)	.275" (7mm)	-9°	BNBC	BH0306	TH020	BNB W2	.1875	.125	NU- CCGE62
BNC510R	.472" (12)	.394" (10)	5.5" (140)	.35" (9)	-8°				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°							

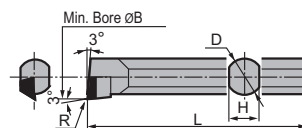
* BNC boring bars are 100% solid carbide (head and shank).



Sumitomo Cat. No.	Dimensions (mm)						
Cat. Number	Stock	Min. Bore ØDm	ØDs	h	L1	θ°	
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	



Sumitomo Cat. No.	Dimensions (mm)					
Right Hand	Grade BN250	Min. Bore ØB	L	D	H	R
BNBB 03R	•	3.5	60	3.0	24	0.2
BNBB 035R	★	4.0	60	3.5	2.9	0.2
BNBB 04R	•	4.5	60	4.0	3.4	0.2
BNBB 045R	★	5.0	60	4.5	3.9	0.2
BNBB 05R	•	5.5	80	5.0	4.4	0.2
BNBB 055R	★	6.0	80	5.5	4.9	0.2
BNBB 06R	•	6.5	80	6.0	5.4	0.2
BNBB 065R	★	7.0	80	6.5	5.9	0.2
BNBB 07R	★	7.5	100	7.0	6.4	0.2
BNBB 075R	★	8.0	100	7.5	6.9	0.2
BNBB 08R	★	8.5	100	8.0	7.4	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 2013

BNBX Small Hole Brazed Boring Bar

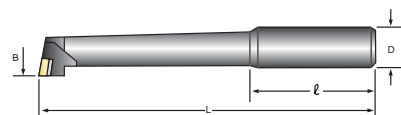
Catalog No.	BN2000	Min. Boring Dia.	Dimensions (mm)				Applicable Adapter Sleeve	ϕd (mm)	Adapter Sleeve Hardware
			ϕD	H	L	R			
BNBX020R	★	2.5	2.0	1.7	40	0.2	HBX2016	2.0	
BNBX025R	★	3.0	2.5	2.2	40	0.2	HBX2516	2.5	
BNBX030R	★	3.5	3.0	2.7	40	0.2	HBX3016	3.0	
BNBX035R	★	4.0	3.5	3.2	40	0.2	HBX3516	3.5	
BNBX040R	★	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 $\phi 6\text{mm}$

★ = Worldwide Warehouse Item

SUMIBORON Mini Boring Bars SJB Series

Jig Boring Tools



These figures show right hand tools.

Sumitomo Cat. No.	Dimensions (Inches)				Grade
	Min. Bore B	D	L	ℓ	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	•

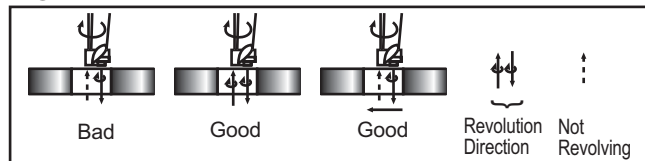
• = USA stocked item

Sumitomo Cat. No.	Dimensions (mm)				Grade
	ϕD	ϕd	L	ℓ	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.





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Threading, Grooving, & Cut-Off:

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High Rigidity Body














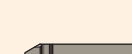




The GND series is designed for grooving and features a single-piece construction made of special steel. This design reduces chatter and also delivers steady performance for turning, profiling, and facing.

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)					Max. Grooving Depth (INCH)	Work Dia. (METRIC)	Page
				2	3	4	5	6			
External Grooving	  	GNDM Straight			3					.500	
		GNDMS L-Style				4	5	6	.700		
					3				.400 (Shank: .750")		
						4	5		.500 (Shank: 1.000")		
Face Grooving	  	GNDL Straight								.550 (Shank: .750")	
		GNDLS L-Style						6	.500 (Shank: .750")		
					2	3			.750		
						4	5	6	1.000		
Face Grooving	  	GNDF Straight								.600 (Shank: .750")	
									.700 (Shank: 1.000")		
					2	3			.900		
						4	5	6	.900		
Face Grooving	  	GNDF Straight			3					.500	
						3			.700	ø35	
							4		.900	ø50	
								4	.900	ø300	

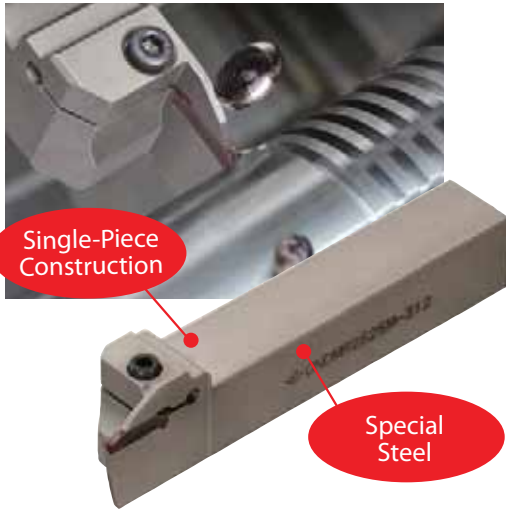
Grooving Toolholders

GND Series - Features & Benefits

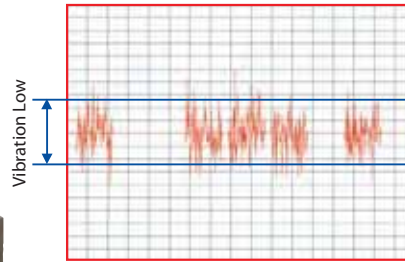
GROOVING TOOLHOLDERS

GND SERIES

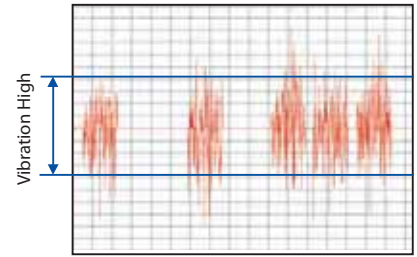
Eliminates Vibration



High rigid design reduces vibration by as much as 30% over conventional types



GND
GND Type



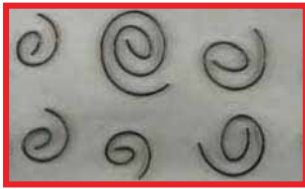
Conventional Tool (Unit Type)

SCM415 GNDL R2525M-220 GCM N2002-GG
Part Material Holder Insert
 $v_c=100\text{m/min}$, $f=0.10\text{mm/rev}$, $a_p=20.0\text{mm}$, 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
 $v_c=50\text{ SFM}$, $f=0.006\text{ IPR}$, $a_p=0.472''$, Wet
Cutting Conditions

Turning



GND Type (ML Type Chipbreaker)



Conventional Tool

SCM415
Part Material
GNDM R2525M-312 GCM N3002-ML
Holder Insert
 $v_c=328\text{ SFM}$, $f=0.004\text{ IPR}$, $a_p=0.020''$ Wet
Cutting Conditions

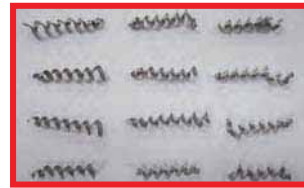


GND Type (RG Type Chipbreaker)



Conventional Tool

SCM415
Part Material
GNDM R2525M-312 GCM N3015-RG
Holder Insert
 $v_c=328\text{ SFM}$, $f=0.005\text{ IPR}$, $a_p=0.039''$, Wet
Cutting Conditions



GND Type (RG Type Chipbreaker)



Conventional Tool

SCM415
Part Material
GNDM R2525M-312 GCM N3015-RG
Holder Insert
 $v_c=100\text{m/min}$, $f=0.15\text{mm/rev}$, $a_p=0.1\text{mm}$, Wet
Cutting Conditions

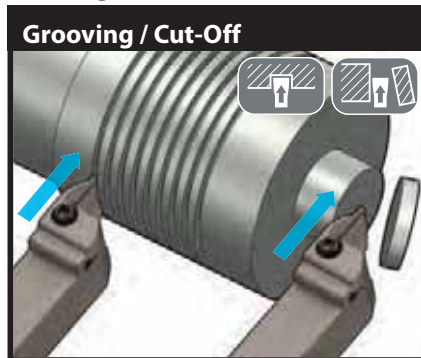
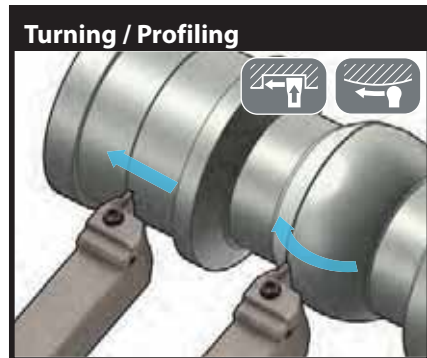
Improved Precision

Our precision sintering technology delivers $\pm 0.03\text{mm}$ accuracy for all grooving widths (from 2.0 to 6.0 mm).

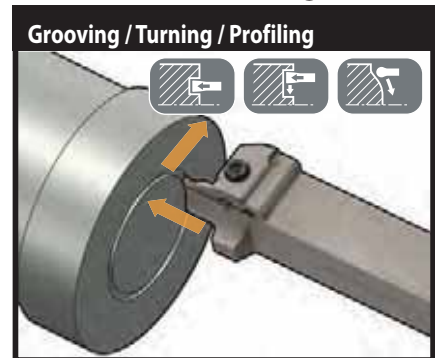


GND Type Holder Selection Guide

External Grooving



Face Grooving

**GNDM Type / GNDMS Type**

Perfect for turning and profiling. Can also be used for grooving.

GNDM**GNDMS****GNDL Type / GNDLS Type**

Perfect for grooving and cut-off applications. Handles deep grooving with ease.

GNDL**GNDLS****GNDF Type**

For facing work.

GNDF**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



Application Specific

For R grooving

**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		Nose Radius	Catalog Number
	Grooving	Turning		
2	<p>Chipbreaker GG GL</p> <p>f (in/rev) Feed Rate</p>		.008	GCM N2002- GG GCM N2002- GL
3	<p>Chipbreaker MG ML GG GL RG</p> <p>f (in/rev) Feed Rate</p>	<p>Depth of Cut</p> <p>f (in/rev) Feed Rate</p>	.008	GCM N3002- ML GCM N3002- GG GCM N3002- GL
			.016	GCM N3004- MG GCM N3004- GG
			.060 Full R	GCM N3015- RG
4	<p>Chipbreaker MG ML GG GL RG</p> <p>f (in/rev) Feed Rate</p>	<p>Depth of Cut</p> <p>f (in/rev) Feed Rate</p>	.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	<p>Chipbreaker MG ML GG GL RG</p> <p>f (in/rev) Feed Rate</p>	<p>Depth of Cut</p> <p>f (in/rev) Feed Rate</p>	.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	<p>Chipbreaker MG ML GG GL RG</p> <p>f (in/rev) Feed Rate</p>	<p>Depth of Cut</p> <p>f (in/rev) Feed Rate</p>	.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 (INCH)

GND M R/L 16 3 M -075

#1-3 #4

#5

#6

#7

#8

#9

#1-3 Series Name
#1 Groove #2 New #3 Depth

#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 Groove #2 New #3 Depth

#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 (INCH)

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 16ths
R0.5: 0.5/16 = 0.0313"
R1.0: 1/16 = 0.0625"
R2.0: 2/16 = 0.1250"

#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")

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
06 = 0.6mm

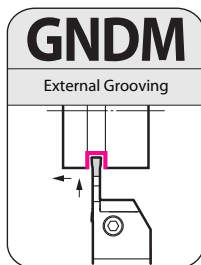
#7 Chipbreaker
GG: Std. Feed Deep Groove
GL: Low Feed Deep Groove
MG: Std. Feed Traverse
ML: Low Feed Traverse
RG: Full Radius Profiling

#8: Grade
AC530U: Universal Grade
For most materials

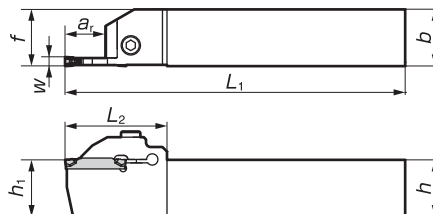
*Note: Items with the RG chipbreaker have a radius equal to 1/2 the width (Ex: GCMN3125-RG = 0.0625")



External Multi-Purpose (Grooving / Turning / Profiling)



Use for multi-purpose or profiling insert for turning (widening).

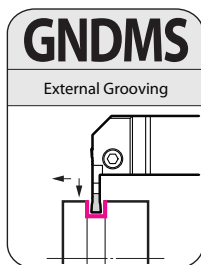


Above figures show right hand tools

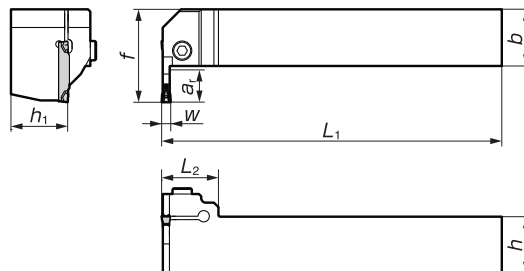
Catalog Number	Dimensions (in)						Groove Width W (inch)	Max. Groove depth ar (inch)	Seat Size		
	h	b	L1	f	h1	L2					
GNDM L/R 123K-050	.750	.750	5.000	.750	.750	1.441	.125	.500	3	BX0520	LH040
GNDM L/R 124K-070	.750	.750	5.000	.750	.750	1.772	.157	.700	4		
GNDM L/R 125K-070	.750	.750	5.000	.750	.750	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 245 for applicable inserts

External L-Styled (Side Cut) Multi-Purpose (Grooving / Turning / Profiling)



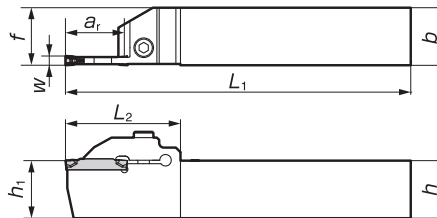
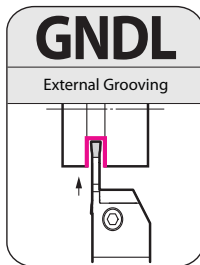
Use for multi-purpose or profiling insert for turning (widening).





Above figures show right hand tools

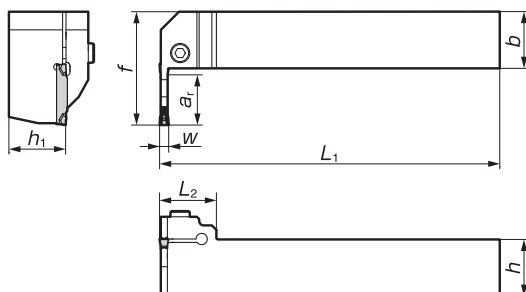
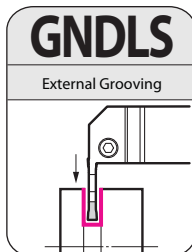
Catalog Number	Dimensions (in)						Groove Width W (inch)	Max. Groove depth ar (inch)	Seat Size		
	h	b	L1	f	h1	L2					
GNDMS L/R 123K-040	.750	.750	5.000	1.222	.750	1.000	.125	.4000	3	BX0520	LH040
GNDMS L/R 124K-050	.750	.750	5.000	1.300	.750	1.000	.157	.5000	4		
GNDMS L/R 125K-050	.750	.750	5.000	1.300	.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 245 for applicable inserts



**External Deep
Grooving / Cut-Off**

Above figures show right hand tools

Catalog Number	Dimensions (in)						Groove Width W (inch)	Max. Groove depth ar (inch)	Seat Size		
	h	b	L1	f	h1	L2					
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		

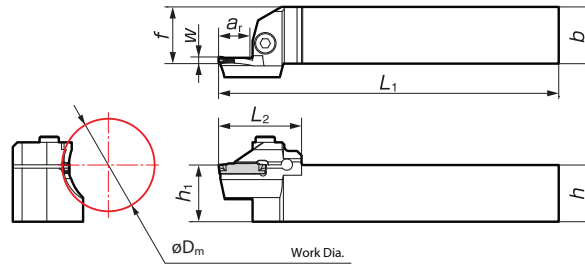
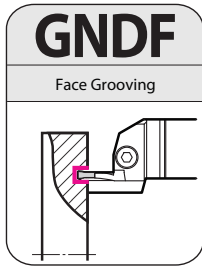
*Please see page 245 for applicable inserts***External L-Style (Side Cut)
Grooving**

Above figures show right hand tools

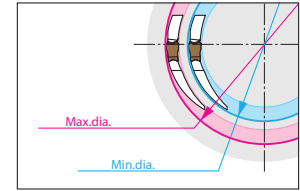
Catalog Number	Dimensions (in)						Groove Width W (inch)	Max. Groove depth ar (inch)	Seat Size		
	h	b	L1	f	h1	L2					
GNDLS L/R 122K-060	.750	.750	5.000	1.459	.750	1.000	.094	.600	2	BX0520	LH040
GNDLS L/R 123K-060	.750	.750	5.000	1.459	.750	1.000	.125	.600	3		
GNDLS L/R 124K-070	.750	.750	6.000	1.787	.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 245 for applicable inserts

Face Grooving



Above figures show right hand tools



Work diameters in stock table indicate external diameter of face groove.

Threading, Grooving,
&
Cut-Off Holders

Catalog Number	Dimensions (in)						Work Dia. ØDm		Grooving width	Max. Grooving Depth ar (inch)	Seat Size	Cap Screw	Wrench
	h	b	L1	f	h1	L2	Min.	Max.					
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	BX0520	LH040
GNDF L/R 124K-070-040	.750	.750	5.000	.750	.750	1.638	1.575	2.165	.157	.700	4		
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	BX0520	LH040
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		
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	BX0520	LH040
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		
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	BX0520	LH040
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		
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	BX0520	LH040
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 164K-070-040	1.000	1.000	5.000	.750	.750	1.638	1.575	2.165	.157	.700	4		
GNDF L/R 164K-090-050	1.000	1.000	5.000	.750	.750	1.835	1.969	2.756	.157	.900	4		
GNDF L/R 164K-090-065	1.000	1.000	5.000	.750	.750	1.835	2.559	3.543	.157	.900	4		
GNDF L/R 164K-090-085	1.000	1.000	5.000	.750	.750	1.835	3.346	5.118	.157	.900	4	BX0520	LH040
GNDF L/R 164K-090-125	1.000	1.000	5.000	.750	.750	1.835	4.921	7.874	.157	.900	4		
GNDF L/R 164K-090-180	1.000	1.000	5.000	.750	.750	1.835	7.087	11.811	.157	.900	4		
GNDF L/R 164K-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		
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	BX0520	LH040
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 245 for applicable inserts



Fig. 1

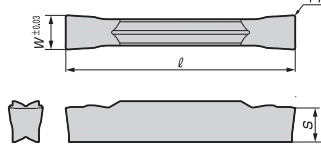
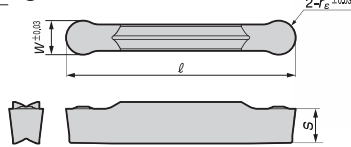


Fig. 2



Type		Catalog Number	Coated Carbide		Dimensions (inch)					Fig.
			AC530U		W	re	ℓ	Seat	S	
Deep Gooving Cut-off	General feed GG type	GCMN2094R0.5-GG	O		.094	.0078	.831	2	.142	1
		GCMN3125R0.5-GG	O		.125	.0078	.831	3	.150	
		GCMN5187R0.5-GG	O		.1875	.0078	1.039	4	.161	
		GCMN6250R0.5-GG	O		.250	.0078	1.039	6	.177	
	Low feed GL type	GCMN2094R0.5-GL	O		.094	.0078	.831	2	.142	1
		GCMN3125R0.5-GL	O		.125	.0078	.831	3	.150	
		GCMN5187R0.5-GL	O		.1875	.0078	1.039	5	.161	
		GCMN6250R0.5-GL	O		.250	.0078	1.039	6	.177	
Multi function (traversing)	General feed MG type	GCMN3125R1.0-MG	O		.125	.0156	.831	3	.150	1
		GCMN5187R2.0-MG	O		.1875	.01875	1.039	5	.161	
		GCMN6250R2.0-MG	O		.250	.01875	1.039	6	.177	
	Low feed ML type"	GCMN3125R0.5-ML	O		.125	.0078	.831	3	.150	1
		GCMN5187R1.0-ML	O		.1875	.0156	1.039	5	.161	
		GCMN6250R1.0-ML	O		.250	.0156	1.039	6	.177	
Profiling	General feed RG type	GCMN3125-RG	O		.125	.0625	.831	3	.150	2
		GCMN5187-RG	O		.1875	.0935	1.039	5	.161	
		GCMN6250-RG	O		.250	.125	1.039	6	.177	
Type		Cat. No.	Coated Carbide		Dimensions (inch)					Fig.
			AC530U		W	re	ℓ	Seat	S	
			R	L						
Cut-off	CL type	GCM R/L2094R0.5-CL	O	O	.094	.0078	.831	2	.142	1
		GCM R/L3125R0.5-CL	O	O	.125	.0078	.831	3	.150	
		GCM R/L5187R0.5-CL	O	O	.1875	.0078	1.039	5	.161	
		GCM R/L6250R0.5-CL	O	O	.250	.0078	1.039	6	.177	

○ New Product Arriving January 2013

Catalog Number	Coated Carbide	Dimensions				Package	Fig.
	AC530U	W	rφ	ℓ	S		
GCM N3004-MG	O	3	0.4	21.1	3.8	5	1
N4008-MG	O	4	0.8	26.4	4.0		
N5008-MG	O	5	0.8	26.4	4.1		
N6008-MG	O	6	0.8	26.4	4.5		
GCM N3002-ML	O	3	0.2	21.1	3.8	5	1
N4004-ML	O	4	0.4	26.4	4.0		
N5004-ML	O	5	0.4	26.4	4.1		
N6004-ML	O	6	0.4	26.4	4.5		

○ New Product Arriving January 2013

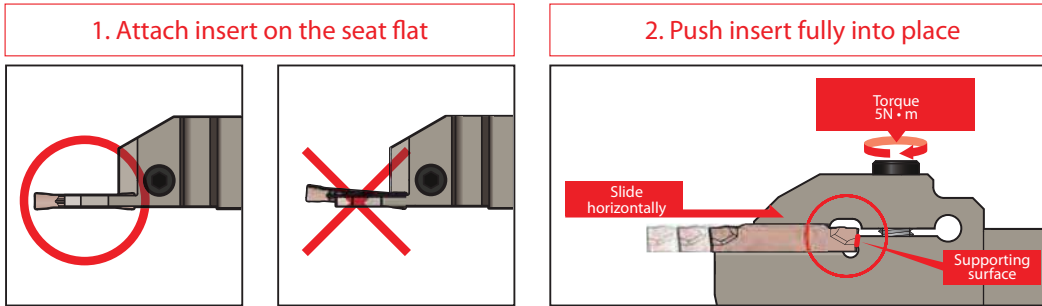
Catalog Number	Coated Carbide	Dimensions				Package	Fig.
	AC530U	W	rφ	ℓ	S		
GCM N2002-GG	O	2	0.2	21.1	3.6	5	1
N3002-GG	O	3	0.2	21.1	3.8		
N4002-GG	O	4	0.2	26.4	4.0		
N5002-GG	O	5	0.2	26.4	4.1		
N6002-GG	O	6	0.2	26.4	4.5	5	1
GCM N3004-GG	O	3	0.4	21.1	3.8		
N4004-GG	O	4	0.4	26.4	4.0		
N5004-GG	O	5	0.4	26.4	4.1		
N6004-GG	O	6	0.4	26.4	4.5	5	1
GCM N2002-GL	O	2	0.2	21.1	3.6		
N3002-GL	O	3	0.2	21.1	3.8		
N4002-GL	O	4	0.2	26.4	4.0		
N5002-GL	O	5	0.2	26.4	4.1		
N6002-GL	O	6	0.2	26.4	4.5		

○ New Product Arriving January 2013



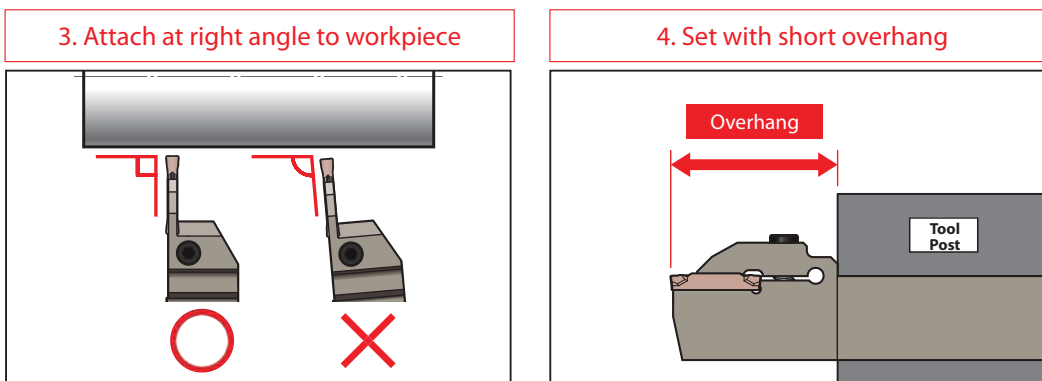
Notes on Attaching Inserts

- 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.



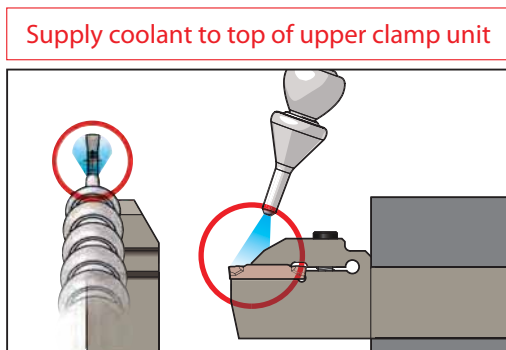
Notes on Attaching Holders

- 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.

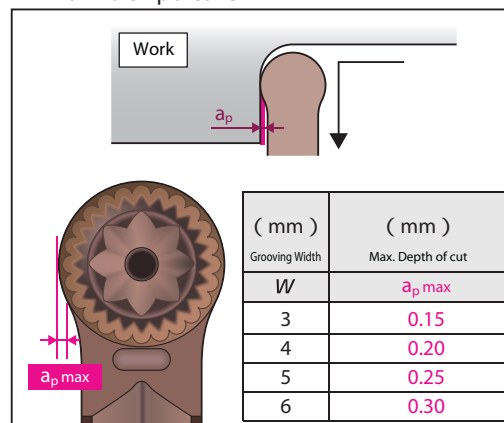


Notes on Setting Coolant Supply Nozzle

- Set the coolant supply nozzle so that coolant can be supplied from the top of the upper clamp unit.



Maximum depth of cut when pulling up with RG chipbreaker





■ 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

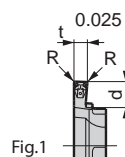
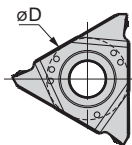


Fig.1

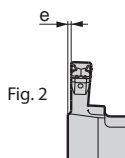


Fig. 2

Sumitomo Cat. No.	AC530U		Tooth t	Dimensions mm (in)					Max. Groove Depth		Fig.	Holder(s)
	R	L		e	R	D	T	d	OD	ID		
TGA R/L4150BF	★	★	1.50	0.250	0.2	12.70	4.76	3.9	3.5	2.5	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								
TGA R/L4200BF	★	★	2.00	0.000								
TGA R/L4220BF	★	★	2.20									
TGA R/L4230BF	★	★	2.30									
TGA R/L4250BF	★	★	2.50									
TGA R/L4265BF	★	★	2.65		0.3	12.70	4.76	5.4	5.0	2.5	1	GWC R/L2525-35 GWCI R/L432
TGA R/L4270BF	★	★	2.70									
TGA R/L4280BF	★	★	2.80									
TGA R/L4300BF	★	★	3.00									
TGA R/L4320BF	★	★	3.20									
TGA R/L4330BF	★	★	3.30									
TGA R/L4350BF	★	★	3.50									
TGA R/L4370BF	★	★	3.70									
TGA R/L4390BF	★	★	3.90									
TGA R/L4400BF	★	★	4.00	0.4								
TGA R/L4410BF	★	★	4.10									
TGA R/L4420BF	★	★	4.20									
TGA R/L4430BF	★	★	4.30									
TGA R/L4440BF	★	★	4.40									
TGA R/L4450BF	★	★	4.50	(0.008)	(0.500)	(0.187)	(0.154)	(0.138)	(0.098)	2	GWC R/L2020-25 GWC R/L2525-25 GWCI R/L432	
TGA R/L40062BF	●	●	(0.062)									(0.016)
TGA R/L40072BF	●	●	(0.072)							(0.010)		
TGA R/L40088BF	●	●	(0.088)							(0.003)		
TGA R/L40094BF	●	●	(0.094)									
TGA R/L40097BF	●	●	(0.097)	(0.012)	(0.500)	(0.187)	(0.213)	(0.197)	(0.098)	1	GWC R/L2525-35 GWCI R/L432	
TGA R/L40105BF	●	●	(0.105)									
TGA R/L40110BF	●	●	(0.110)									
TGA R/L40122BF	●	●	(0.122)									
TGA R/L40125BF	●	●	(0.125)									
TGA R/L40142BF	●	●	(0.142)	(0.016)								
TGA R/L40156BF	●	●	(0.156)									

■ EXTERNAL GROOVING

Sumitomo Cat. No.	Stock		Dimensions mm (in)						Max. Grooving Depth (mm)	Screw	Wrench	Clamp	Double Screw	Wrench
	R	L	h	b	L ₁	f	h ₁	W						
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		Dimensions mm (in)						Min. Bore	Grooving Width	Max. Grooving	Screw	Wrench
	R	L	øDs	h	L1	f	h1	øDm	W	Depth (mm)			
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

				A	B	C	D	E	F	H			
Sumitomo Cat. No.		Gage Insert									Right Hand Clamp	Left Hand Clamp	Clamp Screw
Right Hand	Left Hand	R.H.	L.H.										
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.

Gage Insert

Right Hand

Left Hand

R.H.

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

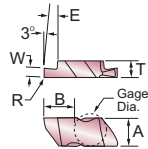
1/4-18 NPT

TF72

TF-73

S-412

Note: Right-hand boring bars use left-hand inserts. Left-hand boring bars use right-hand inserts.



- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item

SUMINOTCH GROOVING INSERTS

Left				Dimensions (in)							Right			
SG	Coated	CBN		W ±.001	R	E ±.001	T	A	B	Gage Dia.	SG	Coated	CBN	
	EH520V	BN250	BN350									EH520V	BN250	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	.195	.344	.4050	.3750	SG-2125R	●		
SG-3047L	●			.047	.005/.010	.075					SG-3047R	●	●	●
SG-3062L	●	●	●	.062	.005/.010	.094					SG-3062R	●	●	●
SG-3072L	●			.072	.005/.010	.094					SG-3072R	●		
SG-3088L	●			.088	.005/.010	.094					SG-3088R	●		
SG-3094L	●	●	●	.094	.005/.010	.150					SG-3094R	●	●	●
SG-3097L	●			.097	.005/.010	.150					SG-3097R	●		
SG-3105L	●			.105	.005/.010	.150					SG-3105R	●		
SG-3110L	●			.110	.005/.010	.150					SG-3110R	●		
SG-3122L	●			.122	.005/.010	.150					SG-3122R	●		
SG-3125L	●	●	●	.125	.005/.010	.150					SG-3125R	●	●	●
SG-3142L	●			.142	.005/.010	.150					SG-3142R	●		
SG-3156L	●			.156	.005/.010	.150					SG-3156R	●		
SG-3178L	●			.178	.005/.010	.150					SG-3178R	●		
SG-3185L	●			.185	.020/.025	.150					SG-3185R	●		
SG-3189L	●			.189	.020/.025	.150					SG-3189R	●		●

Left		Dimensions (in)							Right	
SG-CB	Coated	W ±.001	R	E ±.001	T	A	B	Gage Dia.	SG-CB	Coated
	EH520V									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	450-750	.004 - .012
	plain carbon steels	400-700	
	alloy steels 190-330HB	400-700	
	alloy steels 330-450HB	350-600	
Stainless Steels	martensitic/ferritic stainless steel	250-650	.004 - .009
	austenitic stainless steel	175-700	
Cast Iron	gray cast iron 190-330HB	400-700	.004 - .015
	gray cast iron 330-450HB	350-600	
	alloy/ductile irons	250-650	
High Temperature Alloys	high temp alloys 200-260HB	60-250	.003 - .008
	high temp alloys 260-450HB	30-175	
	titanium alloys Ti 6Al-4V	90-250	
	free-machining aluminum alloys	600-2500	
Non-Ferrous Materials	copper/zinc/brass	300-900	.004 - .012
	non-metallics	350-1200	



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

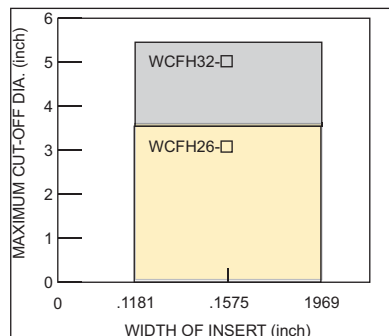
the insert corners are greatly reduced, and coolant is easier to direct.

Operating at high speeds and feeds is possible because of longer tool life, and down-time for chip removal is drastically reduced.

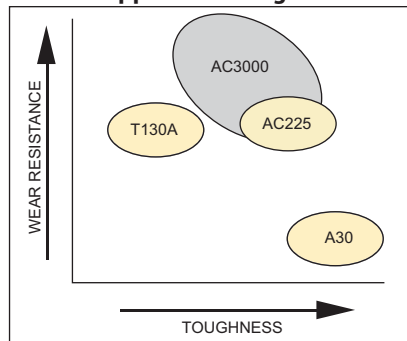
Safety is enhanced because long, stringy chips are avoided.

Note: Sumitomo Inserts fit only Sumitomo Blades.

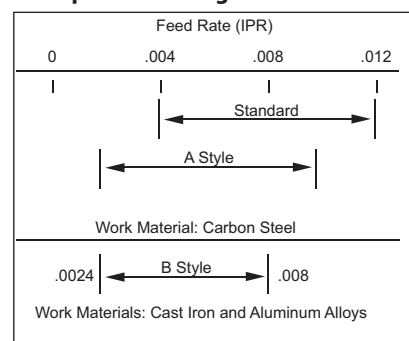
■ Maximum Cut-Off Diameter



■ Grade Application Range



■ Chipbreaker Range



■ Inserts Application

GRADE	C.B. STYLE	APPLICATION	FEATURE
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.

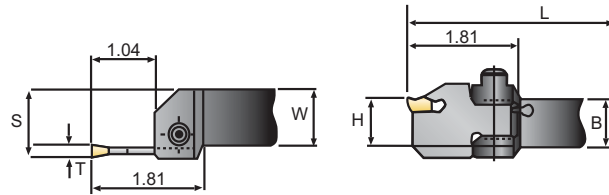
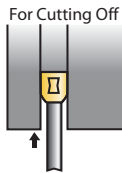
CAUTION 1. Do not use AC25 for light feed rate applications (Feed rate should be at least .004 ipr)
2. Use AC225 for stainless steel.

3. Use A style chipbreaker for low carbon steel.
4. Use coolant.

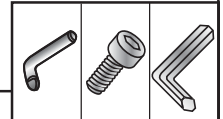
■ Recommended Cutting Conditions

GRADE	V (SFM) f (ipr)	STEEL	CARBON STEEL	STAINLESS STEEL	DIE STEEL	CAST IRON	EXOTICS
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



WCFS Series
HOLDERS


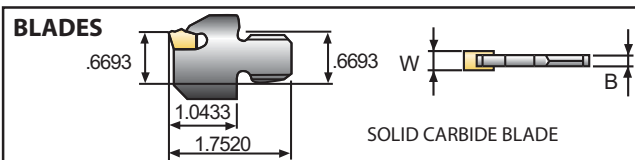
HARDENED STEEL HOLDER



These figures show right hand tools.

Sumitomo Cat. No.	STKD.		Dimensions						Support Blade	Insert	Extractor	Clamp Screw	Wrench
	R	L	W	B	L	S	H	T					
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□			

Sumitomo Cat. No.	STOCK	Dimensions	
		W	B
WCFH17-3	•	.1181	.094
WCFH17-4	•	.1575	.134
WCFH17-5	•	.1969	.169



SOLID CARBIDE BLADE

INSERTS	WCF□○□ (General Steel)			WCF□○A (Hard to Cut Materials • Slow Feed)					WCF□○B (Cast Iron • Aluminum Alloy)		
	Sumitomo Cat. No.	Coated AC3000	W	Sumitomo Cat. No.	Coated AC225	Cermet T130A	Uncoated A30N	Uncoated G10E	Sumitomo Cat. No.	Uncoated G10E	W
Neutral (N) 2° 1/128 W 2°	—	—	—	—	—	—	—	—	—	—	—
Right Hand (R) 2° 1/128 8°	WCFN2T	•	.0787	—	—	—	—	—	—	—	—
	WCFR2T	•		—	—	—	—	—	—	—	—
	WCFL2T	•		—	—	—	—	—	—	—	—
Left Hand (L) 8° 1/128	WCFN3	•	.1181	WCFN3A	•	•	•	•	WCFN3B	•	.1181
	WCFR3	•		WCFR3A	•	•	•	▲	WCFR3B	•	
	WCFL3	•		WCFL3A	•	•	•	•	WCFL3B	•	
	WCFN4	•	.1575	WCFN4A	•	•	•	•	WCFN4B	•	.1575
	WCFR4	•		WCFR4A	•	•	•	▲	WCFR4B	•	
	WCFL4	•		WCFL4A	•	•	•	•	WCFL4B	•	
	WCFN5	•	.1969	WCFN5A	•	•	•	•	WCFN5B	•	.1969
	WCFR5	•		WCFR5A	•	•	•	•	WCFR5B	•	
	WCFL5	•		WCFL5A	•	•	•	•	WCFL5B	•	

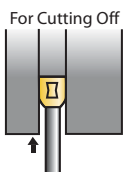
• = USA stocked item

▲ = USA limited availability item

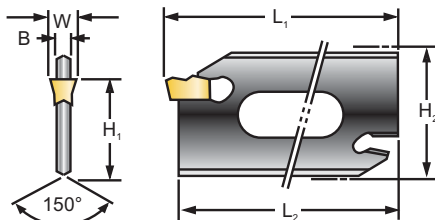


WCFH Series

SUPPORT BLADES



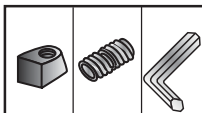
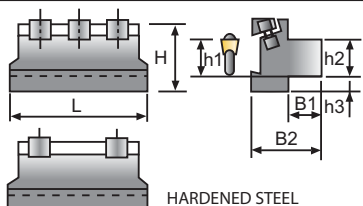
SOLID CARBIDE BLADE



Sumitomo Cat. No.	STKD.	Dimensions							Tool Block		Insert	Extractor
	R	W	B	H ₁	H ₂	L ₁	L ₂	Max. Cut-Off Dia.				
WCFH26-3	•	.1181	.0945						SBN063-26	SBU075-26	WCF□3(A, B)	SL-1
WCFH26-4	•	.1575	.1339	.844	1.031	4.344	4.281	3.150	SBN075-26		WCF□4(A, B)	
WCFH26-5	•	.1969	.1693								WCF□5(A, B)	
WCFH32-3	•	.1181	.0945						SBN100-32	SBU075-32	WCF□3(A, B)	
WCFH32-4	•	.1575	.1339	.984	1.250	5.906	5.844	5.500	SBN125-32	SBU100-32	WCF□4(A, B)	
WCFH32-5	•	.1969	.1693								WCF□5(A, B)	

SBN Series

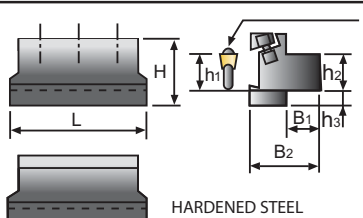
Tool Blocks



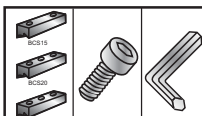
Sumitomo Cat. No.	Dimensions							Clamp	Clamp Screw	Wrench
	L	h ₁	h ₂	h ₃	H	B ₁	B ₂			
SBN063-26	3.000	.625	.625	.500	1.719	.625	1.328	BWS-30	WB8-20	LH040
SBN075-26	3.156	.750	.750	.375	1.719	.750	1.469			
SBN100-32	4.500	1.000	1.000	.3125	2.000	.8125	1.531			

SBU Series

Tool Blocks



Does not include
Support Blade or Insert



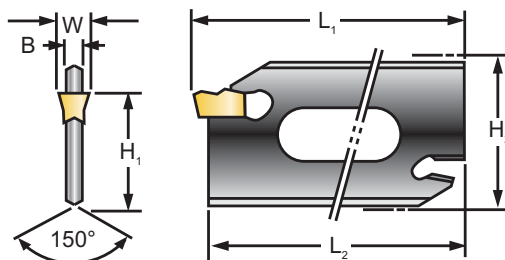
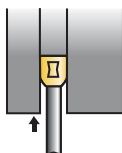
Sumitomo Cat. No.	Dimensions							Wedge Clamp	Clamp Screw	Wrench
	L	H	h ₁	h ₂	h ₃	B ₁	B ₂			
SBU075-26	3.156	1.781	.750	.750	.4375	.750	1.719	BCS15		
SBU075-32	4.000	2.000	.750	.750	.531	.781	1.719	BCS20	BX0622	LH050
SBU100-32	4.344	2.000	1.000	1.000	.344	.781	1.719	BCS25		



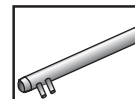
STFH Series Sumi-Grip Jr.

SUPPORT BLADES

For Cutting Off



HARDENED STEEL BLADE

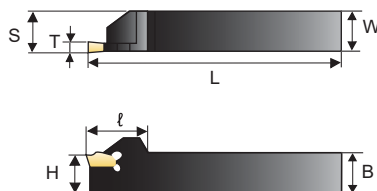
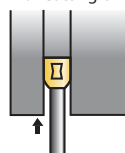


Sumitomo Cat. No.	STKD.	Dimensions							Tool Block		Insert	Wrench
	R	W	B	H ₁	H ₂	L ₁	L ₂	Max. Cut-Off Dia.				
STFH26-2	•	.0800	.0630	.8425	1.024	4.291	4.252	1.580	SBN063-26	SBU075-26	WCF□2T	SL-4
STFH26-3	•	.1200	.0945	.8425	1.024	4.291	4.252	2.760	SBN075-26		WCF□3□	
STFH32-2	•	.0800	.0630	.9843	1.260	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□	

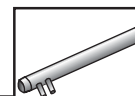
STFS Series Sumi-Grip Jr.

TOOL HOLDERS

For Cutting Off



HARDENED STEEL HOLDER

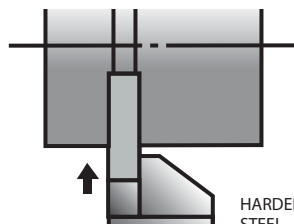
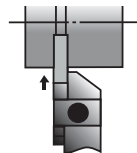


These figures show right hand tools.											
Sumitomo Cat. No.	STKD.		Dimensions						Max. Cut-Off Dia.	Insert	Wrench
	R	L	W	B	L	S	H	T			
STFSR/L-063-2	●	●	.625	.625	4.000	.625	.625	.0800	.650	WCF□2T	SL-4
STFSR/L-075-2	●	●	.750	.750	5.000	.750	.750	.0800	.840	WCF□2T	
STFSR/L-063-3	●	●	.625	.625	4.000	.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



HARDENED
STEEL
HOLDER

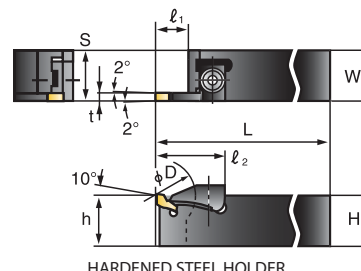
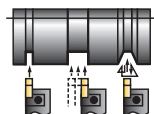
These figures show right hand tools.

Sumitomo Cat. No.	STK.	Dimensions								Max. Cut-Off Dia.
		B	W	H	L	S	h	F	θ°	
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



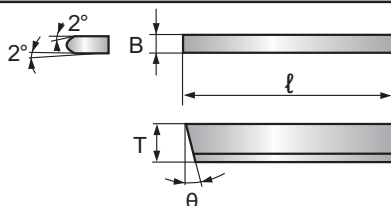
HARDENED STEEL HOLDER

These figures show right hand tools.

Sumitomo Cat. No.	STK.	Dimensions								
		W	H	L	S	h	ℓ ₁	ℓ ₂	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.

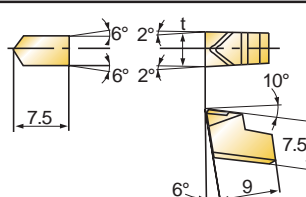
INSERTS



SOLID CARBIDE

Insert	Uncoated		Dimensions			Holder No.
	G10E		B	T	ℓ	
CFB3	•		.118	.2760	1.961	CF3-3
CFB3T	•					
CFB5			.197	.3125	2.329	CF4-5
CFB5T	•					

INSERTS



SOLID CARBIDE

Insert	Coated	T (inch)	Holder No.
	AC2000		
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.

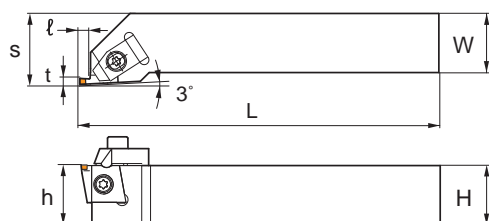
"PFE" SERIES HARDWARE


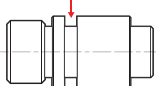

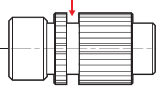
Holder Cat. No.		
	Clamp	Wrench
PFER 160-3	PCM3 R	
PFER 160-4	PCM4 R	LH040
PFER 160-5	PCM5 R	



■ 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□□ CGA R/L 4□□□
GWBL 165D4						.079 < t ≤ .118 (2.0 < t ≤ 3.0)	.177 (4.5)	6.039 (153.4)	
						.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□□ CGA R/L 6□□□
GWBL 165D6									
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□□ CGA R/L 4□□□
GWBL 2525-45						.079 < t ≤ .118 (2.0 < t ≤ 3.0)	.177 (4.5)	6.039 (153.4)	
						.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□□ CGA R/L 6□□□
GWBL 2525-60									

• = USA Stocked Item






★ = Worldwide Warehouse Item

Please see page 136 for applicable inserts

■ RECOMMENDED CUTTING CONDITIONS

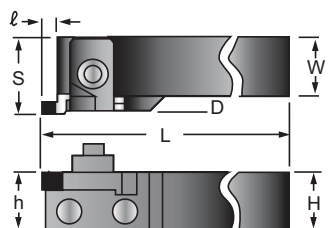
For hardened steel:	
Cutting Speed	260 - 400 sfm (80 - 120 m/min)
Feed Rate	.0016 - .0032 ipr (.04 - .08 mm/rev)
Coolant	Continuous cut: dry or wet Interrupted cut: dry
NOTE: To avoid thermal cracking of cutting edge during interrupted cutting applications, please ensure workpiece remains dry.	

■ 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

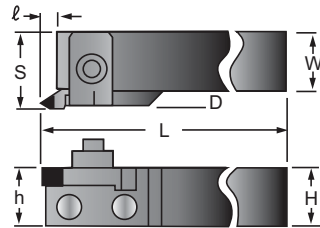
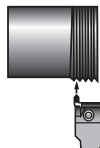


Sumitomo Cat. No.	STK		Dimensions							
	R	L	W	H	L	S	D	h	l	
BNGGR/L160	•		1	1	6	1.25	.281	1	.2	

- For use in hard grooving with BNGT 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		Dimensions							
	R	L	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		BN350		BN500	
	R	L	R	L	R	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	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.



Table of Contents

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Sumitomo Electric is a world leader in the development of polycrystalline 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, polycrystalline 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.

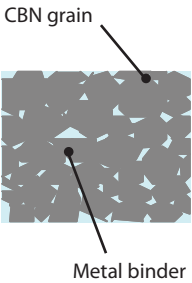
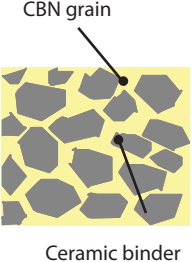
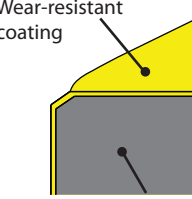


■ CBN CLASSIFICATIONS

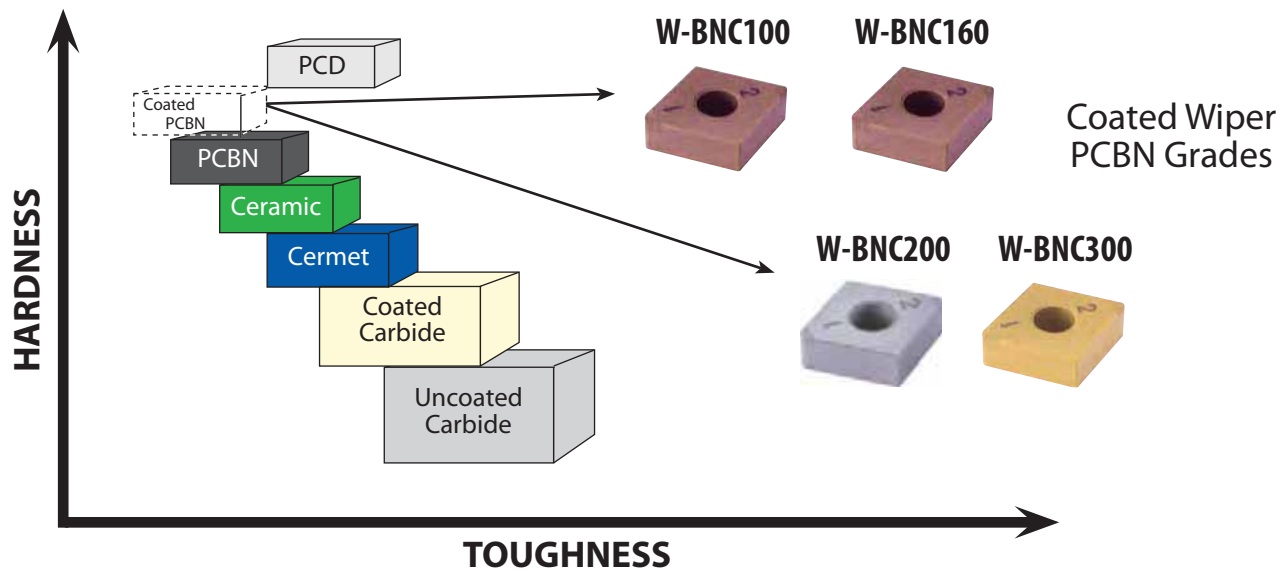
PCBN is generally classified into two groups based on its material microstructure. PCBN particles of the first type are bonded together directly. The percentage of PCBN in this type is very high, resulting in an extremely hard substrate.

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.

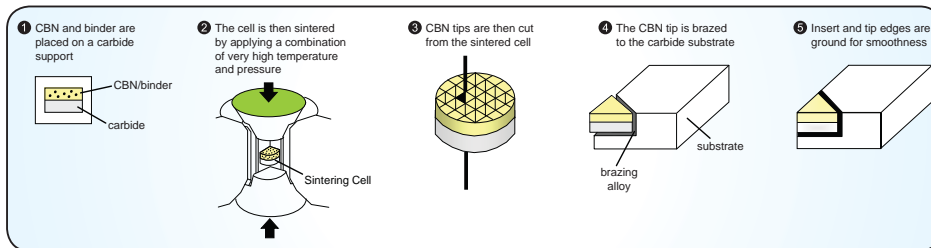
A third type of PCBN features enhancements of ceramic based coatings to new Sumitomo PCBN grades. They offer increased wear resistance as well as the ability to achieve higher speeds and superior surface finishes in a multitude of hardened steel applications.

Structure	Classification	Grades	Main Application
 <p>CBN grain</p> <p>Metal binder</p>	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
 <p>CBN grain</p> <p>Ceramic binder</p>	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	
		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)
 <p>Wear-resistant coating</p> <p>CBN substrate</p>	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

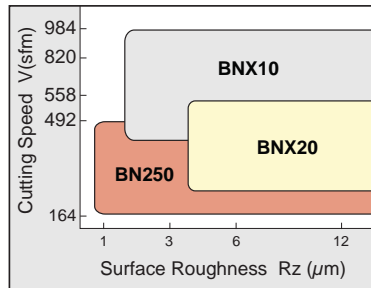
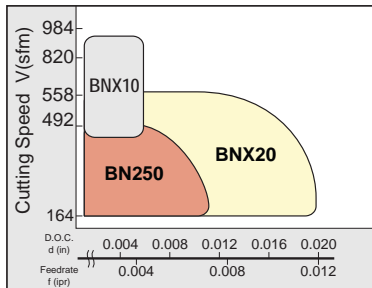


MANUFACTURING PROCESS of PcBN

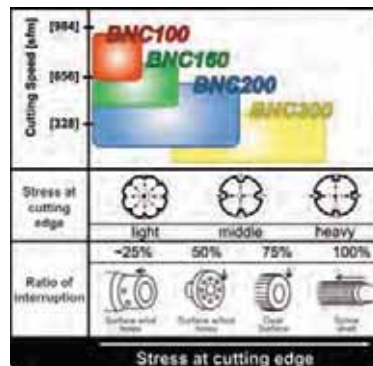
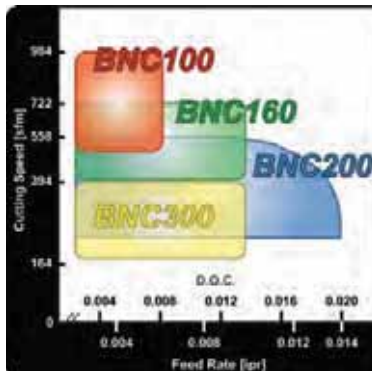


APPLICATION RANGE

Uncoated SumiBoron



Coated SumiBoron

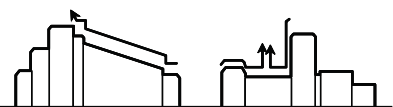
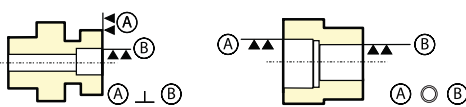


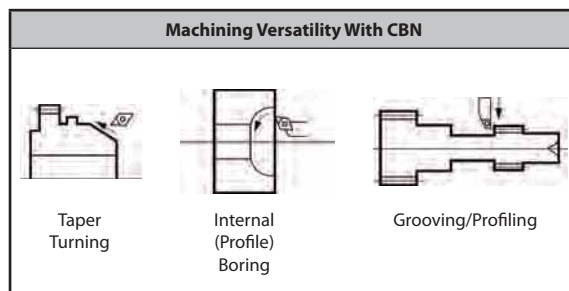
	Low Resistance	Standard	High Resistance
	LS (extra-sharp)		HS (extra-tough)
High Wear Resistance	BNC100 a = 15° W = .007	Standard a = 25° W = .005	Non-Stocked Item a = 30° W = .007
	BNC160 a = 20° W = .004	Standard a = 25° W = .005	Non-Stocked Item a = 30° W = .007
	BNC200 a = 15° W = .004	Standard a = 25° W = .005	Non-Stocked Item a = 35° W = .007
High Fracture Resistance	BNC300 Non-Stocked Item	Standard a = 25° W = .005	Non-Stocked Item a = 35° W = .007



■ 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	<ul style="list-style-type: none"> • 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)



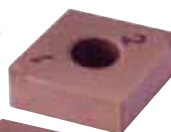
Multi-Corner PCBN Grade

BN350

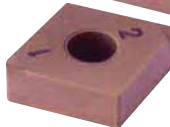


Coated PCBN Grades

BNC100



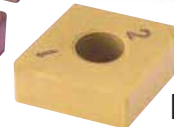
BNC160



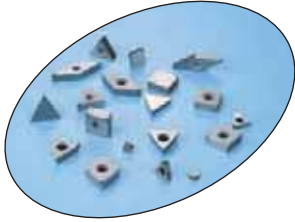
BNC200



BNC300



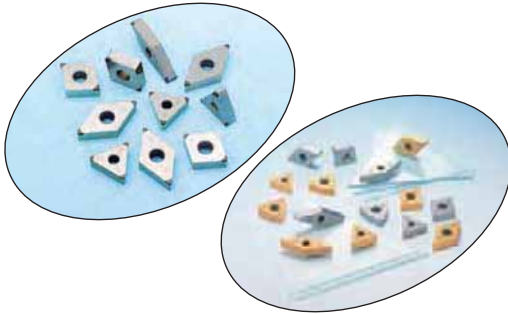
One-use Insert NU Type/NS Type



■ 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.

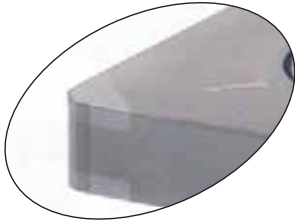
Multi-cornered, One-use Insert



■ CHARACTERISTICS

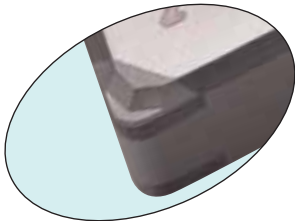
- Insert with several brazed SUMIBORON one-use corners. Price per edge is more reasonable compared to normal single cornered, one use type insert.
- Coated SUMIBORON is available as a double-faced insert. Diamond shaped inserts have 4 cutting edges and triangle shaped inserts have 6 cutting edges, etc.
- 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

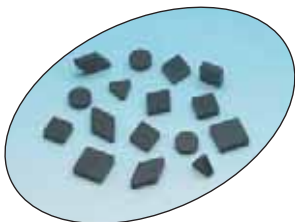
- SUMIBORON one-use insert with wiper edge is for hardened steel machining.
- Excellent surface roughness comparable to grinding.
- Multi-cornered, one-use type has G-class specification with ground side faces. In addition, all edges are numbered for easy cutting edge management.

One-use insert with chipbreaker
Break Master-SV Type

■ CHARACTERISTICS

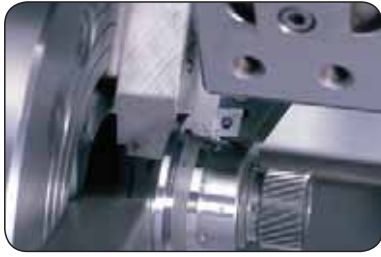
- SUMIBORON One-use insert with chipbreaker, especially for carburized layer removal.
- Breaker included on the CBN edge, chipbreaking effect can be maintained throughout.
- Unique breaker design can be applied to both hardened and non-hardened parts with effective chip control.

Solid SUMIBORON



■ CHARACTERISTICS

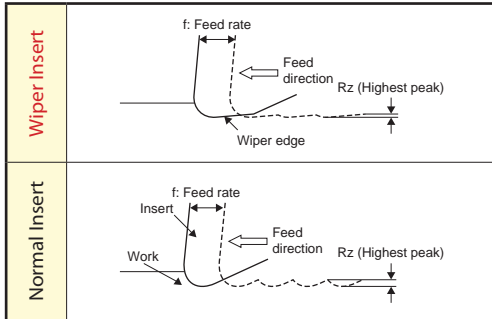
- 100% solid CBN structure. With no brazed portion, this grade is excellent for the roughing of cast iron at large depth of cut.



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

Purpose of Wiper Edge



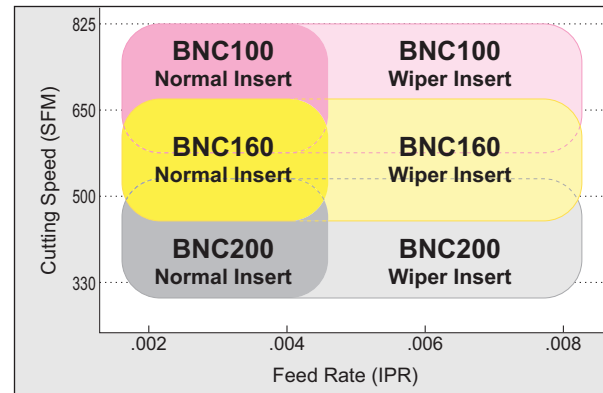
Surface Roughness of Wiper Insert

	Wiper Insert (R0.8)		Normal Insert (R0.8)	
	Finishing ($f = 0.15\text{mm/rev}$)	High feed cutting ($f = 0.25\text{mm/rev}$)	Finishing ($f = 0.15\text{mm/rev}$)	High feed cutting ($f = 0.25\text{mm/rev}$)
Surface Roughness Profile				
Surface Roughness Rz (Highest peak)	0.6 μm	1.0 μm	3.5 μm	9.8 μm

The wiper flat offers good surface finish and improved efficiency.

Recommended Cutting Conditions (Surface Roughness Standard: 1.6s to 3.2s)

- Wiper insert is recommended for high feed conditions.
- For optimum effectiveness, use wiper inserts for continuous cutting. For copy turning, inserts with nose radius are recommended.
- Chattering and undulation may occur, please use work material and machines with high rigidity.



Max. feed rate under high feed conditions is .012 IPR

Application Example

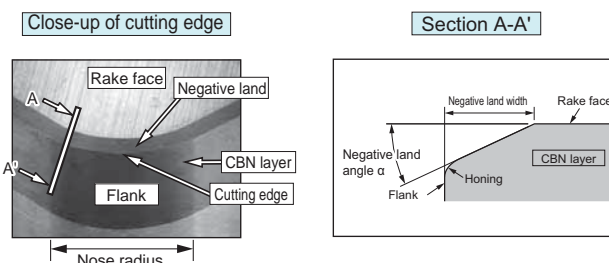
Condition	Work	Tool	Cutting Conditions	Results
	1. Part Name 2. Grade	Insert	v_c = Cutting Speed (m/min) f = Feed Rate (mm/rev) a_p = Depth of cut (mm)	
Pinion Gear Ext. Turning 	1. Gear 2. Hardened Steel 58 to 62HRC	4NC-CNGA120404W (BNC200)	$v_c = 130\text{m/min}$ $f = 0.18\text{mm/rev}$ $a_p = 0.15\text{mm}$ Wet	BNC200 (Wiper) → Able to continue 120 pcs Comp. (No wiper) → 70 pcs
Shaft Ext. Turning 	1. Shaft 2. Carburized steel 58 to 62HRC	4NC-CNGA120408W (BNC160)	$v_c = 200\text{m/min}$ $f = 0.11 \text{ to } 0.15\text{mm/rev}$ $a_p = 0.13\text{mm}$ Dry	BNC160 (Wiper) → 350 pcs Comp. (No wiper) → less than 150 pcs



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.



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	α	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	-	-	-	-	-	HS	S01235	35°	0.12	Yes
		Positive	T01235	35°	0.12	No	-	-	-	-	-	HT	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	LE	Sharp edge	0°	0	Yes	HS	S00525	25°	0.05	Yes	
BNS800		Negative	T02020	20°	0.20	No	LS	S00715	15°	0.07	Yes	-	-	-	-	-	
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 $\phi 4.76$.

Cutting Edge Treatment of Inserts with Wipers/Chipbreakers

Series	Work Material	Grade	Other Types					Type
			Notation	Identification Code	α	W	Honing	
SUMIBORON	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	W	S01215	15°	0.12	Yes	Wiper
		BNC200	W	S01215	15°	0.12	Yes	Wiper
		BNC200	N-SV	S01235	35°	0.12	Yes	With breaker
	Cast Iron	BNC500	W	S01215	15°	0.12	Yes	Wiper

Edge Treatment Identification

New 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
W	Wiper			
N-Sv	With Chipbreaker			

• Edge treatment identification code (Ex)

S 0 1 2 2 5

Diagram showing the edge treatment identification code (Ex) S 0 1 2 2 5. The code is broken down into: S (Treatment type), 0 (Negative land width), 1 (Negative land angle), 2 (Negative land width), 2 (Negative land angle), and 5 (Negative land angle).

Diagram showing the edge treatment identification code (Ex) S 0 1 2 2 5. The code is broken down into: S (Treatment type), 0 (Negative land width), 1 (Negative land angle), 2 (Negative land width), 2 (Negative land angle), and 5 (Negative land angle).

Ex: S01225
→ 25°/0.12mm width negative land with honing

■ GRADE DESCRIPTION

Grades	Hardness (Hv)	T.R.S. (kg/mm ²)	Features	Applications
BNX10	2800 3200	80 90	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Non coated grade • Excellent toughness • Excellent breakage resistance 	Excellent performance for heavy Interrupted cutting
BN500	3300 3500	100 110	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • TiAlN based coating • Micro-grain CBN • High fracture toughness 	Excellent performance in a wide range of interrupted hard turning
BNS800	4000 4300	100 120	<ul style="list-style-type: none"> • 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





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 unequalled 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.

■ 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 Description	<ul style="list-style-type: none"> • Ultra-fine grain structure • Superior hardness and wear resistance with sharp edge 	<ul style="list-style-type: none"> • High density sintered material made of ultra-micro diamond particles • Superior hardness and wear resistance with sharp edge 	<ul style="list-style-type: none"> • Fine grain diamond • High abrasion resistance 	<ul style="list-style-type: none"> • Coarser grain • High wear resistance
Applications	<ul style="list-style-type: none"> • High Silicon Aluminum • Copper • Fiberglass • Hard rubber • Graphite epoxy • Wood • Aluminum alloys (finishing, roughing, interrupted) • Plastics • Carbon 	<ul style="list-style-type: none"> • High silicon Aluminum • Copper • Fiberglass • Hard rubber • Graphite epoxy • Wood • Aluminum alloys (finishing, roughing, interrupted) 	<ul style="list-style-type: none"> • High silicon aluminum • Copper • Fiberglass • Hard rubber • Graphite epoxy • Wood • Carbon 	<ul style="list-style-type: none"> • Sintered carbide • Stone or rock • High silicon aluminum • Green or semi-sintered carbide & ceramic

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.

■ 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

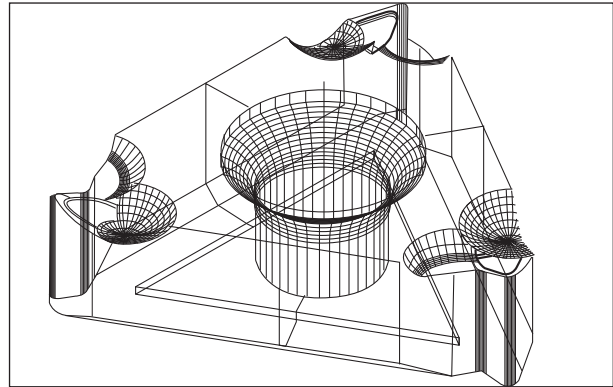
Recommended Running Conditions (SFM)

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

Recommended Infeed Values mm (inch)

Pitch (mm) \ TPI	1.0	1.25	1.5	1.75	2	2.5	3
Pass	24	19	16	14	12	9	8
1 ST	0.25 (.010)	0.25 (.010)	0.30 (.012)	0.30 (.012)	0.30 (.012)	0.35 (.014)	0.35 (.014)
2 ND	0.20 (.008)	0.20 (.008)	0.25 (.010)	0.25 (.010)	0.25 (.010)	0.30 (.012)	0.30 (.012)
3 RD	0.15 (.006)	0.15 (.006)	0.20 (.008)	0.20 (.008)	0.20 (.008)	0.25 (.010)	0.25 (.010)
4 TH	0.10 (.004)	0.15 (.006)	0.15 (.006)	0.15 (.006)	0.20 (.008)	0.20 (.008)	0.20 (.008)
5 TH	0.05 (.002)	0.10 (.004)	0.10 (.004)	0.15 (.006)	0.15 (.006)	0.20 (.008)	0.20 (.008)
6 TH	—	0.05 (.002)	0.05 (.002)	0.10 (.004)	0.12 (.005)	0.15 (.006)	0.15 (.006)
7 TH	—	—	—	0.05 (.002)	0.10 (.004)	0.15 (.006)	0.15 (.006)
8 TH	—	—	—	—	0.05 (.002)	0.10 (.004)	0.15 (.006)
9 TH	—	—	—	—	—	0.05 (.002)	0.10 (.004)
10 TH	—	—	—	—	—	—	0.10 (.004)
11 TH	—	—	—	—	—	—	0.05 (.002)

TME Insert Design



Trouble Shooting

- **Chipping**
T130A → AC225
- **Excessive Wear**
A30 → AC225 → T130A
- **Plastic Deformation**
A30 → AC225 → T130A

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.

$\text{Pitch} = 1 \text{ (inch)} / \text{threads per inch}$, Ex: $20 \text{ TPI} = 1 / 20 = .050$

T.P.I. – Number of threads per inch

$\text{TPI} = 1 \text{ (inch)} / \text{pitch}$, Ex: $1 / .050 \text{ (pitch)} = 20 \text{ tpi}$

Lead – Movement caused by one revolution of the screw.

(the same as pitch in a single start thread)

$\text{Lead} = \text{pitch} \times \text{number of starts}$

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.

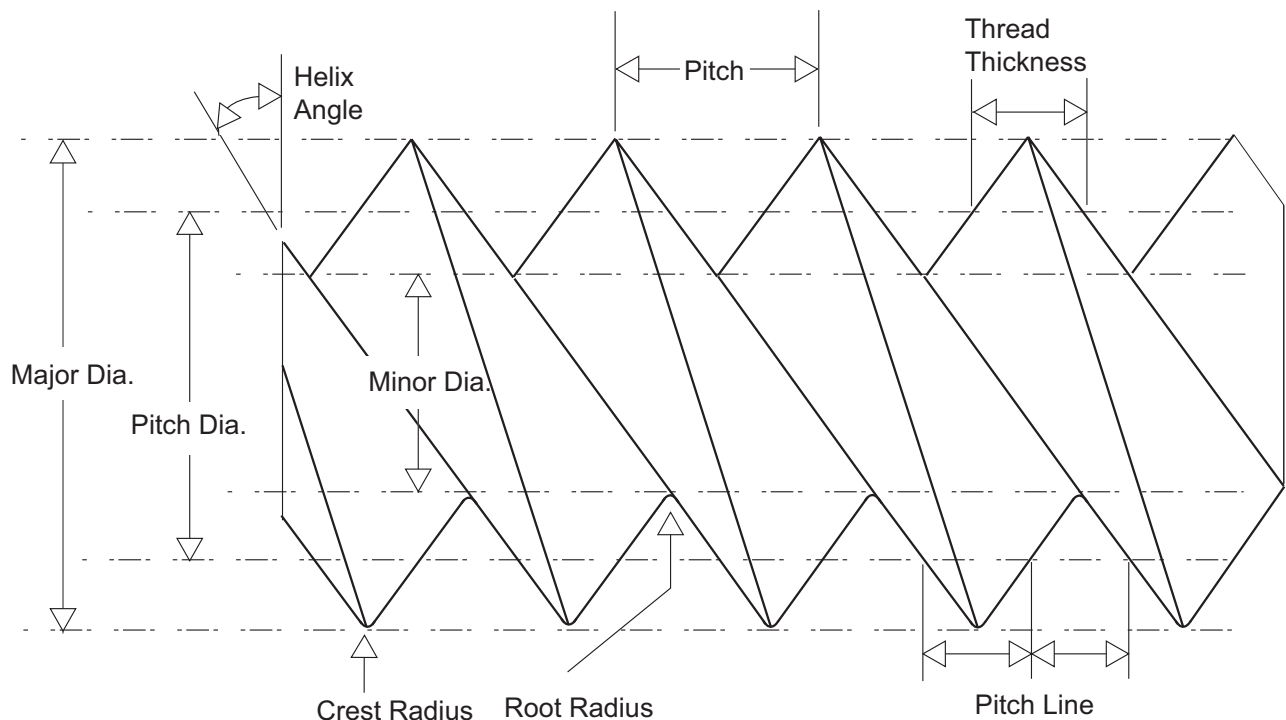
Major Diameter – see drawing below

Minor Diameter – see drawing below

Pitch Diameter – see drawing below

Pitch Line – see drawing below

Crest and Root Radius – see drawing below



CUT-OFF TOOLS

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.

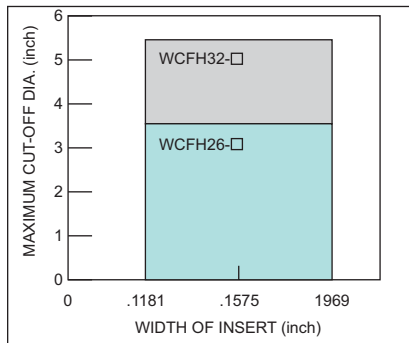
and wear on the insert corners are greatly reduced, and coolant is easier to direct. Operating at high speeds and feeds is possible because of longer tool life, and down-time for chip removal is drastically reduced.

NOTE: Sumitomo inserts fit only Sumitomo blades.

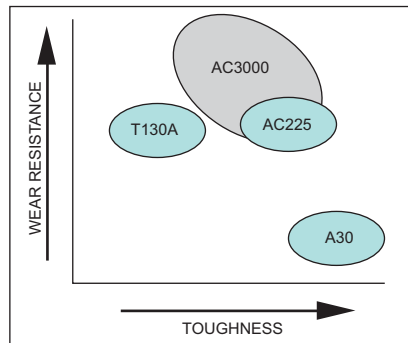
The Sumitomo solid carbide support blades fit in many existing cut-off tool blocks.

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

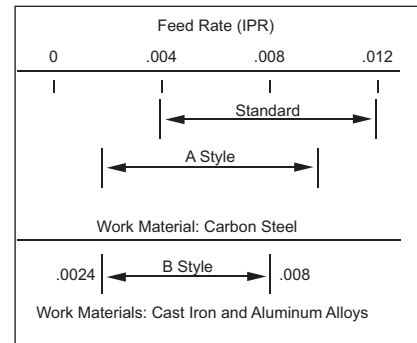
■ MAXIMUM CUT-OFF DIAMETER



■ 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
	Interrupted (DRY)	45-65 HrC	BN2000	300	400	550	600
			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



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".



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 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.
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		CUTTING SPEED SFM		
		T1200A	800~1500	800~1300	—
		T2000Z	800~1600	800~1400	—
		AC810P	800~1600	800~1400	700~1100
		AC820P	500~1200	500~1000	400~900
		AC830P	—	500~900	400~850
	220~350"	T1200A	700~1200	700~1100	—
		T2000Z	700~1300	700~1200	—
		AC810P	700~1200	700~1100	600~950
		AC820P	500~1000	500~900	400~800
		AC830P	—	500~800	400~750
	HRc 35~55"	T1200A	400~600	400~550	—
		T2000Z	400~700	400~650	—
		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	T1200A	1000~1500	1000~1400	—
		T2000Z	1000~1600	1000~1500	—
		AC810P	1000~1500	1000~1400	900~1300
		AC820P	800~1400	750~1300	600~1100
		AC830P	—	750~1200	650~1000
	250~350	T1200A	900~1200	800~1100	—
		T2000Z	900~1300	800~1200	—
		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.	
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		CUTTING SPEED SFM			
		T1200A	900~1300	900~1200	—	
		T2000Z	900~1400	900~1300	—	
		AC810P	900~1300	900~1200	800~1000	
		AC820P	800~1000	500~900	450~800	
		AC830P	—	500~800	400~700	
	250~ 350	T1200A	800~1200	700~1100	—	
		T2000Z	800~1300	700~1200	—	
		AC810P	800~1200	700~1100	600~1000	
		AC820P	600~1000	500~900	450~950	
		AC830P	—	500~850	400~800	
	HRc 36~55	T1200A	600~900	400~800	—	
		T2000Z	600~1000	400~900	—	
		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	T1200A	800~1400	800~1300	—
			T2000Z	800~1500	800~1400	—
			AC810P	800~1400	800~1300	700~1100
			AC820P	800~1200	700~1000	600~900
AC830P			—	650~950	550~800	
250~ 350		T1200A	800~1300	750~1200	—	
		T2000Z	800~1400	750~1300	—	
		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 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.
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		CUTTING SPEED SFM		
		T1200A	700~1100	700~1000	–
		T2000Z	700~1200	700~1100	–
		AC810P	700~1100	700~1000	500~800
		AC820P	600~950	500~850	450~800
		AC830P	–	500~800	400~700
	<250	T1200A	600~1000	600~900	–
		T2000Z	600~1100	600~1000	–
		AC810P	600~1000	600~900	–
		AC820P	500~900	450~800	400~750
		AC830P	–	400~750	300~700
	250~ 350	T1200A	300~600	300~500	–
		T2000Z	300~700	300~600	–
		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	T1200A	800~1200	700~1100	–
		T2000Z	800~1300	700~1200	–
		AC810P	800~1250	700~1150	600~1000
		AC820P	450~850	300~750	300~700
		AC830P	–	300~750	300~650
	250~ 350	T1200A	700~1100	600~1000	–
		T2000Z	700~1200	600~1100	–
		AC810P	700~1150	600~1100	500~800
		AC820P	550~850	500~750	400~650
		AC830P	–	450~700	400~600
	HRC 36~50	T1200A	400~800	300~700	–
		T2000Z	400~900	300~800	–
		AC810P	350~850	300~750	200~650
		AC820P	350~600	200~500	200~450
		AC830P	–	200~600	200~500
		NB90S	500~1000	–	–
	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.
TOOL STEELS DIE STEELS	<250		CUTTING SPEED SFM		
		T1200A	500~750	350~700	—
		T2000Z	500~850	350~800	—
		AC810P	500~900	350~800	300~750
		AC820P	400~700	350~650	300~600
		AC830P	—	350~650	300~600
	250~350	T1200A	650~900	450~850	—
		T2000Z	500~800	350~800	—
		AC810P	500~900	450~800	350~750
		AC820P	400~750	400~650	300~600
		AC830P	—	300~650	200~600
	HRc 36~50	T1200A	350~500	300~450	—
		T2000Z	300~550	200~500	—
		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	250~300"	T1200A	600~900	450~800	—
		T2000Z	550~950	450~850	—
		AC810P	500~950	350~850	300~700
		AC820P	400~700	350~700	300~650
		AC830P	—	350~700	300~600
	300~350"	T1200A	550~800	350~750	—
		T2000Z	500~900	350~850	—
		AC810P	500~900	350~850	300~800
		AC820P	400~800	300~700	250~650
		AC830P	—	300~650	250~600
	HRc 35~45	T1200A	300~550	250~500	—
		T2000Z	300~600	250~600	—
		AC810P	300~600	250~500	250~500
		AC820P	250~450	200~350	150~300
		AC830P	—	200~350	150~300
		NB90S	300~600	—	—
	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.
STAINLESS STEEL 300 SERIES AUSTENITIC	160~ 280		CUTTING SPEED SFM		
		T1200A	350~750	300~600	—
		T2000Z	300~800	300~700	—
		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	T1200A	300~750	300~650	—
		T2000Z	300~850	300~750	—
		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.
STAINLESS STEEL 300 SERIES AUSTENITIC	160~ 280		CUTTING SPEED SFM		
		T1200A	350~750	300~600	–
		T2000Z	300~800	300~700	–
		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	T1200A	300~750	300~650	–
		T2000Z	300~850	300~750	–
		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.
STAINLESS STEEL 400 SERIES MARTENSITIC cont.	260~ 380	CUTTING SPEED SFM			
		T1200A	200~600	200~550	—
		T2000Z	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	T1200A	200~600	200~500	—
		T2000Z	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 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 ~ .016 IPR .040" ~ .150" D.O.C.	Roughing .010 ~ .020 IPR 120 ~ 250" D.O.C.
STAINLESS STEEL PRECIPITATION HARDENING 15-5PH, 16-6PH, 17-4, 17-7PH, 13-8 Mo	160~ 260	CUTTING SPEED SFM			
		T1200A	300~800	250~700	—
		T2000Z	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	T1200A	200~700	200~600	—
		T2000Z	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	T1200A	300~650	300~600	—
		T2000Z	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 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 ~ .016 IPR .040" ~ .150" D.O.C.	Roughing .010 ~ .020 IPR 120 ~ 250" D.O.C.
STAINLESS STEEL WROUGHT AUSTENITIC NITRONIC 32 NITRONIC 33 NITRONIC 40 NITRONIC 50 NITRONIC 60	250~	CUTTING SPEED SFM			
		T1200A	200~600	200~550	—
		T2000Z	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	200~ 300	EH510/520	50~150	30~130	30~100
		AC510U	100~240	100~200	60~180
		AC520U	100~200	80~180	50~150
		AC530U	80~180	80~150	50~120
		WX2000	400~1500	400~1200	400~1000
	200~ 300	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	140~ 220	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	240~ 310	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	200~ 375	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 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 ~ .016 IPR .040" ~ .120" D.O.C.	Roughing .010 ~ .020 IPR .100" ~ .180" D.O.C.
HIGH TEMP ALLOYS Iron Base, Wrought	180~ 230	CUTTING SPEED SFM			
		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/EEH/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.
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		CUTTING SPEED SFM			
		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/EEEX/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.
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		CUTTING SPEED SFM			
		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/EEH/EUP	EEG/EMU

* Refer to the PCD section for proper running conditions of PCD grades.



Recommended first choice,

Recommended second choice,

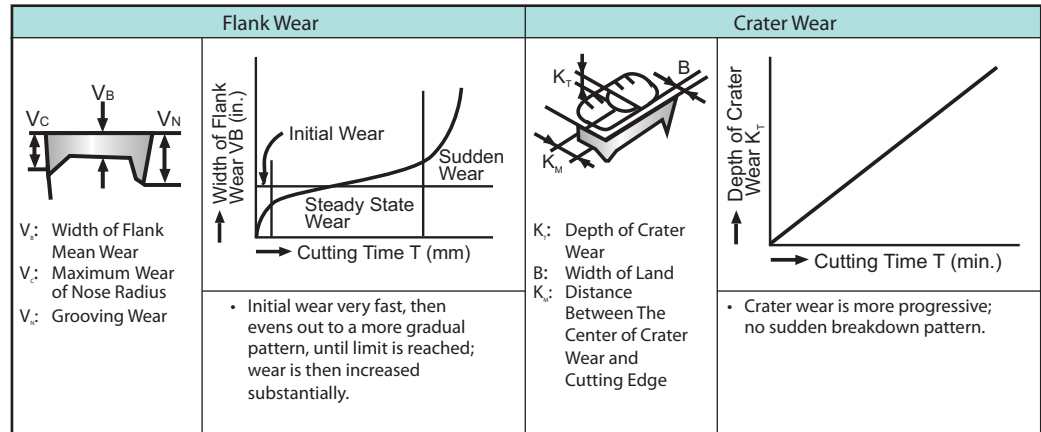
Recommended third choice

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.
GRAY CAST IRON cont.	<220	CUTTING SPEED SFM			
	>220	BN500*	600~2000	—	—
		BN700*	1900~3100	—	—
		BNS800*	1900~3100	—	—
		SN2000K	1000~3500	800~3500	600~2500
		T2000Z	500~1200	400~1000	—
		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	—	—
		T2000Z	350~900	400~850	—
		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	—	—
		T2000Z	330~800	330~750	—
		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

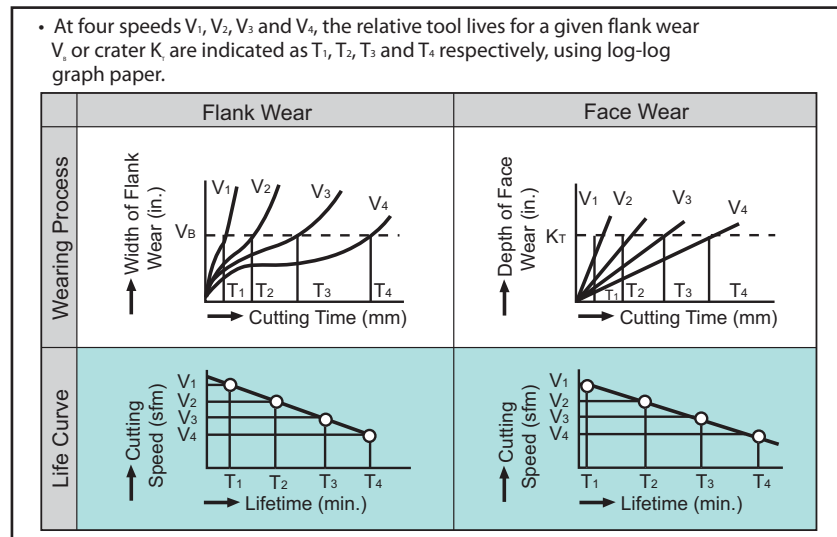
*Refer to the CBN section for proper running conditions of CBN grades.



① Wearing Process Curve



② Life Curve (V-T Lines)



③ Tool Life Equation

• Tool Life Equation (Taylor's Equation)

$$VT^n = C$$

V : Cutting Speed
 T : Tool Life
 n } Constants determined by work material, tool material, tool design, etc.
 C }

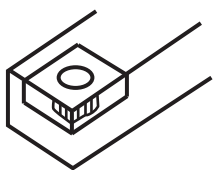
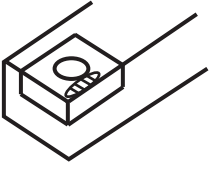
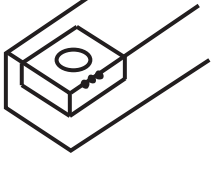
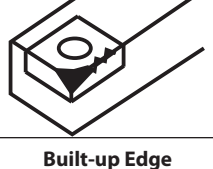

④ Alternative Tool Life Criteria

<ol style="list-style-type: none"> When surface finish deteriorates unacceptably. When a fixed amount of tool wear is reached (see the right-hand table). When work piece dimension is out of tolerance. When power consumption reaches limit. Sparking or chip discoloration and disfigurement. Cutting time or component quantity. 	<p>• Width of Flank Wear for General Life Determination (For Cemented Carbides)</p> <table border="1"> <thead> <tr> <th>Width of Wear (in.)</th><th>Applications</th></tr> </thead> <tbody> <tr> <td>.008</td><td>Finish cutting of non-ferrous alloys, fine & light cut, etc.</td></tr> <tr> <td>.016</td><td>Cutting of special steels</td></tr> <tr> <td>.028</td><td>Normal cutting of cast irons, steels, etc.</td></tr> <tr> <td>.040-.050</td><td>Rough cutting of common cast irons</td></tr> </tbody> </table>	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
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	
		Physical	Chemical
1-5	Flank Wear	Due to the abrasive effect of hard grains contained in the work material Fine chips caused by high-pressure cutting, chatter, vibration, etc. Due to the mechanical impact when an excessive force is applied to the cutting edge	
6	Chipping		
7	Partial Fracture		
8	Crater Wear		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

Edge Failure	Failure	Basic Remedy		Proven Remedies											
	Excessive Flank Wear 	Tool Material Cutting Conditions	<ul style="list-style-type: none">• Use a more wear-resistant grade Carbide → { Coated Cermet• Decrease speed	• Recommended Insert Grade: <table><tr><th></th><th>Steel</th><th>Cast Iron</th></tr><tr><td>Finishing</td><td>AC810P</td><td>BN700, BN7000, BNC500</td></tr><tr><td>Rough</td><td>ACA20P</td><td>AC405K</td></tr></table>				Steel	Cast Iron	Finishing	AC810P	BN700, BN7000, BNC500	Rough	ACA20P	AC405K
		Steel	Cast Iron												
	Finishing	AC810P	BN700, BN7000, BNC500												
	Rough	ACA20P	AC405K												
	Excessive Crater Wear 	Tool Material Tool Design Cutting Conditions	<ul style="list-style-type: none">• 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: <table><tr><th></th><th>Steel</th><th>Cast Iron</th></tr><tr><td>Finishing</td><td>AC810P</td><td>BN700, BN7000, BNC500</td></tr><tr><td>Rough</td><td>ACA20P AC830P</td><td>AC415K, AC420K</td></tr></table>				Steel	Cast Iron	Finishing	AC810P	BN700, BN7000, BNC500	Rough	ACA20P AC830P	AC415K, AC420K
		Steel	Cast Iron												
	Finishing	AC810P	BN700, BN7000, BNC500												
Rough	ACA20P AC830P	AC415K, AC420K													
Cutting Edge Chipping 	Tool Material Tool Design Cutting Conditions	<ul style="list-style-type: none">• 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: <table><tr><th></th><th>Steel</th><th>Cast Iron</th></tr><tr><td>Finishing</td><td>T2000Z,T1200A</td><td>BN700, BN7000, BNC500</td></tr><tr><td>Rough</td><td>ACA20P AC830P</td><td>AC420K</td></tr></table> • All coated inserts are honed				Steel	Cast Iron	Finishing	T2000Z,T1200A	BN700, BN7000, BNC500	Rough	ACA20P AC830P	AC420K	
	Steel	Cast Iron													
Finishing	T2000Z,T1200A	BN700, BN7000, BNC500													
Rough	ACA20P AC830P	AC420K													
Partial Fracture of Cutting Edges 	Tool Material Tool Design Cutting Conditions	<ul style="list-style-type: none">• 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: <table><tr><th></th><th>Steel</th><th>Cast Iron</th></tr><tr><td>Rough</td><td>AC820P</td><td>AC420K</td></tr><tr><td>Machining</td><td>AC830P</td><td></td></tr></table>				Steel	Cast Iron	Rough	AC820P	AC420K	Machining	AC830P		
	Steel	Cast Iron													
Rough	AC820P	AC420K													
Machining	AC830P														
Built-up Edge 	Tool Material Cutting Conditions	<ul style="list-style-type: none">• Change to a grade which is adhesion resistant• Increase the cutting speed and feed• Use cutting fluids	• Recommended Insert Grade: <table><tr><th></th><th>Steel</th><th>Cast Iron</th></tr><tr><td>Finishing</td><td>T2000Z, T1200A</td><td>BN700, BN500</td></tr><tr><td>Rough</td><td>AC820P</td><td>AC700G, YB100</td></tr></table>				Steel	Cast Iron	Finishing	T2000Z, T1200A	BN700, BN500	Rough	AC820P	AC700G, YB100	
	Steel	Cast Iron													
Finishing	T2000Z, T1200A	BN700, BN500													
Rough	AC820P	AC700G, YB100													
Plastic Deformation 	Tool Material Cutting Conditions	<ul style="list-style-type: none">• Change to high thermal resistant grades• Reduce the cutting speed and feed	<table><tr><th></th><th>Steel</th><th>Cast Iron</th></tr><tr><td>Finishing</td><td>T2000Z,AC810P</td><td>AC405K</td></tr><tr><td>Rough</td><td>ACA20P</td><td>AC415K, AC420K</td></tr></table>				Steel	Cast Iron	Finishing	T2000Z,AC810P	AC405K	Rough	ACA20P	AC415K, AC420K	
	Steel	Cast Iron													
Finishing	T2000Z,AC810P	AC405K													
Rough	ACA20P	AC415K, AC420K													

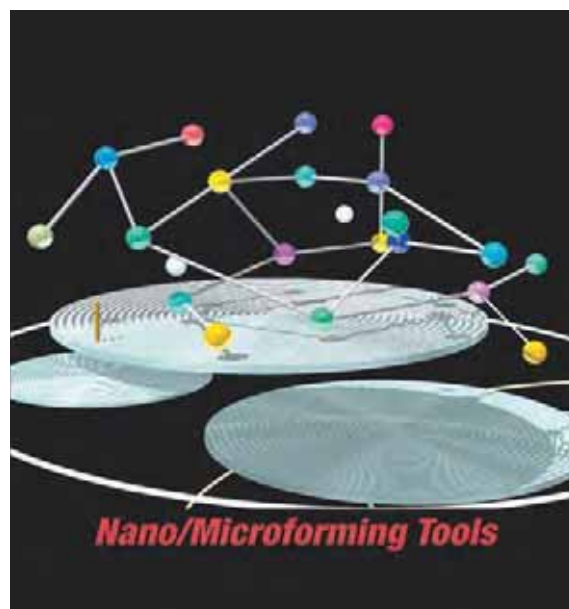


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Ultra Precision Cutting Tools *Nano/Microforming Tools* **UPC**



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.

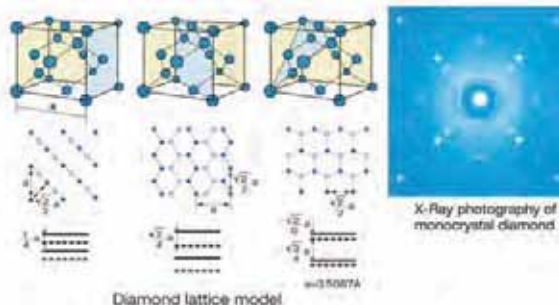


Extremely sharp cutting edge with the advanced UPC



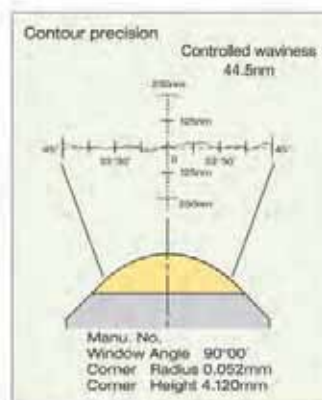
Checking the variation in the distance between carbon atoms in monocrystal diamond assists in determining the optimal crystal orientation

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.



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



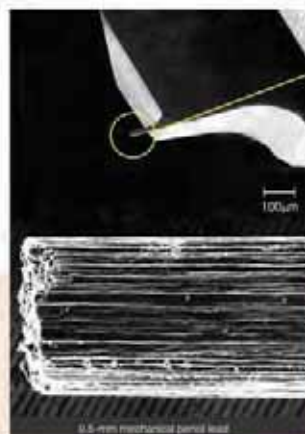
Sharply polished monocrystal diamond ore



Extremely fine chips measured down to nanometer dimensions.

Straightness and surface roughness unobtainable with photolithography or ion-beam method

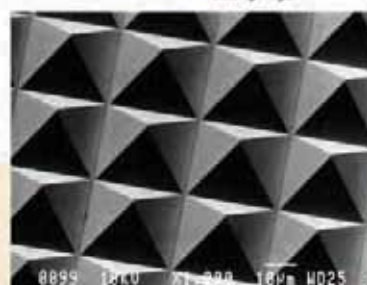
With their extremely sharp cutting edge, the UPC-Nano series developed by A.L.M.T. Corp. achieves excellent surface roughness and straightness, which cannot be obtained using photolithography or ion-beam methods. They are also effective tools in high aspect-ratio applications where micrometer precision is required.



Polished surface shown in the same magnification



Cutting edge



Moles Surface by microforming

cutting tools



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



UPC-R

The UPC-R shows extraordinary success in ultra-precision spherical and aspherical cutting applications

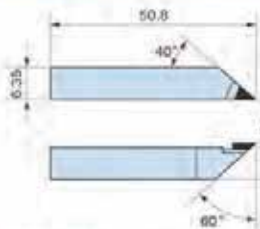


Application

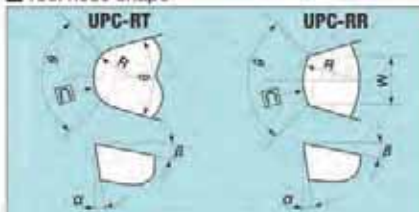
1. CD·DVD pickup lenses molding
2. Molding for optical lenses for cameras
3. Spherical and aspherical reflecting mirrors for laser and X-ray equipment
4. Spherical and aspherical lenses
5. Other precision parts machined with CNC 2-axis lathe

Features

1. A tool edge contour of $0.05\mu\text{m}$ ($50\text{nm} / 0.000002''$) 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 (R)			Corner Radius R	Tool Edge Angle θ	Tool Width W	Clearance Angle α	Face Angle β
		θ ≤ 90°	θ ≤ 120°	θ ≤ 150°					
UPC-RT	Ultraprecision	0.05μm	0.15μm	0.20μm	0.01~3mm	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

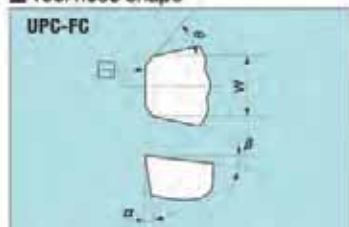
The UPC-F shows its supremacy in high-efficiency and ultra-precision surface and cylindrical cutting applications.


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 β	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 Frensel lens.


Application

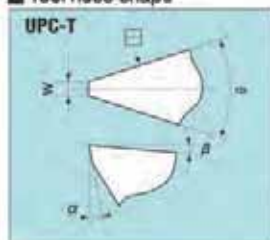
1. Molds of LCD display optical waveguide.
2. Frensel lens molding.
3. Other fine grooving applications.

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.



Molds of LCD display optical waveguide

Tool nose shape

Shape Dimensions

Type	Tool Edge Angle β	Leading Edge Width W	Straightness \square	Clearance Angle α	Face Angle β
UPC-T	Ultra-precision	min0.2µm	0.05µm	0°~15°	-5°~10°
	Precision	min2µm	0.1µm		



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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

Selection Guide

Milling Type	Cutter Type	Series	Insert	Approach Angle	Rake Angle		Diameter	Application										Applicable Work Material						Page #	
					Axial	Radial		Face Milling		Shoulder Milling	Slot Milling	Ramping	Copying	Chamfering	Borning	Finishing	P	M	K	N	S	H			
								General Purpose	Finishing								High Feed	General & Carbon Steel /Iloy Steel	Die Steel - Tempered Steel	Stainless Steel	Cast Iron - Ductile Iron	Non-ferrous Metal	Aluminum Alloy		Ti Alloy - Heat Resistant Alloy
Shoulder Milling	WEX-E 	WEX2000 WEX3000	AXMT12 AXMT17		14° ~ 25° 16° ~ 24°	10° ~ 18° 8° ~ 15°	0.500" 2.000"	○			✓	✓	✓				✓	✓	✓	✓	✓	✓		303, 305	
	WEX-R 	WEX2000 WEX3000			23° ~ 25° 19° ~ 24°	16° ~ 18° 12° ~ 15°	1.500" 8.000"	○			✓	✓	✓				✓	✓	✓	✓	✓	✓		304, 306	
	WRX-E 	WRX2000 WRX3000	AXMT12 AXMT17		16° ~ 24° 20° ~ 22°	13° ~ 16° 12° ~ 13°	1.000" 2.000"	○			✓	✓	✓				✓	✓	✓	✓	✓	✓		309-310	
	WRX-R 	WRX2000 WRX3000			24° ~ 22° 22° ~ 24°	16° ~ 17° 13° ~ 15°	2.500" 3.000"	○			✓	✓	✓				✓	✓	✓	✓	✓	✓			
	WAX 	WAX3000 WAX4000	AECT16 AECT22		19° ~ 25°	6°	0.750" 1.500"	○			✓	✓	✓	✓				X	X	X	X	○	✓		312-314
	WAX-E 	WAX3000 WAX4000					2.500" 5.000"	○			✓	✓	✓	✓				X	X	X	X	○	✓		
	WFX 	WFX4000	SOMT		8°	-8°	2.000" 8.000"	○			✓	○						✓	○	○	○				316-317
	WFX-E 	WFXF12000					40mm 80mm	○			✓	○						✓	○	○	○				
Face Milling	WGC 	WGC4000	SEMT13T		20° ~ 22°	20° ~ 24°	2.000" 8.000"	✓				○			○			✓	✓	✓	✓	✓	✓		324-326
	DGC 	DGC4000	SNMT ONMT		-5°	-10°	2.000" 10.000"	✓				○			○			✓	✓	✓	✓	✓	✓		321-322
	GOALMILL 	GFV5000	LNGX		-5°	-8°	4.000" 8.000"		✓	✓								X	X	X	✓	X	X	X	328
	DNX 	DNX4000	SNMT		-5°	-6°	3.000" 8.000"	○									○			✓					330
	Spider Mill 	SDP40000 SDP50000	SNMX SNEX		-5°	-15°	2.000" 6.000"	○			○									✓					331
	SumiEdge Mill 	PWC40000	LNMX		-5°	-15°	3.000" 6.000"	○		✓	○	○		✓						✓					332



INDEXABLE MILLING SELECTION GUIDE

Milling Type	Cutter Type	Series	Insert	Approach Angle	Rake Angle		Diameter	Application											Applicable Work Material						Page #		
					Axial	Radial		Face Milling			General Purpose	Finishing	High Feed	Shoulder Milling	Slot Milling	Ramping	Copying	Chamfering	Boring	Finishing	P	M	K	N		S	H
								General & Carbon Steel Alloy Steel	Die Steel - Tempered Steel	Stainless Steel											Cast Iron - Ductile Iron	Non-ferrous Metal	Aluminium Alloy	Ti Alloy -Heat Resistant Alloy		Hardened Steel 45-55 HRC	
High Feed Milling	MSX 	MSX2000 MSX3000 MSX4000	WDMT06 WDMT08		8°	-3° 8°	0.750" 1.500"				○		○	○						✓	✓	✓	✓			○	335
	Metal Slash Mill 	MS14000	SDEW04 SDMW04		10°	-5°	2.000" 4.000"				✓									✓	✓	✓	✓		X	○	336
	WRCX-E/R 	WRCX3000 WRCX4000 WRCX6000 WRCX8000	QPMT QPET	-	-3°	0°	1.000" 6.000"	✓					○	✓	✓					✓	✓	✓	✓		○	○	340
	WBMR 	WBMRX	ZNMT	-	-10°	-	0.750" 2.000"						✓		✓					✓	✓	✓	✓		○	○	343
	WBMF 	WBMF1000		-	0°	-	0.500" 1.250"						✓		✓			✓		✓	✓	✓	✓		○		345
		WMM 	WMM10000 WMM16000	APET APMT		7° 11°	15° 16°	1.000" 1.500"	✓			✓	✓	✓	✓		✓			✓	✓	✓	✓	✓	✓	✓	
Face Milling	UFO-E/R 	UFO400 UFO500	SFEN SFKN SFKR UW RGMN		27°	-7°	2.000" 12.000"	○					○				○			○	○	○	○	○	○		355-358
	CHE 	CHE-2 CHE-3 CHE-4	TECN TEKN TEEN NF-TEEN		6° 15° 15°	3° 0° 2° 4°	0.625" 2.000"					○	○							○	○	○	○	○			359-360
	APG 	APG400	SDC NF-SDC APW		18°	-2°	3.000" 8.000"	○					○				○			○	○	○	○	✓	✓		361
	DNF 	DNF4000	CSNH SN SNMN NW		-5°	-6°	8mm 160mm	○					○				○			○		✓	X	X	X		362
	CHG 	CHG400	TECN TEKN TEEN NF-TEEN		15°	4°	3.000" 8.000"						○	○						✓	○	○	○	○	✓		363
	CPG 	CPG500	TPCH TPC TPG TPMN		6°	0°	3.000" 8.000"						○	○						○	○	○	○	○			364
	DPG 	DPG400 DPG500	SPCH SPG SPMN DPW		8°	0°	3.000" 12.000"	○					○				○			○	○	○	○	○			365-366
	EHG 	EHG400	SEKN SEMR SEC		20°	-3°	3.000" 8.000"	○					○				○			○	○	○	○		○		367
	FPG 	FPG400 FPG500	SDKN		15°	-4°	3.000" 12.000"	○					○				○			○	○	○	○				368





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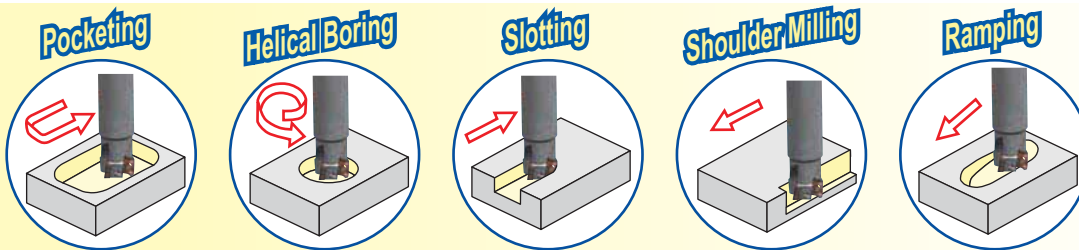
Shoulder Milling Cutters:	Pages
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WFX Series Endmills/Shell Mills	315-317

Indexable
Milling

Shoulder Milling
Face Milling
High Feed Milling
Multi- purpose
Modular Tooling
UFO & SumiMill
Discon- tinued

High efficiency machining due to its optimized cutting edge geometry and highly rigid body

For a wide range of applications

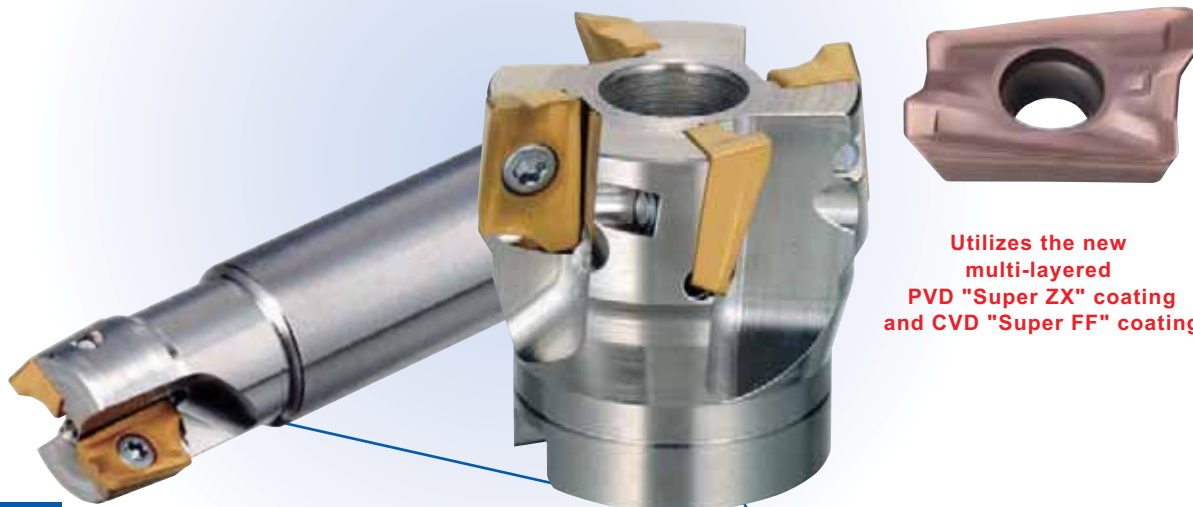


Tough, sharp and highly accurate cutting edge geometry

- 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

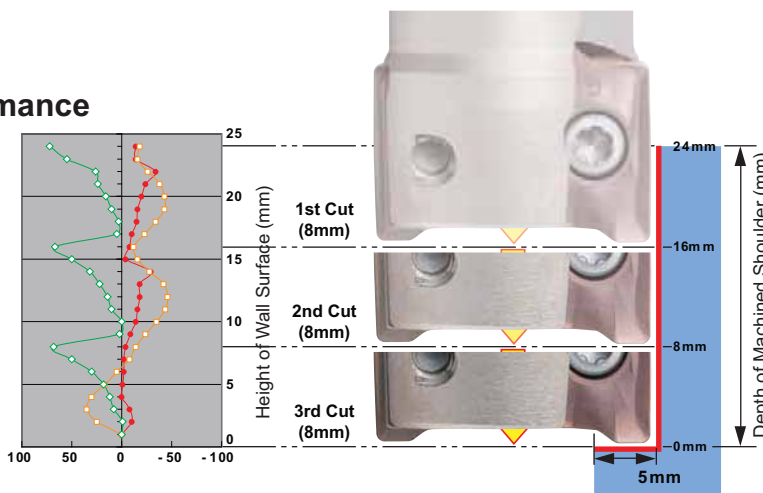
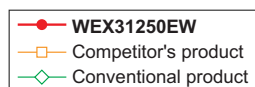
- Cutter body and insert strength provide for high feed rate capabilities

Coolant holes

- Efficient chip removal due to new air/coolant hole design

Cutting Performance

- Shoulder accuracy generated in profile machining




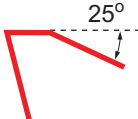
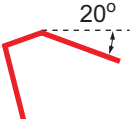
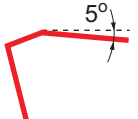


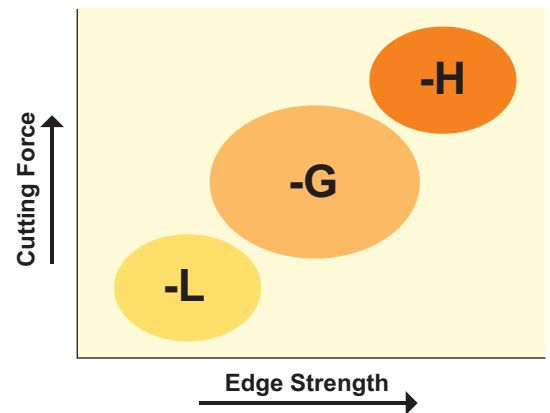
Minimal depth of cut variation due to assembly precision!

■ Grade Applications

Grade	Coating	Description
ACP100	Al ₂ O 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/AICrN	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/AICrN	ACP300 features the new "Super ZX" coating improving the toughness and chipping resistance in difficult to machine materials.
ACK200	Al ₂ O ₃	General purpose grade that features the new "Super FF" CVD coating for machining gray and ductile cast irons.
ACK300	TiAlN/AICrN	ACK300 with "Super ZX" PVD coating for milling heavily interrupted gray and ductile irons.

■ Chipbreaker Selection Guide

Work Material	Steel, Stainless Steel, Cast Iron		
Insert Geometry			
Characteristics	Light Cutting	Multi-purpose	High Strength
Insert Cross Section			
Application	Light DOC, Low rigidity conditions	General purpose applications	Heavy cutting applications



■ Grade Applications

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	775-1310	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 4140, 4340, 5130, 8620	<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	
M	Martensitic and Ferritic Stainless Steels 414, 416, 430, 440	<250 Bhn	ACP200	535-850	520-830	275-820	.004-.011	
			ACP300	525-840	515-820	250-800	.004-.012	
			ACP200	435-750	420-720	175-700	.004-.011	
	Austenitic and Precipitation Hardening Stainless Steels 303, 304, 316, 321, etc.	>250 Bhn	ACP300	425-740	415-720	175-675	.004-.012	
			ACP200	325-875	300-850	275-825	.004-.011	
			ACP300	300-850	275-825	250-800	.004-.012	
	K	Gray Cast Iron	<250 Bhn	ACK200	700-1050	625-925	590-900	.004-.014
				ACK300	600-950	575-875	550-850	.004-.014
				ACK200	600-950	525-825	490-800	.004-.014
		Ductile Iron	>250 Bhn	ACK300	500-850	475-775	450-750	.004-.014
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	

■ Application Range

Material	P10/M10/C7	P20/M20/C6	P30/M30/C5A	P40/M40/C5
P	ACP100			
M	ACP200			
K	ACK200			
K	ACK300			

INCH

WEX 2000

APPLICABLE INSERT:

AXMT
AXET

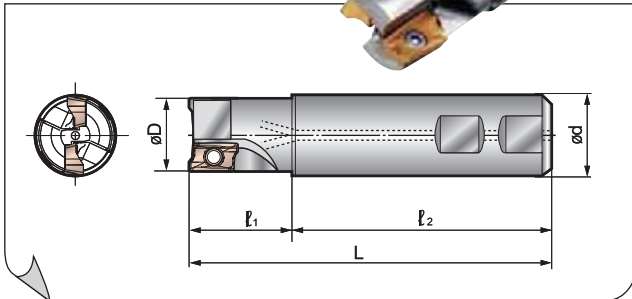
METRIC

WEX 2000

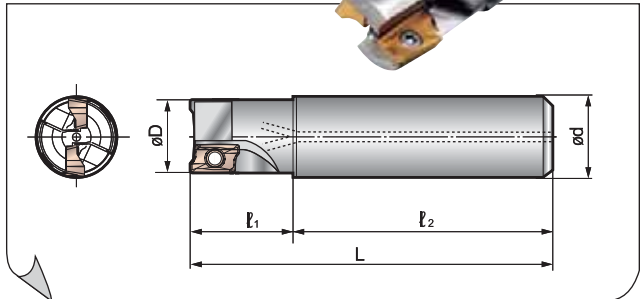
APPLICABLE INSERT:

AXMT
AXET

Inch



Metric


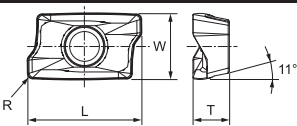


WEX 2000 Weldon Shank Series

Catalog Number	Stock	Dimensions (inch)						Ramp Angle	Insert Qty.
		D	d	L	l ₁	l ₂			
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
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

• USA stocked item

WEX 2000 Inserts

												
Sumitomo Cat. No.	Coated					Dimensions (Inches)						
	ACP100	ACP200	ACP300	ACK200	ACK300	DL1000	HT	L	W	T	R	Facet Width
AXMT123504PEERG	•	•	•	•	•	•		.472	.260	.138	.016	.061
AXMT123504PEERH	•	•	•	•	•	•		.472	.260	.138	.016	.061
AXMT123504PEERE								.472	.260	.138	.016	.061
AXMT123504PEEREH								.472	.260	.138	.016	.061
AXMT123508PEERG	•	•	•	•	•	•		.472	.260	.138	.031	.061
AXMT123508PEERH	•	•	•	•	•	•		.472	.260	.138	.031	.061
AXMT123508PEERE								.472	.260	.138	.031	.061
AXMT123508PEEREH								.472	.260	.138	.031	.061
AXMT123512PEERG	•	•	•	•	•	•		.472	.260	.138	.047	.061
AXMT123512PEERH	•	•	•	•	•	•		.472	.260	.138	.047	.061
AXMT123512PEERE								.472	.260	.138	.047	.061
AXMT123512PEEREH								.472	.260	.138	.047	.061
AXMT123516PEERE								.472	.260	.138	.063	.061
AXMT123516PEEREH								.472	.260	.138	.063	.061
AXET123502PEFRS						•	•	.472	.260	.138	.008	.061
AXET123504PEFRS						•	•	.472	.260	.138	.016	.061
AXET123508PEFRS						•	•	.472	.260	.138	.031	.061

• 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 pages 551-553
for recommended
running parameters**

WEX 2000 Shank Series Standard type

Catalog Number	Stock	Dimensions (mm)						Ramp Angle	Insert Qty.
		D	d	L	l ₁	l ₂			
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)						Ramp Angle	Insert Qty.
		D	d	L	l ₁	l ₂			
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

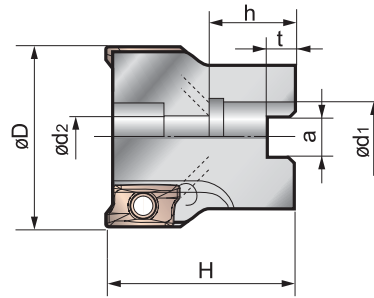
* Torque specifications for insert screw=18-22 in/lbs.

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.



**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


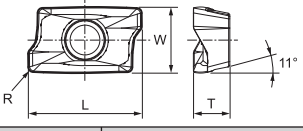
- USA stocked item

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

WEX 2000 Inserts

													
Sumitomo Cat. No.		Coated			Dimensions (Inches)								
		ACP100	ACP200	ACP300	ACK200	ACK300	DL1000	HI	L	W	T	R	Facet Width
AXMT123504PEERG		•	•	•	•	•	•	•	.472	.260	.138	.016	.061
AXMT123504PEERH		•	•	•	•	•	•	•	.472	.260	.138	.016	.061
AXMT123504PEERE		•	•	•	•	•	•	•	.472	.260	.138	.016	.061
AXMT123504PEEREH		•	•	•	•	•	•	•	.472	.260	.138	.016	.061
AXMT123508PEERG		•	•	•	•	•	•	•	.472	.260	.138	.031	.061
AXMT123508PEERH		•	•	•	•	•	•	•	.472	.260	.138	.031	.061
AXMT123508PEERE		•	•	•	•	•	•	•	.472	.260	.138	.031	.061
AXMT123508PEEREH		•	•	•	•	•	•	•	.472	.260	.138	.031	.061
AXMT123512PEERG		•	•	•	•	•	•	•	.472	.260	.138	.047	.061
AXMT123512PEERH		•	•	•	•	•	•	•	.472	.260	.138	.047	.061
AXMT123512PEERE		•	•	•	•	•	•	•	.472	.260	.138	.047	.061
AXMT123512PEEREH		•	•	•	•	•	•	•	.472	.260	.138	.047	.061
AXMT123516PEERG		•	•	•	•	•	•	•	.472	.260	.138	.063	.061
AXMT123516PEEREH		•	•	•	•	•	•	•	.472	.260	.138	.063	.061
AXET123502PEFRS		•	•	•	•	•	•	•	.472	.260	.138	.008	.061
AXET123504PEFRS		•	•	•	•	•	•	•	.472	.260	.138	.016	.061
AXET123508PEFRS		•	•	•	•	•	•	•	.472	.260	.138	.031	.061

- USA stocked item

**See pages 551-553
for recommended
running parameters**

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"

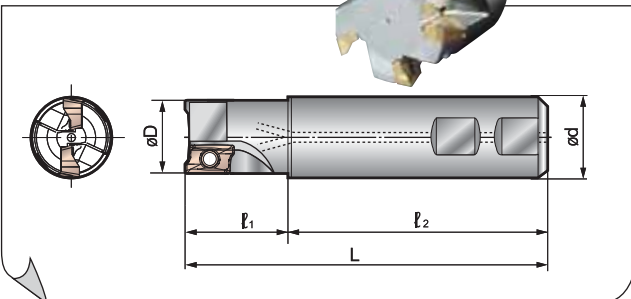
INCH

APPLICABLE INSERT:

WEX 3000

AXMT
AXET

Inch



WEX 3000 Weldon Shank Series

Catalog Number	Stock	Dimensions (inch)						Ramp Angle	Insert Qty.
		D	d	L	ℓ ₁	ℓ ₂	ℓ ₃		
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

WEX 3000 Inserts

Sumitomo Cat. No.	Coated		Dimensions (Inches)						
	ACP100	ACP200	ACP300	ACK200	ACK300	DL1000	H1	L	W
								T	R
AXMT170504PEERG	•	•	•	•	•	•		.689	.402
AXMT170504PEERE								.402	.219
AXMT170504PEEREH								.219	.016
AXMT170508PEERL								.402	.219
AXMT170508PEERG	•	•	•	•	•	•		.402	.219
AXMT170508PEERH								.219	.031
AXMT170508PEERE								.219	.031
AXMT170508PEEREH								.031	.118
AXMT170512PEERG	•	•	•	•	•	•		.402	.219
AXMT170512PEERH								.219	.047
AXMT170512PEERE								.219	.047
AXMT170512PEEREH								.047	.118
AXMT170516PEERG	•	•	•	•	•	•		.402	.219
AXMT170516PEERE								.219	.063
AXMT170516PEEREH								.219	.063
AXMT170520PEERG								.402	.219
AXMT170530PEERG	•	•	•	•	•	•		.402	.219
AXMT170532PEERG								.402	.219
AXET170502PEFRS								.402	.219
AXET170504PEFRS								.219	.016
AXET170508PEFRS								.219	.031

• USA stocked 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.

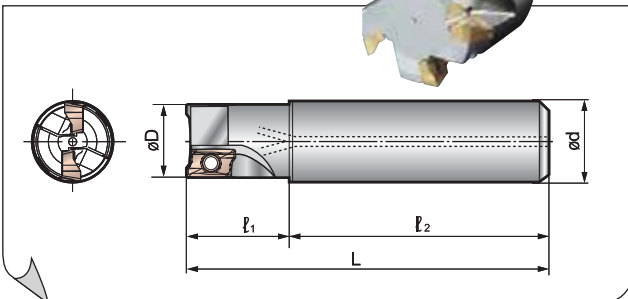
METRIC

APPLICABLE INSERT:

WEX 3000

AXMT
AXET

Metric



WEX 3000 Shank Series Standard Type

Catalog Number	Stock	Dimensions (mm)						Ramp Angle	Insert Qty.
		D	d	L	ℓ ₁	ℓ ₂	ℓ ₃		
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)						Ramp Angle	Insert Qty.
		D	d	L	ℓ ₁	ℓ ₂	ℓ ₃		
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)						Ramp Angle	Insert Qty.
		D	d	L	ℓ ₁	ℓ ₂	ℓ ₃		
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)						Ramp Angle	Insert Qty.
		D	d	L	ℓ ₁	ℓ ₂	ℓ ₃		
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)						Ramp Angle	Insert Qty.
		D	d	L	ℓ ₁	ℓ ₂	ℓ ₃		
WEX3050ES-C	★	50	32	135	25	110		1°	3
WEX3063ES-C	★	63	32	135	25	110		0°30'	4

★ Worldwide Warehouse item

Hardware (Metric)

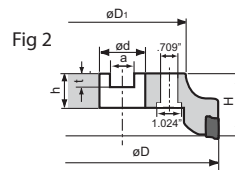
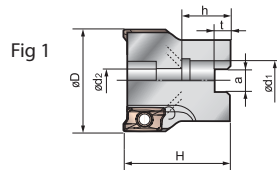
See pgs. 301, 302, or 304 for coolant bolt avail.		
Catalog Number	Insert Screw*	Insert Wrench
WEX3025	BFTX0407IP	TRDR15IP
WEX3032-WEX3063	BFTX0409IP	TRDR15IP

* Torque specifications for insert screw=27-31 in/lbs.



Shoulder Milling Cutters

90° WaveMill Series Shoulder Mill



WEX 3000 Shell Mill Series (Inch)

Catalog Number	Stock	Dimensions (Inches)							Ramp Angle	Insert Qty.	Fig.
		D	d ₁	d ₂	a	t	H	h			
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
WEX33000R	•	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
WEX34000R	•	4.000	1.250	0.656	0.500	0.281	2.000	0.750	N/A	6	1
WEX34000R	•	4.000	1.250	0.656	0.500	0.281	2.000	0.750	N/A	8	1
WEX36000R	•	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)							Ramp Angle	Insert Qty.
		D	d ₁	d ₂	a	t	H	h		
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)							Ramp Angle	Insert Qty.
		D	d ₁	d ₂	a	t	H	h		
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

WEX 3000 Inserts

				Coated						
				Dimensions (Inches)						
				L	W	T	R	Facet Width		
Sumitomo Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	DL1000	HT		
AXMT170504PEERG	•	•	•	•	•	•	•	•	.689	.402 .219 .016 .118
AXMT170504PEERE	•	•	•	•	•	•	•	•	.689	.402 .219 .016 .118
AXMT170504PEEREH	•	•	•	•	•	•	•	•	.689	.402 .219 .016 .118
AXMT170508PEERL	•	•	•	•	•	•	•	•	.689	.402 .219 .031 .118
AXMT170508PEERG	•	•	•	•	•	•	•	•	.689	.402 .219 .031 .118
AXMT170508PEERH	•	•	•	•	•	•	•	•	.689	.402 .219 .031 .118
AXMT170508PEERE	•	•	•	•	•	•	•	•	.689	.402 .219 .031 .118
AXMT170508PEEREH	•	•	•	•	•	•	•	•	.689	.402 .219 .031 .118
AXMT170512PEERG	•	•	•	•	•	•	•	•	.689	.402 .219 .047 .118
AXMT170512PEERH	•	•	•	•	•	•	•	•	.689	.402 .219 .047 .118
AXMT170512PEERE	•	•	•	•	•	•	•	•	.689	.402 .219 .047 .118
AXMT170512PEEREH	•	•	•	•	•	•	•	•	.689	.402 .219 .047 .118
AXMT170516PEERG	•	•	•	•	•	•	•	•	.689	.402 .219 .063 .118
AXMT170516PEERL	•	•	•	•	•	•	•	•	.689	.402 .219 .063 .118
AXMT170520PEERG	•	•	•	•	•	•	•	•	.689	.402 .219 .079 .118
AXMT170530PEERG	•	•	•	•	•	•	•	•	.689	.402 .219 .118 .118
AXMT170532PEERG	•	•	•	•	•	•	•	•	.689	.402 .219 .126 .118
AXET170502PEFRS	•	•	•	•	•	•	•	•	.689	.402 .219 .008 .118
AXET170504PEFRS	•	•	•	•	•	•	•	•	.689	.402 .219 .016 .118
AXET170508PEFRS	•	•	•	•	•	•	•	•	.689	.402 .219 .031 .118

• 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"

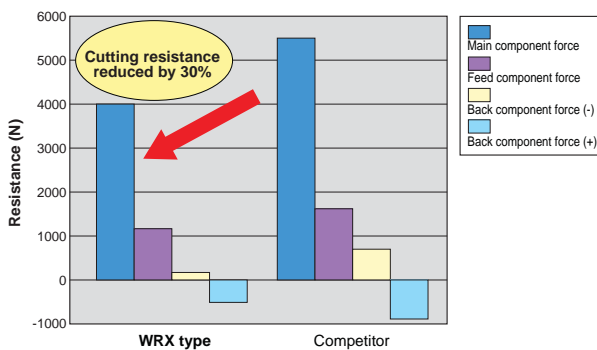




Features & Benefits

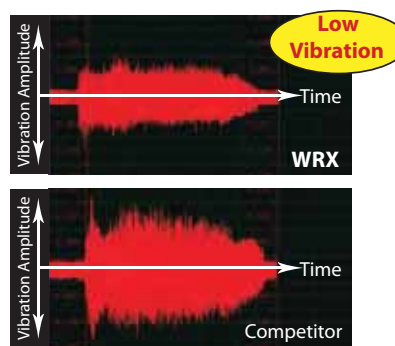
- Long cutting edges are arranged in multiple stages to enable high efficiency milling
- Optimized cutting positions provide low cutting resistance and low vibration
- Dual level cutting edge design reduces number of passes
- Lead groove and special pocket shape offer smooth chip evacuation and high 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

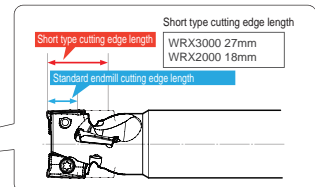
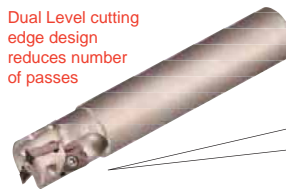


Material: Medium carbon steel
Tool: WRX3080R55332
SFM=490 IPT=0.008 Cutting Width=0.197
D.O.C.=1.575 Dry

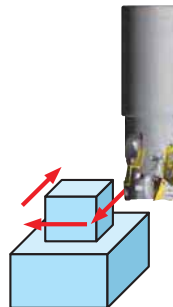
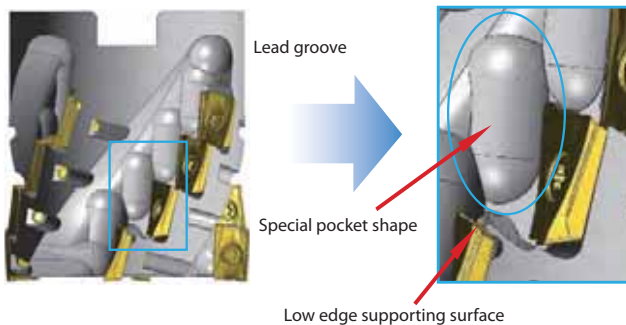
Product Range

Cutting Edge	Series Code	Cutting Edge Length in (mm)	Cutter Dia. in (mm)	Cutter Type	Applicable Insert
Standard Type	WRX2000	1.063 ~ 1.417 (27 ~ 36)	0.787 ~ 1.575 (20 ~ 40)	Shank	AXMT1235
	WRX2000	1.417 (36)	1.575 ~ 1.969 (40 ~ 50)	Shell	
	WRX3000	1.574 ~ 2.087 (40 ~ 53)	1.575 ~ 1.969 (40 ~ 50)	Shank	AXMT1705
	WRX3000	2.087 (53)	1.969 ~ 3.937 (50 ~ 100)	Shell	
Short Cutting Edge Type	WRX2000	0.709 (18)	0.787 ~ 1.575 (20 ~ 40)	Shank	AXMT1205
	WRX2000		1.575 ~ 1.969 (40 ~ 50)	Shell	
	WRX3000	1.063 (27)	1.575 ~ 1.969 (40 ~ 50)	Shank	AXMT1705
	WRX3000		1.969 ~ 3.937 (50 ~ 100)	Shell	

Dual Level cutting edge design reduces number of passes



Characteristics



Application Example

Part/ Work Material	Stainless Steel Part		
	Manufacturer	Sumitomo	Competitor
Tool	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 Cutting 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

Classification	Work Material	Hardness (HB)	Chipbreaker	Grades																	
				ACP100			ACP200			ACP300			ACK200			ACK300			DL1000		
				Feed Rate - IPT (mm/tooth)																	
				.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	200	G	557 (170)	492 (150)	426 (130)	459 (140)	426 (130)	360 (110)	426 (130)	360 (110)	328 (100)									
		240	G	459 (140)	393 (120)	328 (100)	393 (120)	328 (100)	295 (90)	328 (100)	295 (90)	229 (70)									
		180	G	590 (180)	524 (160)	459 (140)	524 (160)	459 (140)	426 (130)	459 (140)	426 (130)	360 (110)									
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)

Special Tooling

Integrated Arbor



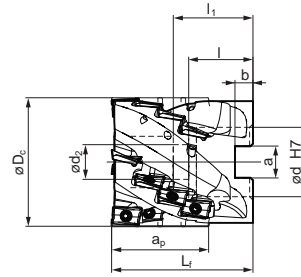
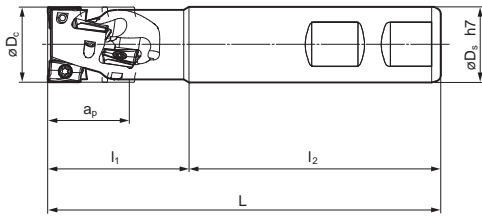
Indexable Head



Unique Clamping Design

- 1) Unique clamping combines spigot and drive
- 2) Easy position adjustment minimizes deterioration of run-out precision
- 3) Available as an integrated unit with an arbor





WRX2000 Endmill Cutter Bodies - Weldon Shank - INCH

Catalog Number	Stock	Dimensions (inch)						Steps	Effective Teeth	Total Teeth	Weight lbs (kg)
		ϕD_c	ϕD_s	L	I_1	I_2	a_p				
WRX21000E100-150	●	1.000	1.000	4.250	1.950	2.300	1.500	4	2	8	1.10 (.5)
WRX21250E125-175	●	1.250	1.250	4.500	2.200	2.300	1.750	5	3	15	1.48 (.7)
WRX21500E125-200	●	1.500	1.250	4.800	2.500	2.300	2.126	6	4	24	1.82 (.8)

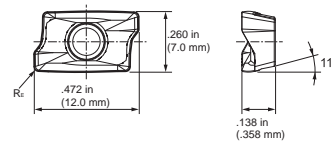
WRX2000 Shell Mill Cutter Bodies - METRIC

Catalog Number	Stock	Dimensions (mm)									Steps	Effective Teeth	Total Teeth	Weight lbs (kg)
		ϕD_c	ϕd	ϕd_2	L_1	I_1	I_2	a	b	a_p				
WRX2040RS1816*	★	40	16	9	50	28	18	8.4	5.6	18	2	5	10	0.66 (.3)
WRX2040RS3616	★	40	16	9	55	28	18	8.4	5.6	36	4	4	16	1.10 (.5)
WRX2050RS1822*	★	50	22	11	50	26	20	10.4	6.3	18	2	5	10	0.88 (.4)
WRX2050RS3622	★	50	22	11	55	26	20	10.4	6.3	36	4	4	16	1.10 (.5)

WRX2000 Endmill Cutter Bodies - METRIC

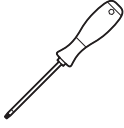

Catalog Number	Stock	Dimensions (mm)						Steps	Effective Teeth	Total Teeth	Weight lbs (kg)
		ϕD_c	ϕD_s	L	I_1	I_2	a_p				
WRX2020E1820*	★	20	20	120	40	80	18	2	2	4	0.66 (.03)
WRX2020E3620	★	20	20	130	45	85	36	4	1	4	0.66 (.03)
WRX2025E1825*	★	25	25	130	45	85	18	2	3	6	0.88 (.04)
WRX2025E2725	★	25	25	130	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)

Inserts for WRX2000/2000 Series



Catalog Number	Coated Carbide					Carbide	DLC	r_E in (mm)
	ACP 100	ACP 200	ACP 300	ACK 200	ACK 300	H1	DL 1000	
AXMT123504PEERG	●	●	●	●	●			.016 (.04)
AXMT123504PEERH	●	●	●	●	●			.031 (.08)
AXMT123508PEERG	●	●	●	●	●			.047 (1.2)
AXMT123508PEERH	●	●	●	●	●			.008 (.02)
AXMT123512PEERG	●	●	●	●	●			.016 (.04)
AXMT123512PEERH	●	●	●	●	●			.031 (.08)
AXET123502PEFRS						●	●	.008 (.02)
AXET123504PEFRS						●	●	.016 (.04)
AXET123508PEFRS						●	●	.031 (.08)

Hardware

	
Wrench	Screw
TRDR08IP	BFTX0306IP

● = USA Stocked Item ★ = Worldwide Warehouse Item

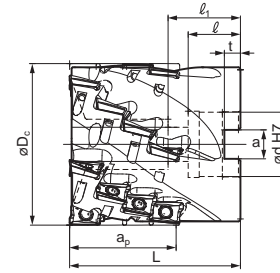
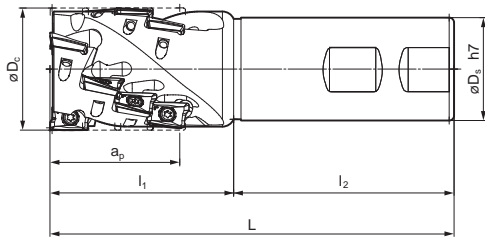
*Short Cutting Edge Type

**See pages 551-553
for recommended
running parameters**

Shoulder Milling Cutters

High Efficiency Deep Shoulder WaveMill

WRX SERIES



WRX30000 Endmill Cutter Bodies - Weldon Shank - INCH

Catalog Number	Stock	Dimensions (inch)						Steps	Effective Teeth	Total Teeth	Weight lbs (kg)
		ϕD_c	ϕD_s	L	I_1	I_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)
		ϕD_c	ϕD_s	L	I	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)

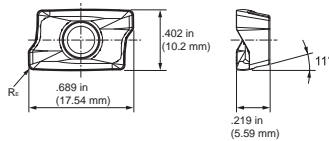
WRX3000 Endmill Cutter Bodies - METRIC

Catalog Number	Stock	Dimensions (mm)						Steps	Effective Teeth	Total Teeth	Weight lbs (kg)
		ϕD_c	ϕD_s	L	I_1	I_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)
		ϕD_c	ϕd	ϕd_2	L_1	L_2	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)

Inserts for WRX0000/3000 Series



Catalog Number	Coated Carbide					Carbide H1	DLC DL 1000	r_E in (mm)
	ACP 100	ACP 200	ACP 300	ACK 200	ACK 300			
AXMT170504PEERG	●	●	●	●	●			.016 (0.4)
AXMT170508PEERG	●	●	●	●	●			.031 (0.8)
AXMT170508PEERH	●	●	●	●	●			
AXMT170508PEERL		●	●	●	●			
AXMT170512PEERG	●	●	●	●	●			.047 (1.2)
AXMT170512PEERH		●	●	●	●			
AXMT170516PEERG	●	●	●	●	●			.063 (1.6)
AXMT170520PEERG	●	●	●	●	●			.079 (2.0)
AXMT170530PEERG	●	●	●	●	●			.118 (3.0)
AXMT170532PEERG		●						.126 (3.2)
AXET170502PEFRS						●	●	.008 (0.2)
AXET170504PEFRS						●	●	.016 (0.4)
AXET170508PEFRS						●	●	.031 (0.8)

Hardware

Wrench TRDR15IP	Screw BFTX0409IP

● = USA Stocked Item ★ = Worldwide Warehouse Item

*Short Cutting Edge Type

**See pages 551-553
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.

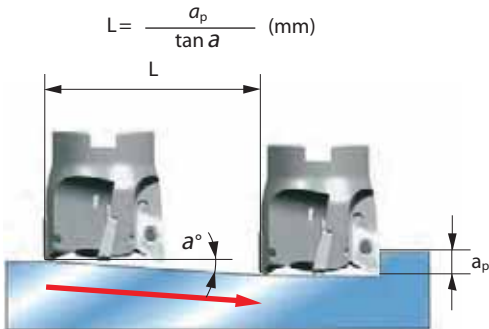
■ Characteristics

- 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

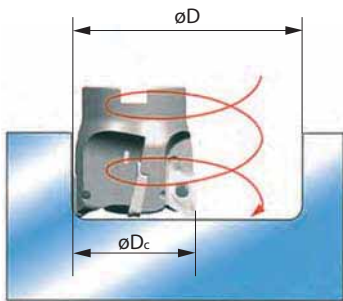
■ Ramping (Slant Milling)

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:



■ Helical Milling



■ Ramping (Slant Milling) Angles

Cutter Diameter ϕD_c (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 Diameter

Cutter Diameter ϕD_c (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 ϕD_c (mm)	WAX3000 Type		WAX4000 Type	
	n max(min ⁻¹)	v_c (m/min)	n max(min ⁻¹)	v_c (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

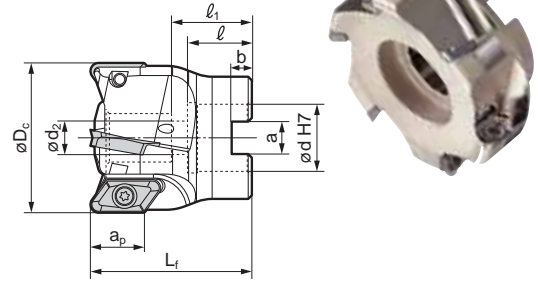
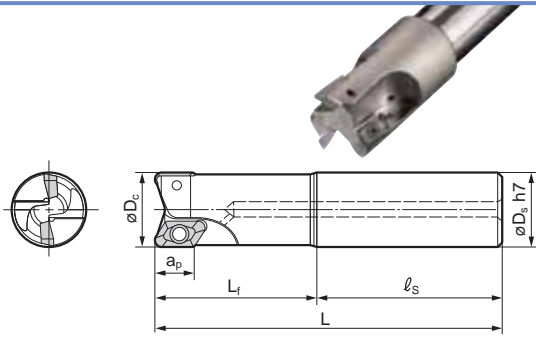
ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min.- Optimum -Max.	Feed Rate f_z (mm/t) Min.- Optimum -Max.	Grade
N	Aluminium Alloy	-	600-900-1200	0.05-0.15-0.25	DL1000

Shoulder Milling Cutters

High Speed & Efficiency Non-ferrous WaveMill

WAX 3000/4000/INCH

Applicable Insert: AECT



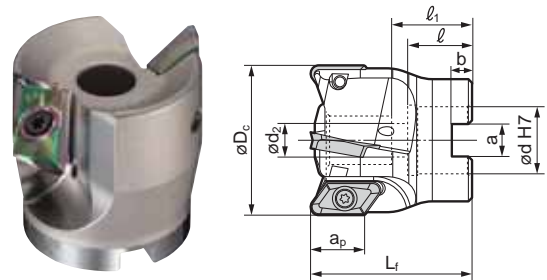
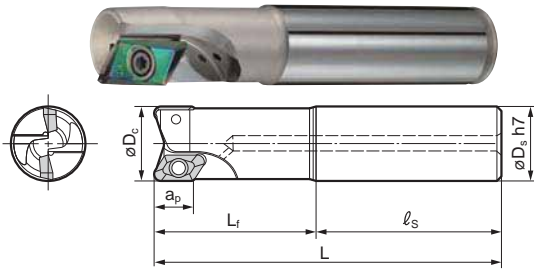
WAX 3000 Endmill Cutter Bodies - INCH

Catalog Number	Dc	Ds	OAL	Lf	Is	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 27 and 28 for inserts).



WAX 4000 Endmill Cutter Bodies - INCH

Catalog Number	Dc	Ds	OAL	Lf	Is	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

WAX 4000 Shell Mill Cutter Bodies - INCH

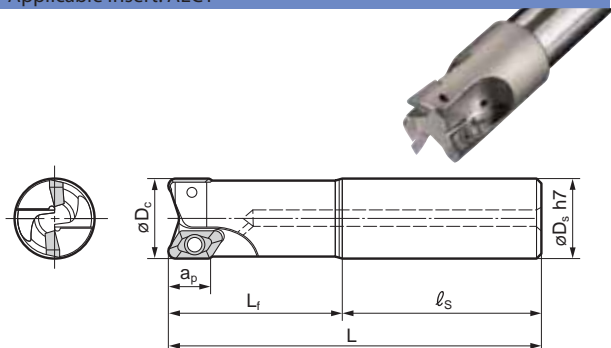
Catalog Number	φDc	Φd	φd2	φd1	L1	a	b	l	No. of teeth
WAX42000-3.2	2.000	0.750	0.406	0.630	2.000	0.312	0.220	0.787	2
WAX42500-3.2	2.500	1.000	0.531	0.630	2.000	0.375	0.220	0.787	3
WAX43000-3.2	3.000	1.000	0.531	1.260	2.000	0.375	0.248	0.866	4
WAX44000-3.2	4.000	1.250	0.656	1.220	2.500	0.500	0.394	1.181	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 27 and 28 for inserts).



WAX 3000/METRIC

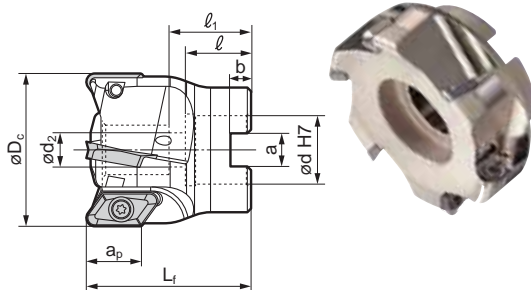
Applicable Insert: AECT



See insert table for "a_p".

Shoulder Milling Cutters

High Speed & Efficiency Non-ferrous WaveMill



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)
		ϕD_c	ϕD_s	L	L_f	L_s		
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 3000E/3000EL (For inserts with nose radius 4.0mm and below)								
Catalog Number	Stock	Dimensions (mm)					No. of Teeth	Weight (kg)
		ϕD_c	ϕD_s	L	L_f	L_s		
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

Inserts (for all WAX 3000 Endmills)

Inserts (for all WAX 3000 Endmills)								
Catalog Number	Carbide	DLC	Dimensions - In. (mm)					ϕd_1
			a_p	A	B	r_e	s	
			H1	DL1000				
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 160448PEFRA				0.6456		0.187	0.1968	0.1732
AECT 160450PEFRA	●	●	0.630 (16)	0.6456 (16.4)	0.016 (0.4)	0.197 (5.0)	0.1968 (5)	0.1732 (4.4)
AECT 160464PEFRA				0.6456		0.250	0.1968	0.1732

$r_e=4.0$ or greater are for use with bodies that have a -4.0 cat. no. suffix.

WAX 3000 (For inserts with nose radius 3.2mm and below)												
Catalog Number	Stock	Dimensions (mm)								No. of Teeth	Weight (kg)	
		øD _c	ød	L _f	ød ₂	a	b	ℓ	ℓ ₁			
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 3000 (For inserts with nose radius 4.0mm and below)												
Catalog Number	Stock	Dimensions (mm)								No. of Teeth	Weight (kg)	
		øD _c	ød	L _f	ød ₂	a	b	ℓ	ℓ ₁			
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

Hardware (for all WAX 3000 Endmills)

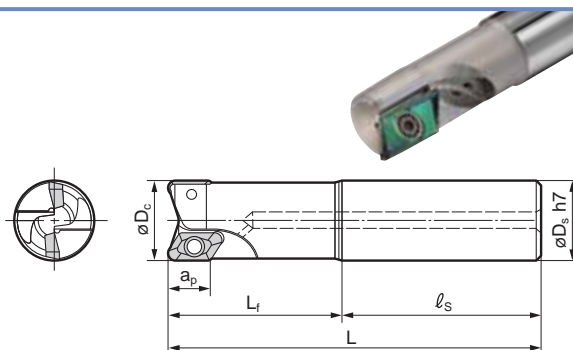
Screw	Spanner	Anti-seize Paste	Recommended Tightening Torque (N·m)	Applicable Endmill
BFTX0408	TRD15	SUMI-P	3.0	
				WAX3000 WAX3000E/EL

See pages 551-553
for recommended
running parameters



Shoulder Milling Cutters

High Speed & Efficiency Non-ferrous WaveMill



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 4000E/4000EL		(For inserts with nose radius 4.0mm and below)						
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

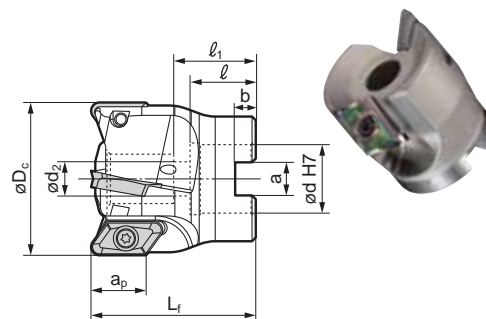
Inserts (for all WAX 4000 Endmills)

Catalog Number		Dimensions - In. (mm)						
		Dimensions (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 220648PEFRA			0.8563		0.187	0.250	0.236	
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)	
AECT 220664PEFRA			0.8563		0.250			

r_ε = 4.0 or greater are for use with bodies that have a -4.0 cat. no. suffix.

WAX 4000/METRIC

Applicable Insert: AECT



See insert table for "a_p".




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 4000		(For inserts with nose radius 4.0mm 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 4050-4.0	★	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

Hardware (for all WAX 4000 Endmills)

Screw	Spanner	Anti-seize Paste	Recommended Tightening Torque (N-m)	Applicable Endmill
			5.0	
BFTX0509N	TRD20	SUMI-P		
BFTX0511N	TRD20	SUMI-P		
				ø25 to ø32
				ø40 to ø125

See pages 551-553
for recommended
running parameters



WFX SERIES

Applicable Insert: SOMT

Shoulder Milling Cutters

Four-cornered Shoulder WaveMill



Features & Benefits

WFX WaveMill is a screw-down type cutter capable of using 4-cornered inserts. Ideal cutting edge design offers exceptional squareness.

■ Characteristics

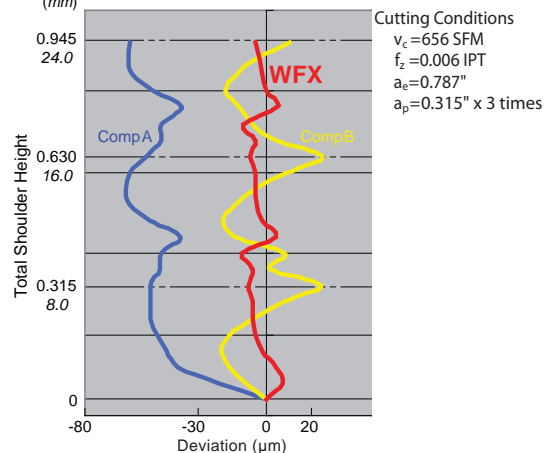
The insert shape is optimized for shoulder milling; when combined with a high-precision body it leaves a superior machined surface finish.

- Maximum depth of cut (a_p) = 0.394" (10.0mm)
- With oil hole = $\phi 5$ " or less (125 mm)
- 3 types of chipbreakers

■ Performance

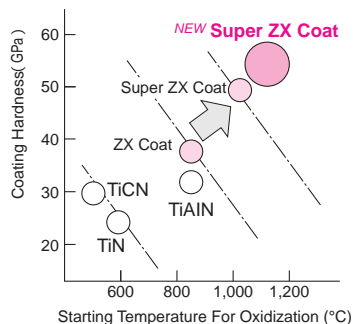
(1) Squareness

Work material: 1049 Tool: WFX12100R ($\phi 3.94$ " x 5 flutes)



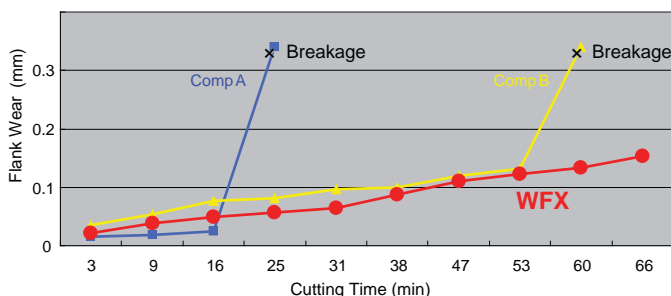
■ Grades

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.



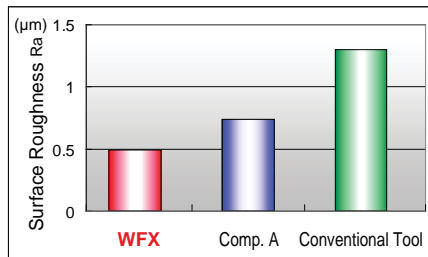
(2) Wear Resistance

Work material: 4140 Tool: WFX12100R ($\phi 3.94$ " 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 ($\phi 3.94$ " x 5 flutes)
 Cutting Conditions
 $v_c = 656$ SFM
 $f_z = 0.004$ IPT
 $a_e = 3.543$ "
 $a_p = 0.118$ "

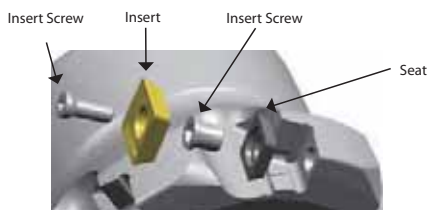


Spare Parts

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	492-656-820 150-200-250	0.004-0.006-0.008 0.10-0.15-0.20	< 0.394 < 10.0	ACP200 ACP300
	Soft Steel	G	591-869-1148 180-265-350	0.004-0.006-0.008 0.10-0.15-0.20	< 0.394 < 10.0	ACP200 ACP300
	Die Steel	S	328-492-656 100-150-200	0.004-0.006-0.008 0.10-0.15-0.20	< 0.236 < 6.0	ACP200 ACP300
	Stainless Steel	S	525-672-820 160-205-250	0.004-0.006-0.008 0.10-0.15-0.20	< 0.394 < 10.0	ACP300
K	Cast Iron	S	328-574-820 100-175-250	0.004-0.006-0.008 0.10-0.15-0.20	< 0.394 < 10.0	ACK200 ACK300

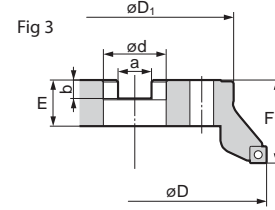
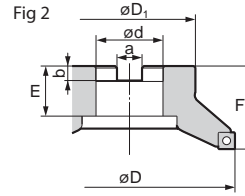
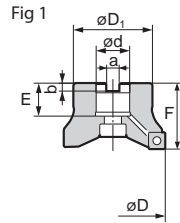


Shoulder Milling Cutters

Four-cornered Shoulder WaveMill

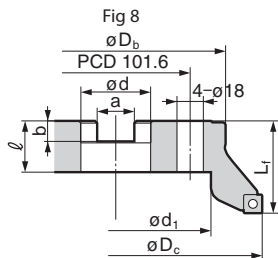
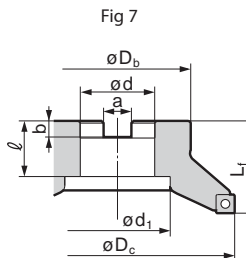
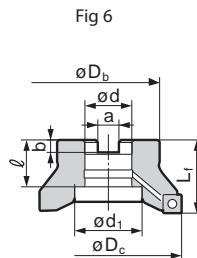
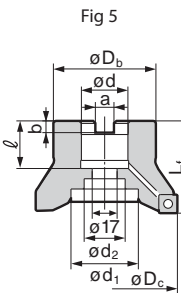
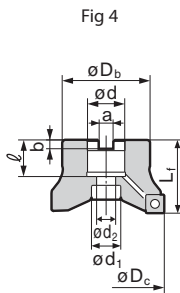
WFX SERIES

Applicable Insert: SOMT



WFX Cutter Bodies - INCH

Cat. No.	Stock	Dimensions (inch)							No. of Teeth	Pitch	Fig
		ϕD	ϕD_1	F	ϕd	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	Fine	3
WFXF42000R	●	2.000	1.500	1.750	0.750	0.312	0.187	1.020	4		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
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
WFXX45000R	●	5.000	3.750	2.500	1.500	0.625	0.380	1.060	12		1

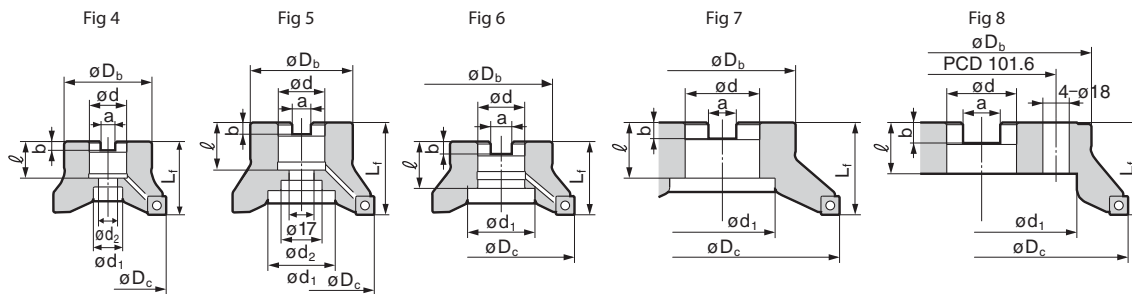


WFX Cutter Bodies - METRIC (Coarse Pitch)

Cat. No.	Stock	Dimensions (mm)									No. of Teeth	Weight (kg)	Fig
		ϕD_c	ϕD_b	Lf	ϕd	a	b	ℓ	ϕd_1	ϕd_2			
WFX 12050RS	★	50	40	40	22	10.4	6.3	20	18	11	3	0.2	4
WFX 12063RS	★	63	50	40	22	10.4	6.3	20	18	11	4	0.4	4
WFX 12080RS	★	80	60	50	27	12.4	7	25	20	13.5	4	0.9	4
WFX 12100RS	★	100	70	50	32	14.4	8.5	32	46	-	5	1.3	6
WFX 12080R	★	80	60	50	25.4	9.5	6	25	20	13	4	0.9	4
WFX 12100R	★	100	70	63	31.75	12.7	8	32.5	46	28	5	1.7	5
WFX 12125R	★	125	80	63	38.1	15.9	10	35.5	55	30	6	2.4	4
WFX 12160R	★	160	100	63	50.8	19	11	38	72	-	8	3.7	7
WFX 12200R	★	200	150	63	47.625	25.4	14	35	130	-	10	6.3	8
WFX 12250R	★	250	190	63	47.625	25.4	14	35	150	-	12	11.0	8

★: Worldwide Warehouse Item





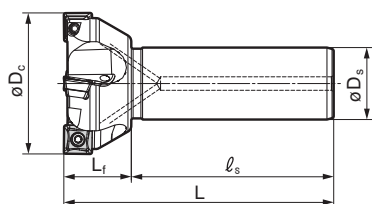
WFX Cutter Bodies - METRIC (Fine Pitch)

Cat. No.	Stock	Dimensions (mm)									No. of Teeth	Weight (kg)	Fig
		ϕD_c	ϕD_b	L_f	ϕd	a	b	ℓ	ϕd_1	ϕd_2			
WFXF 12050RS	★	50	40	40	22	10.4	6.3	20	18	11	4	0.2	1
WFXF 12063RS	★	63	50	40	22	10.4	6.3	20	18	11	5	0.4	1
WFXF 12080RS	★	80	60	50	27	12.4	7	25	20	13.5	6	0.9	1
WFXF 12100RS	★	100	70	50	32	14.4	8.5	32	46	-	7	1.2	3
WFXF 12080R	★	80	60	50	25.4	9.5	6	25	20	13	6	0.9	1
WFXF 12100R	★	100	70	63	31.75	12.7	8	32.5	46	28	7	1.6	2
WFXF 12125R	★	125	80	63	38.1	15.9	10	35.5	55	30	8	2.4	1
WFXF 12160R	★	160	100	63	50.8	19	11	38	72	-	12	3.5	4
WFXF 12200R	★	200	150	63	47.625	25.4	14	35	130	-	16	6.2	5
WFXF 12250R	★	250	190	63	47.625	25.4	14	35	150	-	18	10.9	5

★: Worldwide Warehouse Item

Inserts are not included. * Cutters $\phi 160$ mm or above do not have coolant holes.

Please use JISB1176 "hexagonal bolt" ($\phi 80$: M12 \times 30-35mm, $\phi 100$: M16 \times 40-45mm) for securing the $\phi 80$ or $\phi 100$ cutter to the arbor.



Body (Shank Type)

Cat. No.	Stock	Dimensions (mm)					No. of Teeth
		$\varnothing D_c$	$\varnothing D_s$	L_f	ℓ_s	L	
WFX 12040E	★	40	32	30	90	120	3
WFX 12050E	★	50	32	30	90	120	3
WFX 12063E	★	63	32	30	90	120	4
WFX 12080E	★	80	32	30	90	120	4

$\phi 40$ mm cutters do not have a seat.

Body (Shank, Fine Pitched Type)

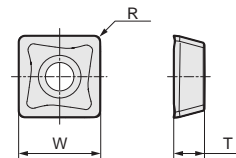
Cat. No.	Stock	Dimensions (mm)					No. of Teeth
		$\varnothing D_c$	$\varnothing D_s$	L_f	ℓ_s	L	
WFXF 12050E	★	50	32	30	90	120	4
WFXF 12063E	★	63	32	30	90	120	5
WFXF 12080E	★	80	32	30	90	120	6

★: Worldwide Warehouse Item

See pages 551-553
for recommended
running parameters

Inserts

Cat. No.	Coated Carbide						Carbide			Dim. (mm)		
	ACP100	ACP200	ACP300	ACK200	ACK300	DL1000	H1			W.	T	R
SOMT 120408PDER-L										12.7	4.76	.8
SOMT 120408PDER-G	●	●	●	●	●							
SOMT 120408PDER-H		●	●		●							
SOET 120408PDRF-S						○	○					



○: Available 4th Quarter 2012

Face Milling

Pages 318-332



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DGC Series Endmills/Shell Mills	319-322
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GOALMILL.....	327-328
DNX 25° Lead Angle Face Mill	329-330
Spider Mill Cast Iron Face Mill	331
SumiEdge Mill.....	332

Indexable Milling
Shoulder Milling
Face Milling
High Feed Milling
Multi- purpose
Modular Tooling
UFO & SumiMil
Discon- tinued



■ Features & Benefits

Improved reliability and quality

Improved coating and insert runout provides stability of tool life for production

An excellent lineup of Inserts with optimized chamfers to prevent burrs improves surface finish.

Superior economy

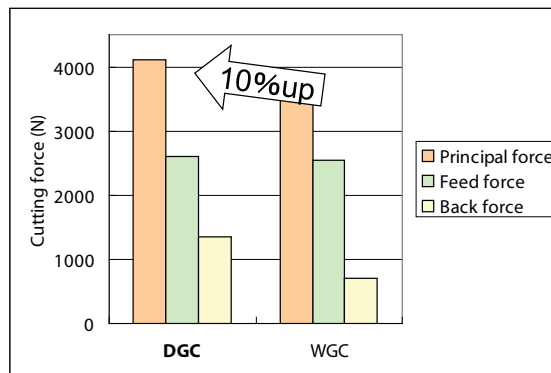
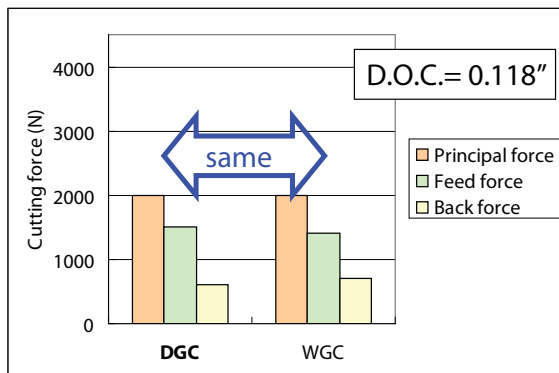
With the same sharpness of similar one-sided inserts, you get twice the corners. Also, the cutter body holds both the ONMT & SNMT inserts, allowing up to 16 corners.

Extensive Lineup

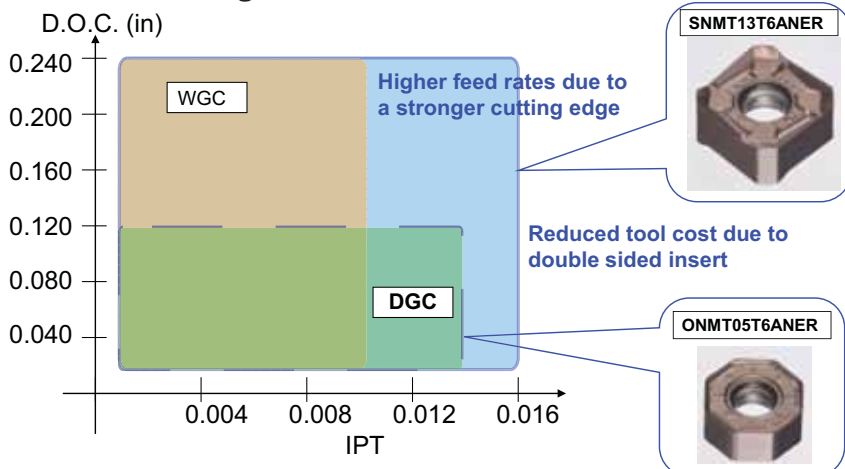
A wide range of diameters (2.000" to 10.000") and pitches (Normal, Fine, Extra Fine) allows you to choose what you need for your application.

Cutting performance: DGC vs. WGC

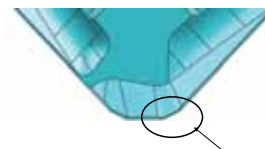
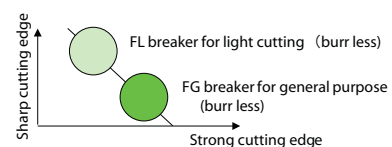
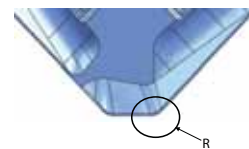
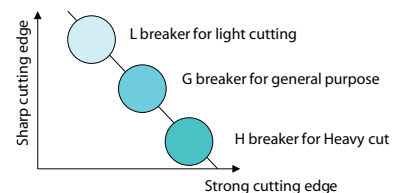
Work material : Cr-Mo Steel(SCM435)
Cutting conditions : $vc=500$ SFM $fz=.012$ IPT
Tool dia: 4.00"



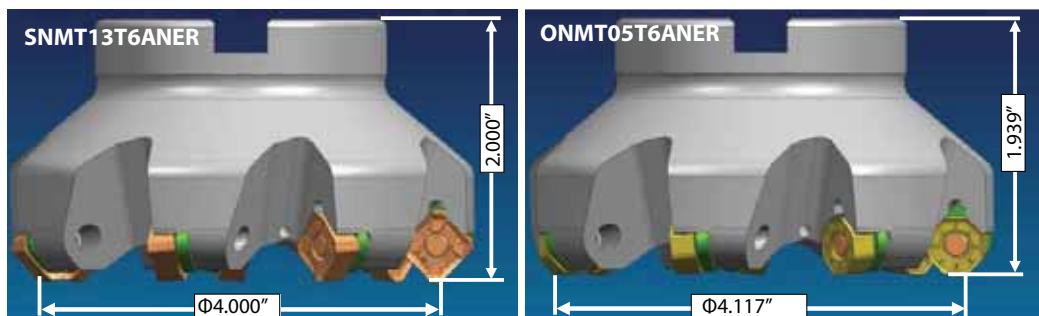
General Cutting Conditions



Edge Preparations

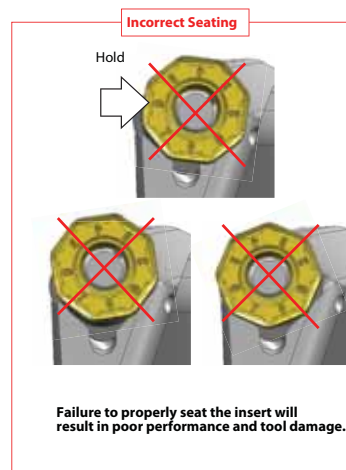
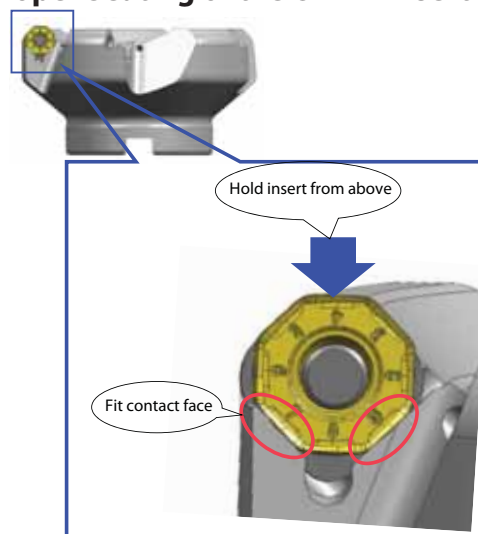


DGC Variation of Diameter by Insert

Both SNMT and ONMT inserts can be used on the same cutter body

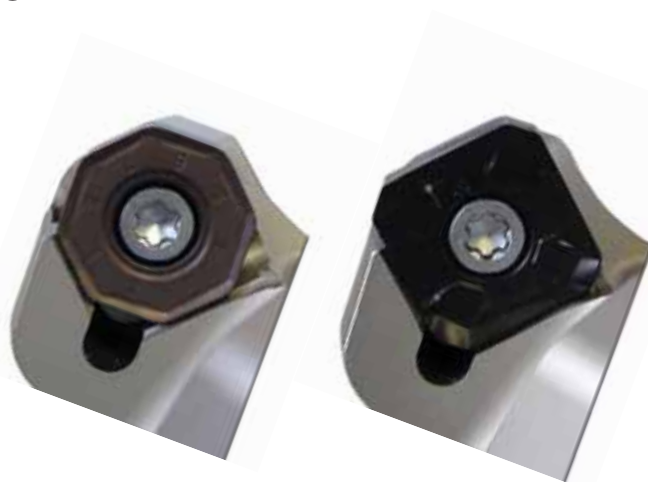
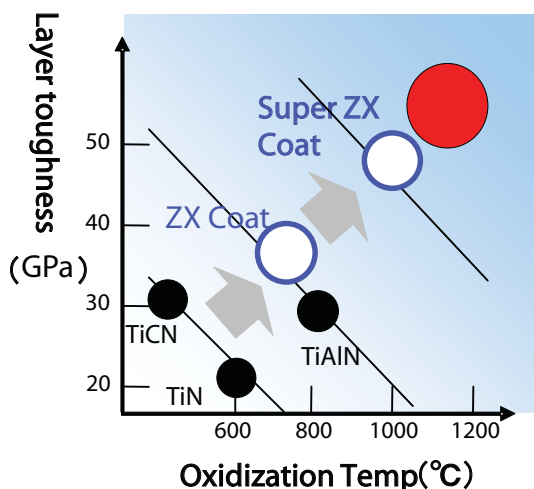
EX. $\phi 4.000''$	# of cutting edges	Tool dia.	Cutter height	Max D.O.C
SNMT	8	4"	2"	6mm 0.236"
ONMT	16	4.117"	1.939"	3mm 0.118"

Proper Seating of the ONMT Insert



Machining stability with new Super ZX coating

Super multi-layered new super ZX coating improves wear resistance, toughness, and anti-adhesion.



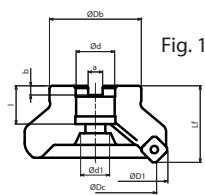


Fig. 1

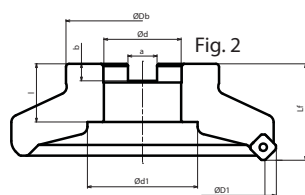


Fig. 2

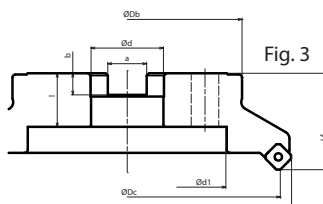


Fig. 3

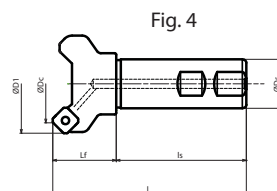


Fig. 4

Rake Angle: Radial: -10° Axial: -5°

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
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	3
DGC410000R	●	10.000	10.567	7.480	2.756	2.500	6.299	1.000	0.531	1.575	10	3

DGC Cutter Bodies - Fine Pitch - INCH

Catalog Number	Stock	ϕD_c	ϕD_1	ϕD_b	Lf	ϕd	ϕd_1	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
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	3

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
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	3

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	4
DGC42500EW	●	2.000	2.567	1.250	1.591	2.379	3.970	5	








●: USA Stocked Item ★: Worldwide Warehouse Item **PLEASE NOTE:** For 40, 50 and 63mm, arbor hole is standard in metric sizes, not inch sizes.

Inserts

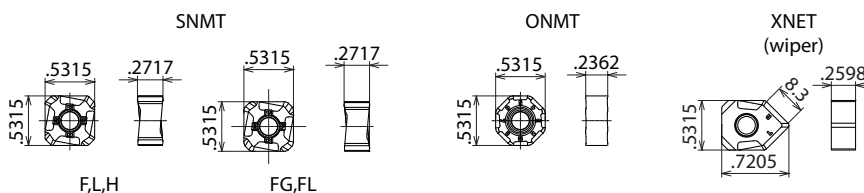
Catalog Number	ACP100	ACP200	ACP300	ACK200	ACK300
SNMT13T6ANER-L	●	●	●	●	○
SNMT13T6ANER-G	●	●	●	●	○
SNMT13T6ANER-H	●	●	●	●	○
SNMT13T6ANER-FL	○	○	○	○	○
SNMT13T6ANER-FG	○	○	○	○	○
XNET13T6ANEN-W					○
ONMT05T6ANER-L	●	●	●	●	○
ONMT05T6ANER-G	●	●	●	●	○

●: USA Stocked Item
○: New Product arriving January 2013

Hardware

Seat	Seat Screw	Seat Wrench	Insert Screw	Wrench	Anti-seize Paste	Insert Screw
						
DGCS13R	BW06509F	LH040	BFTX0412IP	TRDR15IP	SUMI-P	BFTX0418IP

* Insert corner can be changed by loosening the insert screw. Can only be used with DGC & DGCM cutters with dia. of ø80mm (3.15") or larger



Max. Depth of Cut - SNMT: 6mm (.240") ONMT: 3mm (.120")

***See pages 551-553
for recommended
running parameters***

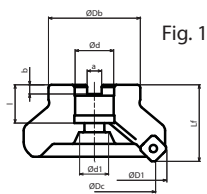


Fig. 1

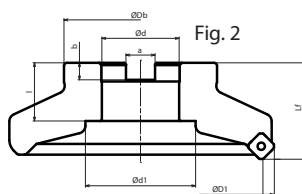


Fig. 2

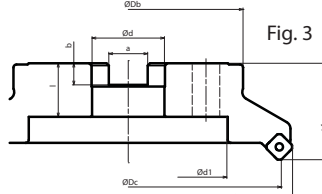


Fig. 3

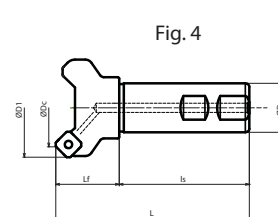


Fig. 4

Rake Angle: Radial: -10° Axial: -5°

DGC Cutter Bodies - Coarse Pitch - METRIC

Catalog Number	Stock	ϕD_c	ϕD_1	ϕD_b	Lf	ϕd	ϕd_1	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	ϕD_c	ϕD_1	ϕD_b	Lf	ϕd	ϕd_1	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	ϕD_c	ϕD_1	ϕD_b	Lf	ϕd	ϕd_1	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	ϕD_c	ϕD_1	ϕD_b	Lf	ℓ_s	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 551-553
for recommended
running parameters**

●: USA Stocked Item ★: Worldwide Warehouse Item **PLEASE NOTE:** For 40, 50 and 63mm, arbor hole is standard in metric sizes, not inch sizes.

Inserts

Catalog Number	ACP100	ACP200	ACP300	ACK200	ACK300
SNMT13T6ANER-L	●	●	●	●	○
SNMT13T6ANER-G	●	●	●	●	○
SNMT13T6ANER-H	●	●	●	●	○
SNMT13T6ANER-FL	○	○	○	○	○
SNMT13T6ANER-FG	○	○	○	○	○
XNET13T6ANEN-W	○	○	○	○	○
ONMT05T6ANER-L	●	●	●	●	○
ONMT05T6ANER-G	●	●	●	●	○

●: USA Stocked Item
○: New Product arriving January 2013

Hardware

Seat	Seat Screw	Seat Wrench	Insert Screw	Wrench	Anti-seize Paste	Insert Screw
DGCS13R	BW06509F	LH040	BFTX0412IP	TRDR15IP	SUMI-P	BFTX0418IP

* Insert corner can be changed by loosening the insert screw. Can only be used with DGC & DGCM cutters with dia. of ϕ



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

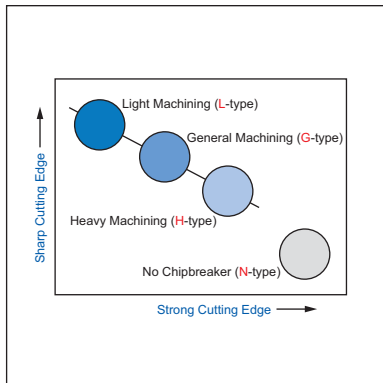


**Shell type
Coarse Pitch**



**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	<ul style="list-style-type: none"> • Light cutting • Low force milling of thin work piece • Low burr design 	<ul style="list-style-type: none"> • General purpose to interrupted milling • Main chipbreaker 	<ul style="list-style-type: none"> • Interrupted to Heavy milling • For welded or rolled surfaces 	<ul style="list-style-type: none"> • Very heavy milling 	<ul style="list-style-type: none"> • High precision finish (Wiper edge)

Inch

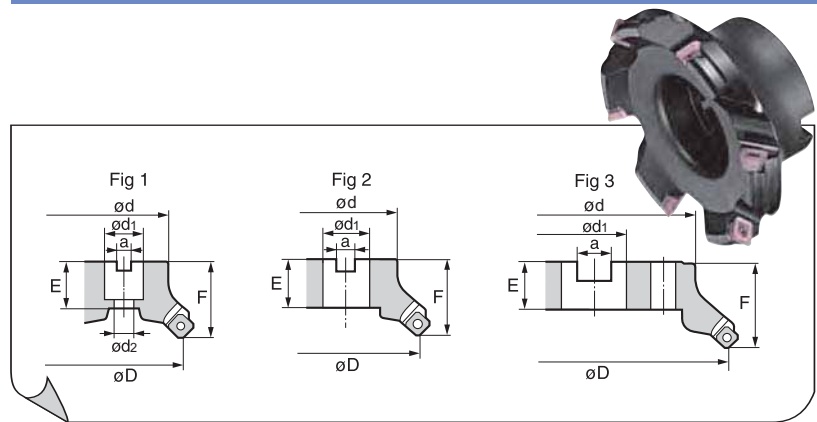
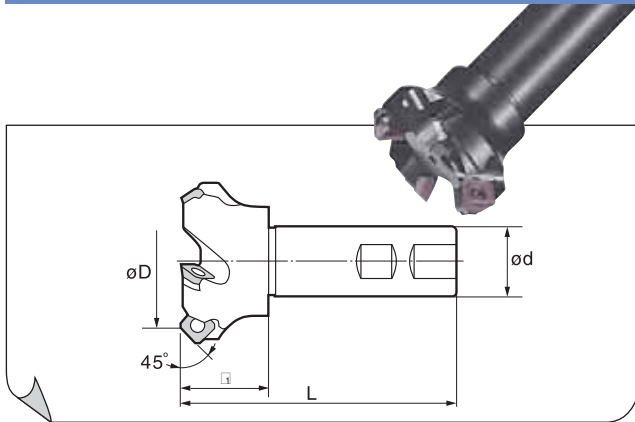
WGC4000

Applicable Insert:
SEET, SEMT,
SECW, XEEW

Inch

WGC/F4000

Applicable Insert:
SEET, SEMT,
SECW, XEEW



Weldon Shank Series

Catalog Number	Stock	Dimensions (Inches)				Insert	Max	# of
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


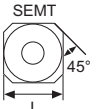
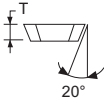
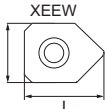
Catalog Number	Seat	Insert Screw*	Seat Screw**	Insert Wrench	Seat Wrench
WGC42□□WR	WGCS13R	BFTX03512IP	BW0507F	TRDR15IP	LH035
WGC4□□□SR	WGCS13R	BFTX03512IP	BW0507F	TRDR15IP	LH035
WGCF4□□□SR	WGCS13R	BFTX03512IP	BW0507F	TRDR15IP	LH035

* Torque specifications for insert screw=24-29 in/lbs.

**Torque specifications for seat screw=42-46 in/lbs.

**See pages 551-553
for recommended
running parameters**

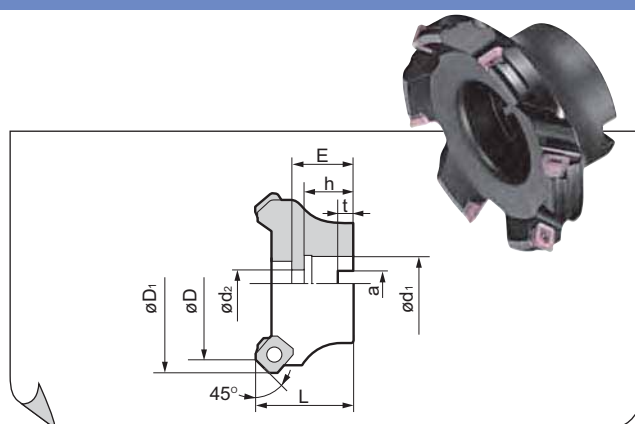
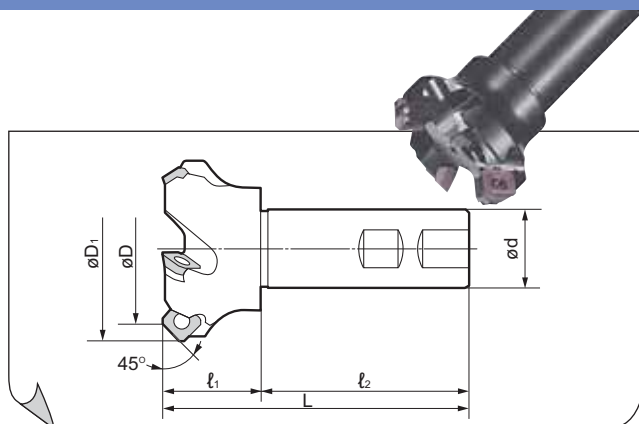
Inserts

	<div><div><div>SEMT</div></div><div><div></div></div><div><div>XEEW</div></div></div>																																								
	<table><tr><th colspan="5">Coated</th><th>Cermet</th><th>Uncoated</th><th>PCD</th><th colspan="4">Dimension (inch)</th></tr><tr><th>ACZ310</th><th>ACZ330</th><th>ACZ350</th><th>DL1000</th><th>ACK200</th><th>ACK300</th><th>ACP100</th><th>ACP200</th><th>ACP300</th><th>T250A</th><th>A30N</th><th>EH520</th><th>H1</th><th>DA2200</th><th>DA1000</th><th>L</th><th>T</th><th>Facet Width</th><th>Facet Radii</th></tr></table>										Coated					Cermet	Uncoated	PCD	Dimension (inch)				ACZ310	ACZ330	ACZ350	DL1000	ACK200	ACK300	ACP100	ACP200	ACP300	T250A	A30N	EH520	H1	DA2200	DA1000	L	T	Facet Width	Facet Radii
	Coated					Cermet	Uncoated	PCD	Dimension (inch)																																
ACZ310	ACZ330	ACZ350	DL1000	ACK200	ACK300	ACP100	ACP200	ACP300	T250A	A30N	EH520	H1	DA2200	DA1000	L	T	Facet Width	Facet Radii																							
Sumitomo Catalog Number																																									
SEET13T3AGFNL			•	•							•	•			0.528	0.156	0.0639	0.0394																							
SEET13T3AGSNG	▲	▲		•	•	★	•	•	•		•																														
SEET13T3AGSNN	▲	▲		•	•	★	•	•	•		•																														
SEMT13T3AGSNG	▲	▲		•	•	★	•	•		•																															
SEMT13T3AGSNH	▲	▲		•	•	★	•	•																																	
SEMT13T3AGSNL	▲	▲		•	•	★	•	•							0.707	0.156	0.320	-																							
NF-SECW13T3AGTNN	▲	▲										•	•																												
XEEW13T3AGERW				•																																					
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





Weldon Shank Series (WGC 4000EW Type)

Catalog Number	Stock	Dimensions (mm)					# of Inserts	
		ØD	ØD ₁	Ød	ℓ ₁	ℓ ₂		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

★ Worldwide Warehouse item

Shell Mill Series (WGC 4000RS Type)

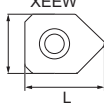
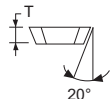
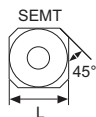
Catalog Number	Stock	Dimensions (mm)									# of Teeth
		ØD	ØD ₁	Ød ₁	Ød ₂	t	a	L	h	E	
WGC4040RS	★	40	52	16	9	5.6	8.4	40	18	28	3
WGC4050RS	★	50	63	22	11	6.3	10.4	40	20	26	3
WGC4063RS	★	63	76	22	11	6.3	10.4	40	20	26	4

Shell Mill Series (WGCF 4000RS Type)

Catalog Number	Stock	Dimensions (mm)									# of Teeth
		ØD	ØD ₁	Ød ₁	Ød ₂	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

★ Worldwide Warehouse item






Inserts

[illegible]

Note: SEET is a close tolerance, peripheral ground insert type which may provide better surface finish and repeatability

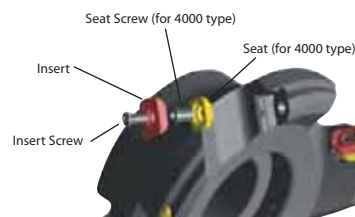
- USA stocked item
- ★ Worldwide Warehouse item
- ▲ USA limited availability item

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.



***See pages 551-553
for recommended
running parameters***

WaveMill Series

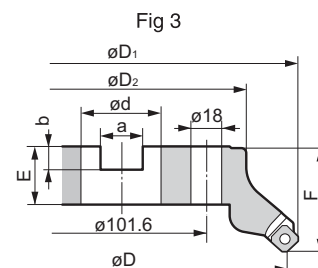
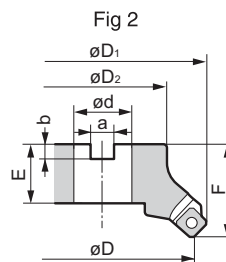
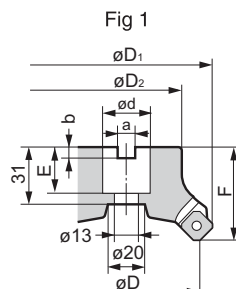
45° Lead Angle Face Mill

Metric

WGC/F4000

Applicable Insert:

SEET, SEMT,
SECW, XEEW



Shell Mill Series (WGC 4000 Type)


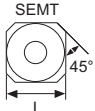
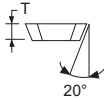
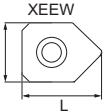
Catalog Number	Stock	Dimensions								No. of Teeth	Weight (kg)	Fig.
		ØD	ØD ₁	ØD ₂	F	Ød	a	b	E			
WGC4080R	★	80	93	60	50	25.4	9.5	6	25	4	1.0	1
WGC4100R	★	100	113	70	50	31.75	12.7	8	32	5	1.5	2
WGC4125R	★	125	138	80	63	38.1	15.9	10	38	6	2.6	2
WGC4160R	★	160	173	100	63	50.8	19	11	38	7	4.0	2
WGC4200R	★	200	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

★ Worldwide Warehouse item

Inserts

																				
	Coated					Cermet		Uncoated	PCD	Dimension (inch)										
	ACZ310	ACZ330	ACZ350	DL1000	ACK200	ACK300	ACP100	ACP200	ACP300	T250A		A30N	EH520	H1	DA2200	DA1000	L	T	Facet Width	Facet Radii
Sumitomo Catalog Number	ACZ310	ACZ330	ACZ350	DL1000	ACK200	ACK300	ACP100	ACP200	ACP300	T250A		A30N	EH520	H1	DA2200	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

★ Worldwide Warehouse item

▲ USA limited availability item

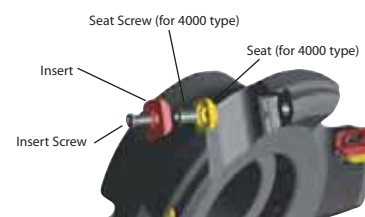
Hardware

					
Catalog Number	Seat	Insert Screw*	Seat Screw**	Insert Wrench	Seat Wrench
WGC/F 4000R	WGCS13R	BFTX03512IP	BW0507F	TRDR15IP	LH035

* Torque specifications for insert screw=24-29 in/lbs.

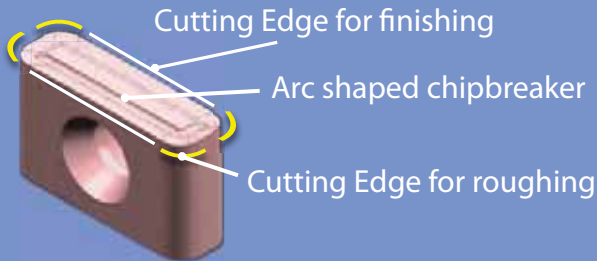
**Torque specifications for seat screw=42-46 in/lbs.

**See pages 551-553
for recommended
running parameters**

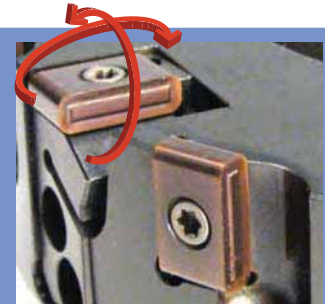


Features & Benefits

- 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.



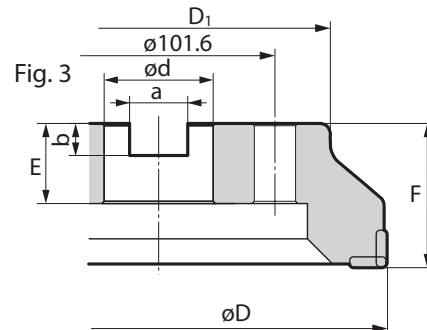
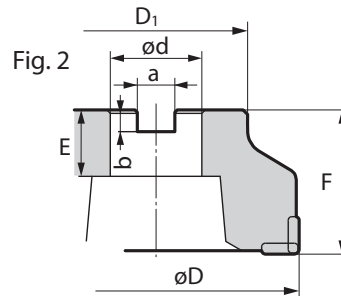
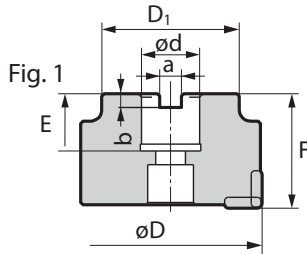
By switching the insert to a left hand cutter, **FOUR MORE ROUGHING EDGES** can now be used. A total of 12 indexes are possible when using both right and left hand cutters.*

*Left-handed cutters are made to order



Master Tool can provide custom-made milling cutters to accommodate your specific applications.

Roughing <50Rz	Semi-finishing <18Rz	Finishing <12.5Rz
45° 	45° w/wiper 	90° 

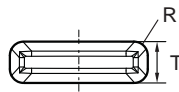
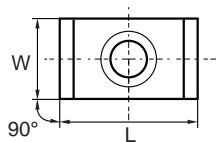


GOALMILL Cutter Bodies

Catalog Number	Stock	Dimensions (inch)							# of Teeth		Fig.	Effective Cutting Dia.
		øD	øD ₁	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

*Greater depths of cut (up to 4mm) possible if wiper cartridges are removed.

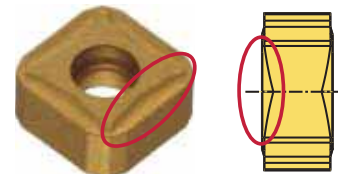
Ductile Cast Iron			
Grade	SFM	D.O.C.	IPT
K244L9	450~800	0.004~0.030	0.004~0.015
K246L9	400~600		

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**Breaker type**

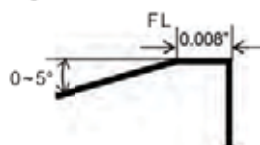
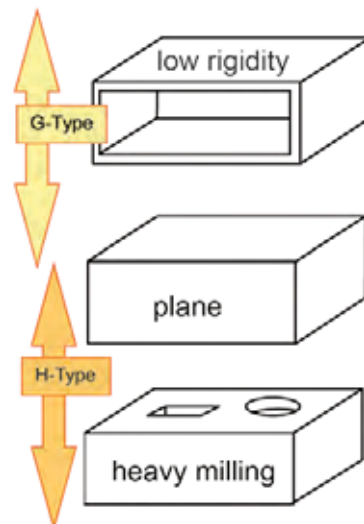
G-Type: for general purpose milling



H-Type: for heavy milling



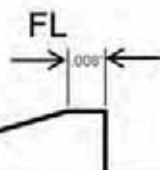
V-shaped cutting edge

Cross section**Application**

SH-type with straight cutting edge



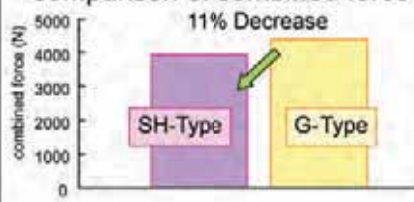
straight



SH-Type



G-Type

**comparison of combined force**

Cutting conditions:
 $v_c=600\text{SFM}$ $f_z=0.008\text{IPT}$
 Width=3.300" D.O.C.=0.118-0.236" dry
 Work material: Gray Cast Iron
 Tool: DNX12100R+G,SH

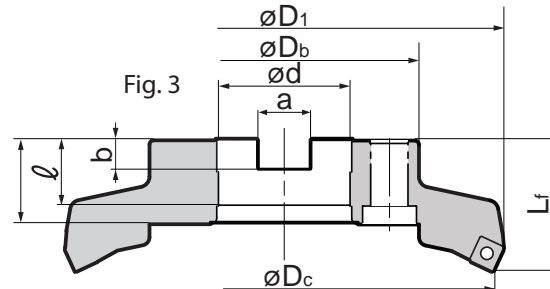
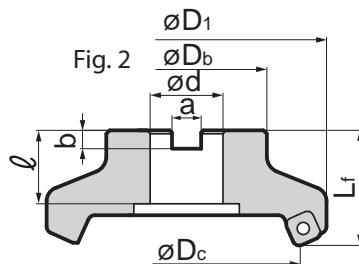
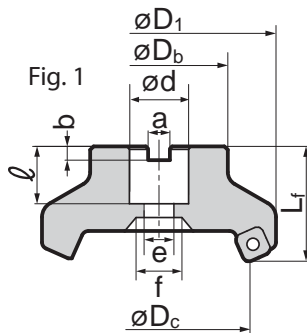
SumiMill General Purpose Milling

25° Lead Angle Face Mill

SumiMill

DNX Series

Applicable Insert: SNMT



SumiMill DNX Bodies - Coarse Pitch

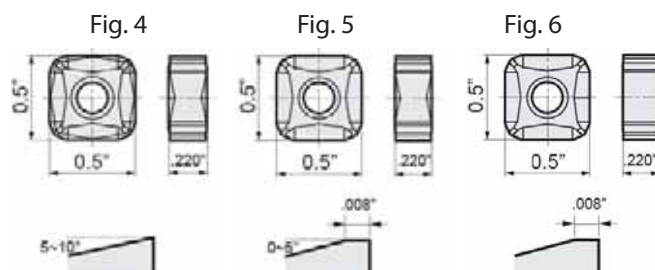
Sumitomo Cat. Number	Dimensions (in)										# of Teeth	Pitch	Max D.O.C.	Fig.
	ϕD_c	ϕD_1	ϕD_b	L_f	ϕd	a	b	ℓ	e	f				
DNX43000R	3.000	3.303	2.250	1.750	1.000	0.375	0.220	1.020	0.531	0.797	6	Coarse	0.314"	1
DNX44000R	4.000	4.315	2.870	2.000	1.250	0.500	0.280	1.020	0.656	1.000	7			1
DNX45000R	5.000	5.303	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.
	ϕD_c	ϕD_1	ϕD_b	L_f	ϕd	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
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



Recommended Running Conditions

Grade	Cast Iron				Steel	
	Gray Cast Iron		Ductile Cast Iron		Carbon Steel	Alloy Steel
	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

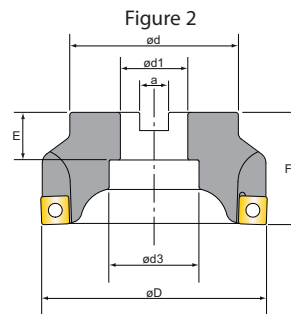
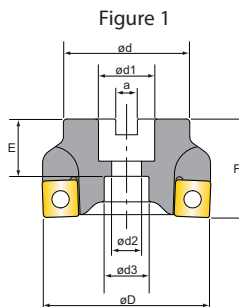
Wrench	Screw
TRDR15IP	BFTX0412IP





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



Spider Mill Cutter Bodies

Sumitomo Cat. No.	Status	Dimensions (Inch)										Fig.
		øD	ød	F	ød1	ød2	ød3	E	a	I.C.	Pitch	
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										Dimensions (Inches)		
	ACK100	ACK200									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.

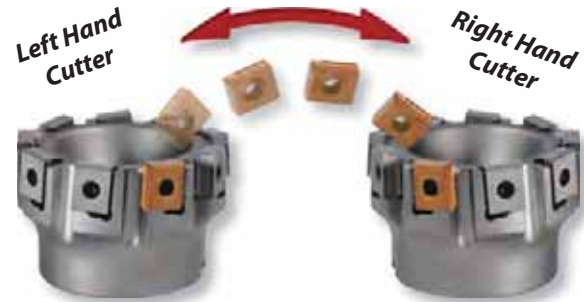
**See pages 551-553
for recommended
running parameters**



Tangential Cast Iron Milling Cutter With Eight Cutting Edges

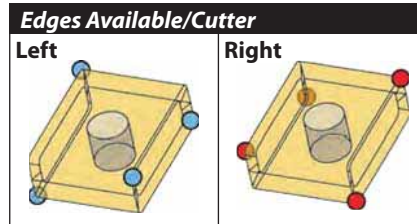
SUMIMILL
SUMIEDGE MILL

Applicable Insert: LNMX

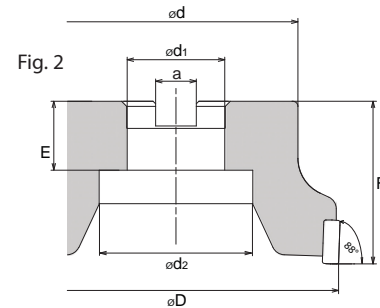
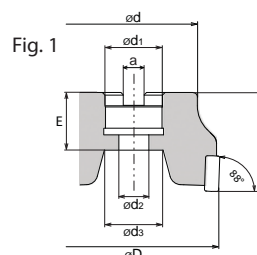


Features & Benefits

- 8 available cutting edges when inserts are used in both left and right cutters
- Low cutting force and fine pitch design allow for higher production machining
- New ACK200 and ACK300 grades provide stable cutting performance and longer tool life
- Exceptional surface finish capabilities
- Available in 3", 4", 5", and 6" diameters




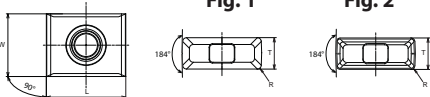
• **ADD 4 MORE INDEXES**--switch the insert to an opposite-hand cutter and repeat the rotation process



SumiEdge Mill Cutter Bodies

Catalog Number		Stock	Dimensions (Inches)								Number of teeth	Max D.O.C.	Fig.
Right Hand	Left Hand		D	d1	d2	d3	F	d	a	E			
PWC43000R	PWC43000L	•	3.000	1.000	0.531	1.040	1.750	2.250	0.375	1.020	9	.250"	1
PWC44000R	PWC44000L	•	4.000	1.250	0.656	1.500	2.000	2.870	0.500	1.020	12	.250"	1
PWC45000R	PWC45000L	•	5.000	1.500	2.362	-	2.500	3.750	0.625	1.060	15	.250"	2
PWC46000R	PWC46000L	•	6.000	1.500	-	-	2.500	4.380	0.625	1.060	18	.250"	2

Inserts

								
	Grade		Dimensions (Inches)					
	Sumitomo Cat. No.	ACK200	ACK300	L	W	T	R	Facet Width
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 130 for facet width information.

Hardware

Applicable Cutter	Insert Screw	Wrench
PWC Series	BFTX0512N	TTX15W

**See pages 551-553
for recommended
running parameters**





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HIGH FEED MILLING

Pages 334-336



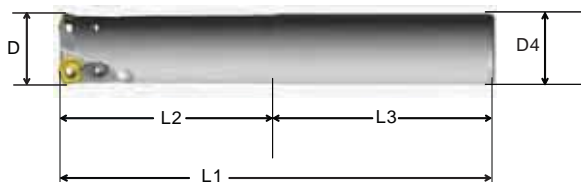
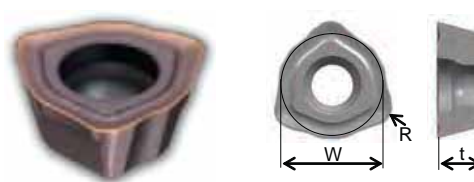
Table of Contents

Indexable Milling Cutters:	Pages
MS/MS-X Mill Shell Mills	335-336

Indexable Milling
Shoulder Milling
Face Milling
High Feed Milling
Multi-purpose
Modular Tooling
UFO & SumiMill
Discontinued

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

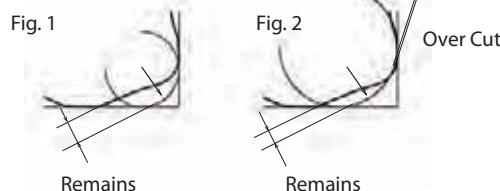
**MSX Mill Availability****Inserts**

Sumitomo Cat. No.	Stock	Dimensions (in)					# of teeth	Insert	ACK200	ACK300	ACP200	ACP300	Insert Dimensions (in)		
		D	D4	L1	L2	L3							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								

- USA stocked item

Ramp Angle

Cutting Edge dia. (in)	WDMT0603ZDTR				WDMT0804ZDTR				WDMT1205ZDTR			
	Max. Ad: .039 in R: .079 in				Max. Ad: .060 in R: .098 in				Max. Ad: .079 in R: .118 in			
	Ramp Angle	Helical Milling	Min øD (in)	Max øD (in)	Ramp Angle	Helical Milling	Min øD (in)	Max øD (in)	Ramp Angle	Helical Milling	Min øD (in)	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

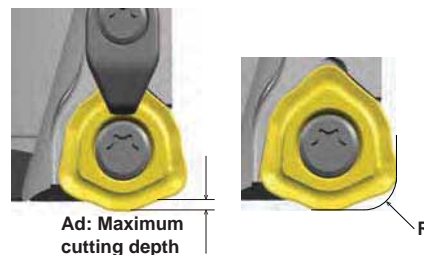
R	WDMT0603ZDTR			WDMT0804ZDTR			WDMT1205ZDTR		
	Remains (in)	Over Cut (in)	Fig.	Remains (in)	Over Cut (in)	Fig.	Remains (in)	Over Cut (in)	Fig.
.079	.016	0	1	.029	0	1	.052	0	1
.098	.010	.003	2	.023	0	1	.046	0	1
.118	.005	.011	2	.018	.001	2	.041	0	1
.138				.012	.007	2	.035	.00004	2
.158				.007	.014	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

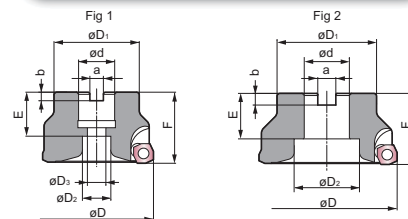
Recommended Running Conditions

Material	Cutting Speed (SFM)	Feed Rate (IPT)	Depth of Cut (Inch)	Recommended Grades
General Steel ≥200HB	330 ~ 660	< 0.047	< 0.039	ACP200, ACP300
Alloy Steel ≥HRC45	260 ~ 590	< 0.047	< 0.031	ACP200, ACP300
Stainless Steel	260 ~ 490	< 0.031	< 0.039	ACP200, ACP300
Cast Iron	330 ~ 660	< 0.055	< 0.039	ACK200, ACK300



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



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

Ramp Angle

Cutting Edge dia.	SDMW (SDEW)1406ZDTR		
	Max. Ad: .039 in (.015mm) R: .079 in (.003mm)		
	Ramp Angle	Helical Milling	
		Min ϕD	Max ϕD
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

Inserts

Sumitomo Cat. No.	Coated		Dimensions (Inches)				Fig.
	CS3000	ACZ310	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.

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





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MULTI-PURPOSE MILLING

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WBMF Endmills (Finishing Endmill).....	345
WMM Endmills	346-347

Indexable
Milling

Shoulder
Milling

Face
Milling

High
Feed
Milling

Multi-
purpose

Modular
Tooling

UFO &
SumiMil

Discon-
tinued

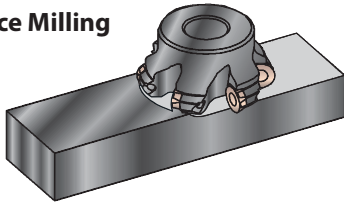


Features & Benefits

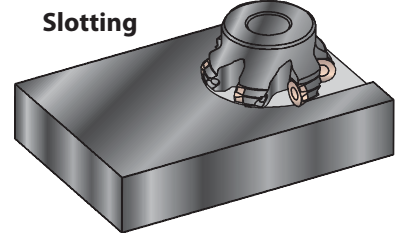
- 8 corner polygon inserts withstand extraordinary feed rates while providing improved finishes
- Highly durable cutter body made of special alloyed steel and protected by a hard surface treatment
- Wide application range that includes face milling, ramping, slotting, 3-D interpolation, and helical boring
- Pocket design eliminates insert rotation and breakage during aggressive machining
- Wide flute relief provides excellent chip evacuation

Application Examples

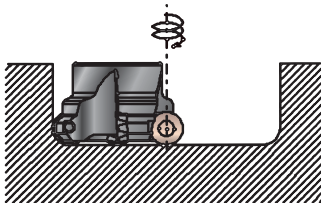
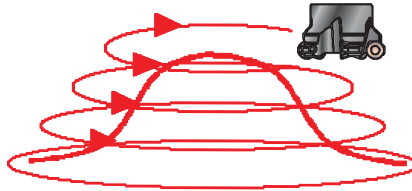
Face Milling



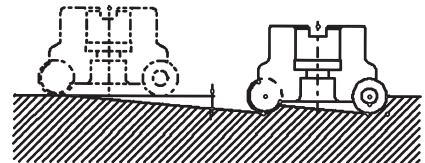
Slotting



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
	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.



Multi-purpose Milling

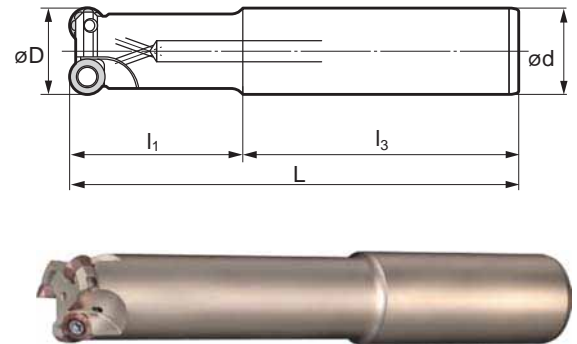
Multi-application WaveMill

WRCX SERIES

Applicable Insert: QPMT, QPET

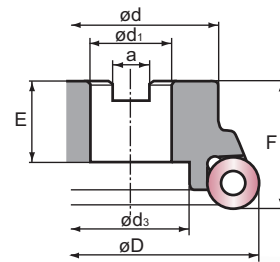
WRCX Endmill Cutter Bodies - Weldon/Cylindrical Shank - INCH

Catalog Number	Stock	Dimensions (inch)					Insert Dia.	# of Inserts	Ramp Angle	Shank Style
		øD	ød	L	l ₁	l ₂				
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



WRCX Shell Mill Cutter Bodies - INCH

Catalog Number	Stock	Dimensions (mm)								Insert Dia.	# of Inserts	Ramp Angle
		øD	ød	F	ød ₁	ød ₂	ød ₃	E	a			
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'



Indexable Milling

Shoulder Milling

Face Milling

High Feed Milling


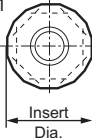
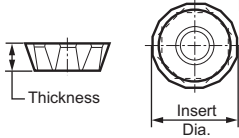
Multi-purpose

Modular Tooling

UFO & SumiMill

Discontinued

Inserts

	Fig. 1		Fig. 2								
											
Catalog Number	Availability							Dimensions (in)			
	AC230	ACK300	ACP100	ACP200	ACP300	DL1000	HI	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		BFTX0511IP
WRCX8□□□R	TRDR20IP	BFTX0615IP



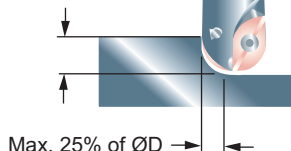
Features & Benefits

- 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



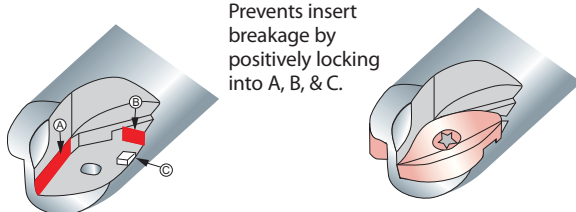
- Max. D.O.C.
Radial & Axial

Max. 50% of ØD



- Anti-rotational design

Prevents insert breakage by positively locking into A, B, & C.



Inserts for all WBMR Series Ballnose Endmills

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, SLX, MLX, or LLX
ZNMT4SX	2	outer	0.913	0.369	0.217	0.500	
ZNMT5CX	1	center	1.150	0.615	0.281	0.625	WBMR125SX, MX, LX, LCX, SLX, MLX, or LLX
ZNMT5SX	2	outer	1.185	0.472	0.263	0.625	
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 (I.C.)	0.375	N/A	0.156	.031	WBMR100 & 125 SLX, MLX, or LLX

*Used in “Extended Length of Cut” Endmills only

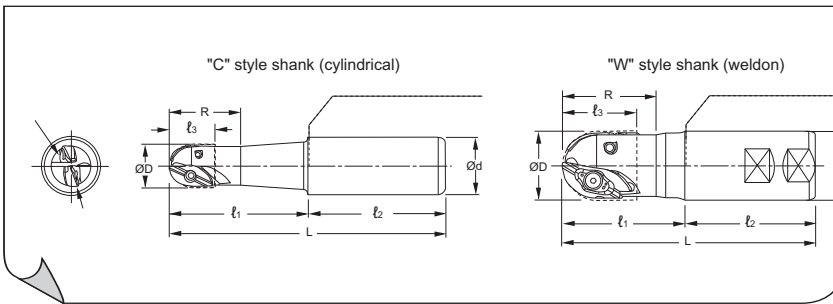
Multi-purpose Milling

Ballnose Roughing WaveMill

WBMR

Applicable Insert: ZNMT

BALLNOSE ENDMILL



WBMR Cutters (Standard Length)

Catalog Number	Stock	Dimensions (Inches)							Inserts
		ØD	Ød	Shank	L	l ₃	l ₁	l ₂	
WBMR075SX	•	0.750	1.000	W	4.546	0.752	2.285	2.261	ZNMT3_X
WBMR075MX	•	0.750	1.000	W	6.046	0.752	3.785	2.261	ZNMT3_X
WBMR075LX	•	0.750	1.000	W	7.546	0.752	5.285	2.261	ZNMT3_X
WBMR100SX	•	1.000	1.250	W	4.796	0.917	2.535	2.261	ZNMT4_X
WBMR100MX	•	1.000	1.250	W	6.546	0.917	4.285	2.261	ZNMT4_X
WBMR100LX	•	1.000	1.250	W	8.296	0.917	6.035	2.261	ZNMT4_X
WBMR100LCX	•	1.000	1.250	C	11.750	0.917	2.535*	9.215**	ZNMT4_X
WBMR125SX	•	1.250	1.250	W	4.796	1.228	2.535	2.261	ZNMT5_X
WBMR125MX	•	1.250	1.250	W	6.796	1.228	4.535	2.261	ZNMT5_X
WBMR125LX	•	1.250	1.250	W	8.796	1.228	6.535	2.261	ZNMT5_X
WBMR125LCX	•	1.250	1.250	C	13.750	1.228	2.535*	11.215**	ZNMT5_X
WBMR150SX	•	1.500	1.500	W	5.223	1.543	2.535	2.688	ZNMT6X
WBMR150MX	•	1.500	1.500	W	7.779	1.543	4.535	3.244	ZNMT6X
WBMR150LX	•	1.500	1.500	W	9.779	1.543	6.535	3.244	ZNMT6X
WBMR200SX	•	2.000	2.000	W	6.029	1.862	2.785	3.244	ZNMT8X
WBMR200MX	•	2.000	2.000	W	8.279	1.862	5.035	3.244	ZNMT8X
WBMR200LX	•	2.000	2.000	W	10.529	1.862	7.285	3.244	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/-0.020.

*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)				Figure
	ACZ310	ACZ330	ACZ350	ACP200	ACP300	A	B	T	R	
	•	•	•	•	•					
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.

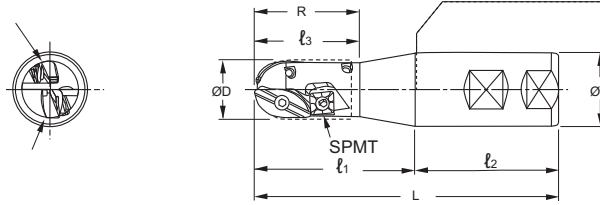
• USA stocked item

**See pages 551-553
for recommended
running parameters**





"W" style shank (weldon)



WBMR Cutters (Extended Length)

Catalog Number	Stock	Dimensions (Inches)								Inserts 1 & 2	Insert style 4
		ØD	Ød	Shank	L	l ₃	l ₁	l ₂	R		
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/-0.020.

*This dimension represents the actual "extension from holder."

- USA stocked item

Inserts

Sumitomo Cat. No.	Figure 1					Figure 2					Figure 3				
	Coated					Dimensions (Inches)					Dimensions (Inches)				
	ACZ310	ACZ330	ACZ350	ACK300	ACP300	A	B	T	R	Figure	ACZ310	ACZ330	ACZ350	ACK300	ACP300
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 stocked item

Sumitomo Cat. No.	Figure 1					Figure 2					Figure 3				
	Coated					Dimensions (Inches)					Dimensions (Inches)				
	ACZ310	ACZ330	ACZ350	ACK300	ACP300	A	B	T	R	Figure	ACZ310	ACZ330	ACZ350	ACK300	ACP300
SPMT09T308	•	•	•	•	•	0.375	0.156	0.031	0.031	1	•	•	•	•	•

- 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.

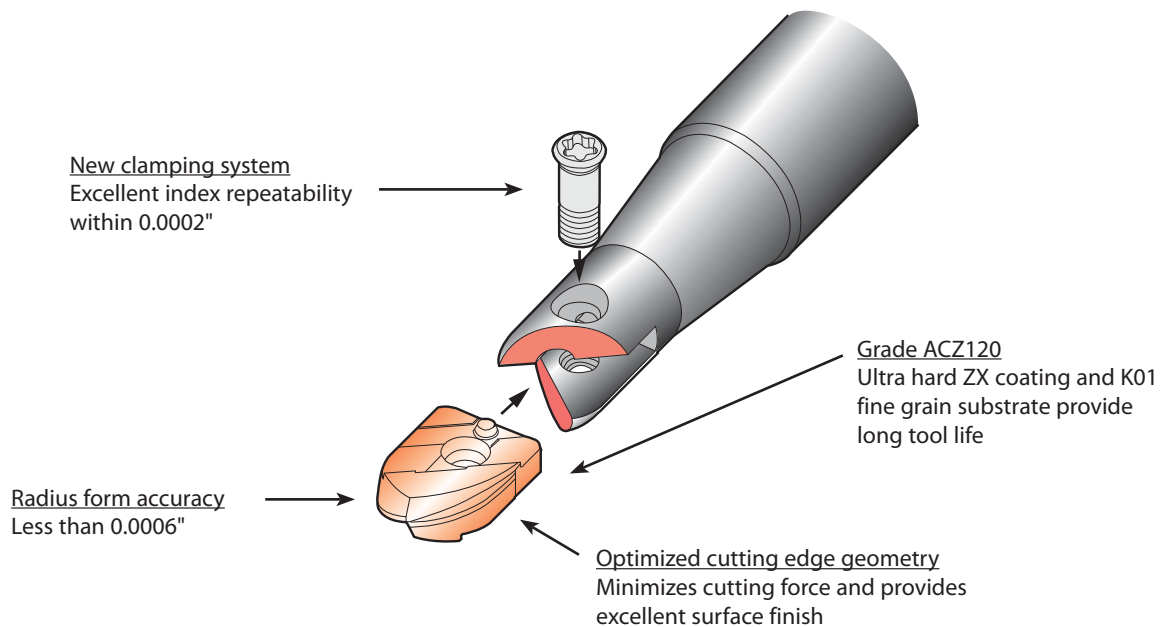
Torque specifications for BFTX0511N insert screw is 44-49 in/lbs.

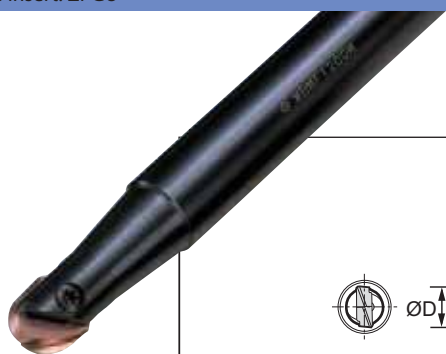
**See pages 549-551
for recommended
running parameters**



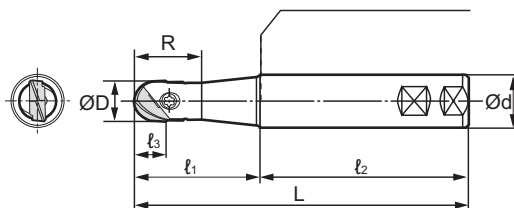
Features & Benefits

- 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





"W" style shank (weldon)



WBMF Cutters (Standard Length)									
Catalog Number	Stock	Dimensions (Inches)							Inserts
		D	d	Shank	L	L ₁	L ₂	L ₃	
WBMF10500S	•	0.500	0.625	W	3.678	1.772	1.906	0.427	ZPGU2S
WBMF10500M	•	0.500	0.625	W	4.428	2.5222	1.906	0.427	ZPGU2S
WBMF10500L	•	0.500	0.750	W	5.300	3.270	2.031	0.427	ZPGU2S
WBMF10625S	•	0.625	0.750	W	3.801	1.770	2.0313	0.470	ZPGU2.5S
WBMF10625M	•	0.625	0.750	W	4.551	2.520	2.0313	0.470	ZPGU2.5S
WBMF10625L	•	0.625	1.000	W	5.546	3.265	2.2813	0.470	ZPGU2.5S
WBMF10750S	•	0.750	1.000	W	4.5459	2.265	2.2813	0.572	ZPGU3S
WBMF10750M	•	0.750	1.000	W	6.0459	3.7647	2.2813	0.572	ZPGU3S
WBMF10750L	•	0.750	1.000	W	7.546	5.265	2.2813	0.572	ZPGU3S
WBMF11000S	•	1.000	1.250	W	4.793	2.5117	2.2813	0.736	ZPGU4S
WBMF11000M	•	1.000	1.250	W	6.546	4.265	2.2813	0.736	ZPGU4S
WBMF11000L	•	1.000	1.250	W	8.296	6.0147	2.2813	0.736	ZPGU4S
WBMF11250S	•	1.250	1.250	W	4.796	2.515	2.2813	0.919	ZPGU5S
WBMF11250M	•	1.250	1.250	W	6.796	4.515	2.2813	0.919	ZPGU5S
WBMF11250L	•	1.250	1.250	W	8.796	6.5147	2.2813	0.919	ZPGU5S

• USA stocked item

Inserts							
 Sumitomo Cat. No.							
	Coated	Dimensions (Inches)					
	ACZ120		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 551-553
for recommended
running parameters**

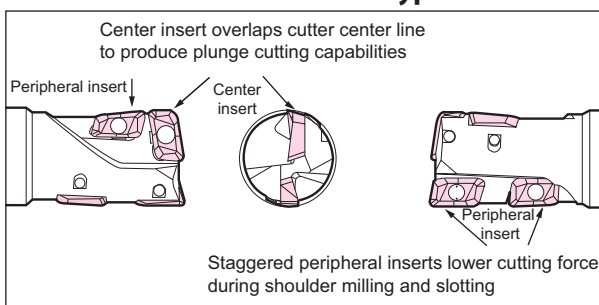




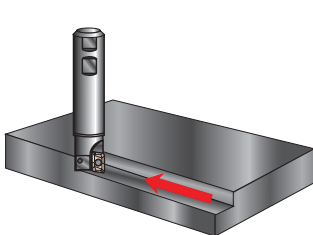
Features & Benefits

- 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

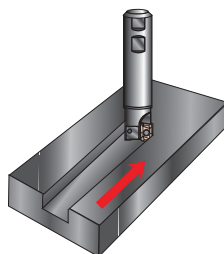
■ Insert orientation of WMM type cutter



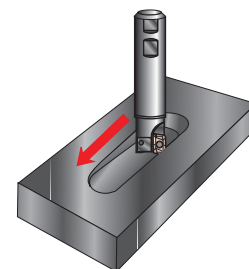
■ Multi-purpose Applications



Shoulder milling

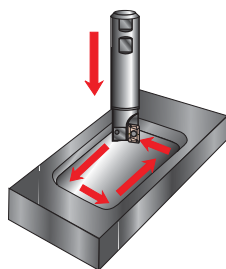


Slotting

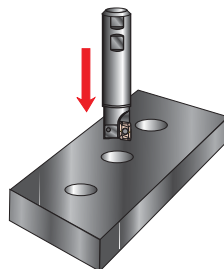


Ramping

Max. depth = effective depth of cut
Ramping Angle = 0~30°

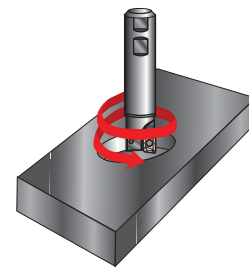


Pocketing



Drilling

Always use step feed (.020"-.040") when drilling. It is recommended that the drill depth is $\leq 0.6D$.



Helical boring
Boring-expanding

- a hole of 1.2-1.8 x diameter without prepared hole
- Helical angle = 0° to 30°

Inch

WMM10000

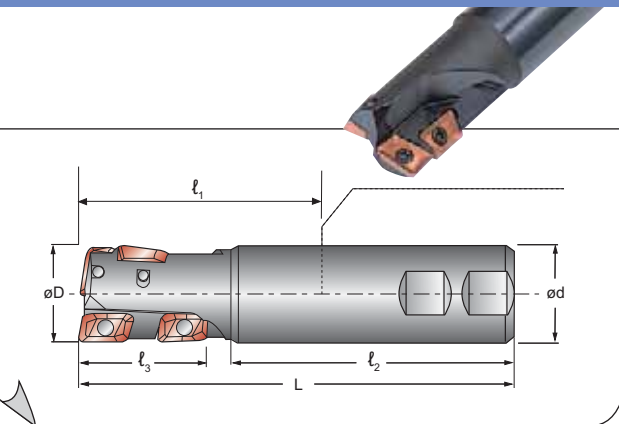
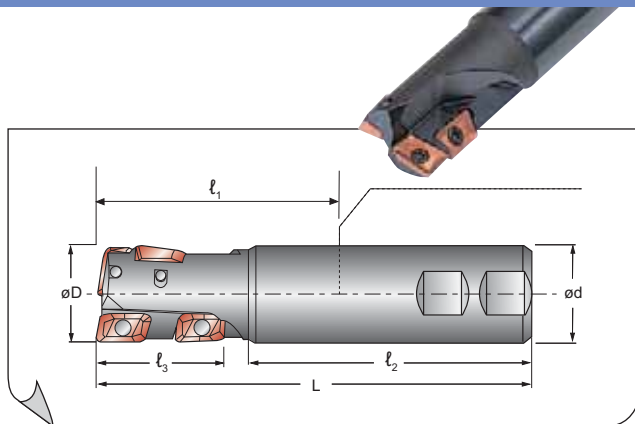
Applicable Insert:

APET10
APMT10

Inch

WMM16000

Applicable Insert:

APET16
APMT16


WMM Endmills

Catalog Number	Stock	Dimensions (Inches)						# of Inserts
		ØD	Ød	L	l ₁	l ₂	l ₃ Max D.O.C.	
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

WMM Endmills

Catalog Number	Stock	Dimensions (Inches)						# of Inserts
		ØD	Ød	L	l ₁	l ₂	l ₃ Max D.O.C.	
WMM16150M	•	1.500	1.250	5.000	2.7394	2.281	1.540	4

- USA stocked item

Inserts

Sumitomo Cat. No.	Coated		Uncoated		Dimensions (Inches)						Fig.
	ACZ310	ACZ330	ACZ350	DL1000	H1	L	W	T	R	Facet Width	
APET103504PDER	•	•	•			0.394	0.250	0.138	0.016	0.0315	1
APET103504PDER-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

Inserts



Sumitomo Cat. No.	Coated		Uncoated		Dimensions (Inches)						Fig.
	ACZ310	ACZ330	ACZ350	DL1000	H1	L	W	T	R	Facet Width	
APET160504PDER-J	•	•	•	•	•	0.630	0.375	0.218	0.016	0.0827	1
APET160508PDER	•	•	•	•	•	0.630	0.375	0.218	0.031	0.071	1
APET160508PDER-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
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.

**See pages 551-553
for recommended
running parameters**



MODULAR TOOLING

Pages 348-353



Table of Contents

Modular Tooling:	Pages
Modular Tools Features & Benefits	349-350
WEX Type	351
WRCX Type.....	352
MSX Type	353

Indexable
Milling

Shoulder
Milling

Face
Milling

High
Feed
Milling

Multi-
purpose

Modular
Tooling

UFO &
SumiMil

Discon-
tinued



Features & Benefits

Exchangeable head endmills are available in 3 types!

1) High Efficiency Endmill

WEX Type: 15 Items

2) Multi-purpose Radius Endmill

WRCX Type: 7 Items

3) Ultra-High Feed Endmill

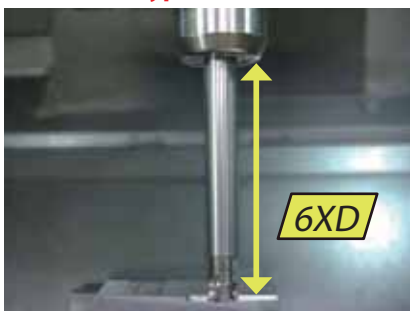
MSX Type: 13 Items

- A wide variety of possible combinations with carbide arbors (16 items) and steel arbors (4 items).

Characteristics

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)



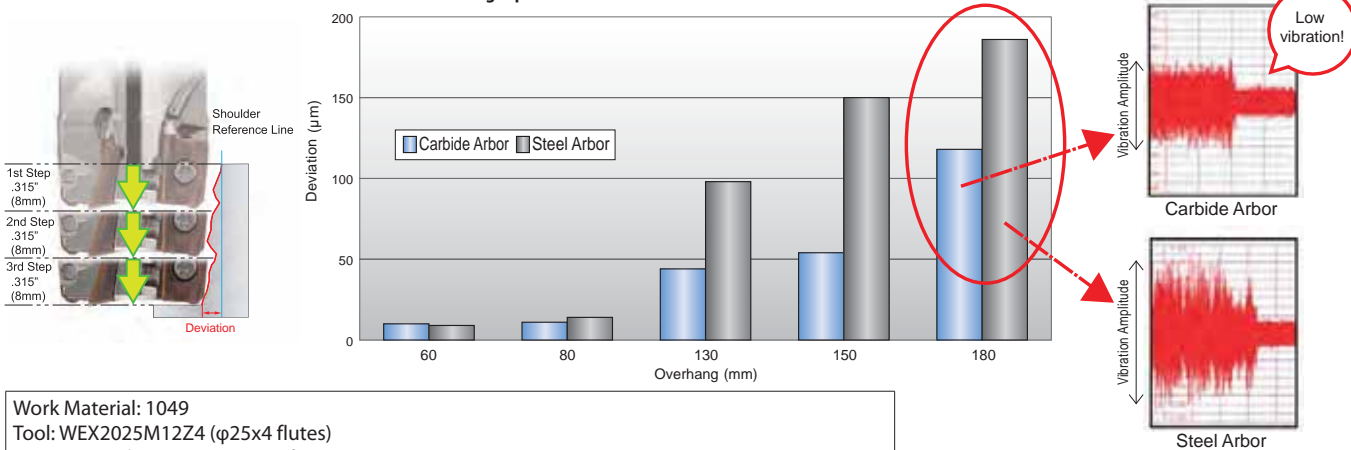
Work Material: 1049
Tool: WEX2025M12Z4 ($\phi 25 \times 4$ flutes)
Cutting Conditions: $v_c=328$ SFM $f_z=0.004$ IPT $a_e=.315"$ mm x 3 D.O.C=.079" Equipment = M/C BT50

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.

Shoulder Milling Squareness



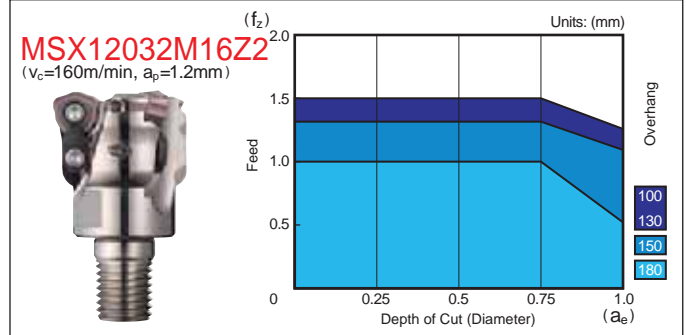
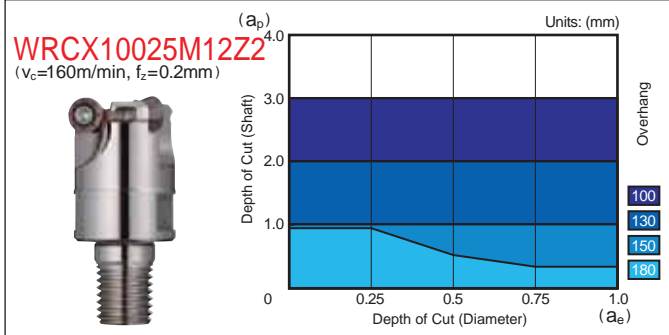
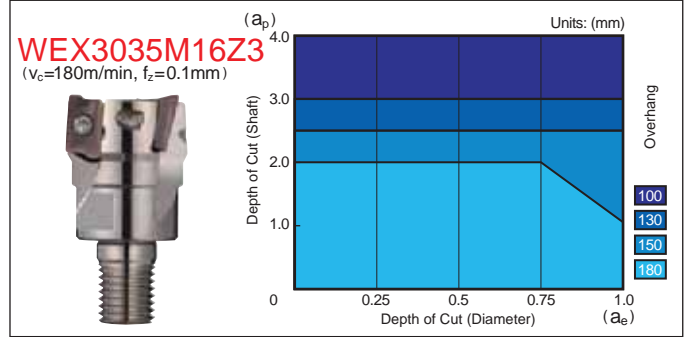
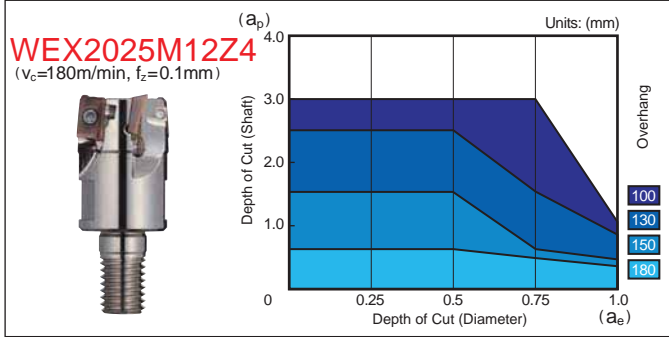
Suitable for milling with long overhangs when combined with carbide or steel arbors

Economically designed exchangeable head!



Application Range

(Work Material: 1049 Equipment: Vertical M/C BT50 Dry)



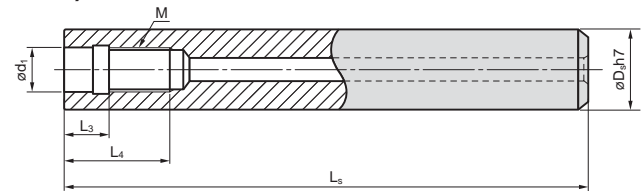
Note: These tables indicate reference machining conditions. Actual machining parameters should be adjusted based on machine rigidity and work clamp rigidity.

SEC-Modular Tools Special Arbors (Carbide Arbors/Steel Arbors)

Carbide Arbors



Steel Arbors



Carbide Arbors							
Catalog Number	Stock	Dimension (mm)					
		M	ød ₁	øDs	L _s	L ₃	L ₅ *
MA15M08L120C	★	M8	8.5	15	120	10	145
MA15M08L160C	★	M8	8.5	15	160	10	185
MA16M08L120C	★	M8	8.5	16	120	10	145
MA16M08L160C	★	M8	8.5	16	160	10	185
MA18M10L150C	★	M10	10.5	18	150	10	180
MA18M10L200C	★	M10	10.5	18	200	10	230
MA20M10L150C	★	M10	10.5	20	150	10	180
MA20M10L200C	★	M10	10.5	20	200	10	230
MA23M12L200C	★	M12	12.5	23	200	10	235
MA23M12L250C	★	M12	12.5	23	250	10	285
MA25M12L200C	★	M12	12.5	25	200	10	235
MA25M12L250C	★	M12	12.5	25	250	10	285
MA28M16L200C	★	M16	17.0	28	200	10	240
MA28M16L300C	★	M16	17.0	28	300	10	340
MA32M16L200C	★	M16	17.0	32	200	10	240
MA32M16L300C	★	M16	17.0	32	300	10	340

★ Worldwide Warehouse Item

Steel Arbors							
Catalog Number	Stock	Dimension (mm)					
		M	ød ₁	øDs	L _s	L ₃	L ₅
MA16M08L120S	★	M8	8.5	16	120	10	145
MA20M10L150S	★	M10	10.5	20	150	10	180
MA25M12L200S	★	M12	12.5	25	200	10	235
MA32M16L200S	★	M16	17.0	32	200	10	240

★ Worldwide Warehouse Item

Endmill Identification

MA 15 M08 L120 C

(1) Cutter Series (2) Shank Diameter (3) Mounting Screw (4) Arbor Length (5) C: Carbide S: Steel

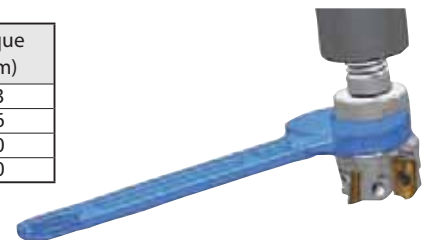
Recommended Tightening Torque (N·m)

*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

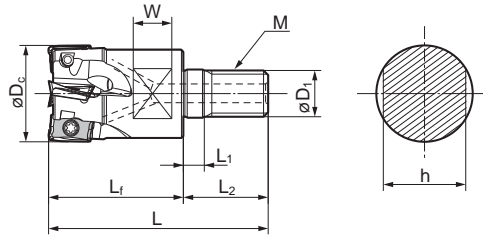
High efficiency, high definition finishing endmill



WEX2000M



WEX3000M

**Modular Head (WEX2000M)**

Catalog Number	Stock	Dimensions (mm)										No. of Teeth
		øD _c	øD ₁	M	L	L _f	L ₁	L ₂	W	h		
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

Inserts (WEX2000M)

Sumitomo Cat. No.	Coated						Dimensions (Inches)					
	ACP100	ACP200	ACP300	ACK200	ACK300	DL1000	L	W	T	R	Facet Width	
	H1											
AXMT123504PEERG	•	•	•	•	•		.472	.260	.138	.016	.061	
AXMT123504PEERH	•	•	•	•	•		.472	.260	.138	.016	.061	
AXMT123504PEERE	•	•	•	•	•		.472	.260	.138	.016	.061	
AXMT123504PEEREH	•	•	•	•	•		.472	.260	.138	.016	.061	
AXMT123508PEERG	•	•	•	•	•		.472	.260	.138	.031	.061	
AXMT123508PEERH	•	•	•	•	•		.472	.260	.138	.031	.061	
AXMT123508PEERE	•	•	•	•	•		.472	.260	.138	.031	.061	
AXMT123508PEEREH	•	•	•	•	•		.472	.260	.138	.031	.061	
AXMT123512PEERG	•	•	•	•	•		.472	.260	.138	.047	.061	
AXMT123512PEERH	•	•	•	•	•		.472	.260	.138	.047	.061	
AXMT123512PEERE	•	•	•	•	•		.472	.260	.138	.047	.061	
AXMT123512PEEREH	•	•	•	•	•		.472	.260	.138	.047	.061	
AXMT123516PEERE	•	•	•	•	•		.472	.260	.138	.063	.061	
AXMT123516PEEREH	•	•	•	•	•		.472	.260	.138	.063	.061	
AXET123502PEFRS						•	.472	.260	.138	.008	.061	
AXET123504PEFRS						•	.472	.260	.138	.016	.061	
AXET123508PEFRS						•	.472	.260	.138	.031	.061	

• USA stocked item

Modular Head Identification**WEX 2016 M08 Z2**

(1) Cutter Series (2) Insert Size (3) Diameter (4) Mounting Screw (5) No. of Flutes

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

Modular Head (WEX3000M)

Catalog Number	Stock	Dimensions (mm)										No. of Teeth
		øD _c	øD ₁	M	L	L _f	L ₁	L ₂	W	h		
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**Inserts (WEX3000M)**

Sumitomo Cat. No.	Coated						Dimensions (Inches)					
	ACP100	ACP200	ACP300	ACK200	ACK300	DL1000	L	W	T	R	Facet Width	
	H1											
AXMT123504PEERG	•	•	•	•	•		.472	.260	.138	.016	.061	
AXMT123504PEERH	•	•	•	•	•		.472	.260	.138	.016	.061	
AXMT123504PEERE	•	•	•	•	•		.472	.260	.138	.016	.061	
AXMT123504PEEREH	•	•	•	•	•		.472	.260	.138	.016	.061	
AXMT123508PEERG	•	•	•	•	•		.472	.260	.138	.031	.061	
AXMT123508PEERH	•	•	•	•	•		.472	.260	.138	.031	.061	
AXMT123508PEERE	•	•	•	•	•		.472	.260	.138	.031	.061	
AXMT123508PEEREH	•	•	•	•	•		.472	.260	.138	.031	.061	
AXMT123512PEERG	•	•	•	•	•		.472	.260	.138	.047	.061	
AXMT123512PEERH	•	•	•	•	•		.472	.260	.138	.047	.061	
AXMT123512PEERE	•	•	•	•	•		.472	.260	.138	.047	.061	
AXMT123512PEEREH	•	•	•	•	•		.472	.260	.138	.047	.061	
AXMT123516PEERE	•	•	•	•	•		.472	.260	.138	.063	.061	
AXMT123516PEEREH	•	•	•	•	•		.472	.260	.138	.063	.061	
AXET123502PEFRS						•	.472	.260	.138	.008	.061	
AXET123504PEFRS						•	.472	.260	.138	.016	.061	
AXET123508PEFRS						•	.472	.260	.138	.031	.061	

• USA stocked item

-G: General Purpose, H: Strong Edge, E/EH: Stainless Steel, S: For Aluminum Alloy

* Cutter body modification is required.

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



WRCX

Milling for steel, stainless steel, cast iron, and non-ferrous alloys



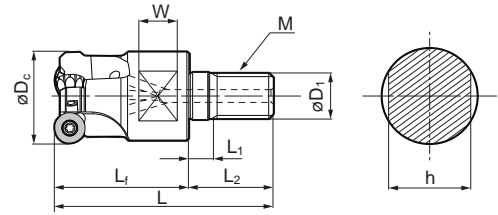
WRCX08000M Type



WRCX10000M Type



WRCX12000M Type



Modular Head (WRCX 08000M)		Applicable Insert A = 8 mm Type									
Catalog Number	Stock	Dimensions (mm)									
		ϕD_c	ϕD_1	M	L	L _f	L ₁	L ₂	W	h	No. of Teeth
WRCX 08020M10Z2	★	20	10.5	M10	49	30	5	19	8	15	2
WRCX 08025M12Z3	★	25	12.5	M12	56	35	5	21	10	19	3

★ Worldwide Warehouse Item

Inserts are not included.

Modular Head (WRCX 10000M)		Applicable Insert A = 10mm Type									
Catalog Number	Stock	Dimensions (mm)									
		ϕD_c	ϕD_1	M	L	L _f	L ₁	L ₂	W	h	No. of Teeth
WRCX 10025M12Z2	★	25	12.5	M12	56	35	5	21	10	19	2
WRCX 10028M12Z2	★	28	12.5	M12	56	35	5	21	10	19	2
WRCX 10030M16Z3	★	30	17.0	M16	63	40	5	23	10	24	3
WRCX 10032M16Z3	★	32	17.0	M16	63	40	5	23	10	24	3

★ Worldwide Warehouse Item

Inserts are not included.

Modular Head (WRCX 12000M)		Applicable Insert A = 12mm Type									
Catalog Number	Stock	Dimensions (mm)									
		ϕD_c	ϕD_1	M	L	L _f	L ₁	L ₂	W	h	No. of Teeth
WRCX 12040M16Z4	★	40	17.0	M16	63	40	5	23	10	24	4

★ Worldwide Warehouse Item

Inserts are not included.

Arbor



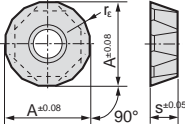
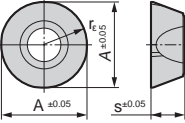
Hardware

Spanner	Screw	Recommended Tightening Torque (N•m)	Applicable Head
TRDR08IP	BFTX02506IP	1.5	WRCX08000M
TRDR15IP	BFTX03584IP	3.0	WRCX10000M
	BFTX0409IP	3.0	WRCX12000M

Modular Head Identification

WRCX 08 020 M10 Z2

(1) Cutter Series (2) Insert Size (3) Diameter (4) Mounting Screw (5) No. of Flutes

Inserts																	
Usage	Catalog Number	Coated Carbide					Carbide	DLC	Dimensions (mm)					Fig.	Applicable Cutters	Fig. 1	
		ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	A	r _e	s						
General Purpose	QPMT 080330 PPEN	★	★	★	★	★	-	-	8	3.0	3.18	1	WRCX08000M	Fig. 1			
	QPMT 080330 PPEN-H	★	★	★	★	★	-	-	8	3.0	3.18	1					
	QPMT 10T335 PPEN	★	★	★	★	★	-	-	10	3.5	3.97	1	WRCX10000M				
	QPMT 10T335 PPEN-H	★	★	★	★	★	-	-	10	3.5	3.97	1					
	QPMT 120440 PPEN	★	★	★	★	★	-	-	12	4.0	4.76	1	WRCX12000M				
	QPMT 120440 PPEN-H	★	★	★	★	★	-	-	12	4.0	4.76	1					
Non-Ferrous Metal	QPET 10T350 PPFR-S	-	-	-	-	-	★	★	10	5.0	3.97	2	WRCX10000M	Fig. 2			
	QPET 120460 PPFR-S	-	-	-	-	-	★	★	12	6.0	4.76	2	WRCX12000M				

★ Worldwide Warehouse Item

Fig. 1

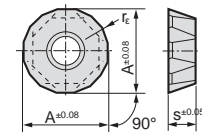
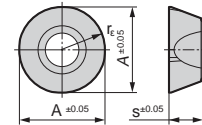


Fig. 2



MSX

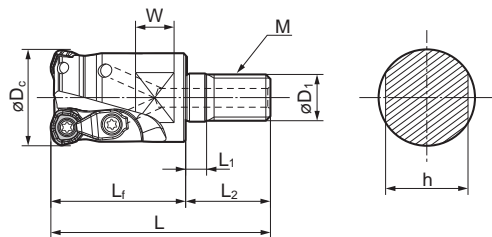
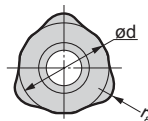
Ultra-high speed, high efficiency machining endmill

MSX0600M Type
(MSX0600M type only with single clamp)

MSX0800M Type



MSX1200M Type

**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	BFTX0306IP	Q	Q	Q	1.5	MSX0600M
	BFTX0306IP	CCH3.5	CR3	BFTX03510IP08	2.0	MSX0800M
TRDR15IP	BFTX0409IP	CCH3.5	CR3	BFTX03510IP15	3.0	MSX1200M

Performance

Tool: MSX12032EM Insert: WDMT1205ZDTR-ACP200

* Actual measurement for an integrated endmill type.

Helical Boring

Work material : 1015
 Cutting Conditions : $v_c=558$ SFM $n=1,700\text{min}^{-1}$ $f_z=.059$ 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 $n=1,500\text{min}^{-1}$ $f_z=.039$ 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)



UFO & SUMIMILL SERIES

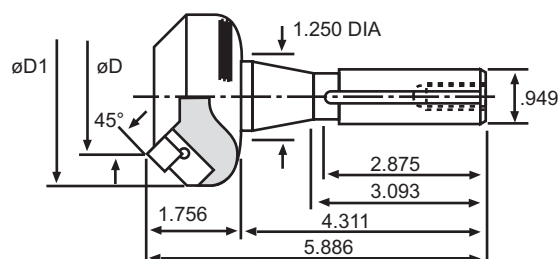
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

Indexable Milling
Shoulder Milling
Face Milling
High Feed Milling
Multi- purpose
Modular Tooling
UFO & SumiMill
Discon- tinued

**■ BODY - BRIDGEPORT SHANK****■ UFO End Mill Series**

Catalog Number	Stock	Dimensions (Inches)		No. of Teeth	Max. D.O.C.	Axial Rake	Radial Rake	Lead Angle	Insert I.C.	Insert Type
		ϕD	ϕD_1							
UFO 420EX-R8	•	2.000	3.000	4	.197	+27°	-7°	45°	.500	SFKN
UFO 425EX-R8	•	2.500	3.406	5						
UFO 430EX-R8	•	3.000	3.953	6						

- USA stocked item

■ Inserts

	<div><div>Figure 1</div></div> <div><div>Figure 2</div></div>																							
	<div><div>Coated</div><div>Cermet</div><div>Uncoated</div></div>												Dimensions (Inches)											
													I.C.	T	Facet Width	Figure								
Sumitomo Cat. No.	ACZ310	ACZ330	ACZ350	ACZ30	AC325	AC211	EH20Z	K245R2	ACK200	ACK300	ACP100	ACP200	ACP300	T250A	TT10A	A30N	G10E	H10E	H1					
SFEN12T3AZFN																								
SFKN12T3AZTN		•	•	•	•						•					•					0.500	0.156	0.088	1
SFKN12T3AZFN	•						•	•	•								•							
SFKR12T3AZEN																								
UW12500R															•				•		0.500	0.156	0.218	2

TN = "T" land

FN = honed

- USA stocked item

■ Hardware

Catalog Number	Locator	Seat	*Insert Clamp	**Locator Clamp	Clamp Screw	Wrench
UFO4 <input type="checkbox"/> 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.

**See pages 551-553
for recommended
running parameters**



UFO "400" Face Mills

Ultra High Positive Face Mill

INDEXABLE SHELL MILLS

UFO SERIES

Applicable Insert: SFEN, SFKN, SFKR, UW



Lead Angle: 45°
Axial Rake Angle: +27°
Radial Rake Angle: -7°

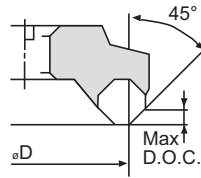


Fig. 1

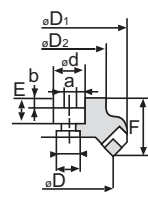


Fig. 2

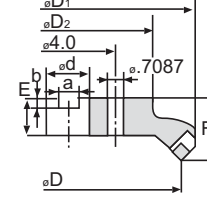
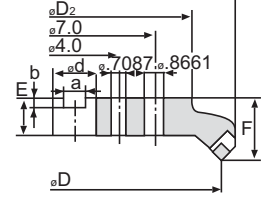


Fig. 3



UFO Fine Pitch Face Mill Series

Catalog Number	Stock		Dimensions (Inches)								No. of Teeth	Max. D.O.C.	Fig.
	R	L	D	D ₁	D ₂	F	d	a	b	E			
UFOF 403R/L	▲		3.000	3.945	2.362	1.969	1.000	.375	.250	1.000	6	.197	1
UFOF 404R/L*	▲		4.000	4.898	2.953	2.362	1.500	.625	.405	1.496	8		
UFOF 405R/L*	▲		5.000	5.843	2.953	2.362	1.500	.625	.405	1.496	10		
UFOF 406R/L**	▲		6.000	6.834	3.937	2.362	2.000	.750	.437	1.496	12		2
UFOF 408R/L	▲		8.000	8.819	5.118	2.362	2.500	1.000	.531	1.496	16		
UFOF 410R/L			10.000	10.803	7.087	2.756	2.500	1.000	.531	1.575	20		3
UFOF 412R/L			12.000	12.756	9.449	2.756	2.500	1.000	.531	1.575	24		

*Requires BFX3/4x16 arbor screw

**Requires BFX1x14 arbor screw

▲ USA limited availability item

Inserts

Sumitomo Cat. No.	Figure 1																Figure 2			
	Coated																Cermet			
	Uncoated																Dimensions (Inches)			
	ACZ310	ACZ330	ACZ350	ACZ370	ACZ390	ACZ410	ACZ430	ACZ450	ACZ470	ACZ490	ACZ510	ACZ530	ACZ550	ACZ570	ACZ590	ACZ610	I.C.	T	Facet Width	Figure
SFEN12T3AZFN																	0.500	0.156	0.088	1
SFKN12T3AZTN																	0.500	0.156	0.088	1
SFKN12T3AZFN																	0.500	0.156	0.088	1
SFKR12T3AZEN																	0.500	0.156	0.218	2
UW12500R																	0.500	0.156	0.218	2

TN = "T" land

FN = honed

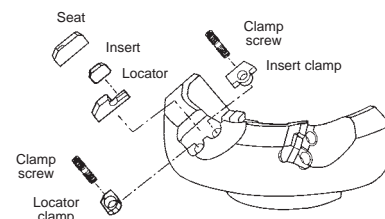
● USA stocked item

Hardware

Catalog Number	Locator	Seat	*Insert Clamp	**Locator Clamp	Clamp Screw	Wrench
UFOF4 □ □ R	UF4KR	UF4SR	UFTWR	UFWWR	WB715T*	TT25
UFOF402L	UF4KL	UF4SLS	UFTWL	UFWWL		
UFOF4 □ □ L		UF4SL				

*Torque specifications for insert clamp screw=49-53 in/lbs.

**Torque specifications for locator clamp screws=62-66 in/lbs.

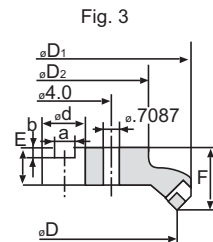
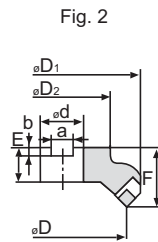
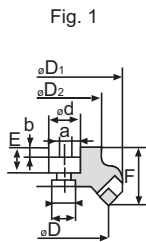
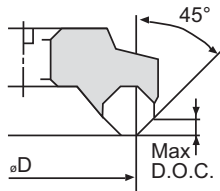


**See pages 551-553
for recommended
running parameters**





*Approach Angle: 45°
 *Axial Rake Angle: +27°
 *Radial Rake Angle: -7°



■ UFO Coarse Pitch Face Mill Series

Catalog Number	Stock		Dimensions (Inches)								No. of Teeth	Max. D.O.C.	Fig.	I.C.
	R	L	D	D ₁	D ₂	F	d	a	b	E				
UFO 402R/L	•		2.000	2.992	1.772	1.969	.750	.321	.200	.787	4	.197	1	.500
UFO 403R/L	•		3.000	3.945	2.362	1.969	1.000	.375	.250	1.000	4			
UFO 404R/L *	•		4.000	4.898	2.953	2.362	1.500	.625	.405	1.496	5			
UFO 405R/L *	•		5.000	5.843	2.953	2.362	1.500	.625	.405	1.496	6			
UFO 406R/L **	•		6.000	6.834	3.937	2.362	2.000	.750	.437	1.496	8			
UFO 408R/L			8.000	8.819	5.118	2.362	2.500	1.000	.531	1.496	10			
UFO 410R/L			10.000	10.803	7.087	2.756	2.500	1.000	.531	1.575	12		3	
UFO 412R/L			12.000	12.756	9.449	2.756	2.500	1.000	.531	1.575	14			
UFO 503R/L	•		3.000	3.945	2.362	1.969	1.000	.375	.250	1.000	4	.276	1	.625
UFO 504R/L *	•		4.000	4.898	2.953	2.362	1.500	.625	.405	1.496	5			
UFO 505R/L *	•		5.000	5.843	2.953	2.362	1.500	.625	.405	1.496	6			
UFO 506R/L **	•		6.000	6.834	3.937	2.362	2.000	.750	.437	1.496	8			
UFO 508R/L	•		8.000	8.819	5.118	2.362	2.500	1.000	.531	1.496	10			
UFO 510R/L	•		10.000	10.803	7.087	2.756	2.500	1.000	.531	1.575	12			
UFO 512R/L	•		12.000	12.756	9.449	2.756	2.500	1.000	.531	1.575	14		3	

*Requires BFX3/4x16 arbor screw

**Requires BFX1x14 arbor screw

• USA stocked item

■ Inserts

Sumitomo Cat. No.	Coated											Cermets				Uncoated				Dimensions (Inches)			
	ACZ310	ACZ330	ACZ350	ACZ30	ACZ35	ACZ11	EH20Z	K245R2	ACK200	ACK300	ACPT100	ACPT200	ACPT300	T250A	T110A	A30N	G10E	H10E	H1	I.C.	T	Facet Width	Figure
SFEN12T3AZFN																				0.500	0.156	0.088	1
SFKN12T3AZTN																				0.500	0.156	0.088	1
SFKN12T3AZFN																				0.500	0.156	0.088	1
SFKR12T3AZEN																				0.500	0.156	0.088	1
SFKN1504AZTN																				0.625	0.1875	0.088	1
SFKN1504AZFN																				0.625	0.1875	0.088	1
UW12500R																				0.500	0.156	0.218	2

TN = "T" land

FN = honed

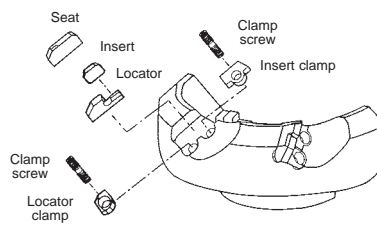
• USA stocked item

■ Hardware

Catalog Number	Locator	Seat	*Insert Clamp	**Locator Clamp	Clamp Screw	Wrench
UFO402R	UF4KR	UF4SRS	UFTWR	UFKWR	WB715T	TT25
UFO402L	UF4KL	UF4SLS	UFTWL	UFKWL	WB715T	TT25
UFO402L	UF4KL	UF4SL	UFTWL	UFKWL	WB715T	TT25
UFO505R	UF5KR	UF5SR	UFTWR	UFKWR	WB715T	TT25
UFO505L	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.



**See pages 551-553
for recommended
running parameters**



UFOR "600" Face Mills

Ultra High Positive Face Mill

INDEXABLE SHELL MILLS

UFO SERIES

Applicable Insert: RGMN



Axial Rake Angle: +25°
Radial Rake Angle: +10°

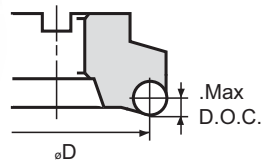


Fig. 1

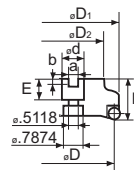
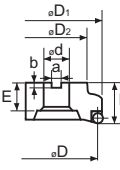


Fig. 2



UFOR Face Mill Series

Catalog Number	Stock	Dimensions (Inches)								No. of Teeth	Max. D.O.C.
		D	D ₁	D ₂	F	d	a	b	E		
UFOR 603R	•	3	3.807	2.362	1.969	1.000	.375	.250	1.000	4	.375
UFOR 604R	•	4	4.748	2.953	2.362	1.500	.625	.405	1.496	5	
UFOR 605R	•	5	5.712	2.953	2.362	1.500	.625	.405	1.496	6	

- USA stocked item

Inserts

Sumitomo Cat. No.	Coated	Dimensions	
		Insert Dia.	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 stocked item
- ▲ USA limited availability item

Hardware

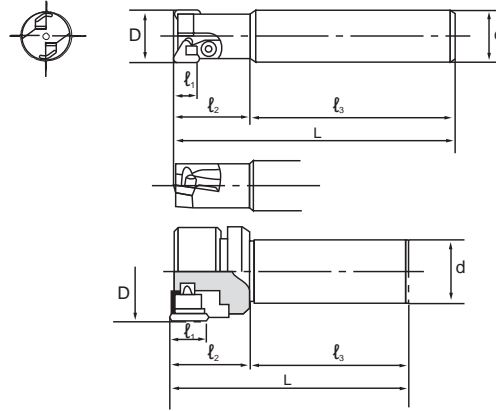
Catalog Number	Locator	Insert Clamp	Locator Screw**	Insert Screw*	Wrench
UFOR6 □ □ R	GRKR	GRWR	BH0410T	WB8-20	TH040 TRD15

*Torque specifications for insert clamp screw=58-62 in/lbs.

**Torque specifications for locator clamp screws=35-40 in/lbs.

**See pages 551-553
for recommended
running parameters**



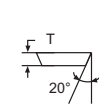


CHE Shoulder Mills**Positive Shoulder Mill****CHE Bridgeport Shank Series**

Catalog Number	Stock	Dimensions (Inches)						No. of Teeth	Cutting Angle			Insert I.C.
		Nom. Dia.	Shank Dia.	Overall Length	Cutting Edge Length	Thickness	Shank Length		Axial	Radial	Lead	
		D	d	L	ℓ ₁	ℓ ₂	ℓ ₃					
CHE3-1250RR8	▲	1.250	.949	5.875	.500	2.781	3.093	2	15°	-2°	0°	.375
CHE3-1500RR8	▲	1.500	.949	5.875	.500	2.781	3.093	2	15°	-1°	0°	.500
CHE4-2000RR8	▲	2.000	.949	5.875	.750	2.781	3.093	3	15°	2°	0°	.500

▲ USA limited availability item

Inserts








	<div><div>Figure 1</div></div> <div><div>Figure 2</div></div>												Dimensions (Inches)				
	Coated			Cermet		Uncoated		PCD		I.C.	T	Figure					
	AC230	AC325	AC211	T250A			A30N	G10E	H1				DA2200	DA150	DA1000		
Sumitomo Cat. No.																	
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

• USA stocked item

**See pages 551-553
for recommended
running parameters**

Hardware

							
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



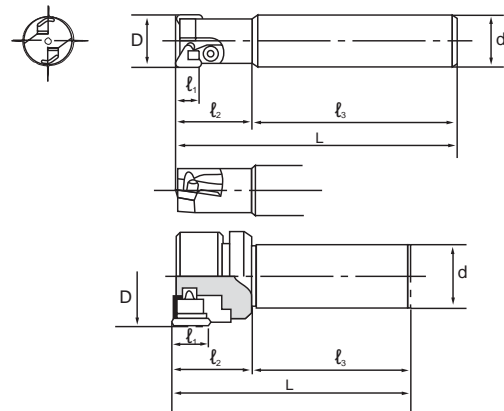
CHE Shoulder Mills

Positive Shoulder Mill

INDEXABLE ENDMILLS

SUMIMILL SERIES

Applicable Insert: TECN, TEEN, NF-TEEN, TEKN



CHE Weldon Shank Series

Catalog Number	Stock	Dimensions (Inches)						No. of Teeth	Cutting Angle			Insert I.C.
		Nom. Dia.	Shank Dia.	Overall Length	Cutting Edge Length	Thickness	Shank Length		Axial	Radial	Lead	
		D	d	L	l ₁	l ₂	l ₃					
CHE2-0625RW	▲	.625	.625	3.484	.312	1.000	2.484	1	6°	-3°	0°	.250
CHE2-0750RW	▲	.750	.750	3.484	.312	1.187	2.500	1	8°	-2°	0°	.250
CHE2-0875RW	▲	.875	.750	3.687	.312	1.187	2.500	2	12°	-1°	0°	.250
CHE2-1000RW	▲	1.000	1.000	4.375	.312	1.375	3.000	2	15°	-1°	0°	.250
CHE2-1125RW	▲	1.125	1.000	4.375	.312	1.375	3.000	2	15°	0°	0°	.250
CHE3-1250RW	▲	1.250	1.250	4.562	.500	1.562	3.000	2	15°	-2°	0°	.375
CHE3-1500RW	▲	1.500	1.250	4.562	.500	1.562	3.000	2	15°	-1°	0°	.375
CHE4-2000RW	▲	2.000	1.250	4.562	.750	1.562	3.000	3	15°	2°	0°	.500

▲ USA limited availability item

Inserts








Sumitomo Cat. No.	Figure 1										Figure 2		
	I.C.										I.C.		
	20°										20°		
	Coated		Cermet		Uncoated		PCD		Dimensions (Inches)				Figure
	AC230	AC325	AC211	T250A	A30N	G10E	H1	DA2200	DA150	DA1000	I.C.	T	
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

● USA stocked item

**See pages 551-553
for recommended
running parameters**

Hardware

							
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





- *Lead Angle: 25°
 *Axial Rake Angle: +18°
 *Radial Rake Angle: -2°

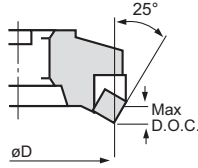


Fig. 1

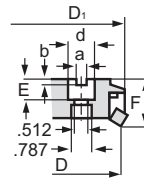


Fig. 2

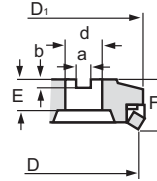
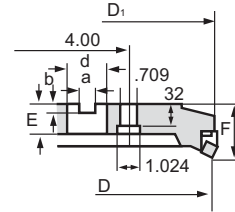


Fig. 3

**APG Face Mill Series**


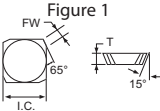
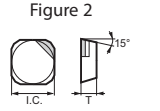
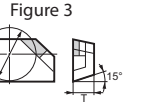
Catalog Number	Stock	Dimensions (Inches)							No. of Teeth	Max. D.O.C.	Fig.	I.C.
		D	D ₁	F	d	a	b	E				
APG403R	•	3.000	3.413	1.969	1.000	.375	.250	1.000	5	.275	1	.500
APG404R*	•	4.000	4.381	2.362	1.500	.625	.406	1.496	5	.275	2	.500
APG405R*	•	5.000	5.360	2.362	1.500	.625	.406	1.496	6	.275	2	.500
APG406R**	•	6.000	6.346	2.362	2.000	.750	.437	1.496	8	.275	2	.500
APG408R	•	8.000	8.327	2.756	2.500	1.000	.562	1.496	10	.275	3	.500

*Requires BFX3/4x16 arbor screw

**Requires BFX1x14 arbor screw

• USA stocked item

Inserts

	<div><div>Figure 1</div></div> <div><div>Figure 2</div></div> <div><div>Figure 3</div></div>																
	Coated		Uncoated				PCD				Dimensions (Inches)						
Sumitomo Cat. No.	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

DNF Face Mill Series

Double Negative Face Mill

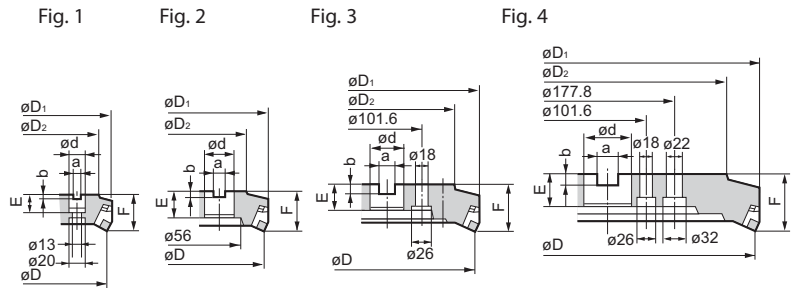
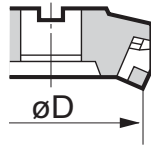
INDEXABLE ENDMILLS

SUMIMILL SERIES

Applicable Insert: CSNH, SNG, SNMN, NW



Lead Angle: 25°
Axial Rake Angle: -5°
Radial Rake Angle: -6°



DNF Face Mill Series													
Catalog Number	Stock	Dimensions (Inches)								No. of Teeth	Max. D.O.C.	Weight (kg)	Fig.
		D	D ₁	D ₂	F	d	a	b	E				
DNF 4080R	▲	3.150	3.780	2.362	1.969	1.000	0.375	0.236	0.985	6	.250	1.8	1
DNF 4100R	▲	3.937	4.567	2.953	2.362	1.250	0.500	0.315	1.260	8		3.0	2
DNF 4125R*	▲	4.921	5.551	2.953	2.362	1.500	0.625	0.394	1.496	10		4.3	3
DNF 4160R**	▲	6.300	6.930	3.937	2.362	2.000	0.750	0.433	1.496	12		6.8	4

*Requires BFX3/4x16 arbor screw

**Requires BFX1x14 arbor screw

▲ USA limited availability item

Inserts													
Sumitomo Cat. No.	Figure 1								Figure 2				
	Coated								Cermet				
	Uncoated								CBN				
	Dimensions (Inches)								Figure 3				
	I.C.								Facet Width				
	Figure								Figure				
CSNH43M	•	•	•	•	•	•	•	•	0.500	0.189	—	0.500	1
SNG432	▲	•	•	•	•	•	•	•	0.500	0.1875	0.0312	—	2
SNG433	•	•	•	•	•	•	•	•	0.500	0.1875	0.0469	—	2
SNG434	•	•	•	•	•	•	•	•	0.500	0.1875	0.0625	—	2
SNMN433	•	•	•	•	•	•	•	•	0.500	0.1875	0.0469	—	3
NW100*	•	•	•	•	•	•	•	•	—	0.197	—	—	3

• USA stocked item

▲ USA limited availability item

*Wiper requires LNF40R cartridge

Hardware					
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.

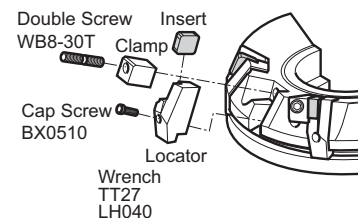
Torque specifications for insert clamp (WB830T)= 57-62 in/lbs.

DNF Milling Cutter

■ Features and Benefits

- Double negative rake angles provide high cutting edge strength
- Up to eight indexes per cutter load

**See pages 551-553
for recommended
running parameters**





- *Lead Angle: 0°
 *Axial Rake Angle: +15°
 *Radial Rake Angle: +4° to +6°

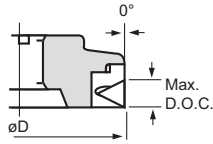


Fig. 1

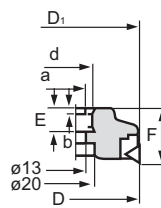


Fig. 2

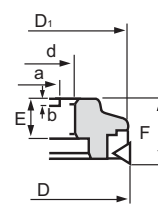
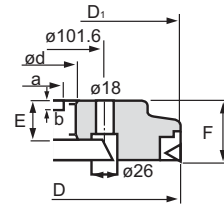


Fig. 3

**CHG Face Mill Series**

Catalog Number	Stock	Dimensions (Inches)							Radial Angle	No. of Teeth	Max. D.O.C.	Fig.	I.C.
		D	D ₁	F	d	a	b	E					
CHG403R	▲	3.000	3.000	1.969	1.000	.375	.250	1.22	4°	4	.630	1	.500
CHG404R*	▲	4.000	4.000	2.480	1.250	.500	.343	1.26	5°	5	.630	2	.500
CHG405R*	▲	5.000	5.000	2.480	1.500	.625	.406	1.496	5°	6	.630	2	.500
CHG406R**	▲	6.000	6.000	2.480	2.000	.750	.562	1.496	6°	8	.630	2	.500
CHG408R	▲	8.000	8.000	2.480	2.500	1.000	.531	1.496	6°	10	.630	3	.500

*Requires BFX3/4x16 arbor screw

**Requires BFX1x14 arbor screw

▲ USA limited availability item

Inserts







Sumitomo Cat. No.	Coated										Dimensions (Inches)			Figure
	AC230	AC325	AC211	T250A	A30N	G10E	H1	DA2200	DA150	DA1000	I.C.	T		
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

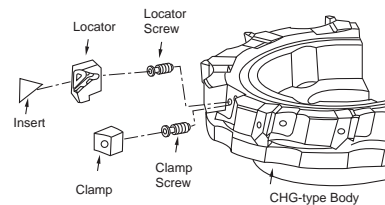
"T" denotes inserts with a T-Land.

• USA stocked item

**See pages 551-553
for recommended
running parameters**

Hardware

									
Catalog Number	Locator	Clamp	Clamp Bolt	Locator Screw	Clamp Wrench	Locator Wrench			
CHG403R	LCH4R	CHWR	FBX0811	FBH0512	TH040	TH030			
CHG404R									
CHG405R			FBX0817						
CHG406R									
CHG408R									



CPG 400 & 500 Face Mill Series

Square Shoulder Face Mill

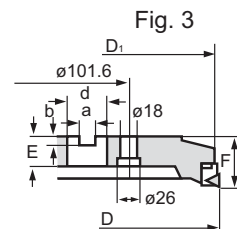
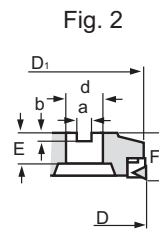
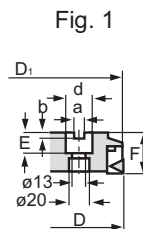
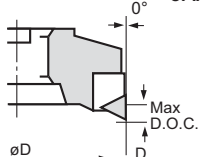
INDEXABLE SHELLMILLS

SUMIMILL SERIES

Applicable Insert: TPCH, TPG, TPMN



- *Lead Angle: 0°
- *Axial Rake Angle: +6°
- *Radial Rake Angle: 0°, 2° for 5XX Series



CPG Face Mill Series


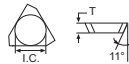
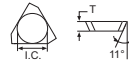
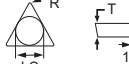
Catalog Number	Stock	Dimensions (Inches)							No. of Teeth	Max. D.O.C.	Fig.	I.C.
		D	D ₁	F	d	a	b	E				
CPG504R*	▲	4.000	4.000	2.362	1.500	0.625	0.406	1.781	5	.700	1	.625
CPG505R*	▲	5.000	5.000	2.362	1.500	0.625	0.406	1.781	6		2	
CPG506R**	▲	6.000	6.000	2.362	2.000	0.750	0.437	1.781	8		3	
CPG508R	▲	8.000	8.000	2.362	2.500	1.000	0.531	1.781	10	.630	1	.500
CPG03R	▲	3.150	3.150	1.969	1.000	0.375	0.234	0.984	5		2	
CPG04R*	▲	4.331	4.331	2.362	1.500	0.625	0.390	1.781	6		1	
CPG05R*	▲	4.921	4.921	2.362	1.500	0.625	0.390	1.781	8		2	
CPG06R**	▲	6.299	6.299	2.362	2.000	0.750	0.437	1.781	10			

*Requires BFX3/4x16 arbor screw

**Requires BFX1x14 arbor screw

▲ USA limited availability item

Inserts

	Figure 1										Figure 2				Figure 3			
																		
	Coated		Cermet		Uncoated				Dimensions (Inches)									
Sumitomo Cat. No.	AC230	AC325	AC211	EH20Z	T250A				A30N	G10E			I.C.	T		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	0.0156		3		
TPG432		•		•					★	•			0.500	0.0312		3		
TPG433	▲		▲										0.500	0.0469		3		
TPMN431		•							★				0.500	0.0156		3		
TPMN432		•							•				0.500	0.0312		3		
TPMN433		▲								•			0.500	0.0469		3		
TPMN434									★				0.500	0.0625		3		

"T" denotes inserts with a T-Land.

• USA stocked item

★ Worldwide Warehouse item

▲ USA limited availability item

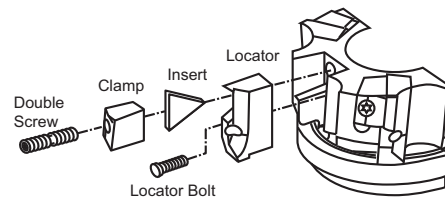
Hardware for 400 Series

Catalog Number	Locator	Clamp	Clamp Bolt	Locator Bolt	Wrench
CPG03R		PTW40R			TT27
CPG04R	LCP40R		WB8-24T	BX0510	
CPG05R		PTW41R			LH040
CPG06R					

Hardware for 500 Series

Catalog Number	Locator	Clamp	Clamp Bolt	Locator Bolt	Wrench	Wrench
CPG504R		PTW50R				
CPG505R						
CPG506R	LCP50R		WB8-24T	BH0408	TT27	TT25
CPG508R		PTW51R				
CPG510R						

See pages 551-553
for recommended
running parameters





- *Lead Angle: 15°
 *Axial Rake Angle: +8°
 *Radial Rake Angle: 0°

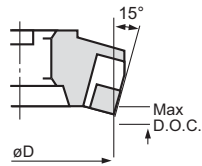


Fig. 1

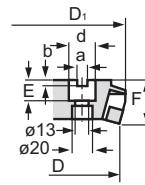


Fig. 2

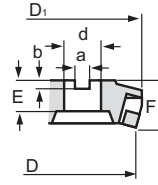
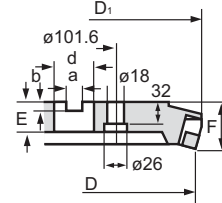


Fig. 3

**DPG 400 Face Mill Series**

Catalog Number	Stock	Dimensions (Inches)							No. of Teeth	Max. D.O.C.	Fig.	I.C.
		D	D ₁	F	d	a	b	E				
DPG403R	▲	3.125	3.54	1.969	1.000	0.375	0.250	1.000	4	.445	1	.500
DPG404R*	▲	4.500	4.84	2.362	1.500	0.625	0.406	1.500	5		2	
DPG406R**	▲	6.125	6.57	2.362	2.000	0.750	0.437	1.500	8		3	
DPG408R	▲	8.000	8.30	2.756	2.000	1.000	1.625	1.500	10			
DPG410R	▲	10.000	10.20	2.756	2.000	1.000	1.625	1.575	12			
DPG412R	▲	12.500	12.80	2.756	2.000	1.000	1.625	1.575	14			

*Requires BFX3/4x16 arbor screw

**Requires BFX1x14 arbor screw

▲ USA limited availability item

Inserts

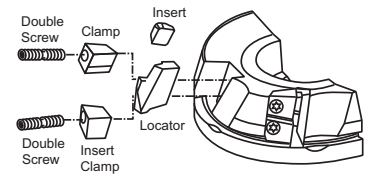
Sumitomo Cat. No.	Coated			Uncoated			Ceramic			Dimensions (Inches)				Figure
	ACZ310	AC230	AC325	AC211	EH20Z	A30N	G10E	NS260		I.C.	T	Facet Width	R	
SPCH42R	•		•							0.500	0.125	0.125	N/A	1
SPCH42TR	•													
SPG421						•							0.0156	
SPG422			▲		•	▲							0.0312	
SPG423					▲								0.0469	
SPMN421						▲				0.500	0.125	N/A	0.0156	2
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 stocked item

★ Worldwide Warehouse item

▲ USA limited availability item

**Hardware**

Catalog Number	Locator	Locator Clamp	Insert Clamp	Clamp Bolt	Wrench
DPG403R	GL40R	GLW40R	GTW40R	WB830T	TT27
DPG404R		GLW41R	GTW41R	WB824T	
DPG406R					
DPG408R					
DPG410R		GLW42R	GTW42R	WB830T	
DPG412R					

Torque specifications for locator clamp (WB830T)=71-75 in/lbs.

Torque specifications for insert clamp (WB830T)=57-62 in/lbs.

**See pages 551-553
 for recommended
 running parameters**





*Lead Angle: 15°
*Axial Rake Angle: +8°
*Radial Rake Angle: 0°

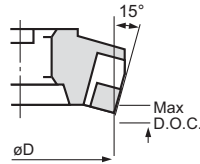


Fig. 1

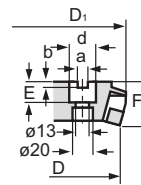


Fig. 2

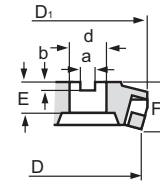
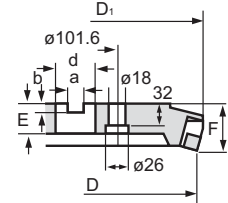


Fig. 3



DPG 500 Face Mill Series


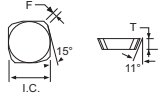
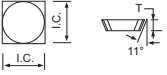
Catalog Number	Stock	Dimensions (Inches)							No. of Teeth	Max. D.O.C.	Fig.	I.C.
		D	D ₁	F	d	a	b	E				
DPG503R	▲	3.250	3.540	1.988	1.000	0.375	0.250	1.000	4	.563	1	.625
DPG504R*	▲	4.500	4.840	2.382	1.500	0.625	0.406	1.500	5		2	
DPG506R**	▲	6.250	6.570	2.382	2.000	0.750	0.437	1.500	8		3	
DPG508R	▲	8.000	8.300	2.776	2.000	0.750	1.625	1.500	10			
DPG510R	▲	10.000	10.200	2.776	2.000	1.000	1.625	1.575	12			
DPG512R	▲	12.500	12.800	2.776	2.000	1.000	1.625	1.575	14			

*Requires BFX3/4x16 arbor screw

**Requires BFX1x14 arbor screw

▲ USA limited availability item

Inserts

	Figure 1										Figure 2				
															
	Coated		Uncoated		Ceramic		Dimensions (Inches)								
Sumitomo Cat. No.	ACZ310	AC230	AC325	AC211	EH20Z	A30N	G10E	NS30	NS260	I.C.	T	Facet Width	R	Figure	
SPCH53TR			▲			•				0.625	0.1875	0.1875	N/A	1	
SPCH53TRR			•							0.625	0.1875	0.0469	N/A	2	
SPMN533			▲			• ★				0.625	0.1875	0.0469	N/A	2	

"T" denotes inserts with a T-Land.

• USA stocked item

★ Worldwide Warehouse item

▲ USA limited availability item

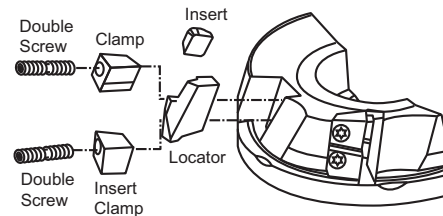
**See pages 551-553
for recommended
running parameters**

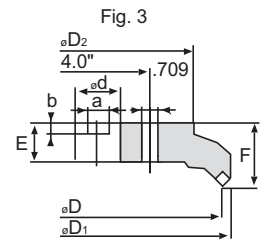
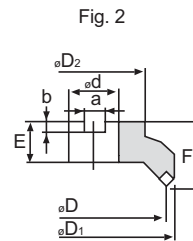
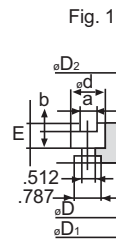
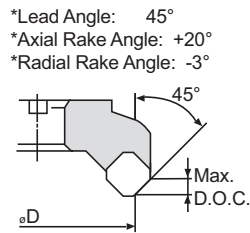
Hardware

Catalog Number	Locator	Locator Clamp	Insert Clamp	Clamp Bolt	Wrench
DPG503R	GL50R	GLW50R	GTW50R	WB830T	TT27
DPG504R		GLW51R	GTW51R	WB824T	
DPG506R					
DPG508R					
DPG510R		GLW52R	GTW52R	WB830T	
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**

Catalog Number	Stock	Dimensions (Inches)								No. of Teeth	Max. D.O.C.	Weight (lbs.)	Figure	I.C.
		D	D ₁	D ₂	F	d	a	b	E					
EHG403R	•	3.000	3.591	2.362	1.969	1.000	0.375	0.750	1.000	4	.219	2.87	1	.500
EHG404R*	•	4.000	4.551	2.953	2.362	1.500	0.625	0.406	1.496	5		5.95		
EHG405R*	•	5.000	5.509	2.953	2.362	1.500	0.625	0.406	1.496	6		7.72	2	
EHG406R**	•	6.000	6.472	3.937	2.362	2.000	0.750	0.437	1.496	8		12.13		
EHG408R	•	8.000	8.465	5.118	2.362	2.500	1.000	0.531	1.496	10		16.09	3	

*Requires BFX3/4x16 arbor screw

**Requires BFX1x14 arbor screw

• USA stocked item

Inserts





Sumitomo Cat. No.	Coated										Cermet					Uncoated					Dimensions (in)				
	ACZ310	ACZ330	ACZ350	ACZ30	ACZ35	ACZ11	EH20Z	T250A			A30	A30N	G10E								I.C.	T	R	Facet Width	Fig.
SEKN42M	•																				0.500	0.125	N/A	0.0625	1
SEKN42MT		•	•	•	•			•				•									0.625	0.1875			
SEKN53M	•																								
SEKN53MT		•	•	•	•			•				•													
SEMR42M					•																0.500	0.125	0.0312	N/A	2
SEC422						•						•		•											

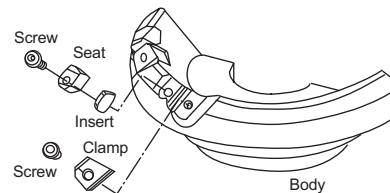
"M" denotes honed inserts

"MT" denotes inserts with a T-Land

• USA stocked item

Hardware

				
Catalog Number	Seat	Clamp	Clamp & Locator Screw	Wrench
EHG4 □ □	EHK4R	EHW4R	EHBX0512	TH040



**See pages 551-553
for recommended
running parameters**



FPG 400 & 500 Face Mill Series

Negative Positive Face Mill

INDEXABLE SHELLMILLS

SUMIMILL SERIES

Applicable Insert: SDKN



- *Lead Angle 45°
- *Axial Rake Angle: 15°
- *Radial Rake Angle: -4°

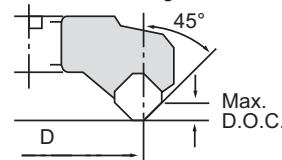


Fig. 1

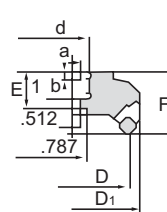


Fig. 2

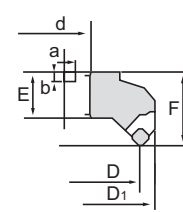
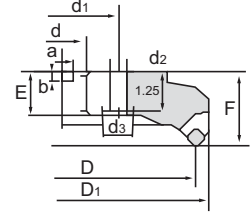


Fig. 3



FPG 400 & 500 Face Mill Series

Catalog Number	Stock		Dimensions (Inches)										No. of Teeth	Max. D.O.C.	Figure	I.C.
	R	L	D	D ₁	F	d	d ₁	d ₂	d ₃	a	b	E				
FPG403R	▲		3.000	3.921	1.969	1.000	—	—	—	0.375	0.250	1.000	4	.250	1	.500
FPG404R*	▲		4.000	4.874	2.362	1.500	—	—	—	0.625	0.406	1.500	5		2	
FPG405R*	▲		5.000	5.843	2.362	1.500	—	—	—	0.625	0.406	1.500	6		3	
FPG406R**	▲		6.000	6.811	2.362	2.000	—	—	—	0.750	0.437	1.500	8		3	
FPG408R	▲		8.000	8.835	2.362	2.500	4.000	.709	1.024	1.000	0.531	1.500	10		3	
FPG410R/L	▲	▲	10.000	10.811	2.756	2.500	4.000	.709	1.024	1.000	0.531	1.750	12		3	
FPG412R	▲		12.000	12.795	2.756	2.500	4.000	.709	1.024	1.000	0.531	1.750	14	.328	1	.625
FPG503R	▲		3.000	3.921	1.969	1.000	—	—	—	0.375	0.250	1.000	4		2	
FPG504R*	▲		4.000	4.874	2.362	1.500	—	—	—	0.625	0.406	1.500	5		2	
FPG505R*	▲		5.000	5.843	2.362	1.500	—	—	—	0.625	0.406	1.500	6		2	
FPG506R**	▲		6.000	6.811	2.362	2.000	—	—	—	0.750	0.437	1.500	8		2	
FPG508R	▲		8.000	8.835	2.362	2.500	4.000	.709	1.024	1.000	0.531	1.500	10		3	
FPG510R	▲		10.000	10.811	2.756	2.500	4.000	.709	1.024	1.000	0.531	1.750	12		3	
FPG512R	▲		12.000	12.795	2.756	2.500	4.000	.709	1.024	1.000	0.531	1.750	14		3	

FPG Cutters accommodate either .500" or .625" I.C. inserts by using the appropriate Locator.

*Requires BFX3/4x16 arbor screw

**Requires BFX1x14 arbor screw

▲ USA limited availability item

Inserts

Sumitomo Cat. No.	Coated										Dimensions (in)		
	ACZ310	ACZ330	ACZ350	ACZ370	ACZ390	ACZ410	ACZ430	ACZ450	ACZ470	ACZ490	I.C.	T	Facet Width
SDKN42M	●										0.500	0.125	0.0781
SDKN42MT		●	●	●	●	●	●	●	●	●	0.500	0.125	
SDKN53M											0.625	0.1875	
SDKN53MT		●	●	●	●	●	●	●	●	●	0.625	0.1875	

"M" denotes honed inserts

"MT" denotes inserts with a T-Land

● USA stocked item

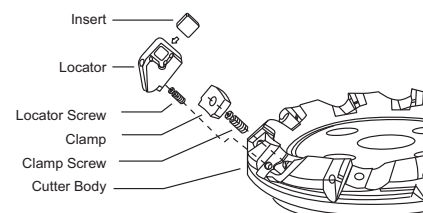
▲ USA limited availability item

Hardware

Catalog Number	Locator	Clamp	Clamp Screw**	Locator Screw*	Clamp Wrench	Locator Wrench
FPG4 □ □ R	LFP4R	FPWR	FBX0817	FBH0512	TH040	TH030
FPG5 □ □ R	LFP5R	FPWR	FBX0817	FBH0512	TH040	TH030

*Torque specification for FBH0512=58-62 in/lbs.

**Torque specification for FBX0817=44-49 in/lbs.





See pages 551-553
for recommended
running parameters





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.

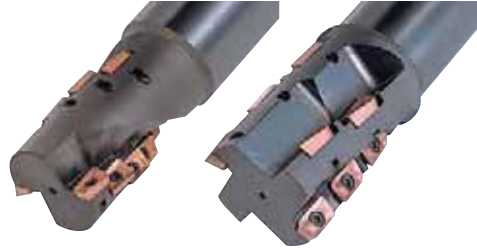
Hardware		
		
Catalog Number	Screw	Wrench
WMM10□□□M	BFTX02506N	TRD08



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


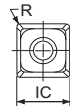
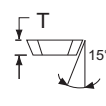
Torque specifications for BFTX02506N insert screw=10-14 inch/lbs.

Hardware		
		
Catalog Number	Screw	Wrench
WRM16□□□M	BFTX03588	TRD15






Torque specifications for BFTX03588 insert screw=27-31 inch/lbs.

WFM 400/500



Inserts															
															
						Coated			Uncoated			Dimensions (Inches)			
		AC230	ACZ310	ACZ330	ACZ350	K245R2	G10E						I.C.	T	R
Sumitomo Cat. No.															
XDMT120408PDEN	•	•	•	•	•	•						0.500	0.1875	0.031	
XDMT120408PDENH	•	•	•	•	•	•						0.500	0.1875	0.031	
XDMT150408PDEN	•	•	•	•	•	•						0.625	0.1875	0.031	

• USA stocked item

Hardware					
					
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

SOLID CARBIDE ENDMILLS

Pages 370-380



Endmill Series

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UPmill SERIES	CAT. NO.
4 Flutes	<p>SSUP412Z</p> <p># Flutes ——— ↑ ——— Coated</p> <p>12/64" Dia.</p>
<ul style="list-style-type: none"> • Single End • Square Nose • Right-hand high helix design 	
<ul style="list-style-type: none"> • High Rigidity • Center Cutting • Excellent Chip Control • For General Applications • TiAlN Coating • Excellent Surface Finishes 	

SSI SERIES	HSI SERIES	CAT. NO.
2 Flutes	4 Flutes	High Spiral 3 Flutes
<ul style="list-style-type: none"> • Single End • Square Nose • Right-hand 30° Spiral Flutes 	<ul style="list-style-type: none"> • Single End • Square Nose • Right-hand 30° Spiral Flutes 	<ul style="list-style-type: none"> • Single End • Square Nose • Right-hand 60° Spiral Flutes
<ul style="list-style-type: none"> • High Rigidity • Smooth Chip Control • Close Tolerance dimensions for superior repeatability 	<ul style="list-style-type: none"> • Enhanced tool life from Sumitomo's ZX super lattice coating 	<ul style="list-style-type: none"> • Excellent Surface Finish • Reduced Cutting Forces in difficult to cut materials • For Inconels, Stainless Steels and exotic alloys
<p>SSI412C</p> <p># Flutes ——— ↑ ——— Coated</p> <p>12/64" Dia.</p>		

MZM & MZI SERIES	CAT. NO.
2 Flutes	4 Flutes
<ul style="list-style-type: none"> • Single End • Square Nose • Right-hand 30° Spiral Flutes 	<ul style="list-style-type: none"> • Single End • Square Nose • Right-hand 30° Spiral Flutes
<ul style="list-style-type: none"> • High Rigidity • Center Cutting • Excellent Chip Control • For General Applications • Economical 	<ul style="list-style-type: none"> • Excellent Surface Finishes
<p>MZI412C</p> <p># Flutes ——— ↑ ——— Coated</p> <p>12/64" Dia.</p>	
<p>MZM4010C</p> <p># Flutes ——— ↑ ——— Coated</p> <p>1.0mm Dia.</p>	

MZBI SERIES	CAT. NO.
2 Flutes	4 Flutes
<ul style="list-style-type: none"> • Single End • Ball Nose • Right-hand 30° Spiral Flutes 	<ul style="list-style-type: none"> • Single End • Ball Nose • Right-hand 30° Spiral Flutes
<ul style="list-style-type: none"> • High Rigidity • Excellent Chip Control • Center Cutting • For General Applications • Excellent Surface Finishes • Reduced Cutting Forces 	
<p>MZBI412C</p> <p># Flutes ——— ↑ ——— Coated</p> <p>12/64" Dia.</p>	



Solid Carbide Endmills

Recommended Running Conditions

SOLID CARBIDE

ENDMILLS

Recommended Running Conditions

■ Coated

Material	Low-Medium Carbon Steels/Alloys				Tool Steels		Martensitic & Stainless Steels		Austenitic & Precipitation Hardening Stainless Steels		Exotic Alloys	
	~HRC 30		~HRC 30-45		~HRC 40-50							
Size (mm)	Speed SFM	Feed IPT	Speed SFM	Feed IPT	Speed SFM	Feed IPT	Speed SFM	Feed IPT	Speed SFM	Feed IPT	Speed SFM	Feed IPT
-7/64 (~3.0)	150-250	.0004-.0010	100-200	.0003-.0006	60-120	.0003-.0006	100-200	.0003-.0011	25-100	.0003-.0005	35-130	.0003-.0006
1/8-7/32 (3.5-6.0)	150-250	.0008-.0015	100-200	.0004-.0008	60-120	.0004-.0008	100-200	.0005-.0011	25-100	.0004-.0009	35-130	.0003-.0008
1/4-3/8 (6.5~10.0)	150-250	.0010-.0020	100-200	.0006-.0010	60-120	.0006-.0010	100-200	.0008-.0018	25-100	.0006-.0014	35-130	.0006-.0009
7/16-5/8 (11.0-18.0)	150-250	.0015-.0030	100-200	.0008-.0015	60-120	.0008-.0015	100-200	.0011-.0028	25-100	.0009-.0021	35-130	.0006-.0015
3/4-1 (19.0-25.0)	150-250	.0020-.0040	100-200	.0010-.0020	60-120	.0010-.0020	100-200	.0013-.0035	25-100	.001-.0028	35-130	.0007-.002

■ Coated

Material	Grey Cast Iron				Ductile Iron				Titanium Alloys	
	<220 Bhn		>220 Bhn		<220 Bhn		>220 Bhn			
Size (mm)	Speed SFM	Feed IPT	Speed SFM	Feed IPT	Speed SFM	Feed IPT	Speed SFM	Feed IPT	Speed SFM	Feed IPT
-7/64 (~3.0)	225-400	.0004-.0010	150-250	.0002-.0008	20-350	.0004-.0010	100-225	.0002-.0007	100-180	.0003-.0006
1/8-7/32 (3.5-6.0)	225-400	.0008-.0018	150-250	.0005-.0012	20-350	.0008-.0018	100-225	.0003-.0009	100-180	.0004-.0008
1/4-3/8 (6.5~10.0)	225-400	.0010-.0025	150-250	.0008-.0020	20-350	.0010-.0025	100-225	.0006-.0014	100-180	.0006-.0010
7/16-5/8 (11.0-18.0)	225-400	.0018-.0038	150-250	.0012-.0028	20-350	.0018-.0038	100-225	.0009-.0021	100-180	.0008-.0015
3/4-1 (19.0-25.0)	225-400	.0025-.0060	150-250	.0018-.0048	20-350	.0025-.0060	100-225	.0015-.0032	100-180	.0010-.0020

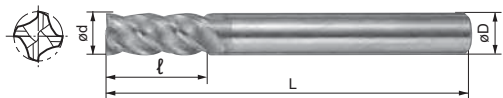
■ Uncoated

Material	Low-Medium Carbon Steels/Alloys				Cast Irons		Aluminum		High Silicon Aluminum	
	~HRc 30		~HRc 30-45							
Size (mm)	Speed SFM	Feed IPT	Speed SFM	Feed IPT	Speed SFM	Feed IPT	Speed SFM	Feed IPT	Speed SFM	Feed IPT
-7/64 (~3.0)	150-250	.0004-.0010	100-200	.0003-.0006	100-200	.0003-.0011	450-1100	.0005-.0045	250-800	.0005-.0040
1/8-7/32 (3.5-6.0)	150-250	.0008-.0015	100-200	.0004-.0008	100-200	.0005-.0011	450-1100	.0005-.0045	250-800	.0005-.0040
1/4-3/8 (6.5~10.0)	150-250	.0010-.0020	100-200	.0006-.0010	100-200	.0008-.0018	450-1100	.0005-.0045	250-800	.0005-.0040
7/16-5/8 (11.0-18.0)	150-250	.0015-.0030	100-200	.0008-.0015	100-200	.0011-.0028	450-1100	.0005-.0045	250-800	.0005-.0040
3/4-1 (19.0-25.0)	150-250	.0020-.0040	100-200	.0010-.0020	100-200	.0013-.0035	450-1100	.0005-.0045	250-800	.0005-.0040





Four Flute Center Cutting				
Coated	Cutter Dia d ϕ	Shank Dia D ϕ	Flute Length l	Overall Length L
SSUP408Z	0.1250	0.1250	0.3750	1.5000
SSUP412Z	0.1875	0.1875	0.4375	2.0000
SSUP416Z	0.2500	0.2500	0.5000	2.5000
SSUP420Z	0.3125	0.3125	0.8125	2.5000
SSUP424Z	0.3750	0.3750	0.8750	2.5000
SSUP428Z	0.4375	0.4375	1.0000	2.7500
SSUP432Z	0.5000	0.5000	1.0000	3.0000
SSUP440Z	0.6250	0.6250	1.2500	3.5000
SSUP448Z	0.7500	0.7500	1.5000	4.0000
SSUP464Z	1.0000	1.0000	1.5000	4.0000



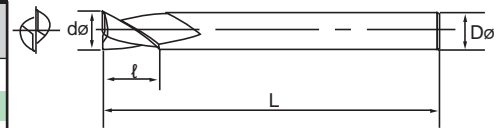
Tolerances		
Size (Inch)	D	d
.125~.250	+0 -0.0003"	+0 -0.0020"
~.375	+0 -0.00035"	+0 -0.0030"
~.687	+0 -0.00043"	+0 -0.0030"
~1.000	+0 -0.0005"	+0 -0.0030"





Two Flute Center Cutting

Uncoated	Coated	Cutter Dia.d ø	Shank Dia.Dø	Flute Length l	Overall Length L
SSI204	SSI204C	.062	.125	.187	1.500
SSI205	SSI205C	.078	.125	.250	1.500
SSI206	SSI206C	.093	.125	.375	1.500
SSI207	SSI207C	.109	.125	.375	1.500
SSI208	SSI208C	.125	.125	.500	1.500
SSI210	SSI210C	.156	.1875	.562	2.000
SSI212	SSI212C	.1875	.1875	.725	2.000
SSI214	SSI214C	.218	.250	.625	2.500
SSI216	SSI216C	.250	.250	.750	2.500
SSI218	SSI218C	.281	.3125	.750	2.500
SSI220	SSI220C	.3125	.3125	.812	2.500
SSI224	SSI224C	.375	.375	.875	2.500
SSI228	SSI228C	.4375	.4375	1.00	3.000
SSI232	SSI232C	.500	.500	1.00	3.000
SSI236	SSI236C	.5625	.5625	1.250	3.000
SSI240	SSI240C	.625	.625	1.250	3.000
SSI248	SSI248C	.750	.750	1.500	4.000
SSI264	SSI264C	1.000	1.000	1.500	4.000



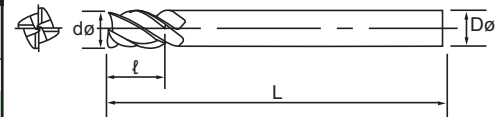
Tolerances

Size (Inch)	D	d
.125~.250	+0 -0.0003"	+0 -0.0020"
~.375	+0 -0.00035"	+0 -0.0020"
~.687	+0 -0.00043"	+0 -0.0020"
~1.000	+0 -0.0005"	+0 -0.0020"



Four Flute Center Cutting

Uncoated	Coated	Cutter Dia.d ø	Shank Dia.Dø	Flute Length l	Overall Length L
SSI404	SSI404C	.0625	.125	.1875	1.500
SSI405	SSI405C	.0781	.125	.250	1.500
SSI406	SSI406C	.093	.125	.375	1.500
SSI407	SSI407C	.109	.125	.375	1.500
SSI408	SSI408C	.125	.125	.500	1.500
SSI410	SSI410C	.156	.1875	.5625	2.000
SSI412	SSI412C	.1875	.1875	.625	2.000
SSI414	SSI414C	.218	.250	.625	2.500
SSI416	SSI416C	.250	.250	.750	2.500
SSI418	SSI418C	.281	.3125	.750	2.500
SSI420	SSI420C	.3125	.3125	.8125	2.500
SSI424	SSI424C	.375	.375	.875	2.500
SSI428	SSI428C	.4375	.4375	1.000	3.000
SSI432	SSI432C	.500	.500	1.000	3.000
SSI436	SSI436C	.5625	.5625	1.125	3.500
SSI440	SSI440C	.625	.625	1.125	3.500
SSI448	SSI448C	.750	.750	1.500	4.000
SSI464	SSI464C	1.000	1.000	1.500	4.000



Tolerances

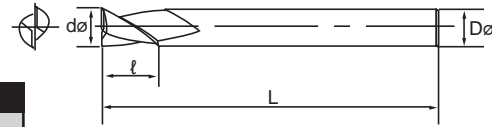
Size (Inch)	D	d
.125~.250	+0 -0.0003"	+0 -0.0020"
~.375	+0 -0.00035"	+0 -0.0020"
~.687	+0 -0.00043"	+0 -0.0020"
~1.000	+0 -0.0005"	+0 -0.0020"

Two Flute Center Cutting - INCH

Uncoated	Coated	Cutter Dia.d ø	Shank Dia.Dø	Flute Length l	Overall Length L
MZI204	MZI204C	.0625 (1/16)	.1250	.187	1.500
MZI206	MZI206C	.0937 (3/32)	.1250	.375	1.500
MZI208	MZI208C	.1250 (1/8)	.1250	.500	1.500
MZI210	MZI210C	.1562 (5/32)	.1875	.562	2.000
MZI212	MZI212C	.1875 (3/16)	.1875	.625	2.000
MZI214	MZI214C	.2187 (7/32)	.2500	.625	2.500
MZI216	MZI216C	.2500 (1/4)	.2500	.750	2.500
MZI218	MZI218C	.2812 (9/32)	.3125	.750	2.500
MZI220	MZI220C	.3125 (5/16)	.3125	.812	2.500
MZI224	MZI224C	.3750 (3/8)	.3750	.875	2.500
MZI228	MZI228C	.4375 (7/16)	.4375	1.000	3.000
MZI232	MZI232C	.5000 (1/2)	.5000	1.000	3.000
MZI236	MZI236C	.5625 (9/16)	.5625	1.250	3.500
MZI240	MZI240C	.6250 (5/8)	.6250	1.250	3.500
MZI244	MZI244C	.6875 (11/16)	.6875	1.500	4.000
MZI248	MZI248C	.7500 (3/4)	.7500	1.500	4.000
MZI256	MZI256C	.8750 (7/8)	.8750	1.500	4.000
MZI264	MZI264C	1.0000	1.0000	1.500	4.000

Two Flute Center Cutting - METRIC

Uncoated	Coated	Cutter Dia.d ø	Shank Dia.Dø	Flute Length l	Overall Length L
MZM2010	MZM2010C	1.0mm	4.0mm	3.0mm	51.0mm
MZM2015	MZM2015C	1.5mm	4.0mm	5.0mm	51.0mm
MZM2020	MZM2020C	2.0mm	4.0mm	6.0mm	51.0mm
MZM2025	MZM2025C	2.5mm	4.0mm	8.0mm	51.0mm
MZM2030	MZM2030C	3.0mm	6.0mm	8.0mm	51.0mm
MZM2035	MZM2035C	3.5mm	6.0mm	8.0mm	51.0mm
MZM2040	MZM2040C	4.0mm	6.0mm	10.0mm	51.0mm
MZM2045	MZM2045C	4.5mm	6.0mm	10.0mm	51.0mm
MZM2050	MZM2050C	5.0mm	6.0mm	12.0mm	51.0mm
MZM2055	MZM2055C	5.5mm	6.0mm	12.0mm	51.0mm
MZM2060	MZM2060C	6.0mm	6.0mm	12.0mm	51.0mm
MZM2065	MZM2065C	6.5mm	8.0mm	12.0mm	64.0mm
MZM2070	MZM2070C	7.0mm	8.0mm	15.0mm	64.0mm
MZM2075	MZM2075C	7.5mm	8.0mm	15.0mm	64.0mm
MZM2080	MZM2080C	8.0mm	8.0mm	15.0mm	64.0mm
MZM2085	MZM2085C	8.5mm	10.0mm	15.0mm	70.0mm
MZM2090	MZM2090C	9.0mm	10.0mm	15.0mm	70.0mm
MZM2095	MZM2095C	9.5mm	10.0mm	15.0mm	70.0mm
MZM2100	MZM2100C	10.0mm	10.0mm	18.0mm	70.0mm
MZM2110	MZM2110C	11.0mm	12.0mm	18.0mm	76.0mm
MZM2120	MZM2120C	12.0mm	12.0mm	18.0mm	76.0mm
MZM2130	MZM2130C	13.0mm	16.0mm	20.0mm	88.0mm
MZM2140	MZM2140C	14.0mm	16.0mm	20.0mm	88.0mm
MZM2150	MZM2150C	15.0mm	16.0mm	25.0mm	88.0mm
MZM2160	MZM2160C	16.0mm	16.0mm	35.0mm	88.0mm
MZM2170	MZM2170C	17.0mm	20.0mm	35.0mm	100.0mm
MZM2180	MZM2180C	18.0mm	20.0mm	40.0mm	100.0mm
MZM2190	MZM2190C	19.0mm	20.0mm	40.0mm	100.0mm
MZM2200	MZM2200C	20.0mm	20.0mm	40.0mm	100.0mm
MZM2220	MZM2220C	22.0mm	25.0mm	40.0mm	100.0mm
MZM2250	MZM2250C	25.0mm	25.0mm	40.0mm	100.0mm



Inch Tolerances

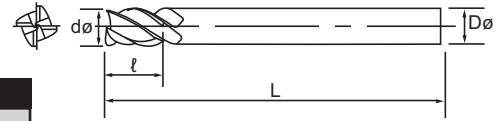
Size (Inch)	D	d
.125~.250	+0 -0.0003"	+0 -0.0020"
~.375	+0 -0.00035"	+0 -0.0030"
~.687	+0 -0.00043"	+0 -0.0030"
~1.000	+0 -0.0005"	+0 -0.0030"



Metric Tolerances

Size (mm)	D	d
1~6.4	+0 -0.00762mm	+0 -0.0508mm
~9.5	+0 -0.00889mm	+0 -0.0762mm
~17.0	+0 -0.01092mm	+0 -0.0762mm
~25.0	+0 -0.01270mm	+0 -0.0762mm





Four Flute Center Cutting - INCH

Uncoated	Coated	Cutter Dia. d ϕ	Shank Dia. D ϕ	Flute Length l	Overall Length L
MZI404	MZI404C	.0625 (1/16)	.1250	.1875	1.500
MZI406	MZI406C	.0937 (3/32)	.1250	.375	1.500
MZI408	MZI408C	.1250 (1/8)	.1250	.500	1.500
MZI410	MZI410C	.1562 (5/32)	.1875	.5625	2.000
MZI412	MZI412C	.1875 (3/16)	.1875	.625	2.000
MZI414	MZI414C	.2187 (7/32)	.2500	.625	2.500
MZI416	MZI416C	.2500 (1/4)	.2500	.750	2.500
MZI418	MZI418C	.2812 (9/32)	.3125	.750	2.500
MZI420	MZI420C	.3125 (5/16)	.3125	.8125	2.500
MZI424	MZI424C	.3750 (3/8)	.3750	.875	2.500
MZI428	MZI428C	.4375 (7/16)	.4375	1.000	3.000
MZI432	MZI432C	.5000 (1/2)	.5000	1.000	3.000
MZI436	MZI436C	.5625 (9/16)	.5625	1.250	3.500
MZI440	MZI440C	.6250 (5/8)	.6250	1.250	3.500
MZI444	MZI444C	.6875 (11/16)	.6875	1.500	4.000
MZI448	MZI448C	.7500 (3/4)	.7500	1.500	4.000
MZI456	MZI456C	.8750 (7/8)	.8750	1.500	4.000
MZI464	MZI464C	1.0000	1.0000	1.500	4.000

Inch Tolerances

Size (Inch)	D	d
.125~.250	+0 -0.0003"	+0 -0.0020"
~.375	+0 -0.00035"	+0 -0.0030"
~.687	+0 -0.00043"	+0 -0.0030"
~1.000	+0 -0.0005"	+0 -0.0030"

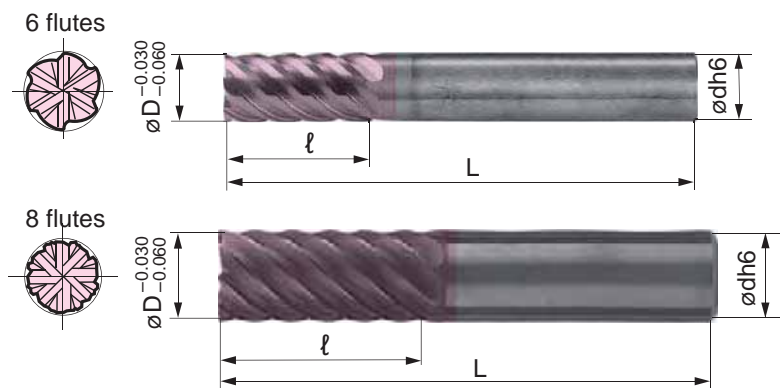
Four Flute Center Cutting - METRIC

Uncoated	Coated	Cutter Dia. d ϕ	Shank Dia. D ϕ	Flute Length l	Overall Length L
MZM4010	MZM4010C	1.0mm	4.0mm	3.0mm	51.0mm
MZM4015	MZM4015C	1.5mm	4.0mm	5.0mm	51.0mm
MZM4020	MZM4020C	2.0mm	4.0mm	6.0mm	51.0mm
MZM4025	MZM4025C	2.5mm	4.0mm	8.0mm	51.0mm
MZM4030	MZM4030C	3.0mm	6.0mm	8.0mm	51.0mm
MZM4035	MZM4035C	3.5mm	6.0mm	8.0mm	51.0mm
MZM4040	MZM4040C	4.0mm	6.0mm	10.0mm	51.0mm
MZM4045	MZM4045C	4.5mm	6.0mm	10.0mm	51.0mm
MZM4050	MZM4050C	5.0mm	6.0mm	12.0mm	51.0mm
MZM4055	MZM4055C	5.5mm	6.0mm	12.0mm	51.0mm
MZM4060	MZM4060C	6.0mm	6.0mm	12.0mm	51.0mm
MZM4065	MZM4065C	6.5mm	8.0mm	12.0mm	64.0mm
MZM4070	MZM4070C	7.0mm	8.0mm	15.0mm	64.0mm
MZM4075	MZM4075C	7.5mm	8.0mm	15.0mm	64.0mm
MZM4080	MZM4080C	8.0mm	8.0mm	15.0mm	64.0mm
MZM4085	MZM4085C	8.5mm	10.0mm	15.0mm	70.0mm
MZM4090	MZM4090C	9.0mm	10.0mm	15.0mm	70.0mm
MZM4095	MZM4095C	9.5mm	10.0mm	15.0mm	70.0mm
MZM4100	MZM4100C	10.0mm	10.0mm	18.0mm	70.0mm
MZM4110	MZM4110C	11.0mm	12.0mm	18.0mm	76.0mm
MZM4120	MZM4120C	12.0mm	12.0mm	18.0mm	76.0mm
MZM4130	MZM4130C	13.0mm	16.0mm	20.0mm	88.0mm
MZM4140	MZM4140C	14.0mm	16.0mm	20.0mm	88.0mm
MZM4150	MZM4150C	15.0mm	16.0mm	25.0mm	88.0mm
MZM4160	MZM4160C	16.0mm	16.0mm	35.0mm	88.0mm
MZM4170	MZM4170C	17.0mm	20.0mm	35.0mm	100.0mm
MZM4180	MZM4180C	18.0mm	20.0mm	40.0mm	100.0mm
MZM4190	MZM4190C	19.0mm	20.0mm	40.0mm	100.0mm
MZM4200	MZM4200C	20.0mm	20.0mm	40.0mm	100.0mm
MZM4220	MZM4220C	22.0mm	25.0mm	40.0mm	100.0mm
MZM4250	MZM4250C	25.0mm	25.0mm	40.0mm	100.0mm

Metric Tolerances

Size (mm)	D	d
1~6.4	+0 -0.00762mm	+0 -0.0508mm
~9.5	+0 -0.00889mm	+0 -0.0762mm
~17.0	+0 -0.01092mm	+0 -0.0762mm
~25.0	+0 -0.01270mm	+0 -0.0762mm





Helix angle: 45°
Corner: Edge with honing
Dia. Range: ø3~32mm

Features & Benefits

- For general hardened steel machining
- High rigidity design:
core diameter = 0.85mm x D
- Available in four, six, and eight flutes.

Two Flutes - METRIC

Catalog No.	Stock	Cutter Dia. d	Shank Dia. D	Flute Length l	Overall Length L
HHM4030ZX	★	3.0mm	6.0mm	8.0mm	50.0mm
HHM4040ZX	★	4.0mm	6.0mm	10.0mm	50.0mm
HHM4050ZX	★	5.0mm	6.0mm	12.0mm	50.0mm

Six Flutes - METRIC

Catalog No.	Stock	Cutter Dia. d	Shank Dia. D	Flute Length l	Overall Length L
HHM6060ZX	★	6.0mm	6.0mm	12.0mm	50.0mm
HHM6080ZX	★	8.0mm	8.0mm	16.0mm	60.0mm
HHM6100ZX	★	10.0mm	10.0mm	20.0mm	71.0mm
HHM6120ZX	★	12.0mm	12.0mm	24.0mm	75.0mm

Eight Flutes - METRIC

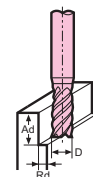
Catalog No.	Stock	Cutter Dia. d	Shank Dia. D	Flute Length l	Overall Length L
HHM8160ZX	★	16.0mm	16.0mm	32.0mm	90.0mm
HHM8200ZX	★	20.0mm	20.0mm	40.0mm	106.0mm
HHM8250ZX	★	25.0mm	25.0mm	50.0mm	120.0mm
HHM8300ZX	★	30.0mm	32.0mm	60.0mm	130.0mm
HHM8320ZX	★	32.0mm	32.0mm	64.0mm	130.0mm

Recommended Running Conditions

Shoulder processing

Ad=1.5 x øD

Rd=0.025(56~65HRC)~0.2(Below 25HRC) x øD

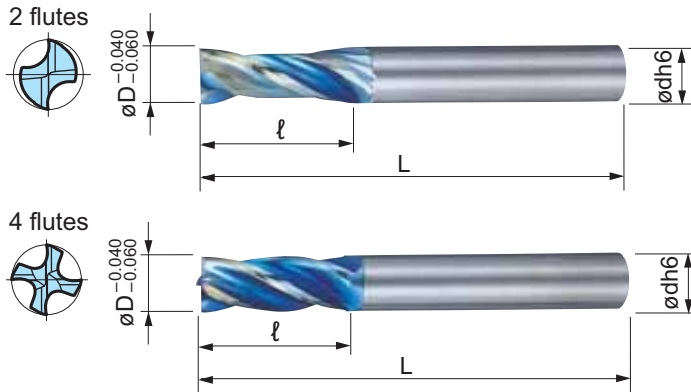


øD inch (mm)		Material	Carbon steel, Alloy steel	Cast Iron	Stainless Steel, Ti Alloy, etc.
		Below 25HRC sfm-ipt (m/min-mm/t)	Below 45HRC sfm-ipt (m/min-mm/t)	Below 65HRC sfm-ipt (m/min-mm/t)	
.118~.200 (3.0~5.0)	V	655-820-985 (200-250-300)	330-490-655 (200-250-300)	260-330-395 (80-100-120)	330-395-490 (100-120-150)
	f	.002~.003 (.040~.080)	.001~.002 (.030~.050)	.0004~.0008 (.010~.020)	.002~.003 (.040~.080)
.236~.472 (6.0~12.0)	V	655-820-985 (200-250-300)	330-490-655 (200-250-300)	260-330-395 (80-100-120)	330-395-490 (100-120-150)
	f	.003~.005 (.082~.120)	.002~.004 (.050~.090)	.0008~.001 (.020~.038)	.003~.009 (.080~.220)
.630~1.25 (16.0~32.0)	V	655-820-985 (200-250-300)	330-490-655 (200-250-300)	260-330-395 (80-100-120)	330-395-490 (100-120-150)
	f	.005 (.120~.130)	.004 (.090~.100)	.001~.002 (.038~.050)	.010~.015 (.250~.350)

For small diameter endmills, if the machine cannot reach the recommended speed, please use the suggested maximum speed.

DLC (Diamond Like Carbon) AURORA COAT Series
for Non-ferrous Materials

SOLID CARBIDE
ENDMILLS



Helix angle: 30°
 Corner: Sharp edge
 Dia. Range: $\phi 2 \sim 16$ mm

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. ϕ	Shank Dia. ϕ	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

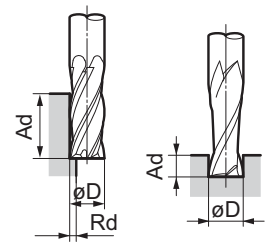
Grade: DL1000

Four Flutes - METRIC					
Catalog No.	Stock	Cutter Dia. ϕ	Shank Dia. ϕ	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	



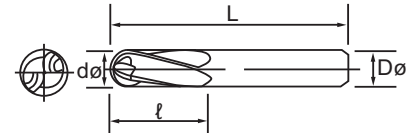
- For groove milling of stainless steel, use 60% recommended RPM and 40% feed rate.
- If cutting noise and vibration occur, please reduce the cutting speed accordingly.





Two Flute Ballnose Center Cutting

Uncoated	Coated	Cutter Dia.d ø	Shank Dia.Dø	Cutter Radius	Flute Length l	Overall Length L
MZBI204	MZBI204C	.0625	.1250	.0312	.250	1.500
MZBI208	MZBI208C	.1250	.1250	.0625	.500	1.500
MZBI212	MZBI212C	.1875	.1875	.0937	.500	2.000
MZBI216	MZBI216C	.2500	.2500	.125	.625	2.375
MZBI220	MZBI220C	.3125	.3125	.156	.6875	2.375
MZBI224	MZBI224C	.3750	.3759	.1875	.750	2.375
MZBI228	MZBI228C	.4375	.4375	.218	.750	2.375
MZBI232	MZBI232C	.5000	.5000	.250	.875	2.875
MZBI236	MZBI236C	.5625	.5625	.281	1.250	3.500
MZBI240	MZBI240C	.6250	.6250	.3125	1.250	3.500
MZBI244	MZBI244C	.6875	.6875	.343	1.500	4.000
MZBI248	MZBI248C	.7500	.7500	.375	1.500	4.000
MZBI256	MZBI256C	.8750	.8750	.4375	1.500	4.000
MZBI264	MZBI264C	1.0000	1.0000	.500	1.500	4.000



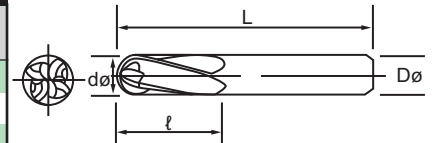
Inch Tolerances

Size (Inch)	D	d
.125~.375	+0 -0.0003"	+0 -0.0012"
~.500 0.0016"	+0 -0.0004"	+0



Four Flute Ballnose Center Cutting

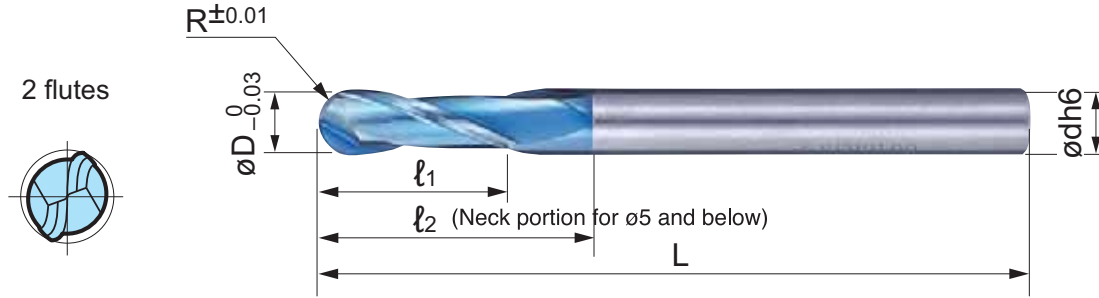
Uncoated	Coated	Cutter Dia.d ø	Shank Dia.Dø	Cutter Radius	Flute Length l	Overall Length L
MZBI404	MZBI404C	.0625	.1250	.0312	.250	1.500
MZBI408	MZBI408C	.1250	.1250	.0625	.500	1.500
MZBI412	MZBI412C	.1875	.1875	.0937	.500	2.000
MZBI416	MZBI416C	.2500	.2500	.125	.625	2.375
MZBI420	MZBI420C	.3125	.3125	.156	.6875	2.375
MZBI424	MZBI424C	.3750	.3750	.1875	.750	2.375
MZBI428	MZBI428C	.4375	.4375	.218	.750	2.375
MZBI432	MZBI432C	.5000	.5000	.250	.875	2.375
MZBI436	MZBI436C	.5625	.5625	.281	1.250	3.375
MZBI440	MZBI440C	.6250	.6250	.3125	1.250	3.500
MZBI444	MZBI444C	.6875	.6875	.343	1.500	4.000
MZBI448	MZBI448C	.7500	.7500	.375	1.500	4.000
MZBI456	MZBI456C	.8750	.8750	.4375	1.500	4.000
MZBI464	MZBI464C	1.0000	1.0000	.500	1.500	4.000



Inch Tolerances

Size (Inch)	D	d
.125~.375	+0 -0.0003"	+0 -0.0012"
~.500	+0 -0.0004"	+0 -0.0016"





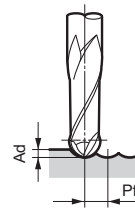
Helix angle :30°

Two Flutes - METRIC							
Sumitomo Catalog No.	Stock	R	øD	l ₁	l ₂	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

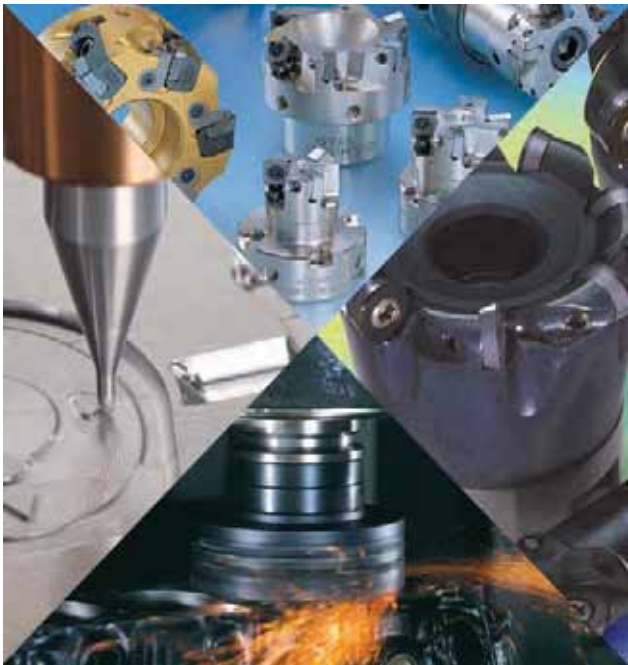
1-800-950-5202

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PCBN & PCD

MILLING

Pages 382-389



PCBN & PCD
Milling

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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

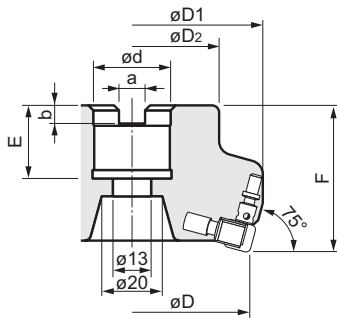
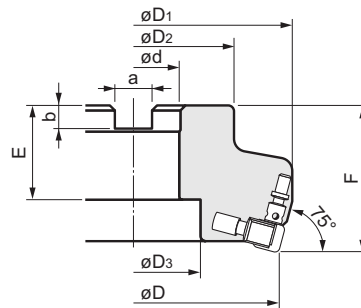


Fig 2


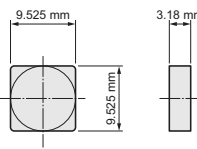


RM Mill Availability - METRIC

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

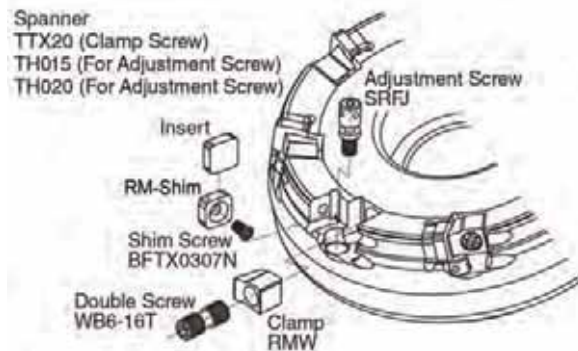
- USA stocked item

Inserts

				Dimensions (Inches)		
Sumitomo Cat. No.	Stock	Grade	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

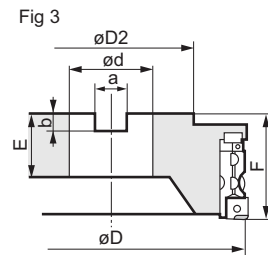
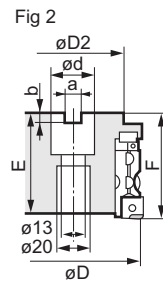
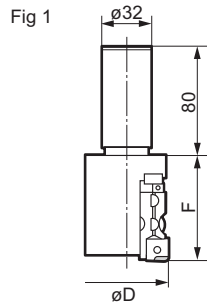
			
Clamp Wrench	Shim Screw Wrench	Adjustment Screw Wrench	Adjustment Screw Wrench
TTX20	TRX10	TH015	TH020





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)



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)

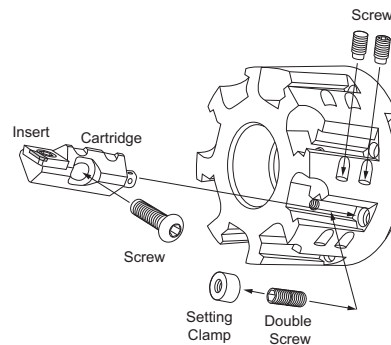
Hardware					
Cartridge	Screw	Adjustment Screw	O-Ring	Wrench	Wrench
FMUU*	BFTX0509N	FMUJ	P3	TRX20	1.8 x 45

* Screw for FMU4040ER/4050ER/4063ER is BH0615

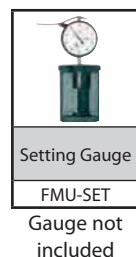
Inserts					
			Dimensions (in.)		
Sumitomo Cat. No.	Stock	Grade	I.C.	T	Fig.
SNEW1203ADTR	•	BN700	.500	.125	1
SNEW1203ADTR-S*	•		.500	.125	2

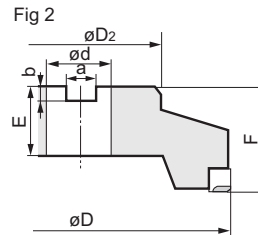
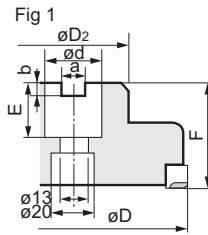
• USA stocked item

* Low cutting force insert



Gauge





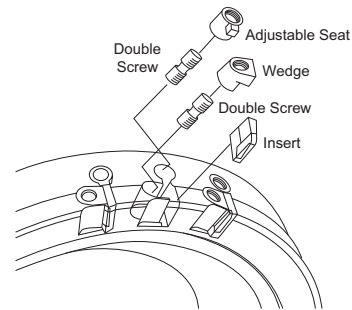
FM Mill Availability - METRIC

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


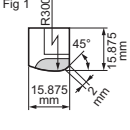
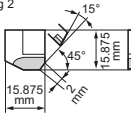
★ Worldwide Warehouse item

Hardware

						Applicable Cutter
Wedge	Adjustable Seat	Adjustment Screw	Double Screw	Wrench	Wrench	
FMW	FME	FMJ	WB7F-20TL	TT25	1.8 x 45	FM5080R FM5100R- FM5160R



Inserts

					
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



High Speed SUMIBORON Mill for Hardened Steel & Cast Iron Finishing

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.

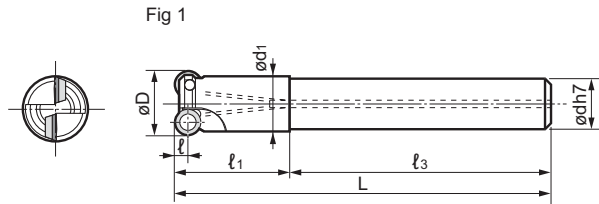


Fig 1

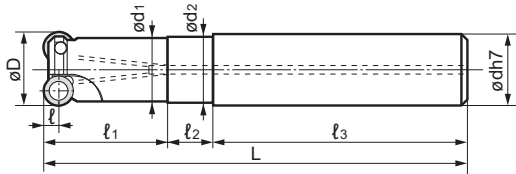


Fig 2

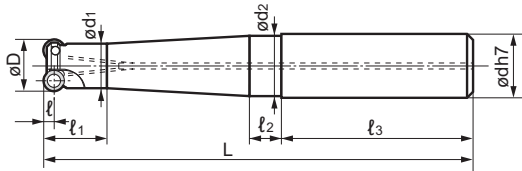
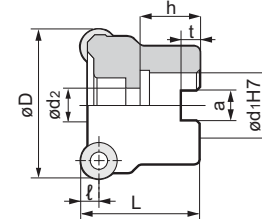


Fig 3

BRC Endmill Availability - METRIC												
Sumitomo Cat. No.	Stock	Dimensions (mm)								# of teeth	Fig.	Group
		øD	ød	ød1	ød2	ℓ	ℓ1	ℓ2	ℓ3			
BRC071207ES10	★	12	10	11	-	3.5	23	-	52	75	2	1
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	
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	
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	





BRC Shell Mill Availability - METRIC

Sumitomo Cat. No.	Stock	Dimensions (mm)								# of teeth	Group
		øD	ød1	ød2	ℓ	L	h	a	t		
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		Dimensions (in)		Applicable Holder (Grp.)
	BN350	BN700	I.C.	T	
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

Recommended Running Conditions

Conditions	Steel			Cast Iron
	40~45HRC	47~55HRC	58~62HRC	-
	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 BNPB Type



High Speed, High Precision SUMIBORON Mill for Pre-Hardened/Hardened Steel

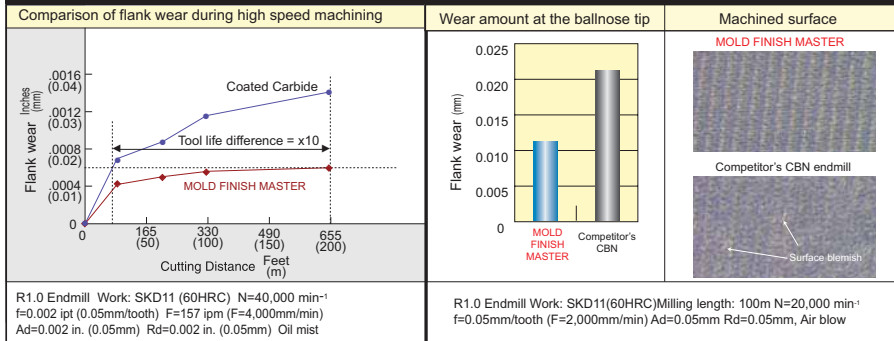
Features & Benefits

- 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.

BNPB Endmill Availability - METRIC

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



Recommended Running Conditions

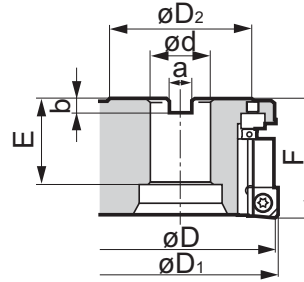
Ballnose Radius mm (in)	STAVAX, NAK80, SKD61 (~52HRC)				SDK11 (~62HRC)				SKH (~70HRC)			
	RPM	Feedrate mm/tooth (ipt)	D.O.C.		RPM	Feedrate mm/tooth (ipt)	D.O.C.		RPM	Feedrate mm/tooth (ipt)	D.O.C.	
			Ad mm (in)	Rd mm (in)			Ad mm (in)	Rd mm (in)			Ad mm (in)	Rd mm (in)
R0.2 (.008)	20,000~ 50,000	.02 (.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)	.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)	.1 (.004)	.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 Cutter for High Speed Finishing of Non-ferrous Metal



SUMIDIA MILLS RF Type





RF Endmill Availability - METRIC

Sumitomo Cat. No.	Stock	Dimensions (mm)								# of teeth
		ϕD	ϕD_1	ϕD_2	F	ϕd	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

Inserts

Description	Sumitomo Catalog No.	SUMIDIA	Appearance
		DA1000	
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.

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.)

Surface Finish

Conditions	Process: Finishing Machine: Machining Center Arbor: HSK63A Work Piece: Si10 ~ 12% Al Alloy Cutter: RF4100R, 6 teeth Grade: SUMIDIA DA2200	V = 16,370 sfm F = 450 ipm f = .005 ipt d = .020 in. d/wiper = .001 in. Dry
Results	 Rz: 0.69μm Ra: 0.092μm	



SUMIDIA MILLS

SRF Type

SUMIDIA Cutter for High Speed Finishing of Non-ferrous Metal



Fig 1

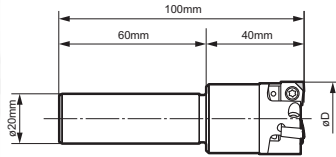


Fig 2

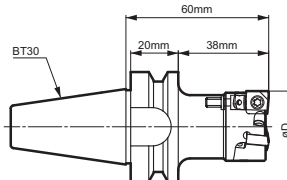


Fig 3

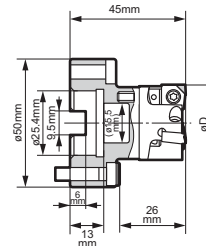
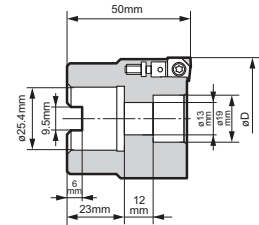


Fig 4



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

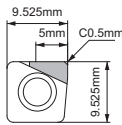


Fig.1

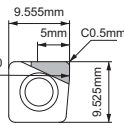


Fig.2

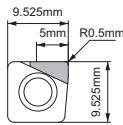
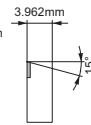


Fig.3

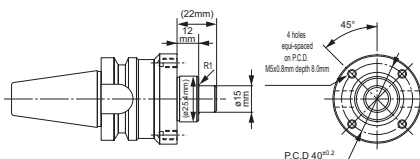


Inserts

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.

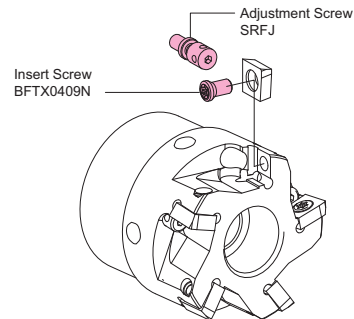
Arbor for SRF30R & SRF40R



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 $\phi 25.4$ mm to $\phi 15$ mm.
- 2) Add four tap holes for M5 cap screws.

Parts



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 conditions 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



MILLING ADAPTERS & HOLDERS

Pages 390-411



Adapters &
Holders

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sumiLock Plus™ Collets

sumiLock Plus™ has the highest accuracy and strongest gripping power available. Runout accuracy is less than 5µm at 100mm from the face of the collet. *sumiLock™* Collets will fit the *sumiLock Plus™* Milling Chucks, but cannot accommodate the *sumiLock Plus™* accessory nuts.



TG Collets

These TG collets offer 33% more holding power than the ER Collets. This can mean increased production without any sacrifice in accuracy. The accuracy of the TG collets over 3/8", are guaranteed to be within 0.0005" at 4" from the face of the collet. Collets under 3/8", are guaranteed to be within 0.0005" runout, at a distance of four times the collet I.D. Coolant collets are also available in the TG100 series.



ER Collets

These are a good economical choice. They offer almost three times the gripping power of double angle collets and 75% of the gripping power of a TG collet. ER collets, over 3/8", are guaranteed to be within 0.0005" runout 4" from the face of the collet. Collets under 3/8", are guaranteed to be within 0.0005" runout, at a distance of four times the collet I.D. Coolant collets are also available in the ER variety.



Advanced Technology Endmill Holders

These holders should be used with Sumitomo's Indexable Endmill products lines. They are extremely accurate and thereby provide you with longer tool life and maximum feed rate capability. Most of our indexable end mills have weldon shanks. This family of holders is sure to cover your needs.



High Quality Precision Shell Mill Holders

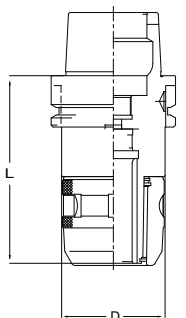
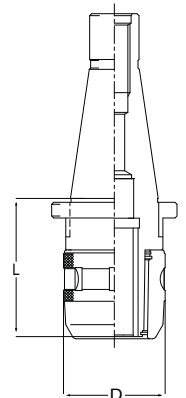
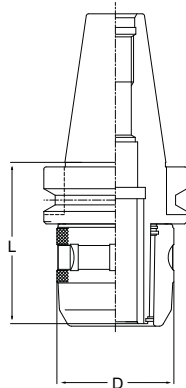
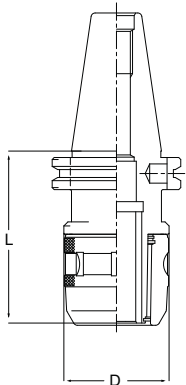
The precision and quality of these holders are best in the industry. Precision ground tapers and cutter mounting surfaces give your milling cutters the least amount of axial and radial runouts available for precision or high volume manufacturing needs. This simply translates into increased tool life, better surface finishes and lower cost price parts. See page 72 for detailed Sumitomo information regarding specific arbor screws and mounting bolts.



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.

**CT Taper sumiLock Plus- Milling Chucks**

Catalog Number	Taper	Size Range	L	D	Collet Series
CT40-SLP750	40	1/8" - 3/4"	4.134"	2.047"	SLP750
CT40-SLP1000	40	1/8" - 1"	4.134"	2.362"	SLP1000
CT40-SLP1250	40	3/16" - 1-1/4"	4.724"	2.520"	SLP1250
CT50-SLP750	50	1/8" - 3/4"	5.315"	2.047"	SLP750
CT50-SLP1000	50	1/8" - 1"	5.315"	2.362"	SLP1000
CT50-SLP1250	50	3/16" - 1-1/4"	5.315"	2.717"	SLP1250

BT Taper sumiLock Plus- Milling Chucks

Catalog Number	Taper	Size Range	L	D	Collet Series
BT30-SLP750	30	1/8" - 3/4"	2.953"	2.047"	SLP750
BT40-SLP750	40	1/8" - 3/4"	4.134"	2.047"	SLP750
BT40-SLP1000	40	1/8" - 1"	3.543"	2.362"	SLP1000
BT40-SLP1250	40	3/16" - 1-1/4"	4.724"	2.717"	SLP1250
BT50-SLP1250	50	3/16" - 1-1/4"	5.315"	2.717"	SLP1250

NMTB Taper sumiLock Plus- Milling Chucks

Catalog Number	Taper	Size Range	L	D	Collet Series
NMTB40-SLP1250	40	3/16" - 1-1/4"	4.134"	2.717"	SLP1250
NMTB50-SLP1250	50	3/16" - 1-1/4"	3.543"	2.717"	SLP1250
NMTB50-SLP2000	50	1" - 2"	4.134"	4.134"	SLP2000

HSK Taper sumiLock Plus- Milling Chucks

Catalog Number	Taper	Max Capacity	L	D	Collet Series
HSK63-SLP0750-90	HSK-63A	3/4"	3.740"	2.047"	SLP750
HSK63-SLP1000-105	HSK-63A	1"	3.937"	2.362"	SLP1000
HSK100-SLP0750-105	HSK-100A	3/4"	4.528"	2.047"	SLP750
HSK100-SLP1000-105	HSK-100A	1"	4.528"	2.362"	SLP1000
HSK100-SLP1250-105	HSK-100A	1-1/4"	4.528"	2.717"	SLP1250
HSK100-SLP2000-120	HSK-100A	2"	4.921"	4.134"	SLP2000

Additional styles and sizes available on request.





sumiLock Plus™ Collets

The *sumiLock Plus™* Milling Chuck Collets are manufactured to uniformly collapse around the cutting tool shank. This provides maximum gripping power, and concentric positioning of the cutting tool. Standard collets and coolant collets (not pictured) are available for all sizes of *sumiLock Plus™* Milling Chucks. SumiLock™ Collets will fit *sumiLock Plus™* Milling Collets, but cannot accommodate the *sumiLock Plus™* accessory nuts.



Coolant-Thru Nut

The Coolant-Thru Nut forms a complete seal around the cutting tool. This is beneficial for coolant-thru cutting tools. The coolant collet and Coolant-Thru Nut must be ordered on size for each cutting tool.



Slotted Nut

The Slotted Nut allows coolant to travel down the tool's shank to its cutting edge. This is well suited for non-coolant-thru cutting tools. The coolant collet and Slotted Nut must be ordered on size for each cutting tool.



Nozzle Nut

The Nozzle Nut allows you to direct coolant to the cutting edge via three nozzles. This is ideal for coolant-thru cutting tools, specially when the cutting tool shank is smaller than the cutting diameter. The coolant collet and Nozzle Nut must be ordered on size for each cutting tool.

SLP750 sumiLock Plus™ Collets - METRIC

Standard Collet	Collet I.D.	Coolant Collet	Coolant-Thru Nut	Slotted Nut	Nozzle Nut
SLP750-6	6mm	SLP750-6C	SLP750N-6C	SLP750N-6S	SLP750N-6N
SLP750-7	7mm	SLP750-7C	SLP750N-7C	SLP750N-7S	SLP750N-7N
SLP750-8	8mm	SLP750-8C	SLP750N-8C	SLP750N-8S	SLP750N-8N
SLP750-10	10mm	SLP750-10C	SLP750N-10C	SLP750N-10S	SLP750N-10N
SLP750-12	12mm	SLP750-12C	SLP750N-12C	SLP750N-12S	SLP750N-12N
SLP750-14	14mm	SLP750-14C	SLP750N-14C	SLP750N-14S	SLP750N-14N
SLP750-16	16mm	SLP750-16C	SLP750N-16C	SLP750N-16S	SLP750N-16N

SLP750 sumiLock Plus™ Collets - INCH

Standard Collet	Collet I.D.	Coolant Collet	Coolant-Thru Nut	Slotted Nut	Nozzle Nut
SLP750-008	1/8"	SLP750-008C	SLP750N-008C	SLP750N-008S	SLP750N-008N
SLP750-012	3/16"	SLP750-012C	SLP750N-012C	SLP750N-012S	SLP750N-012N
SLP750-016	1/4"	SLP750-016C	SLP750N-016C	SLP750N-016S	SLP750N-016N
SLP750-020	5/16"	SLP750-020C	SLP750N-020C	SLP750N-020S	SLP750N-020N
SLP750-024	3/8"	SLP750-024C	SLP750N-024C	SLP750N-024S	SLP750N-024N
SLP750-028	7/16"	SLP750-028C	SLP750N-028C	SLP750N-028S	SLP750N-028N
SLP750-032	1/2"	SLP750-032C	SLP750N-032C	SLP750N-032S	SLP750N-032N
SLP750-036	9/16"	SLP750-036C	SLP750N-036C	SLP750N-036S	SLP750N-036N
SLP750-040	5/8"	SLP750-040C	SLP750N-040C	SLP750N-040S	SLP750N-040N

SLP1000 sumiLock Plus- Collets - METRIC

Standard Collet	Collet I.D.	Coolant Collet	Coolant-Thru Nut	Slotted Nut	Nozzle Nut
SLP1000-6	6mm	SLP1000-6C	SLP1000N-6C	SLP1000N-6S	SLP1000N-6N
SLP1000-8	8mm	SLP1000-8C	SLP1000N-8C	SLP1000N-8S	SLP1000N-8N
SLP1000-10	10mm	SLP1000-10C	SLP1000N-10C	SLP1000N-10S	SLP1000N-10N
SLP1000-12	12mm	SLP1000-12C	SLP1000N-12C	SLP1000N-12S	SLP1000N-12N
SLP1000-14	14mm	SLP1000-14C	SLP1000N-14C	SLP1000N-14S	SLP1000N-14N
SLP1000-16	16mm	SLP1000-16C	SLP1000N-16C	SLP1000N-16S	SLP1000N-16N
SLP1000-18	18mm	SLP1000-18C	SLP1000N-18C	SLP1000N-18S	SLP1000N-18N
SLP1000-20	20mm	SLP1000-20C	SLP1000N-20C	SLP1000N-20S	SLP1000N-20N

SLP1000 sumiLock Plus- Collets - INCH

Standard Collet	Collet I.D.	Coolant Collet	Coolant-Thru Nut	Slotted Nut	Nozzle Nut
SLP1000-008	1/8"	SLP1000-008C	SLP1000N-008C	SLP1000N-008S	SLP1000N-008N
SLP1000-012	3/16"	SLP1000-012C	SLP1000N-012C	SLP1000N-012S	SLP1000N-012N
SLP1000-016	1/4"	SLP1000-016C	SLP1000N-016C	SLP1000N-016S	SLP1000N-016N
SLP1000-020	5/16"	SLP1000-020C	SLP1000N-020C	SLP1000N-020S	SLP1000N-020N
SLP1000-024	3/8"	SLP1000-024C	SLP1000N-024C	SLP1000N-024S	SLP1000N-024N
SLP1000-028	7/16"	SLP1000-028C	SLP1000N-028C	SLP1000N-028S	SLP1000N-028N
SLP1000-032	1/2"	SLP1000-032C	SLP1000N-032C	SLP1000N-032S	SLP1000N-032N
SLP1000-040	5/8"	SLP1000-040C	SLP1000N-040C	SLP1000N-040S	SLP1000N-040N
SLP1000-048	3/4"	SLP1000-048C	SLP1000N-048C	SLP1000N-048S	SLP1000N-048N
SLP1000-056	7/8"	SLP1000-056C	SLP1000N-056C	SLP1000N-056S	SLP1000N-056N

SLP1250 sumiLock Plus- Collets - METRIC

Standard Collet	Collet I.D.	Coolant Collet	Coolant-Thru Nut	Slotted Nut	Nozzle Nut
SLP1250-6	6mm	SLP1250-6C	SLP1250N-6C	SLP1250N-6S	SLP1250N-6N
SLP1250-8	8mm	SLP1250-8C	SLP1250N-8C	SLP1250N-8S	SLP1250N-8N
SLP1250-10	10mm	SLP1250-10C	SLP1250N-10C	SLP1250N-10S	SLP1250N-10N
SLP1250-12	12mm	SLP1250-12C	SLP1250N-12C	SLP1250N-12S	SLP1250N-12N
SLP1250-14	14mm	SLP1250-14C	SLP1250N-14C	SLP1250N-14S	SLP1250N-14N
SLP1250-16	16mm	SLP1250-16C	SLP1250N-16C	SLP1250N-16S	SLP1250N-16N
SLP1250-20	20mm	SLP1250-20C	SLP1250N-20C	SLP1250N-20S	SLP1250N-20N
SLP1250-25	25mm	SLP1250-25C	SLP1250N-25C	SLP1250N-25S	SLP1250N-25N

SLP1250 sumiLock Plus- Collets - METRIC

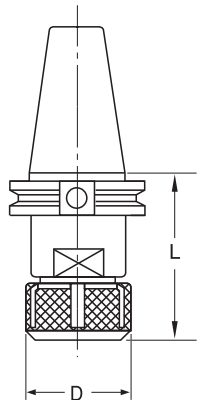
Standard Collet	Collet I.D.	Coolant Collet	Coolant-Thru Nut	Slotted Nut	Nozzle Nut
SLP1250-012	3/16"	SLP1250-012C	SLP1250N-012C	SLP1250N-012S	SLP1250N-012N
SLP1250-016	1/4"	SLP1250-016C	SLP1250N-016C	SLP1250N-016S	SLP1250N-016N
SLP1250-020	5/16"	SLP1250-020C	SLP1250N-020C	SLP1250N-020S	SLP1250N-020N
SLP1250-024	3/8"	SLP1250-024C	SLP1250N-024C	SLP1250N-024S	SLP1250N-024N
SLP1250-028	7/16"	SLP1250-028C	SLP1250N-028C	SLP1250N-028S	SLP1250N-028N
SLP1250-032	1/2"	SLP1250-032C	SLP1250N-032C	SLP1250N-032S	SLP1250N-032N
SLP1250-036	9/16"	SLP1250-036C	SLP1250N-036C	SLP1250N-036S	SLP1250N-036N
SLP1250-040	5/8"	SLP1250-040C	SLP1250N-040C	SLP1250N-040S	SLP1250N-040N
SLP1250-048	3/4"	SLP1250-048C	SLP1250N-048C	SLP1250N-048S	SLP1250N-048N
SLP1250-056	7/8"	SLP1250-056C	SLP1250N-056C	SLP1250N-056S	SLP1250N-056N
SLP1250-064	1"	SLP1250-064C	SLP1250N-064C	SLP1250N-064S	SLP1250N-064N



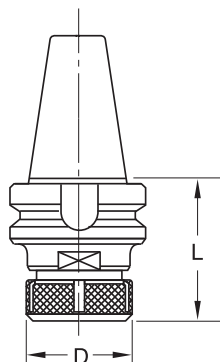
SLP2000 sumiLock Plus™ Collets - INCH					
Standard Collet	Collet I.D.	Coolant Collet	Coolant-Thru Nut	Slotted Nut	Nozzle Nut
SLP2000-064	1"	SLP2000-064C	SLP2000N-064C	SLP2000N-064S	SLP2000N-064N
SLP2000-080	1-1/4"	SLP2000-080C	SLP2000N-080C	SLP2000N-080S	SLP2000N-080N
SLP2000-096	1-1/2"	SLP2000-096C	SLP2000N-096C	SLP2000N-096S	SLP2000N-096N

SLP Spanner Wrenches	
Catalog Number	For Use With
SLP750MC-SPAN	3/4" Capacity Chucks
SLP1000MC-SPAN	1" Capacity Chucks
SLP1250MC-SPAN	1-1/4" Capacity Chucks
SLP2000MC-SPAN	2" Capacity Chucks



**CT Taper TG Milling Chucks**

Catalog Number	Taper	Size Range	L	D	Collet Series
CT40-TG750	40	3/64-3/4"	3"	1-7/8"	TG75
CT50-TG750	50	3/64-3/4"	3-1/2"	1-7/8"	TG75
CT40-TG1000S	40	1/16-1"	2-3/4"	2-1/2"	TG100
CT40-TG1000	40	1/16-1"	3-1/2"	2-1/2"	TG100
CT50-TG1000	50	1/16-1"	3-1/2"	2-1/2"	TG100

**BT Taper TG Milling Chucks**

Catalog Number	Taper	Size Range	L	D	Collet Series
BT30-TG500	30	1/8-1/2"	2"	1-3/8"	TG50
BT30-TG750	30	3/64-3/4"	2-1/2"	1-7/8"	TG75
BT30-TG1000	30	1/16-1"	3-15/16"	2-1/2"	TG100
BT40-TG1000	40	1/16-1"	3-1/2"	2-1/2"	TG100

Note: Special diameters and dimensions available per quotation.

* Additional styles and sizes available on request.



TG50 COLLETS

Inch

Catalog Number	Collet I.D.	Catalog Number	Collet I.D.
TG050-008	1/8"	TG050-021	21/64"
TG050-009	9/64"	TG050-022	11/32"
TG050-010	5/32"	TG050-023	23/64"
TG050-011	11/64"	TG050-024	3/8"
TG050-012	3/16"	TG050-025	25/64"
TG050-013	13/64"	TG050-026	13/32"
TG050-014	7/32"	TG050-027	27/64"
TG050-015	15/64"	TG050-028	7/16"
TG050-016	1/4"	TG050-029	29/64"
TG050-017	17/64"	TG050-030	15/32"
TG050-018	9/32"	TG050-031	31/64"
TG050-019	19/64"	TG050-032	1/2"
TG050-020	5/16"		

TG75 COLLETS

Inch

Catalog Number	Collet I.D.	Catalog Number	Collet I.D.
TG075-003	3/64"	TG075-026	13/32"
TG075-004	1/16"	TG075-027	27/64"
TG075-005	5/64"	TG075-028	7/16"
TG075-006	3/32"	TG075-029	29/64"
TG075-007	7/64"	TG075-030	15/32"
TG075-008	1/8"	TG075-031	31/64"
TG075-009	9/64"	TG075-032	1/2"
TG075-010	5/32"	TG075-033	33/64"
TG075-011	11/64"	TG075-034	17/32"
TG075-012	3/16"	TG075-035	35/64"
TG075-013	13/64"	TG075-036	9/16"
TG075-014	7/32"	TG075-037	37/64"
TG075-015	15/64"	TG075-038	19/32"
TG075-016	1/4"	TG075-039	39/64"
TG075-017	17/64"	TG075-040	5/8"
TG075-018	9/32"	TG075-041	41/64"
TG075-019	19/64"	TG075-042	21/32"
TG075-020	5/16"	TG075-043	43/64"
TG075-021	21/64"	TG075-044	11/16"
TG075-022	11/32"	TG075-045	45/64"
TG075-023	23/64"	TG075-046	23/32"
TG075-024	3/8"	TG075-047	47/64"
TG075-025	25/64"	TG075-048	3/4"

TG100 COLLETS

Inch

Catalog Number	Standard Collet	Coolant Collet	Collet I.D.	Catalog Number	Standard Collet	Coolant Collet	Collet I.D.
TG100-004		–	1/16"	TG100-035		TG100-035C	35/64"
TG100-005		–	5/64"	TG100-036		TG100-036C	9/16"
TG100-006		–	3/32"	TG100-037		TG100-037C	37/64"
TG100-007		–	7/64"	TG100-038		TG100-038C	19/32"
TG100-008		–	1/8"	TG100-039		TG100-039C	39/64"
TG100-009		–	9/64"	TG100-040		TG100-040C	5/8"
TG100-010		–	5/32"	TG100-041		TG100-041C	41/64"
TG100-011		–	11/64"	TG100-042		TG100-042C	21/32"
TG100-012		–	3/16"	TG100-043		TG100-043C	43/64"
TG100-013		–	13/64"	TG100-044		TG100-044C	11/16"
TG100-014		–	7/32"	TG100-045		TG100-045C	45/64"
TG100-015		–	15/64"	TG100-046		TG100-046C	23/32"
TG100-016		TG100-016C	1/4"	TG100-047		TG100-047C	47/64"
TG100-017		TG100-017C	17/64"	TG100-048		TG100-048C	3/4"
TG100-018		TG100-018C	9/32"	TG100-049		TG100-049C	49/64"
TG100-019		TG100-019C	19/64"	TG100-050		TG100-050C	25/32"
TG100-020		TG100-020C	5/16"	TG100-051		TG100-051C	51/64"
TG100-021		TG100-021C	21/64"	TG100-052		TG100-052C	13/16"
TG100-022		TG100-022C	11/32"	TG100-053		TG100-053C	53/64"
TG100-023		TG100-023C	23/64"	TG100-054		TG100-054C	27/32"
TG100-024		TG100-024C	3/8"	TG100-055		TG100-055C	55/64"
TG100-025		TG100-025C	25/64"	TG100-056		TG100-056C	7/8"
TG100-026		TG100-026C	13/32"	TG100-057		TG100-057C	57/64"
TG100-027		TG100-027C	27/64"	TG100-058		TG100-058C	29/32"
TG100-028		TG100-028C	7/16"	TG100-059		TG100-059C	59/64"
TG100-029		TG100-029C	29/64"	TG100-060		TG100-060C	15/16"
TG100-030		TG100-030C	15/32"	TG100-061		TG100-061C	61/64"
TG100-031		TG100-031C	31/64"	TG100-062		TG100-062C	31/32"
TG100-032		TG100-032C	1/2"	TG100-063		TG100-063C	63/64"
TG100-033		TG100-033C	33/64"	TG100-064		TG100-064C	1"
TG100-034		TG100-034C	17/32"				

TG100 COLLETS

Metric

Catalog Number	Standard Collet	Coolant Collet	Collet I.D.	Catalog Number	Standard Collet	Coolant Collet	Collet I.D.
TG100-204		–	4mm	TG100-218		TG100-218C	18mm
TG100-206		TG100-206C	6mm	TG100-220		TG100-220C	20mm
TG100-208		TG100-208C	8mm	TG100-222		TG100-222C	22mm
TG100-210		TG100-210C	10mm	TG100-224		TG100-224C	24mm
TG100-212		TG100-212C	12mm	TG100-225		TG100-225C	25mm
TG100-214		TG100-214C	14mm	TG100-226		TG100-226C	26mm
TG100-216		TG100-216C	16mm				

Note: TG Collets collapse approximately 1/64"

(Continued on next page)



ADAPTERS & HOLDERS

TG Collets and Accessories

(continued from previous page)

TG Chuck Nut Wrenches

Catalog Number	Description
TG25-SPAN	Fits TG25 Chuck Nut
TG50-SPAN	Fits TG50 Chuck Nut
TG75-SPAN	Fits TG75 Chuck Nut
TG100-SPAN	Fits TG100 Chuck Nut
TG150-SPAN	Fits TG150 Chuck Nut

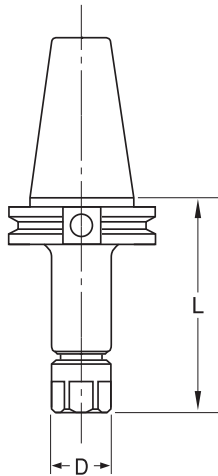
Replacement TG Backup Screws

Catalog Number	Collet Type
TG25-3	TG25
TG50-3	TG50
TG75-3	TG75
TG100-3	TG100
TG150-3	TG150

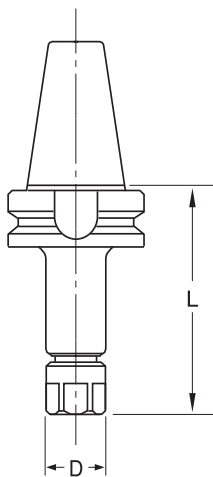
Replacement TG Nut Assemblies

Catalog Number	Description
TG25-NUT	TG25 Chuck Nut, Complete
TG50-NUT	TG50 Chuck Nut, Complete
TG75-NUT	TG75 Chuck Nut, Complete
TG100-NUT	TG100 Chuck Nut, Complete
TG150-NUT	TG150 Chuck Nut, Complete
TG50-1	TG50 Nut Bearing/Spacer Set
TG75-1	TG75 Nut Bearing/Spacer Set
TG100-1	TG100 Nut Bearing/Spacer Set
TG150-1	TG150 Nut Bearing/Spacer Set

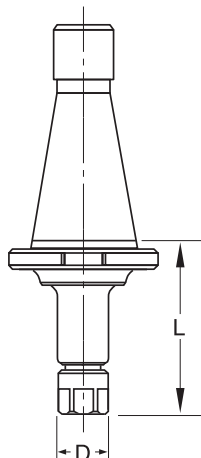


**CT Taper ER Milling Chucks**

Catalog Number	Taper	Size Range	L	D	Collet Series
CT40-ER11	40	.019-.275"	2-1/2"	3/4"	ER11
CT40-ER16	40	1/32-13/32"	3-1/2"	1-1/4"	ER16
CT50-ER16	50	1/32-13/32"	4-1/8"	1-1/4"	ER16
CT40-ER20	40	.039-.511"	2-1/2"	1-3/8"	ER20
CT50-ER20	50	.039-.511"	2-1/2"	1-3/8"	ER20
CT40-ER25	40	.039-.629"	2-1/2"	1-11/16"	ER25
CT50-ER25	50	.039-.629"	2-1/2"	1-11/16"	ER25
CT40-ER32	40	.078-.787"	3-1/8"	2"	ER32
CT50-ER32	50	.078-.787"	4"	2"	ER32
CT40-ER40	40	.118-1.023"	3"	2-1/2"	ER40
CT50-ER40	50	.118-1.023"	4"	2-1/2"	ER40

**BT Taper ER Milling Chucks**

Catalog Number	Taper	Size Range	L	D	Collet Series
BT30-ER11	30	.019-.275"	2"	3/4"	ER11
BT30-ER11L	30	.019-.275"	4"	3/4"	ER11
BT40-ER11	40	.019-.275"	2-1/2"	3/4"	ER40
BT30-ER16	30	1/32-13/32"	2-3/8"	1-1/4"	ER16
BT30-ER16L	30	1/32-13/32"	4"	1-1/4"	ER16
BT40-ER16	40	1/32-13/32"	3-1/2"	1-1/4"	ER16
BT50-ER16	50	1/32-13/32"	4-1/8"	1-1/4"	ER16
BT40-ER20	40	.039-.511"	2-1/4"	1-3/8"	ER20
BT50-ER20	50	.039-.511"	2-5/8"	1-3/8"	ER20
BT30-ER25	30	.039-.629"	2"	1-5/8"	ER25
BT30-ER25L	30	.039-.629"	4"	1-5/8"	ER25
BT40-ER25	40	.039-.629"	2-1/4"	1-5/8"	ER25
BT50-ER25	50	.039-.629"	2-5/8"	1-5/8"	ER25
BT30-ER32	30	.078-.787"	3"	2"	ER32
BT40-ER32	40	.078-.787"	3-1/8"	2"	ER32
BT50-ER32	50	.078-.787"	4"	2"	ER32
BT50-ER40	50	.118-1.023"	4"	2-1/2"	ER40

**NMTB Taper ER Milling Chucks**

Catalog Number	Taper	Size Range	L	D	Collet Series
NMTB40-ER16	40	1/32-13/32"	1-3/4"	1-1/4"	ER16

ER Collets are on the following page.

* Additional styles and sizes available on request.

ER SERIES 40
STANDARD COLLETS

Metric

Catalog Number	Collet		
	Metric	I.D.	Inch
ER40-157	3-4mm	.118-.157"	
ER40-196	4-5mm	.157-.196"	
ER40-236	5-6mm	.196-.236"	
ER40-275	6-7mm	.236-.275"	
ER40-314	7-8mm	.275-.314"	
ER40-354	8-9mm	.314-.354"	
ER40-393	9-10mm	.354-.393"	
ER40-433	10-11mm	.393-.433"	
ER40-452	11-11.5mm	.433-.452"	
ER40-472	11-12mm	.452-.472"	
ER40-511	12-13mm	.472-.511"	
ER40-551	13-14mm	.511-.551"	
ER40-590	14-15mm	.551-.590"	
ER40-629	15-16mm	.590-.629"	
ER40-669	16-17mm	.629-.669"	
ER40-708	17-18mm	.669-.708"	
ER40-748	18-19mm	.708-.748"	
ER40-767	18.5-19.5mm	.728-.767"	
ER40-787	19-20mm	.748-.787"	
ER40-826	20-21mm	.787-.826"	
ER40-866	21-22mm	.826-.866"	
ER40-905	22-23mm	.866-.905"	
ER40-944	23-24mm	.905-.944"	
ER40-984	24-25mm	.944-.984"	
ER40-1023	25-26mm	.984-1.023"	

ER SERIES 40
COOLANT COLLETS

Metric

Catalog Number	Collet I.D.	Catalog Number	Collet I.D.
	Metric		Metric
ER40-393C	10.0mm	ER40-728C	18.5mm
ER40-413C	10.5mm	ER40-748C	19.0mm
ER40-433C	11.0mm	ER40-767C	19.5mm
ER40-452C	11.5mm	ER40-787C	20.0mm
ER40-472C	12.0mm	ER40-807C	20.5mm
ER40-492C	12.5mm	ER40-826C	21.0mm
ER40-511C	13.0mm	ER40-846C	21.5mm
ER40-531C	13.5mm	ER40-866C	22.0mm
ER40-551C	14.0mm	ER40-885C	22.5mm
ER40-570C	14.5mm	ER40-905C	23.0mm
ER40-590C	15.0mm	ER40-925C	23.5mm
ER40-610C	15.5mm	ER40-944C	24.0mm
ER40-629C	16.0mm	ER40-964C	24.5mm
ER40-649C	16.5mm	ER40-984C	25.0mm
ER40-669C	17.0mm	ER40-1003C	26.0mm
ER40-688C	17.5mm	ER40-1023C	26.5mm
ER40-708C	18.0mm		

REPLACEMENT
ER CHUCK NUTS

Catalog Number	Description
ER11-NUT	ER11 Chuck Nut, Complete
ER16-NUT	ER16 Chuck Nut, Complete
ER20-NUT	ER20 Chuck Nut, Complete
ER25-NUT	ER25 Chuck Nut, Complete
ER32-NUT	ER32 Chuck Nut, Complete
ER40-NUT	ER40 Chuck Nut, Complete

ER CHUCK NUT
WRENCHES

Catalog Number	Description
ER011-HEX	Fits ER11 Chuck Nut
ER016-SPAN	Fits ER16 Chuck Nut
ER020-SPAN	Fits ER20 Chuck Nut
ER025-SPAN	Fits ER25 Chuck Nut
ER032-SPAN	Fits ER32 Chuck Nut
ER040-SPAN	Fits ER40 Chuck Nut

ER COLLET RACKS

Catalog Number	Description
ER11-RACK	ER11 Collet Rack
ER16-RACK	ER16 Collet Rack
ER20-RACK	ER20 Collet Rack
ER25-RACK	ER25 Collet Rack
ER32-RACK	ER32 Collet Rack
ER40-RACK	ER40 Collet Rack

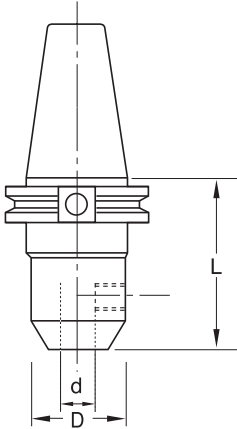
REPLACEMENT
ER BACKUP SCREWS

Catalog Number	Collet Type
ER11-3-Screw	ER11
ER16-3-Screw	ER16
ER20-3-Screw	ER20
ER25-3-Screw	ER25
ER32-3-Screw	ER32
ER40-3-Screw	ER40

ER NUT BEARINGS

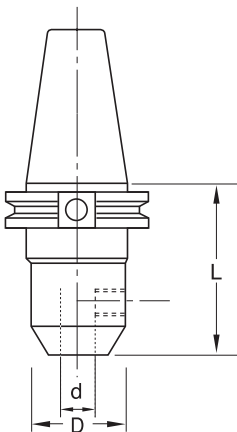
Catalog Number	Description
ER16-1	ER16 Bearing/Spacer Set
ER20-1	ER20 Bearing/Spacer Set
ER25-1	ER25 Bearing/Spacer Set
ER32-1	ER32 Bearing/Spacer Set
ER40-1	ER40 Bearing/Spacer Set





CT40 Endmill Holders - INCH						
Catalog Number	Taper	d	L	D	Set Screw Size	Retention Knob Thread
CT40-06-125EMH	40	1/8"	2-3/8"	3/4"	6-32x1/4	5/8"-11
CT40-06-187EMH	40	3/16"	2-1/2"	3/4"	8-32x1/4	5/8"-11
CT40-06-250EMH	40	1/4"	2-1/2"	13/16"	1/4-28x1/4	5/8"-11
CT40-06-312EMH	40	5/16"	2-1/2"	7/8"	5/16-24x1/4	5/8"-11
CT40-06-375EMH	40	3/8"	2-1/2"	1"	3/8-24x5/16	5/8"-11
CT40-06-500EMH	40	1/2"	2-1/2"	1-3/8"	7/16-20x3/8	5/8"-11
CT40-06-625EMH	40	5/8"	3"	1-5/8"	9/16-18x1/2	5/8"-11
CT40-06-750EMH	40	3/4"	3"	1-3/4"	5/8-18x1/2	5/8"-11
CT40-06-875EMH	40	7/8"	3-1/2"	2"	5/8-18x1/2**	5/8"-11
CT40-06-1000EMH	40	1"	4"	2-3/8"	3/4-16x11/16**	5/8"-11
CT40-06-1250EMH	40	1-1/4"	4"	2-1/2"	3/4-16x11/16**	5/8"-11
CT40-06-1500EMH	40	1-1/2"	4-1/2"	3"	3/4-16x11/16**	5/8"-11

CT40 Endmill Holders - METRIC						
Catalog Number	Taper	d	L	D	Set Screw Size	Retention Knob Thread
CT40-06-6EMH	40	6mm	2-1/2"	13/16"	1/4-28x1/4	5/8"-11
CT40-06-8EMH	40	8mm	2-1/2"	7/8"	5/16-24x1/4	5/8"-11
CT40-06-10EMH	40	10mm	2-1/2"	1"	3/8-24x5/16	5/8"-11
CT40-06-12EMH	40	12mm	2-1/2"	1-3/8"	7/16-20x3/8	5/8"-11
CT40-06-18EMH	40	18mm	3"	1-3/4"	5/8-18x1/2	5/8"-11
CT40-06-20EMH	40	20mm	3"	1-3/4"	5/8-18x1/2	5/8"-11
CT40-06-25EMH	40	25mm	4"	2-3/8"	3/4-16x11/16**	5/8"-11
CT40-06-32EMH	40	32mm	4"	2-1/2"	3/4-16x11/16**	5/8"-11

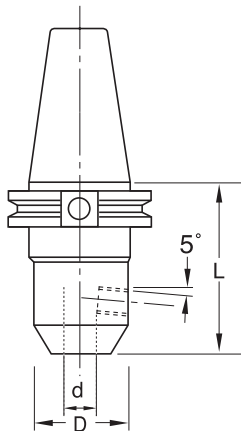


CT50 Endmill Holders - INCH						
Catalog Number	Taper	d	L	D	Set Screw Size	Retention Knob Thread
CT50-06-500EMH	50	1/2"	2-5/8"	1-3/8"	7/16-20x3/8	1"-8
CT50-06-625EMH	50	5/8"	3"	1-5/8"	9/16-18x1/2	1"-8
CT50-06-750EMH	50	3/4"	3"	1-7/8"	5/8-18x1/2	1"-8
CT50-06-875EMH	50	7/8"	3-3/4"	2"	5/8-18x1/2**	1"-8
CT50-06-1000EMH	50	1"	4"	2-3/8"	3/4-16x11/16**	1"-8
CT50-06-1250EMH	50	1-1/4"	4"	2-1/2"	3/4-16x11/16**	1"-8
CT50-06-1500EMH	50	1-1/2"	4-1/2"	3"	3/4-16x11/16**	1"-8
CT50-06-2000EMH	50	2"	5-3/8"	3-3/4"	1-14x7/8**	1"-8

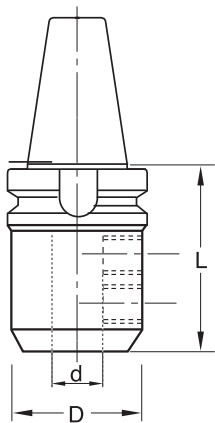
CT50 Endmill Holders - METRIC						
Catalog Number	Taper	d	L	D	Set Screw Size	Retention Knob Thread
CT50-06-16EMH	50	16mm	3"	1-5/8"	9/16-18x1/2	1"-8
CT50-06-18EMH	50	18mm	3"	1-7/8"	5/8-18x1/2	1"-8
CT50-06-20EMH	50	20mm	3"	1-7/8"	5/8-18x1/2	1"-8
CT50-06-25EMH	50	25mm	4"	2-3/8"	3/4-16x11/16**	1"-8
CT50-06-32EMH	50	32mm	4"	2-1/2"	3/4-16x11/16**	1"-8

* Additional styles and sizes available on request.

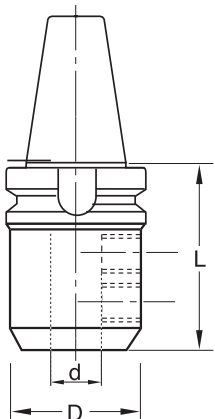
** (2) Required for these holders

**CT50 Aerospace Endmill Holders - INCH**

Catalog Number	Taper	d	L	D	Set Screw Size	Retention Knob Thread
CT50-06-375AEMH	50	3/8"	2-13/16"	1-3/8"	3/8-24UNF	1"-8
CT50-06-500AEMH	50	1/2"	2-3/4"	1-5/8"	3/8-24UNF	1"-8
CT50-06-625AEMH	50	5/8"	2-11/16"	1-13/16"	1/2-20UNF	1"-8
CT50-06-750AEMH	50	3/4"	2-5/8"	2"	1/2-20UNF	1"-8
CT50-06-875AEMH	50	7/8"	2-5/8"	2-1/4"	1/2-20UNF	1"-8
CT50-06-1000AEMH	50	1"	3"	2-5/8"	3/4-16UNF	1"-8
CT50-06-1250AEMH	50	1-1/4"	3"	2-7/8"	3/4-16UNF	1"-8
CT50-06-1500AEMH	50	1-1/2"	4"	3-1/4"	3/4-16UNF	1"-8
CT50-06-2000AEMH	50	2"	5-3/8"	4"	3/4-16UNF**	1"-8

**BT40 Endmill Holders - INCH**

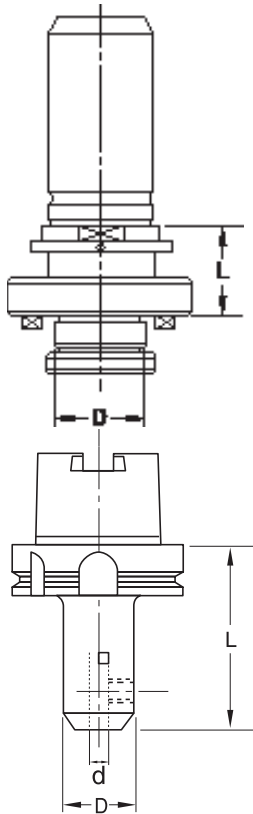
Catalog Number	Taper	d	L	D	Set Screw Size	Retention Knob Thread
BT40-06-125EMH	40	1/8"	2-3/8"	3/4"	6-32x1/4	M16P2
BT40-06-187EMH	40	3/16"	2-1/2"	3/4"	6-32x1/4	M16P2
BT40-06-250EMH	40	1/4"	2-1/2"	13/16"	1/4-28x1/4	M16P2
BT40-06-312EMH	40	5/16"	2-1/2"	7/8"	5/16-24x1/4	M16P2
BT40-06-375EMH	40	3/8"	2-1/2"	1"	3/8-24x5/16	M16P2
BT40-06-500EMH	40	1/2"	2-1/2"	1-3/8"	7/16-20x3/8	M16P2
BT40-06-625EMH	40	5/8"	2-1/2"	1-11/16"	9/16-20x1/2	M16P2
BT40-06-750EMH	40	3/4"	2-1/2"	1-7/8"	5/8-18x1/2	M16P2
BT40-06-875EMH	40	7/8"	3-3/8"	2"	5/8-18x1/2**	M16P2
BT40-06-1000EMH	40	1"	3-9/16"	2-3/8"	3/4-16x11/16**	M16P2
BT40-06-1250EMH	40	1-1/4"	3-9/16"	2-1/2"	3/4-16x11/16**	M16P2
BT40-06-1500EMH	40	1-1/2"	4-1/2"	3"	3/4-16x11/16**	M16P2

**BT50 Endmill Holders - INCH**

Catalog Number	Taper	d	L	D	Set Screw Size	Retention Knob Thread
BT50-06-500EMH	50	1/2"	3"	1-3/8"	7/16-20x3/8	M24P3
BT50-06-625EMH	50	5/8"	3"	1-11/16"	5/8-18x1/2	M24P3
BT50-06-750EMH	50	3/4"	3"	1-7/8"	5/8-18x1/2	M24P3
BT50-06-875EMH	50	7/8"	4"	2"	5/8-18x1/2	M24P3
BT50-06-1000EMH	50	1"	4"	2-3/8"	3/4-16x11/16**	M24P3
BT50-06-1250EMH	50	1-1/4"	4"	2-1/2"	3/4-16x11/16**	M24P3
BT50-06-1500EMH	50	1-1/2"	4-1/2"	3"	3/4-16x11/16**	M24P3
BT50-06-2000EMH	50	2"	5"	3-3/4"	1-14x7/8**	M24P3

** (2) Required for these holders





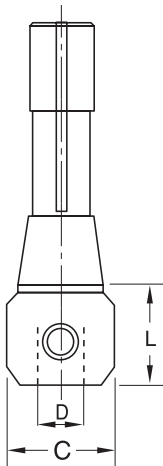
K & T 200 Series Endmill Holders - INCH

Catalog Number	D	L	Set Screw Size
KT20-06-375EMH	3/8"	1-15/16"	3/8-24x5/16
KT20-06-500EMH	1/2"	1-15/16"	7/16-20X3/8
KT20-06-625EMH	5/8"	1-15/16"	1/2-20X5/8
KT20-06-750EMH	3/4"	1-15/16"	5/8-18X1/2
KT20-06-875EMH	7/8"	1-15/16"	5/8-18X1/2
KT20-06-1000EMH	1"	1-15/16"	5/8-18X1/2
KT20-06-1250EMH	1-1/4"	1-15/16"	5/8-18X1/2

HSK Endmill Holders - INCH

Catalog Number	Taper	d	L	D	Set Screw Size
HSK63-250-80EMH	HSK-63	1/4"	3-1/8"	1-1/8"	M8P
HSK63-375-90EMH	HSK-63	3/8"	3-7/16"	1-3/8"	M10P
HSK63-500-95EMH	HSK-63	1/2"	3-3/4"	1-5/8"	M12P
HSK63-625-100EMH	HSK-63	5/8"	3-15/16"	1-7/8"	M14P
HSK63-750-100EMH	HSK-63	3/4"	3-15/16"	2-1/16"	M16P
HSK100-375-90EMH	HSK-100	3/8"	3-7/16"	1-3/8"	M10P
HSK100-500-100EMH	HSK-100	1/2"	3-5/16"	1-5/8"	M12P
HSK100-625-105EMH	HSK-100	5/8"	4-1/8"	1-7/8"	M14P
HSK100-750-110EMH	HSK-100	3/4"	4-5/16"	2-1/16"	M16P
HSK100-1000-115EMH	HSK-100	1"	4-1/2"	2-9/16"	M18P
HSK100-1250-120EMH	HSK-100	1-7/16"	4-3/4"	2-13/16"	M20P

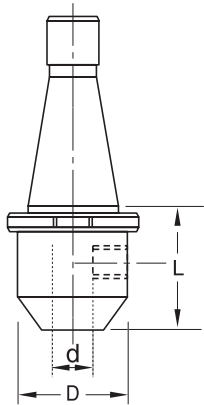
Note: Balanceable HSK holders are available upon request.



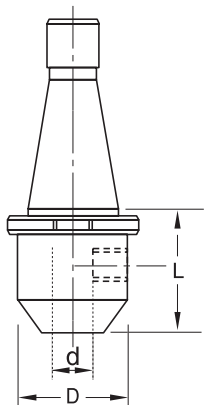
R8 Endmill Holders - INCH

Catalog Number	D	L	C	Set Screw Size
R8-32-3	1/2"	1-15/16"	1-3/8"	7/16-20x3/8
R8-40-3	5/8"	1-1/2"	1-5/8"	9/16-18x1/2
R8-48-3	3/4"	2-3/8"	1-7/8"	5/8-18x1/2
R8-56-3	7/8"	2-3/4"	2"	5/8-18x1/2**
R8-64-3	1"	3-1/4"	2-3/8"	3/4-16x11/16**
R8-80-3	1-1/4"	3-1/4"	2-1/2"	3/4-16x11/16**
R8-96-3	1-1/2"	3-3/4"	3"	3/4-16x11/16**

** (2) Required for these holders

**NMTB 30 Endmill Holders - INCH**

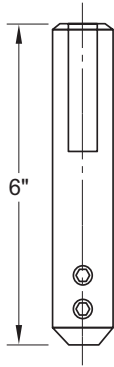
Catalog Number	Taper	d	L	D	Set Screw Size
NMTB30-125EMH	30	1/8"	1-3/4"	3/4"	6-32x1/4
NMTB30-187EMH	30	3/16"	1-3/4"	3/4"	8-32x1/4
NMTB30-250EMH	30	1/4"	1-3/4"	13/16"	1/4-28x1/4
NMTB30-312EMH	30	5/16"	1-3/4"	7/8"	5/16-24x1/4
NMTB30-375EMH	30	3/8"	1-3/4"	1"	3/8-24x5/16
NMTB30-500EMH	30	1/2"	1-3/4"	1-3/8"	7/16-20x3/8
NMTB30-625EMH	30	5/8"	1-3/4"	1-7/16"	9/16-18x1/2
NMTB30-750EMH	30	3/4"	2-1/4"	1-7/8"	5/8-18x1/2
NMTB30-875EMH	30	7/8"	2-1/2"	2"	5/8-18x1/2**
NMTB30-1000EMH	30	1"	2-11/16"	2-3/8"	3/4-16x11/16**
NMTB30-1250EMH	30	1-1/4"	3-5/8"	2-1/2"	3/4-16x11/16**

**NMTB 40 Endmill Holders - INCH**

Catalog Number	Taper	d	L	D	Set Screw Size
NMTB40-125EMH	40	1/8"	2-5/16"	3/4"	6-32x1/4
NMTB40-187EMH	40	3/16"	2-5/16"	3/4"	8-32x1/4
NMTB40-250EMH	40	1/4"	2-5/16"	13/16"	1/4-28x1/4
NMTB40-312EMH	40	5/16"	2-5/16"	7/8"	5/16-24x1/4
NMTB40-375EMH	40	3/8"	2-5/16"	1"	3/8-24x5/16
NMTB40-500EMH	40	1/2"	2-5/16"	1-3/8"	7/16-20x3/8
NMTB40-625EMH	40	5/8"	2-5/16"	1-11/16"	9/16-18x1/2
NMTB40-750EMH	40	3/4"	2-5/16"	1-7/8"	5/8-18x1/2
NMTB40-875EMH	40	7/8"	2-15/16"	2"	5/8-18x1/2**
NMTB40-1000EMH	40	1"	3-3/8"	2-3/8"	3/4-16x11/16**
NMTB40-1250EMH	40	1-1/4"	3-11/16"	2-1/2"	3/4-16x11/16**
NMTB40-1500EMH	40	1-1/2"	3-15/16"	3"	3/4-16x11/16**

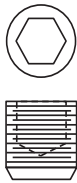
** (2) Required for these holders.





Endmill Holder Extensions - Straight Shank - INCH

Catalog Number	End Mill Size	Shank Diameter	Set Screw Size
S75-125EMHE	3/8"	3/4"	6-32x1/4
S75-187EMHE	3/16"	3/4"	8-32x1/4
S75-250EMHE	1/4"	3/4"	1/4-28x1/4
S75-312EMHE	5/16"	3/4"	5/16-24x5/16
S10-375EMHE	3/8"	1"	3/8-24x5/16
S10-500EMHE	1/2"	1"	7/16-20x3/8**



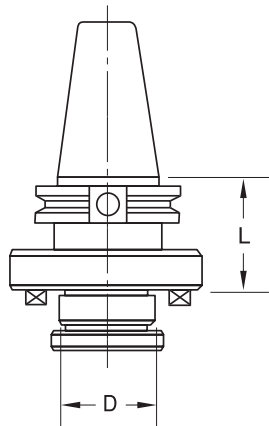
Replacement Set Screws - Endmill Holders

Catalog Number	Size of Holder I.D.
RSS6-32x1/4	1/8"
RSS8-32x1/4	3/16"
RSS1/4-28x1/4	1/4", 6mm
RSS5/16-24x1/4	5/16", 6mm
RSS3/8-24x5/16	3/8", 7/16", 6mm
RSS7/16-20x3/8	1/2", 12mm
RSS9/16-18x1/2	5/8", 16mm
RSS5/8-18x1/2	3/4", 7/8", 18-20mm
RSS3/4-16x11/16	1"-1-1/2", 25-42mm
RSS1-14x7/8	2" & 2-1/2"

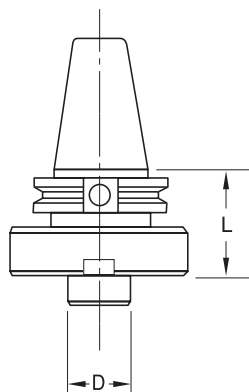
Replacement Set Screws - Aerospace Endmill Holders

Catalog Number	Size of Holder I.D.
RSS3/8-24UNF	3/8" & 1/2"
RSS1/2-20UNF	5/8" & 7/8"
RSS3/4-16UNF	1"-2-1/2"

** (2) Required for these holders

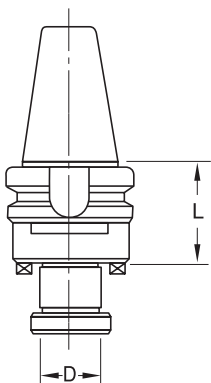


CT Taper Shell Mill Holders - INCH							
Catalog Number	Taper	D	Face Dia.	L	Sq. Key Size	Arbor Thread	Retention Knob Thread
CT40-750SMH	40	3/4"	2"	1-3/4"	5/16"	3/8"-24	5/8"-11
CT40-1000SMH	40	1"	2-3/8"	1-3/4"	3/8"	1/2"-20	5/8"-11
CT40-1250SMH	40	1-1/4"	2-7/8"	2"	1/2"	5/8"-18	5/8"-11
CT40-1500SMH	40	1-1/2"	3-3/4"	2"	5/8"	3/4"-16	5/8"-11
CT45-750SMH	45	3/4"	2"	1-3/4"	5/16"	3/8"-24	3/4"-10
CT45-1000SMH	45	1"	2-1/4"	1-3/4"	3/8"	1/2"-10	3/4"-10
CT45-1250SMH	45	1-1/4"	2-7/8"	1-3/4"	1/2"	5/8"-18	3/4"-10
CT45-1500SMH	45	1-1/2"	3-3/4"	2"	5/8"	3/4"-16	3/4"-10
CT45-2000SMH	45	2"	4-3/8"	2"	3/4"	1"-12	3/4"-10
CT50-750SMH	50	3/4"	2"	1-3/4"	5/16"	3/8"-24	1"-8
CT50-1000SMH	50	1"	2-3/4"	1-3/4"	3/8"	1/2"-20	1"-8
CT50-1250SMH	50	1-1/4"	2-7/8"	1-3/4"	1/2"	5/8"-18	1"-8
CT50-1500SMH	50	1-1/2"	3-3/4"	2"	5/8"	3/4"-16	1"-8
CT50-2000SMH	50	2"	4-3/8"	2"	3/4"	1"-14	1"-8



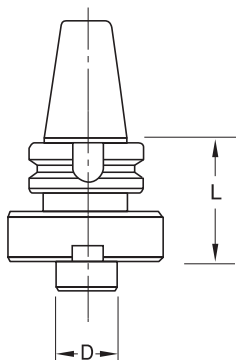
CT Taper Face Mill Holders - INCH						
Catalog Number	Taper	D	Face Dia.	L	Sq. Key Size	Retention Knob Thread
CT50-2000FMH	50	2"	5-1/16"	3"	3/4"	1"-8
CT50-2500FMH	50	2-1/2"	5"	3"	1"	1"-8





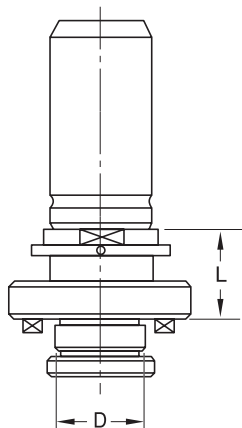
BT Taper Shell Mill Holders - INCH

Catalog Number	Taper	D	Face Dia.	L	Sq. Key Size	Arbor Thread	Retention Stud Thread
BT40-750SMH	40	3/4"	2"	1-3/4"	5/16"	3/8"-24	M16P2
BT40-1000SMH	40	1"	2-3/8"	1-3/4"	3/8"	1/2"-20	M16P2
BT40-1250SMH	40	1-1/14"	2-7/8"	1-3/4"	1/2"	5/8"-18	M16P2
BT40-1500SMH	40	1-1/2"	3-3/4"	1-3/4"	5/8"	3/4"-16	M16P2
BT50-750SMH	50	3/4"	2"	1-3/4"	5/16"	3/8"-24	M24P3
BT50-1000SMH	50	1"	2-3/8"	1-3/4"	3/8"	1/2"-20	M24P3
BT50-1250SMH	50	1-1/4"	2-7/8"	2"	1/2"	5/8"-18	M24P3
BT50-1500SMH	50	1-1/2"	3-3/4"	2"	5/8"	3/4"-16	M24P3
BT50-2000SMH	50	2"	4-3/8"	2"	3/4"	1"-14	M24P3

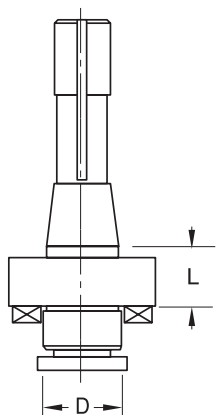


BT Taper Face Mill Holders - INCH

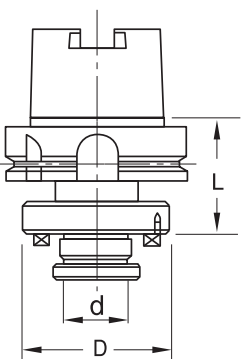
Catalog Number	Taper	D	Face Dia.	L	Sq. Key Size	Retention Stud Thread
BT50-2000FMH	50	2"	5-1/16"	3"	3/4"	1"-8
BT50-2000FMH	50	2-1/2"	5"	3"	1"	1"-8

**K & T Series 200 Shell Mill Holders - INCH**

Catalog Number	D	L	Sq. Key Size	Set Screw Size
KT20-750SMH	3/4"	2-15/16"	5/16"	3/8"-24
KT20-1000SMH	1"	2-15/16"	3/8"	1/2"-20
KT20-1250SMH	1-1/4"	3-15/16"	1/2"	5/8"-18
KT20-1500SMH	1-1/2"	3-15/16"	5/8"	3/4"-16

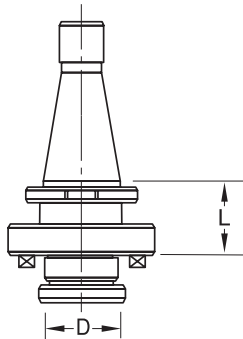
**R8 Shell Mill Holders - INCH**

Catalog Number	D	L	Sq. Key Size	Set Screw Size
R8-48-5	3/4"	1"	5/16"	3/8"-24
R8-64-5	1"	1"	3/8"	1/2"-20
R8-80-5	1-1/4"	1"	1/2"	5/8"-18
R8-96-5	1-1/2"	1-3/4"	5/8"	3/4"-16

**HSK Shell Mill Holders - INCH**

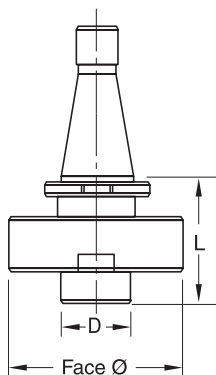
Catalog Number	Taper	d	L	D	Set Screw Size
HSK63-1000SMH	HSK-63A	1"	2-3/8"	2"	1/2"-20
HSK63-1250SMH	HSK-63A	1-1/4"	2-3/8"	2-3/8"	5/8"-18
HSK63-1500SMH	HSK-63A	1-1/2"	2-3/8"	3-1/8"	3/4"-16
HSK100-1000SMH	HSK-100A	1"	3"	2"	1/2"-20
HSK100-1250SMH	HSK-100A	1-1/4"	3"	2-3/8"	5/8"-18
HSK100-1500SMH	HSK-100A	1-1/2"	3"	3-1/8"	3/4"-16
HSK100-2000SMH	HSK-100A	2"	4"	3-7/8"	1"-14





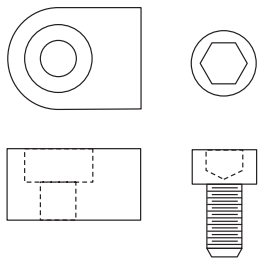
NMTB Taper Shell Mill Holders - INCH

Catalog Number	Taper	D	Face Dia.	L	Sq. Key Size	Arbor Thread
NMTB30-750SMH	30	3/4"	1-15/16"	1-5/16"	5/16"	3/8"-24
NMTB30-1000SMH	30	1"	2-3/8"	1-5/16"	3/8"	1/2"-20
NMTB30-1250SMH	30	1-1/4"	2-7/8"	1-7/16"	1/2"	5/8"-18
NMTB40-750SMH	40	3/4"	2"	7/8"	5/16"	3/8"-24
NMTB40-1000SMH	40	1"	2-3/8"	1-5/16"	3/8"	1/2"-20
NMTB40-1250SMH	40	1-1/4"	2-7/8"	1-1/2"	1/2"	5/8"-18
NMTB40-1500SMH	40	1-1/2"	3-1/2"	1-5/8"	5/8"	3/4"-16
NMTB50-750SMH	50	3/4"	2"	1-1/4"	5/16"	3/8"-24
NMTB50-1000SMH	50	1"	2-3/8"	1-7/8"	3/8"	1/2"-20
NMTB50-1250SMH	50	1-1/4"	2-7/8"	1-7/8"	1/2"	5/8"-18
NMTB50-1500SMH	50	1-1/2"	3-1/2"	1-7/8"	5/8"	3/4"-16
NMTB50-2000SMH	50	2"	4-3/8"	1-7/8"	3/4"	1"-14



NMTB Taper Face Mill Holders - INCH

Catalog Number	Taper	D	Face Dia.	L	Sq. Key Size
NMTB50-2000FMH	50	2"	5-1/16"	3"	3/4"
NMTB50-2500FMH	50	2-1/2"	5"	3"	1"

**Replacement Shell Mill Holder Keys**

Catalog Number	Description
SMHK-3/4-Keyset	Two 5/16" Keys with Screws
SMHK-1-Keyset	Two 3/8" Keys with Screws
SMHK-1-1/4-Keyset	Two 1/2" Keys with Screws
SMHK-1-1/2-Keyset	Two 5/8" Keys with Screws
SMHK-2-Keyset	Two 3/4" Keys with Screws
SMHK-FMH-Keyset	Two 1" Keys with Screws

**Arbor Screw & Mounting Bolt Reference for Sumitomo Milling Cutters**

Screw/Bolt Description	Cutter Type/Size
*3/8-24x-1-1/4" Lg. Socket Head Cap Screw	(series) UFO, APG, DPG, CHG, WFM, CPG, FPG, EHG & WGC [size: 2.000" - 3.000"]
BFX3/4x16	(series) UFO, APG, DPG, CHG, WFM, CPG, FPG, EHG & WGC [size: 4.000" - 5.000"]
BFX1x14	(series) UFO, APG, DPG, CHG, WFM, CPG, FPG, EHG & WGC [size: 6.000"]
*5/8-11x2-3/16" Lg. Socket Head Cap Screw	(series) UFO, APG, DPG, CHG, WFM, CPG, FPG, EHG & WGC [size: 8.000" - 12.000"]

*Note: Standard "Hardware Store" items are not available from Sumitomo. These items should have class 2A threads (min.) and conform to ASTM A574-76 for best results. Reference "Grade 8" or better required.



TIGHTENING FIXTURES & RETENTION KNOBS

Pages 412-414



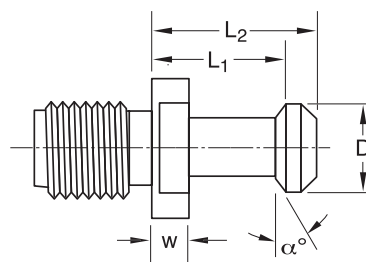
Tightening
Fixtures

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TIGHTENING FIXTURES & RETENTION KNOBS

Tightening Fixtures & Retention Knobs



CT Tooling Retension Knobs

Catalog Number	D (In.)	L1 (In.)	L2 (In.)	α°	W (In.)	Thread (In.)
CT40-1500C*	.75	.79	1.03	15	.28	5/8-11
CT40-1500ISOC*	.75	.79	1.02	15	.16	5/8-11
CT40-4500	.59	.99	1.26	45	.12	5/8-11
CT40-4500B	.59	.99	1.26	45	.12	5/8-11
CT40-4500C*	.59	.99	1.26	45	.12	5/8-11
CT40S-4500	.59	.99	1.26	45	.12	5/8-11
CT40-6000	.59	.99	1.26	60	.12	5/8-11
CT40-6000B	.59	.99	1.26	60	.12	5/8-11
CT40-6000C*	.59	.99	1.26	60	.12	5/8-11
CT40S-6000	.59	.99	1.26	60	.12	5/8-11
CT40-9000	.59	.99	1.26	90	.12	5/8-11
CT40-9000B	.59	.99	1.26	90	.12	5/8-11
CT40-9000C*	.59	.99	1.26	90	.12	5/8-11
CT40S-9000	.59	.99	1.26	90	.12	5/8-11
CT40-C*	.74	.44	.64	45	.12	5/8-11
CT40-BC*	.74	.44	.64	45	.12	5/8-11
CT40-MAZAK	.59	.777	1.05	90	.19	5/8-11
CT40-MITSUI	.94	.708	.98	90	.19	5/8-11
CT45-4500	.74	1.23	1.58	45	.31	3/4-10
CT45-6000	.74	1.23	1.58	60	.31	3/4-10
CT45-9000	.74	1.23	1.58	90	.31	3/4-10
CT45-C*	.94	.58	.82	45	.16	3/4-10
CT50-1500C*	1.1	.992	1.35	15	.28	1-8
CT50-1500ISOC*	1.1	.992	1.35	15	.2	1-8
CT50-4500	.9	1.377	1.77	45	.39	1-8
CT50-4500B	.9	1.377	1.77	45	.39	1-8
CT50-4500C*	.9	1.377	1.77	45	.39	1-8
CT50-6000	.9	1.377	1.77	60	.39	1-8
CT50-6000B	.9	1.377	1.77	60	.39	1-8
CT50-6000C*	.9	1.377	1.77	60	.39	1-8
CT50-9000	.9	1.377	1.77	90	.39	1-8
CT50-9000B	.9	1.377	1.77	90	.39	1-8
CT50-9000C*	.9	1.377	1.77	90	.39	1-8
CT50-C*	1.14	.7	1	45	.2	1-8
CT50-BC*	1.14	.7	1	45	.2	1-8
CT50-MAZAK	.9	1.385	1.78	90	.69	1-8
CT50-MITSUI	.94	.905	1.22	90	.21	1-8

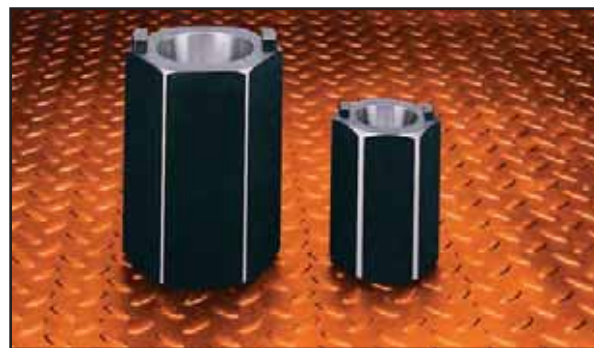
*These items are supplied with coolant hole standard.



BT Tooling Retention Knobs

Catalog Number	D (In.)	L1 (In.)	L2 (In.)	Angle (Degrees)	W (In.)	Thread (In.)
BT30-4500	.44	.709	.9	45°	.19	M12P1.75
BT30-6000	.44	.709	.9	60°	.19	M12P1.75
BT35-4500	.54	.885	1.1	45°	.19	M12P1.75
BT35-6000	.54	.885	1.1	60°	.19	M12P1.75
BT35-9000	.55	.788	.9	90°	.19	M12P1.75
BT40-1500C*	.75	.91	1.14	15°	.27	M16P2
BT40-1500ISOC*	.75	.788	1.02	15°	.16	M16P2
BT40-4500	.59	1.102	1.37	45°	.23	M16P2
BT40-4500C*	.59	1.102	1.37	45°	.23	M16P2
BT40-6000	.59	1.102	1.37	60°	.23	M16P2
BT40-6000C*	.59	1.102	1.37	60°	.23	M16P2
BT40-9000	.59	1.102	1.37	90°	.23	M16P2
BT40-9000C*	.59	1.102	1.37	90°	.23	M16P2
BT40-C*	.74	.43	.64	45°	.12	M16P2
BT40-FADAL	.74	.542	.752	45°	.12	M16P2
BT45-4500	.75	1.22	1.57	45°	.31	M20P2.5
BT45-6000	.75	1.22	1.57	60°	.31	M20P2.5
BT50-4500	.9	1.377	1.77	45°	.39	M24P3
BT50-4500C*	.9	1.377	1.77	45°	.39	M24P3
BT50-6000	.9	1.377	1.77	60°	.39	M24P3
BT50-6000C*	.9	1.377	1.77	60°	.39	M24P3
BT50-9000	.9	1.377	1.77	90°	.39	M24P3
BT50-9000C*	.9	1.377	1.77	90°	.39	M24P3

* Supplied with coolant hole



Tool Tightening Fixtures

Catalog Number	Description
C30-TOOLSET	CT30-Taper TOOL SET
C40-TOOLSET	CT40-Taper TOOL SET
C50-TOOLSET	CT50-Taper TOOL SET
B30-TOOLSET	BT30-Taper TOOL SET
B40-TOOLSET	BT40-Taper TOOL SET
B50-TOOLSET	BT50-Taper TOOL SET

Standard Tightening Fixtures

Catalog Number	Taper (Degrees)
30-SCFX	30°
40-SCFX	40°
50-SCFX	50°



SUMITOMO

CARBIDE - CBN - DIAMOND

1-800-950-5202

www.sumicarbide.com

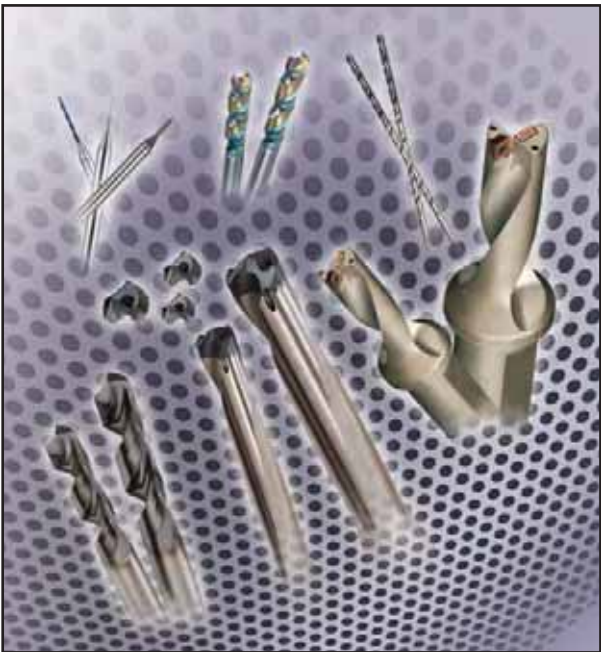












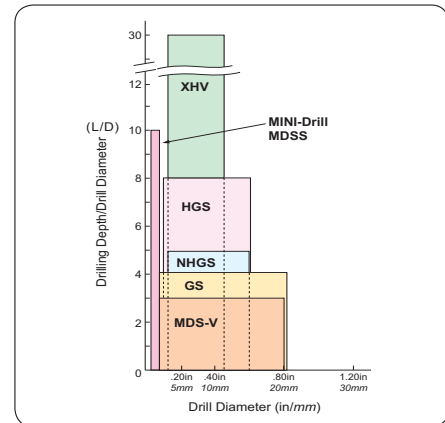
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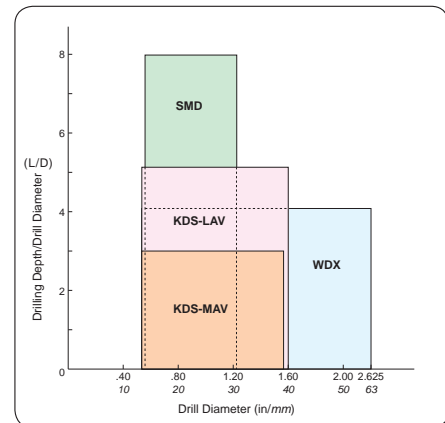
P Steel **K** Cast Iron **S** Exotic Materials
M Stainless Steel **N** Non-ferrous **H** Hardened Steel

Solid Carbide	GS Series p. 425-435  P M K H 2XD 4XD	MDS-V/HV Series p. 449-462  P M K S H 2.5XD 3.5XD 4XD 5XD
	HGS Series p. 436-447  P M K N S H 3XD 5XD 8XD	
Brazed	KDS-AV Series p. 479-483  P K 3XD 5XD	
Indexable	WDX Series p. 493-496  P M K N S 2XD 4XD 3XD 5XD	SMD Series p. 485-491  P M K N S H 3XD 5XD 8XD
	XHV Series p. 471-476  P M K N H 12XD 20XD	
Deep Hole		
Precision	NHGS Series p. 468  K N 5XD	
Mini Drills	MDSS Series p. 466-467  P M K N S H 5XD	MDUS Series p. 465  P M N S 8XD

Application Range - Solid



Application Range - Indexable



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

Type	Series		Coolant		Coating/ Insert Grade	Dia.	Drilling Depth	Catalog Number	P	H	M	S	K	N				
			Internal	External		Min to Max (in / mm)			Soft Steel	General Steel	45HRC	60HRC	Stainless Steel	Titanium Alloy	Inconel	Gray Cast Iron	Ductile Cast Iron	Aluminum 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	✓	✓	●	✓	●	●	✓	✓	▲	●
						.1250-.7812 4.00-20.00	5XD	MDS□□□□LHV										
	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□□	✓	✓		✓	●	●				
					ACK300		3XD	WDX□□□□D3S1□□										
							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

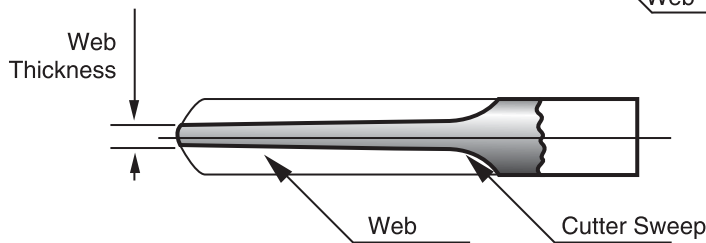
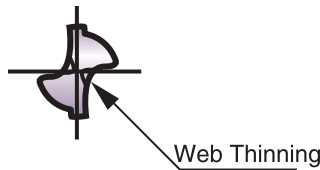
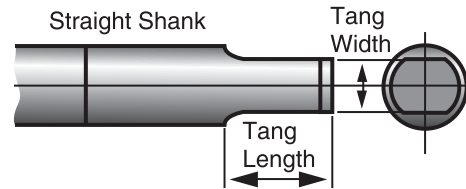
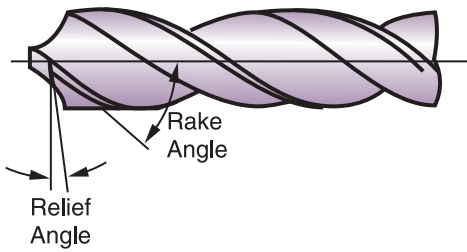
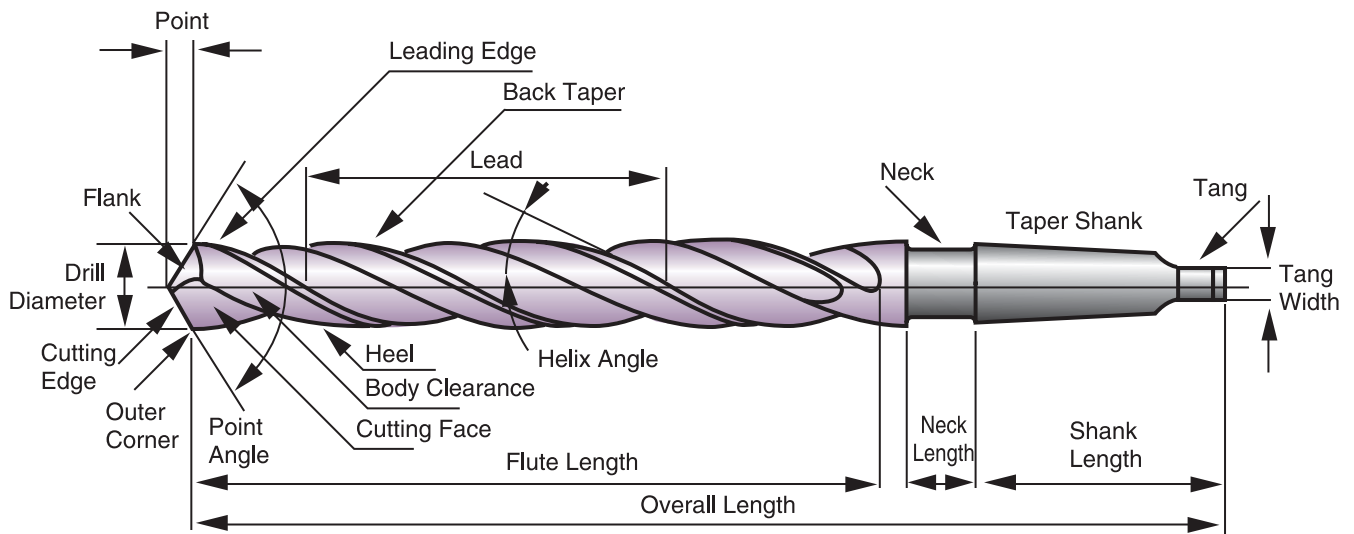
Drill Identification

MDS 150 M HV
 Drill dia. (φ15.0 mm) Series name
 Classification code Length code (S,M,L,D)

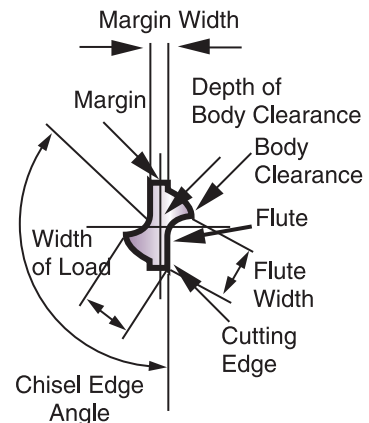
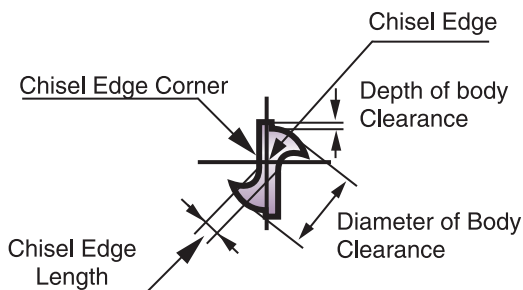
MDW 01250 GS 2
 Drill dia. (φ.125 in) Length code (2,5,8,15,20,25)
 Classification code Series name



TECHNICAL TERMS OF TWIST DRILLS



A:B or A/B=Flute Width Ratio



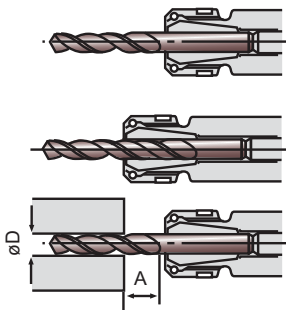
■ CHUCKING

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.

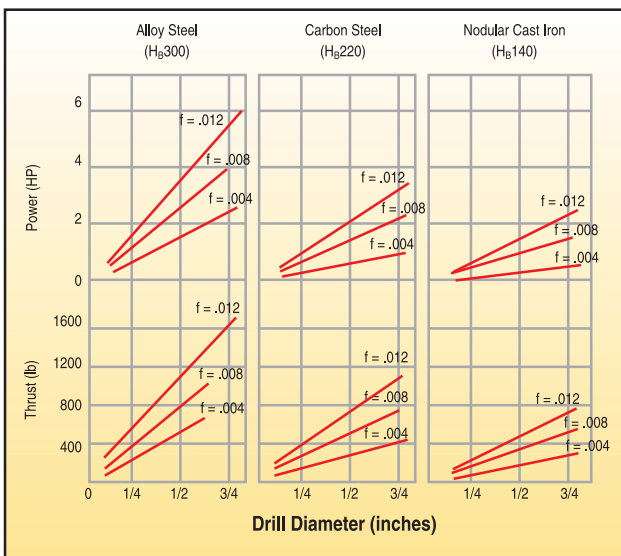
Chips cannot be removed if the flute is chucked.

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.

MDS



■ CUTTING FLUID

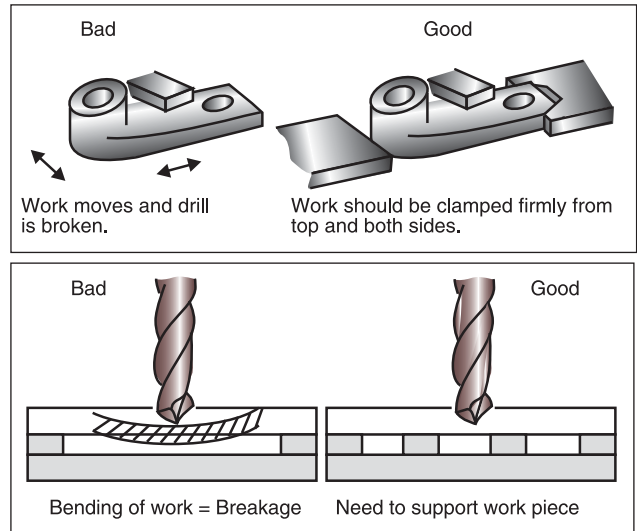
Type of Lubricant

- 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.

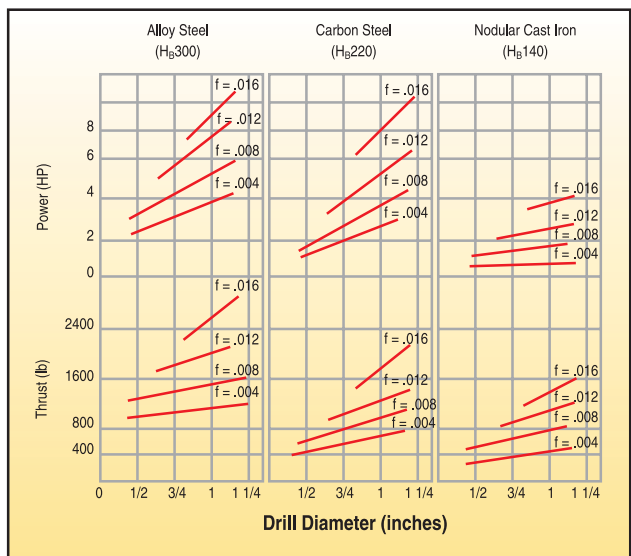
Application of Lubricant

- 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

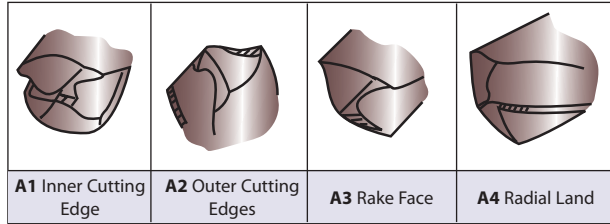


KDS

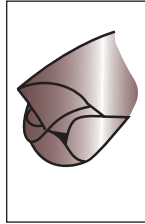


■ TROUBLE

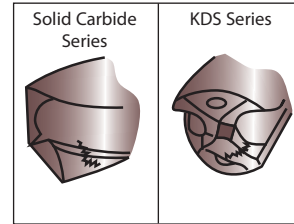
A Drill Wear



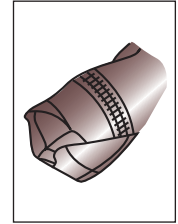
B Drill Chipping



C Cracking



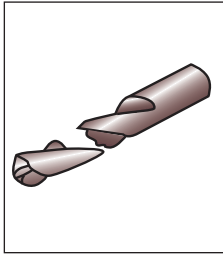
D Body Damage by Chips



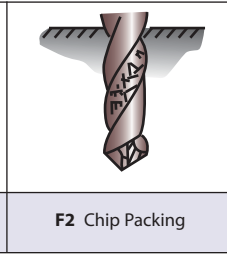
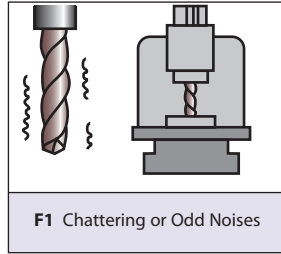
■ COUNTER MEASURE

A1	A2	A3	A4	B	C	D	E	F1	F2	G1	G2	G3	Counter Measure	
•													Larger clearance angle near drill center.	(Fig. 1)
•			•	•			•	•			•		The protruding length of drill should be shortened as much as possible without constricting chip flow.	Bigger back taper
•													Increase clearance angle at the outer cutting edge.	Narrower width of radial lands
•	•	•	•	•									The interval between regrinding of drills should be shortened.	
			•	•	•		•	•		•			Larger back taper and narrower width of radial land (Fig. 1).	(Fig. 2)
			•	•		•	•				•		Lip height distance and run out of center cutting edges should be within .0008" ~ .001".	Expand flute width
				•									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).	(Fig. 3)
						•						•	Point angle should be increased (Fig. 3).	140° 150°
						•							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).	(Fig. 4)
												•	Edge treatment should be smaller.	Outside dia. of body should be .020" ~ .040" smaller than the drill dia.
•	•	•		•	•	•	•	•			•	•	The feed rate should be decreased.	
	•			•	•		•	•			•		Cutting speed should be decreased.	
									•				The feed rate should be increased.	

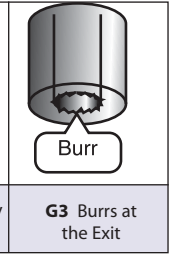
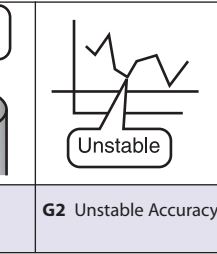
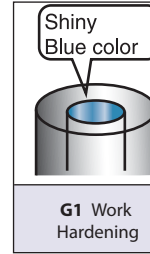
E Breakage



F Trouble During Operation



G Trouble With Hole Accuracy



• MACHINE...A, B, C, E, F1

Is there any excessive vibration or odd noise during operation?

• CHUCKING OF DRILL...A, B, C, E, F1

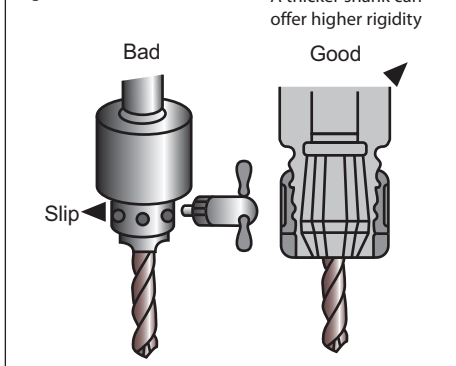
Is the rigidity of the drill chuck enough? (Fig. 5)

Is there any dust or scratches inside the drill chuck? (Fig. 6)

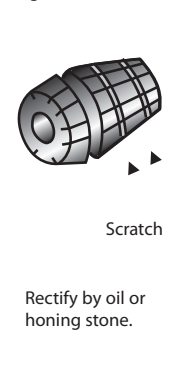
Is the run out of the drill too great when it is held in the drill chuck? (Fig. 7)

The drill point should be within 0.001" maximum of the center of the work piece (when the work rotates) (Fig. 8)

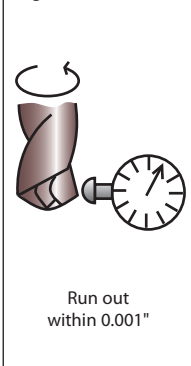
(Fig. 5)



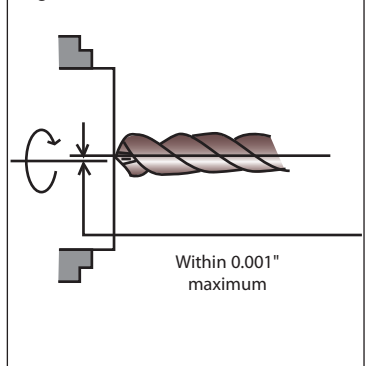
(Fig. 6)



(Fig. 7)

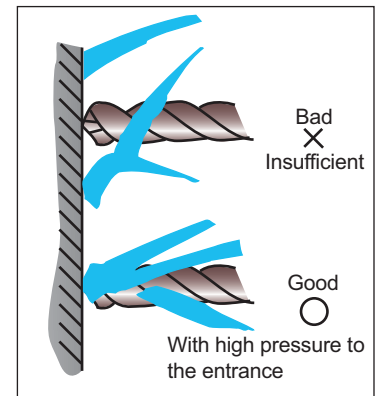
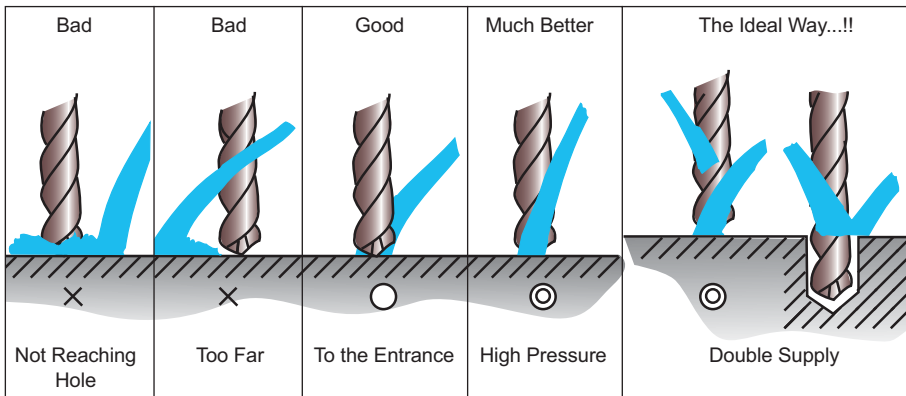


(Fig. 8)



• CUTTING FLUID...A, C, E, G1

Make sure cutting fluid is supplied adequately to the entrance of drill hole.





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SOLID CARBIDE DRILLS

Pages 424-463



Solid Carbide
Drills

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Longer flute lengths for deeper hole capability and more material available for regrounding.

Super Drill for Super Alloys!

Newly developed PVD DEX coating provides improved heat and wear resistance at increased speeds.



Unique thinning design promotes stable drilling performance.



J-Flute design offers a wide chip pocket, producing more compact chips while achieving higher speeds.



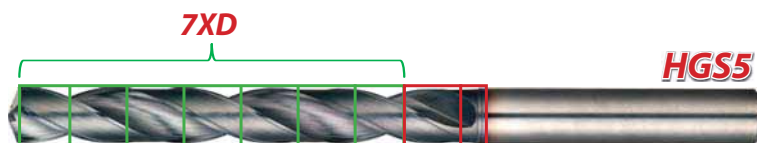
GS Series - External Coolant:

- GS2 (2XD) - Possible to drill to 3XD*
- GS4 (4XD) - Possible to drill to 5XD*



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*



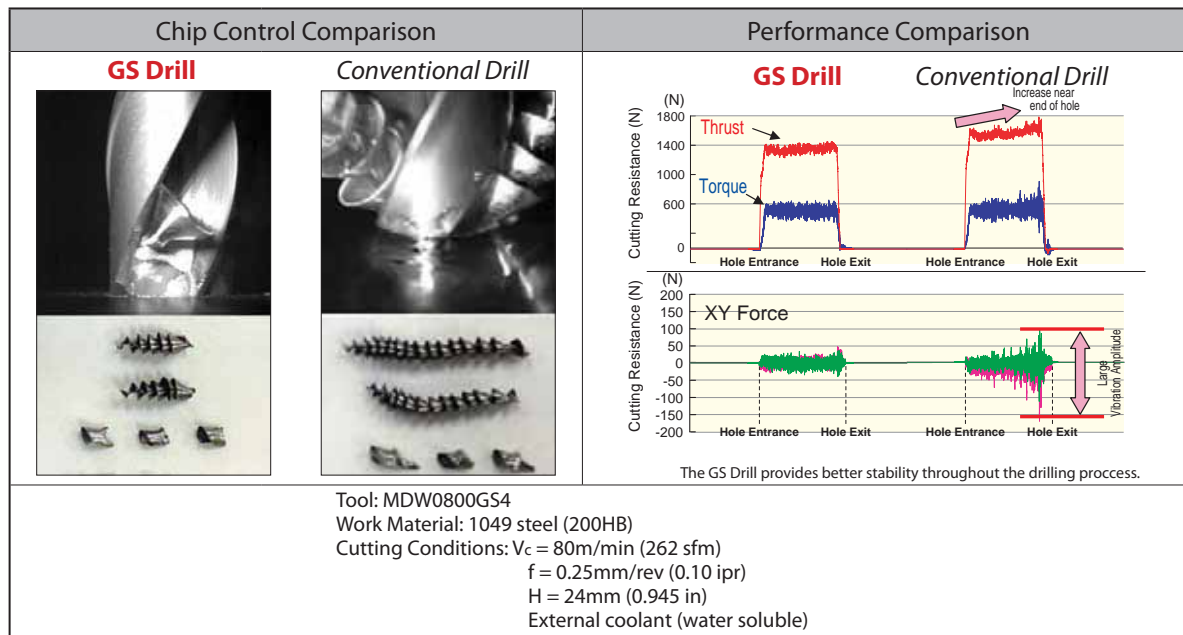
* Not all drills can achieve this depth and some drills may have even deeper capability. Always check for sufficient flute length.



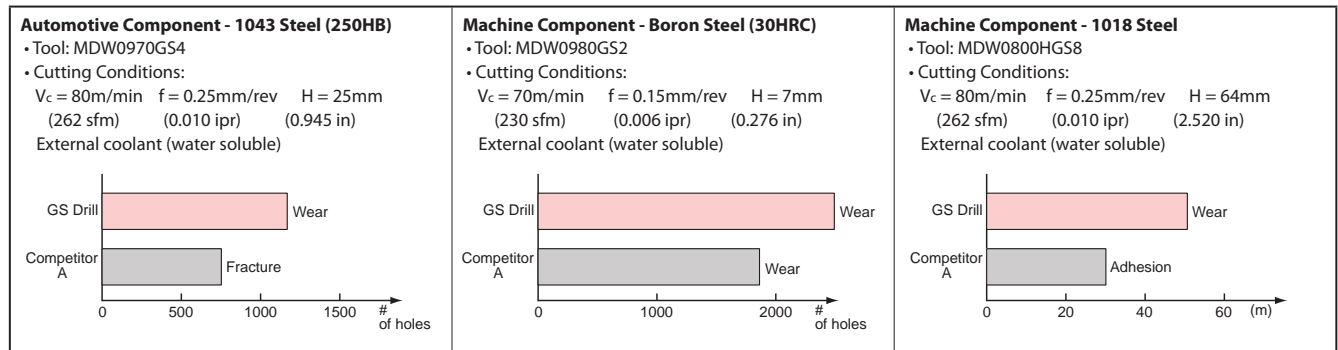
■ Features & Benefits

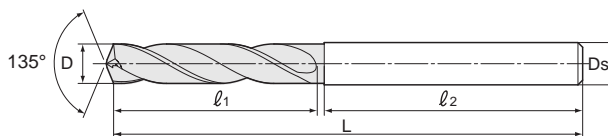
- **Long Tool Life**
 New cutting edge design and special DEX coating provide long tool life in a wide variety of work materials
- **Stable Chip Evacuation**
 New flute design and wide chip pocket allows for excellent chip management and evacuation
- **Quiet Cutting & Stable Cutting**
 Stable drilling with minimal vibration even in small machine applications
- **Environmentally Friendly**
 Compatible with MQL (Minimum Quantity Lubrication) Systems

■ Performance



■ Application Examples





MDW-GS2 2XD drill for excellent chip management and long tool life (External coolant)

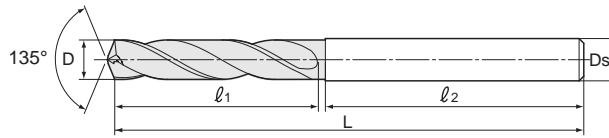
Catalog Number (inch/metric)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (mm)	Overall Length L (in/mm)	Flute Length l_1 (in/mm)	Shank Length l_2 (in/mm)	Shank Diameter D_s (in/mm)	Tap Size
MDW0200GS2	★		0.0787	2.00	45.0	8.0	34.0	3.0	
MDW0210GS2	★		0.0827	2.10	45.0	10.0	32.0	3.0	3-56
MDW0220GS2	★		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	
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 ★ = 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)





(continued from previous page)

MDW-GS2 2XD drill for excellent chip management and long tool life (External coolant)

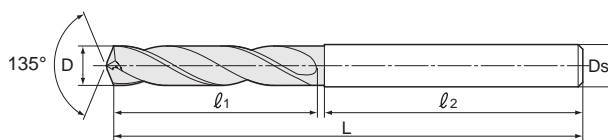
Catalog Number (inch/metric)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (mm)	Overall Length L (in/mm)	Flute Length ℓ_1 (in/mm)	Shank Length ℓ_2 (in/mm)	Shank Diameter D _s (in/mm)	Tap Size
MDW0450GS2	●		0.1772	4.50	61.0	23.0	36.0	5.0	
MDW01800GS2	●		0.1800	4.57	2.4016	0.9843	1.4173	0.1875	
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)

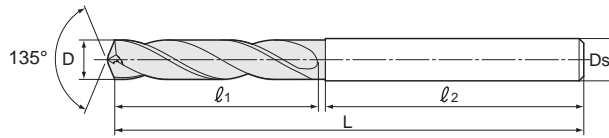
Catalog Number (inch/metric)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (mm)	Overall Length L (in/mm)	Flute Length ℓ_1 (in/mm)	Shank Length ℓ_2 (in/mm)	Shank Diameter Ds (in/mm)	Tap Size
MDW0670GS2	●		0.2638	6.70	73.0	33.0	40.0	7.0	
MDW02656GS2	●	17/64	0.2656	6.75	2.8740	1.2992	1.5748	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	

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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)

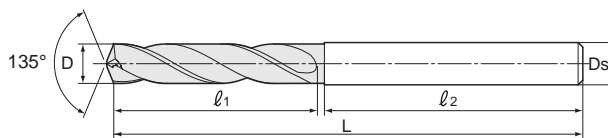
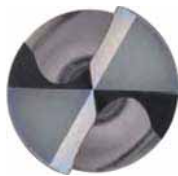
Catalog Number (inch/metric)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (mm)	Overall Length L (in/mm)	Flute Length ℓ_1 (in/mm)	Shank Length ℓ_2 (in/mm)	Shank Diameter D_s (in/mm)	Tap Size
MDW0910GS2	●	23/64	0.3583	9.10	87.0	38.0	47.0	10.0	
MDW03594GS2	●		0.3594	9.13	3.2283	1.4961	1.7323	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	●		0.3750	9.53	3.4252	1.6142	1.8110	0.3906	
MDW03770GS2	●	3/8	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	●		0.3906	9.92	3.4252	1.6142	1.8110	0.3906	7/16-20
MDW1000GS2	●	25/64	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	●	13/32	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	●		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	●	7/16	0.4370	11.10	100.0	45.0	53.0	12.0	
MDW04375GS2	●		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	●		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	●	15/32	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	●		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	

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Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

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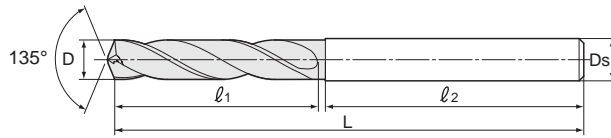
MDW-GS2 2XD drill for excellent chip management and long tool life (External coolant)

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
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	

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MDW-GS4 4XD drill for excellent chip management and long tool life (External coolant)

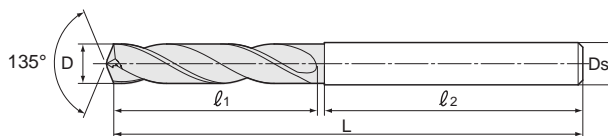
Catalog Number (inch/metric)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (mm)	Overall Length L (in/mm)	Flute Length l_1 (in/mm)	Shank Length l_2 (in/mm)	Shank Diameter D_s (in/mm)	Tap Size
MDW0200GS4	●		0.0787	2.00	49.0	15.0	31.0	3.0	
MDW0210GS4	●		0.0827	2.10	49.0	17.0	30.0	3.0	3-56
MDW0220GS4	●		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	
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 ★ = 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-GS4 4XD drill for excellent chip management and long tool life (External coolant)

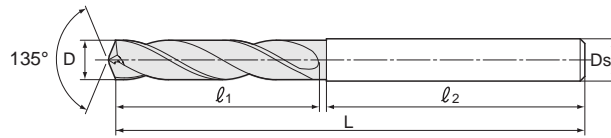
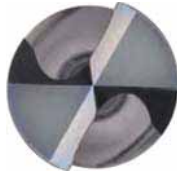
Catalog Number (inch/metric)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (mm)	Overall Length L (in/mm)	Flute Length l_1 (in/mm)	Shank Length l_2 (in/mm)	Shank Diameter D_s (in/mm)	Tap Size
MDW02656GS4	●	17/64	0.2656	6.75	3.2677	1.6929	1.5748	0.2812	
MDW02660GS4	●	#H	0.2660	6.76	3.2677	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 ★ = 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-GS4 4XD drill for excellent chip management and long tool life (External coolant)

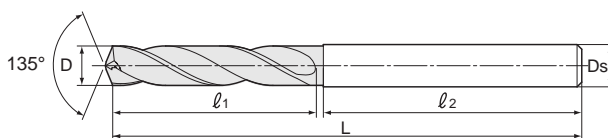
Catalog Number (inch/metric)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (mm)	Overall Length L (in/mm)	Flute Length l ₁ (in/mm)	Shank Length l ₂ (in/mm)	Shank Diameter D _s (in/mm)	Tap Size
MDW0970GS4	●		0.3819	9.70	105.0	60.0	45.0	10.0	
MDW0980GS4	●		0.3858	9.80	105.0	60.0	45.0	10.0	
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	

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Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

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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	

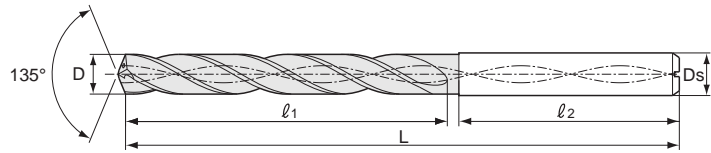
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MDW-HGS3 Series Solid Carbide Coolant Through Drills

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 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
MDW0150HGS3	●		0.0591	1.50	63.0	10.0	50.0	3.0	
MDW0160HGS3	●		0.0630	1.60	63.0	12.0		3.0	M2x.4
MDW0170HGS3	●		0.0670	1.70	63.0	12.0		3.0	
MDW0180HGS3	●		0.0709	1.80	63.0	12.0		3.0	
MDW0190HGS3	●		0.0748	1.90	63.0	12.0		3.0	
MDW0200HGS3	●		0.0787	2.00	63.0	12.5	48.0	3.0	
MDW0210HGS3	●		0.0827	2.10	68.0	15.0	51.0	3.0	3-56
MDW0220HGS3	●		0.0866	2.20	68.0	15.0	51.0	3.0	
MDW0230HGS3	●		0.0906	2.30	68.0	15.0	51.0	3.0	
MDW0240HGS3	●		0.0945	2.40	68.0	15.0	51.0	3.0	
MDW0250HGS3	●		0.0984	2.50	68.0	15.0	51.0	3.0	
MDW0260HGS3	●		0.1024	2.60	68.0	17.5	49.0	3.0	
MDW0270HGS3	●		0.1063	2.70	68.0	17.5	49.0	3.0	6-32
MDW01094HGS3	●	7/64	0.1094	2.78	2.6772	0.6890	1.9291	0.1250	
MDW0280HGS3	●		0.1102	2.80	68.0	17.5	49.0	3.0	
MDW0290HGS3	●		0.1142	2.90	68.0	17.5	49.0	3.0	3.5x.6
MDW0300HGS3	●		0.1181	3.00	68.0	17.5	49.0	3.0	
MDW0310HGS3	●		0.1220	3.10	72.0	20.0	50.0	4.0	
MDW01250HGS3	●	1/8	0.1250	3.18	2.6772	0.6890	1.9291	0.1250	
MDW0320HGS3	●		0.1260	3.20	72.0	20.0	50.0	4.0	
MDW0330HGS3	●		0.1299	3.30	72.0	20.0	50.0	4.0	M4x.7
MDW0340HGS3	●		0.1339	3.40	72.0	20.0	50.0	4.0	
MDW0350HGS3	●		0.1378	3.50	72.0	20.0	50.0	4.0	
MDW0360HGS3	●		0.1417	3.60	72.0	22.5	48.0	4.0	
MDW0370HGS3	●		0.1457	3.70	72.0	22.5	48.0	4.0	M4.5x.7
MDW0380HGS3	●		0.1496	3.80	72.0	22.5	48.0	4.0	
MDW0390HGS3	●		0.1535	3.90	72.0	22.5	48.0	4.0	
MDW01562HGS3	●	5/32	0.1562	3.97	2.8346	0.8858	1.8898	0.1562	
MDW0400HGS3	●		0.1575	4.00	72.0	22.5	48.0	4.0	
MDW01590HGS3	●	#21	0.1590	4.04	3.1496	0.9843	2.0866	0.1875	10-32
MDW0410HGS3	●		0.1614	4.10	80.0	25.0	53.0	5.0	
MDW0420HGS3	●		0.1654	4.20	80.0	25.0	53.0	5.0	M5x.8
MDW0430HGS3	●		0.1693	4.30	80.0	25.0	53.0	5.0	
MDW01719HGS3	●	11/64	0.1719	4.37	3.1496	0.9843	2.0866	0.1875	
MDW0440HGS3	●		0.1732	4.40	80.0	25.0	53.0	5.0	
MDW0450HGS3	●		0.1772	4.50	80.0	25.0	53.0	5.0	
MDW0460HGS3	●		0.1811	4.60	80.0	27.5	51.0	5.0	
MDW0470HGS3	●		0.1850	4.70	80.0	27.5	51.0	5.0	
MDW01875HGS3	●	3/16	0.1875	4.76	3.1496	1.0827	2.0079	0.1875	
MDW0480HGS3	●		0.1890	4.80	80.0	27.5	51.0	5.0	
MDW0490HGS3	●		0.1929	4.90	80.0	27.5	51.0	5.0	
MDW0500HGS3	●		0.1969	5.00	80.0	27.5	51.0	5.0	M6x1
MDW0510HGS3	●		0.2008	5.10	82.0	27.5	53.0	6.0	
MDW02010HGS3	●	#7	0.2010	5.11	3.2283	1.0827	2.0866	0.2344	1/4-20
MDW02031HGS3	●	13/64	0.2031	5.16	3.2283	1.0827	2.0866	0.2344	
MDW0520HGS3	●		0.2047	5.20	82.0	27.5	53.0	6.0	
MDW0530HGS3	●		0.2087	5.30	82.0	27.5	53.0	6.0	
MDW0540HGS3	●		0.2126	5.40	82.0	27.5	53.0	6.0	
MDW02130HGS3	●	#3	0.2130	5.41	3.2283	1.0827	2.0866	0.2344	
MDW0550HGS3	●		0.2165	5.50	82.0	27.5	53.0	6.0	
MDW02188HGS3	●	7/32	0.2188	5.56	3.2283	1.1811	2.0472	0.2344	1/4-28

● = USA stocked item ★ = Worldwide Warehouse item available in 10 business days

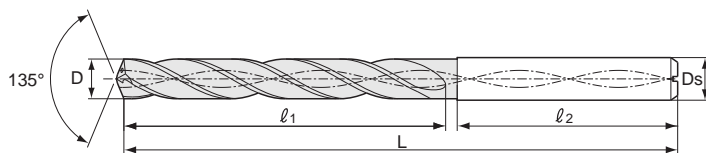
Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

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MDW-HGS3 3XD 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
MDW0560HGS3	●		0.2205	5.60	82.0	30.0	52.0	6.0	
MDW02210HGS3	●	#2	0.2210	5.61	3.2283	1.1811	2.0472	0.2344	
MDW0570HGS3	●		0.2244	5.70	82.0	30.0	52.0	6.0	
MDW0580HGS3	●		0.2283	5.80	82.0	30.0	52.0	6.0	
MDW0590HGS3	●		0.2323	5.90	82.0	30.0	52.0	6.0	
MDW02344HGS3	●	15/64	0.2344	5.95	3.2283	1.1811	2.0472	0.2344	
MDW0600HGS3	●		0.2362	6.00	82.0	30.0	52.0	6.0	M7x1
MDW0610HGS3	●		0.2402	6.10	88.0	32.5	53.0	7.0	
MDW02420HGS3	●	#C	0.2420	6.15	3.4646	1.2795	2.0866	0.2812	
MDW0620HGS3	●		0.2441	6.20	88.0	32.5	53.0	7.0	
MDW0630HGS3	●		0.2480	6.30	88.0	32.5	53.0	7.0	
MDW02500HGS3	●	1/4	0.2500	6.35	3.4646	1.2795	2.0866	0.2812	
MDW0640HGS3	●		0.2520	6.40	88.0	32.5	53.0	7.0	
MDW0650HGS3	●		0.2559	6.50	88.0	32.5	53.0	7.0	
MDW02570HGS3	●	#F	0.2570	6.68	3.4646	1.3780	2.0866	0.2812	5/16-18
MDW0653HGS3	●		0.2571	6.53	88.0	35.0	53.0	7.0	
MDW0660HGS3	●		0.2598	6.60	88.0	35.0	53.0	7.0	
MDW0670HGS3	●		0.2638	6.70	88.0	35.0	53.0	7.0	
MDW02656HGS3	●	17/64	0.2656	6.75	3.4646	1.3780	2.0866	0.2812	
MDW02660HGS3	●		0.2660	6.76	3.4646	1.3780	2.0866	0.2812	
MDW0680HGS3	●		0.2677	6.80	88.0	35.0	53.0	7.0	
MDW0690HGS3	●		0.2717	6.90	88.0	35.0	53.0	7.0	
MDW02720HGS3	●	#I	0.2720	6.91	3.4646	1.3780	2.0866	0.2812	5/16-24
MDW0700HGS3	●		0.2756	7.00	88.0	35.0	53.0	7.0	
MDW02770HGS3	●	#J	0.2770	7.04	3.4646	1.3780	2.0866	0.2812	
MDW0710HGS3	●		0.2795	7.10	94.0	37.5	54.0	8.0	
MDW02812HGS3	●	9/32	0.2812	7.14	3.4646	1.3780	2.0866	0.2812	
MDW0720HGS3	●		0.2835	7.20	94.0	37.5	54.0	8.0	
MDW0730HGS3	●		0.2874	7.30	94.0	37.5	54.0	8.0	
MDW0740HGS3	●		0.2913	7.40	94.0	37.5	54.0	8.0	
MDW0750HGS3	●		0.2953	7.50	94.0	37.5	54.0	8.0	
MDW02969HGS3	●	19/64	0.2969	7.54	3.7008	1.5748	2.1260	0.3125	
MDW0760HGS3	●		0.2992	7.60	94.0	40.0	54.0	8.0	
MDW0770HGS3	●		0.3031	7.70	94.0	40.0	54.0	8.0	
MDW0780HGS3	●		0.3071	7.80	94.0	40.0	54.0	8.0	M9x1.25
MDW0790HGS3	●		0.3110	7.90	94.0	40.0	54.0	8.0	
MDW03125HGS3	●	5/16	0.3125	7.94	3.7008	1.5748	2.1260	0.3125	3/8-16
MDW0800HGS3	●		0.3150	8.00	94.0	40.0	54.0	8.0	
MDW0810HGS3	●		0.3189	8.10	100.0	42.5	55.0	9.0	
MDW0820HGS3	●		0.3228	8.20	100.0	42.5	55.0	9.0	
MDW03230HGS3	●	#P	0.3230	8.204	3.9370	1.6732	2.1654	0.3594	
MDW0830HGS3	●		0.3268	8.30	100.0	42.5	55.0	9.0	
MDW03281HGS3	●	21/64	0.3281	8.33	3.9370	1.6732	2.1654	0.3594	
MDW0840HGS3	●		0.3307	8.40	100.0	42.5	55.0	9.0	
MDW03320HGS3	●	#Q	0.3320	8.43	3.9370	1.6732	2.1654	0.3594	
MDW0850HGS3	●		0.3346	8.50	100.0	42.5	55.0	9.0	M10x1.5
MDW0860HGS3	●		0.3386	8.60	100.0	45.0	55.0	9.0	

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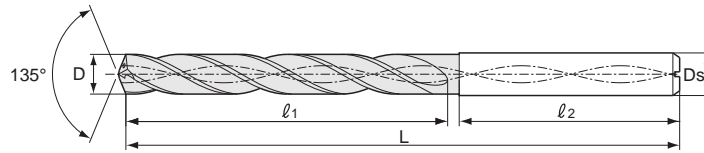
Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

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MDW-HGS3 Series Solid Carbide Coolant Through Drills

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 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
MDW0870HGS3	●		0.3425	8.70	100.0	45.0	55.0	9.0	
MDW03438HGS3	●	11/32	0.3438	8.73	3.9370	1.7717	2.1654	0.3594	
MDW0880HGS3	●		0.3465	8.80	100.0	45.0	55.0	9.0	
MDW0890HGS3	●		0.3504	8.90	100.0	45.0	55.0	9.0	
MDW0900HGS3	●		0.3543	9.00	100.0	45.0	55.0	9.0	
MDW0910HGS3	●		0.3583	9.10	106.0	47.5	56.0	10.0	
MDW03594HGS3	●	23/64	0.3594	9.13	3.9370	1.7717	2.1654	0.3594	
MDW0920HGS3	●		0.3622	9.20	106.0	47.5	56.0	10.0	
MDW0930HGS3	●		0.3661	9.30	106.0	47.5	56.0	10.0	
MDW03680HGS3	●	#U	0.3680	9.35	4.1732	1.8701	2.2047	0.3906	7/16-14
MDW0940HGS3	●		0.3701	9.40	106.0	47.5	56.0	10.0	
MDW0950HGS3	●		0.3740	9.50	106.0	47.5	56.0	10.0	
MDW03750HGS3	●	3/8	0.3750	9.53	4.1732	1.9685	2.2047	0.3906	
MDW0960HGS3	●		0.3780	9.60	106.0	50.0	56.0	10.0	
MDW0970HGS3	●		0.3819	9.70	106.0	50.0	56.0	10.0	
MDW0980HGS3	●		0.3858	9.80	106.0	50.0	56.0	10.0	
MDW0990HGS3	●		0.3898	9.90	106.0	50.0	56.0	10.0	
MDW03906HGS3	●	25/64	0.3906	9.92	4.1732	1.9685	2.2047	0.3906	7/16-20
MDW1000HGS3	●		0.3937	10.00	106.0	50.0	56.0	10.0	
MDW1010HGS3	●		0.3976	10.10	116.0	52.5	61.0	11.0	
MDW1020HGS3	●		0.4016	10.20	116.0	52.5	61.0	11.0	M12x1.75
MDW1030HGS3	●		0.4055	10.30	116.0	52.5	61.0	11.0	
MDW04062HGS3	●	13/32	0.4062	10.32	4.5669	2.0669	2.4016	0.4375	
MDW1040HGS3	●		0.4094	10.40	116.0	52.5	61.0	11.0	
MDW1050HGS3	●		0.4134	10.50	116.0	52.5	61.0	11.0	
MDW1060HGS3	●		0.4173	10.60	116.0	55.0	61.0	11.0	
MDW1070HGS3	●		0.4213	10.70	116.0	55.0	61.0	11.0	
MDW04219HGS3	●	27/64	0.4219	10.72	4.5669	2.1654	2.4016	0.4375	1/2-13
MDW1080HGS3	●		0.4252	10.80	116.0	55.0	61.0	11.0	
MDW1090HGS3	●		0.4291	10.90	116.0	55.0	61.0	11.0	
MDW1100HGS3	●		0.4331	11.00	116.0	55.0	61.0	11.0	
MDW1110HGS3	●		0.4370	11.10	122.0	57.5	62.0	12.0	
MDW04375HGS3	●	7/16	0.4375	11.11	4.5669	2.1654	2.4016	0.4375	
MDW1120HGS3	●		0.4409	11.20	122.0	57.5	62.0	12.0	
MDW1130HGS3	●		0.4449	11.30	122.0	57.5	62.0	12.0	
MDW1140HGS3	●		0.4488	11.40	122.0	57.5	62.0	12.0	
MDW1150HGS3	●		0.4528	11.50	122.0	57.5	62.0	12.0	
MDW04531HGS3	●	29/64	0.4531	11.51	4.8031	2.3622	2.4409	0.4688	1/2-20
MDW1160HGS3	●		0.4567	11.60	122.0	60.0	62.0	12.0	
MDW1170HGS3	●		0.4606	11.70	122.0	60.0	62.0	12.0	
MDW1180HGS3	●		0.4646	11.80	122.0	60.0	62.0	12.0	
MDW1190HGS3	●		0.4685	11.90	122.0	60.0	62.0	12.0	
MDW04688HGS3	●	15/32	0.4688	11.91	4.8031	2.3622	2.4409	0.4688	
MDW1200HGS3	●		0.4724	12.00	122.0	60.0	62.0	12.0	M14x2
MDW1210HGS3	●		0.4764	12.10	128.0	62.5	63.0	13.0	
MDW1220HGS3	●		0.4803	12.20	128.0	62.5	63.0	13.0	
MDW1230HGS3	●		0.4843	12.30	128.0	62.5	63.0	13.0	9/16-12

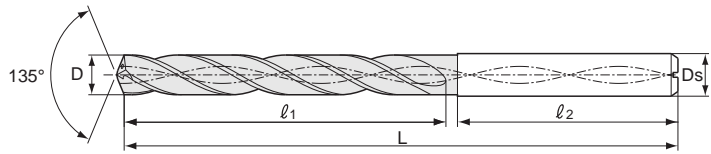
● = USA stocked item ★ = Worldwide Warehouse item available in 10 business days

Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

Solid Carbide 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 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
MDW04844HGS3	●	31/64	0.4844	12.304	5.0394	2.4606	2.4803	0.5156	
MDW1240HGS3	●		0.4882	12.40	128.0	62.5	63.0	13.0	
MDW1250HGS3	●		0.4921	12.50	128.0	62.5	63.0	13.0	
MDW1260HGS3	●		0.4961	12.60	128.0	65.0	63.0	13.0	
MDW1270HGS3	●	1/2	0.5000	12.70	128.0	65.0	63.0	13.0	
MDW05000HGS3	●	1/2	0.5000	12.70	5.0394	2.5591	2.4803	0.5156	
MDW1280HGS3	●		0.5039	12.80	128.0	65.0	63.0	13.0	
MDW1290HGS3	●		0.5079	12.90	128.0	65.0	63.0	13.0	
MDW1300HGS3	●		0.5118	13.00	128.0	65.0	63.0	13.0	
MDW05156HGS3	●	33/64	0.5156	13.09	5.0394	2.5591	2.4803	0.5156	9/16-18
MDW1310HGS3	●		0.5157	13.10	134.0	67.5	64.0	14.0	
MDW1320HGS3	●		0.5197	13.20	134.0	67.5	64.0	14.0	
MDW1330HGS3	●		0.5236	13.30	134.0	67.5	64.0	14.0	
MDW1340HGS3	●		0.5276	13.40	134.0	67.5	64.0	14.0	
MDW05312HGS3	●	17/32	0.5312	13.49	5.2756	2.6575	2.5197	0.5469	5/8-11
MDW1350HGS3	●		0.5315	13.50	134.0	67.5	64.0	14.0	
MDW1360HGS3	●		0.5354	13.60	134.0	70.0	64.0	14.0	
MDW1370HGS3	●		0.5394	13.70	134.0	70.0	64.0	14.0	
MDW1380HGS3	●		0.5433	13.80	134.0	70.0	64.0	14.0	
MDW05469HGS3	●	35/64	0.5469	13.89	5.2756	2.7559	2.5197	0.5469	M16x2
MDW1390HGS3	●		0.5472	13.90	134.0	70.0	64.0	14.0	
MDW1400HGS3	●		0.5512	14.00	134.0	70.0	64.0	14.0	
MDW1410HGS3	●		0.5551	14.10	140.0	72.5	65.0	15.0	
MDW1420HGS3	●		0.5591	14.20	140.0	72.5	65.0	15.0	
MDW05625HGS3	●	9/16	0.5625	14.29	5.5118	2.8543	2.5591	0.5937	
MDW1430HGS3	●		0.5630	14.30	140.0	72.5	65.0	15.0	
MDW1440HGS3	●		0.5669	14.40	140.0	72.5	65.0	15.0	
MDW1450HGS3	●		0.5709	14.50	140.0	72.5	65.0	15.0	
MDW1460HGS3	●		0.5748	14.60	140.0	75.0	65.0	15.0	
MDW05781HGS3	●	37/64	0.5781	14.68	5.5118	2.9528	2.5591	0.5937	5/8-18
MDW1470HGS3	●		0.5787	14.70	140.0	75.0	65.0	15.0	
MDW1480HGS3	●		0.5827	14.80	140.0	75.0	65.0	15.0	
MDW1490HGS3	●		0.5866	14.90	140.0	75.0	65.0	15.0	
MDW1500HGS3	●		0.5906	15.00	140.0	75.0	65.0	15.0	
MDW05937HGS3	●	19/32	0.5937	15.08	5.5118	2.9528	2.5591	0.5937	
MDW1510HGS3	●		0.5945	15.10	146.0	77.5	66.0	16.0	
MDW1520HGS3	●		0.5984	15.20	146.0	77.5	66.0	16.0	
MDW1530HGS3	●		0.6024	15.30	146.0	77.5	66.0	16.0	
MDW1540HGS3	●		0.6063	15.40	146.0	77.5	66.0	16.0	
MDW06094HGS3	●	39/64	0.6094	15.48	5.7480	3.0512	2.5984	0.6250	11/16-12
MDW1550HGS3	●		0.6102	15.50	146.0	77.5	66.0	16.0	M18x2.5
MDW1560HGS3	●		0.6142	15.60	146.0	80.0	66.0	16.0	
MDW1570HGS3	●		0.6181	15.70	146.0	80.0	66.0	16.0	
MDW1580HGS3	●		0.6220	15.80	146.0	80.0	66.0	16.0	
MDW06250HGS3	●	5/8	0.6250	15.88	5.7480	3.1496	2.5984	0.6250	11/16-16
MDW1590HGS3	●		0.6260	15.90	146.0	80.0	66.0	16.0	
MDW1600HGS3	●		0.6299	16.00	146.0	80.0	66.0	16.0	
MDW1650HGS3	●		0.6496	16.5	152.0	82.5		17.0	M18x1.5
MDW1700HGS3	●		0.6693	17.0	152.0	85.0		17.0	
MDW1750HGS3	●		0.6890	17.5	158.0	87.5		17.0	M20x2.5
MDW1800HGS3	●		0.7087	18.0	158.0	90.0		18.0	
MDW1850HGS3	●		0.7284	18.5	164.0	92.5		18.0	M20x1.5
MDW1900HGS3	●		0.7480	19.0	164.0	95.0		19.0	
MDW1950HGS3	●		0.7677	19.5	170.0	97.5		19.0	
MDW2000HGS3	●		0.7874	20.0	170.0	100.0		20.0	

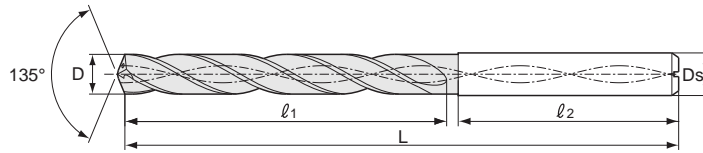
● = USA stocked item ★ = Worldwide Warehouse item available in 10 business days

Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.



MDW-HGS5 Series Solid Carbide Coolant Through Drills

SERIES MDW-HGS5



MDW-HGS5 5XD drill for excellent chip management and long tool life (Internal coolant)

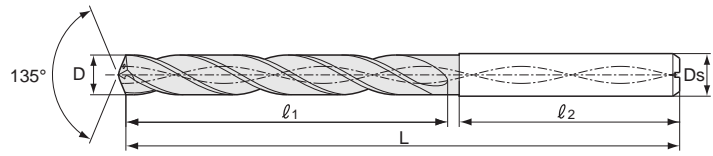
Catalog Number (inch/metric)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (mm)	Overall Length L (in/mm)	Flute Length ℓ_1 (in/mm)	Shank Length ℓ_2 (in/mm)	Shank Diameter D_s (in/mm)	Tap Size
MDW0150HGS5	●		0.0591	1.50	70.0	14.0		3.0	
MDW0160HGS5	●		0.0630	1.60	70.0	19.0		3.0	
MDW0170HGS5	●		0.0670	1.70	70.0	19.0		3.0	
MDW0180HGS5	●		0.0709	1.80	70.0	19.0		3.0	
MDW0190HGS5	●		0.0748	1.90	70.0	19.0		3.0	
MDW0200HGS5	●		0.0787	2.00	70.0	19.0	49.0	3.0	
MDW0210HGS5	●		0.0827	2.10	78.0	24.0	52.0	3.0	
MDW0220HGS5	●		0.0866	2.20	78.0	24.0	52.0	3.0	
MDW0230HGS5	●		0.0906	2.30	78.0	24.0	52.0	3.0	
MDW0240HGS5	●		0.0945	2.40	78.0	24.0	52.0	3.0	
MDW0250HGS5	●		0.0984	2.50	78.0	24.0	52.0	3.0	
MDW0260HGS5	●		0.1024	2.60	78.0	28.0	48.0	3.0	
MDW0270HGS5	●		0.1063	2.70	78.0	28.0	48.0	3.0	
MDW0280HGS5	●		0.1102	2.80	78.0	28.0	48.0	3.0	
MDW0290HGS5	●		0.1142	2.90	78.0	28.0	48.0	3.0	
MDW0300HGS5	●		0.1181	3.00	78.0	28.0	48.0	3.0	
MDW0310HGS5	●		0.1220	3.10	86.0	32.0	52.0	4.0	
MDW01250HGS5	●	1/8	0.1250	3.18	3.0709	1.1024	1.8898	0.125	
MDW0320HGS5	●		0.1260	3.20	86.0	32.0	52.0	4.0	
MDW0330HGS5	●		0.1299	3.30	86.0	32.0	52.0	4.0	
MDW0340HGS5	●		0.1339	3.40	86.0	32.0	52.0	4.0	
MDW0350HGS5	●		0.1378	3.50	86.0	32.0	52.0	4.0	
MDW01406HGS5	●		0.1406	3.57	3.3858	1.4173	1.8898	0.1562	
MDW0360HGS5	●		0.1417	3.60	86.0	36.0	48.0	4.0	
MDW0370HGS5	●		0.1457	3.70	86.0	36.0	48.0	4.0	
MDW0380HGS5	●		0.1496	3.80	86.0	36.0	48.0	4.0	
MDW0390HGS5	●		0.1535	3.90	86.0	36.0	48.0	4.0	
MDW01562HGS5	●	5/32	0.1562	3.97	3.3858	1.4173	1.8898	0.1562	
MDW0400HGS5	●		0.1575	4.00	86.0	36.0	48.0	4.0	
MDW01590HGS5	●	#21	0.1590	4.04	3.8583	1.5748	2.2047	0.1875	
MDW0410HGS5	●		0.1614	4.10	98.0	40.0	56.0	5.0	
MDW0420HGS5	●		0.1654	4.20	98.0	40.0	56.0	5.0	
MDW0430HGS5	●		0.1693	4.30	98.0	40.0	56.0	5.0	
MDW01719HGS5	●	11/64	0.1719	4.37	3.8583	1.5748	2.2047	0.1875	
MDW0440HGS5	●		0.1732	4.40	98.0	40.0	56.0	5.0	
MDW0450HGS5	●		0.1772	4.50	98.0	40.0	56.0	5.0	
MDW0460HGS5	●		0.1811	4.60	98.0	44.0	52.0	5.0	
MDW0470HGS5	●		0.1850	4.70	98.0	44.0	52.0	5.0	
MDW01875HGS5	●	3/16	0.1875	4.76	3.8583	1.7323	2.0472	0.1875	
MDW0480HGS5	●		0.1890	4.80	98.0	44.0	52.0	5.0	
MDW0490HGS5	●		0.1929	4.90	98.0	44.0	52.0	5.0	
MDW0500HGS5	●		0.1969	5.00	98.0	44.0	52.0	5.0	
MDW0510HGS5	●		0.2008	5.10	100	44.0	54.0	6.0	
MDW02031HGS5	●	13/64	0.2031	5.16	3.937	1.7323	2.126	0.2344	
MDW0520HGS5	●		0.2047	5.20	100	44.0	54.0	6.0	
MDW0530HGS5	●		0.2087	5.30	100	44.0	54.0	6.0	
MDW0540HGS5	●		0.2126	5.40	100	44.0	54.0	6.0	
MDW02130HGS5	●	#3	0.2130	5.41	3.937	1.7323	2.126	0.2344	
MDW0550HGS5	●		0.2165	5.50	100	44.0	54.0	6.0	
MDW02188HGS5	●	7/32	0.2188	5.56	3.937	1.8898	2.0472	0.2344	
MDW0560HGS5	●		0.2205	5.60	100	48.0	52.0	6.0	
MDW02210HGS5	●	#2	0.2210	5.61	3.937	1.8898	2.0472	0.2344	
MDW0570HGS5	●		0.2244	5.70	100	48.0	52.0	6.0	
MDW0580HGS5	●		0.2283	5.80	100	48.0	52.0	6.0	

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Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

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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 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
MDW0590HGS5	●		0.2323	5.90	100.0	48.0	52.0	6.0	
MDW02344HGS5	●	15/64	0.2344	5.95	3.937	1.8898	2.0472	0.2344	
MDW0600HGS5	●		0.2362	6.00	100.0	48.0	52.0	6.0	
MDW0610HGS5	●		0.2402	6.10	109.0	52.0	53.0	7.0	
MDW0620HGS5	●		0.2441	6.20	109.0	52.0	53.0	7.0	
MDW0630HGS5	●		0.2480	6.30	109.0	52.0	53.0	7.0	
MDW02500HGS5	●	1/4	0.2500	6.35	4.2913	2.0472	2.0866	0.2812	
MDW0640HGS5	●		0.2520	6.40	109.0	52.0	53.0	7.0	
MDW0650HGS5	●		0.2559	6.50	109.0	52.0	53.0	7.0	
MDW02570HGS5	●	#F	0.2570	6.53	4.2913	2.2047	2.0866	0.2812	
MDW0653HGS5	●		0.2571	6.53	109.0	56.0	53.0	7.0	
MDW0660HGS5	●		0.2598	6.60	109.0	56.0	53.0	7.0	
MDW0670HGS5	●		0.2638	6.70	109.0	56.0	53.0	7.0	
MDW02656HGS5	●	17/64	0.2656	6.75	4.2913	2.2047	2.0866	0.2812	
MDW02660HGS5	●	#H	0.2660	6.76	4.2913	2.2047	2.0866	0.2812	
MDW0680HGS5	●		0.2677	6.80	109.0	56.0	53.0	7.0	
MDW0690HGS5	●		0.2717	6.90	109.0	56.0	53.0	7.0	
MDW02720HGS5	●	#I	0.2720	6.91	4.2913	2.2047	2.0866	0.2812	
MDW0700HGS5	●		0.2756	7.00	109.0	56.0	53.0	7.0	
MDW02770HGS5	●	#J	0.2770	7.04	4.2913	2.2047	2.0866	0.2812	
MDW0710HGS5	●		0.2795	7.10	118.0	60.0	54.0	8.0	
MDW02812HGS5	●	9/32	0.2812	7.14	4.2913	2.2047	2.0866	0.2812	
MDW0720HGS5	●		0.2835	7.20	118.0	60.0	54.0	8.0	
MDW0730HGS5	●		0.2874	7.30	118.0	60.0	54.0	8.0	
MDW0740HGS5	●		0.2913	7.40	118.0	60.0	54.0	8.0	
MDW0750HGS5	●		0.2953	7.50	118.0	60.0	54.0	8.0	
MDW02969HGS5	●	19/64	0.2969	7.54	4.6457	2.5197	2.126	0.3125	
MDW0760HGS5	●		0.2992	7.60	118.0	64.0	54.0	8.0	
MDW0770HGS5	●		0.3031	7.70	118.0	64.0	54.0	8.0	
MDW0780HGS5	●		0.3071	7.80	118.0	64.0	54.0	8.0	
MDW0790HGS5	●		0.3110	7.90	118.0	64.0	54.0	8.0	
MDW03125HGS5	●	5/16	0.3125	7.94	4.6457	2.5197	2.126	0.3125	
MDW0800HGS5	●		0.3150	8.00	118.0	64.0	54.0	8.0	
MDW0810HGS5	●		0.3189	8.10	127.0	68.0	55.0	9.0	
MDW0820HGS5	●		0.3228	8.20	127.0	68.0	55.0	9.0	
MDW03230HGS5	●	#P	0.3230	8.204	5.0000	2.6772	2.1654	0.3594	
MDW0830HGS5	●		0.3268	8.30	127.0	68.0	55.0	9.0	
MDW03281HGS5	●	21/64	0.3281	8.33	5.0000	2.6772	2.1654	0.3594	
MDW0840HGS5	●		0.3307	8.40	127.0	68.0	55.0	9.0	
MDW03320HGS5	●	#Q	0.3320	8.43	5.0000	2.6772	2.1654	0.3594	
MDW0850HGS5	●		0.3346	8.50	127.0	68.0	55.0	9.0	
MDW0860HGS5	●		0.3386	8.60	127.0	72.0	55.0	9.0	
MDW0870HGS5	●		0.3425	8.70	127.0	72.0	55.0	9.0	
MDW03438HGS5	●	11/32	0.3438	8.73	5.0000	2.8346	2.1654	0.3594	
MDW0880HGS5	●		0.3465	8.80	127.0	72.0	55.0	9.0	
MDW0890HGS5	●		0.3504	8.90	127.0	72.0	55.0	9.0	
MDW0900HGS5	●		0.3543	9.00	127.0	72.0	55.0	9.0	
MDW0910HGS5	●		0.3583	9.10	136.0	76.0	56.0	10.0	
MDW03594HGS5	●	23/64	0.3594	9.13	5.0000	2.8346	2.1654	0.3594	
MDW0920HGS5	●		0.3622	9.20	136.0	76.0	56.0	10.0	
MDW0930HGS5	●		0.3661	9.30	136.0	76.0	56.0	10.0	
MDW03680HGS5	●	#U	0.3680	9.35	5.3543	2.9921	2.2047	0.3906	

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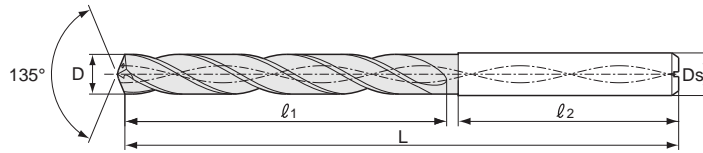
Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

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MDW-HGS5 Series Solid Carbide Coolant Through Drills

SERIES MDW-HGS5



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MDW-HGS5 5XD drill for excellent chip management and long tool life (Internal coolant)

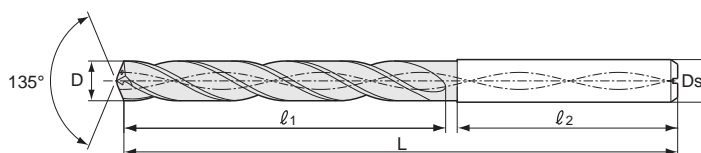
Catalog Number (inch/metric)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (mm)	Overall Length L (in/mm)	Flute Length l_1 (in/mm)	Shank Length l_2 (in/mm)	Shank Diameter D_s (in/mm)	Tap Size
MDW0940HGS5	●		0.3701	9.4	136	76	56	10	
MDW0950HGS5	●		0.3740	9.5	136	76	56	10	
MDW03750HGS5	●	3/8	0.3750	9.53	5.3543	3.1496	2.2047	0.3906	
MDW0960HGS5	●		0.3780	9.6	136	80	56	10	
MDW0970HGS5	●		0.3819	9.7	136	80	56	10	
MDW0980HGS5	●		0.3858	9.8	136	80	56	10	
MDW0990HGS5	●		0.3898	9.9	136	80	56	10	
MDW03906HGS5	●	25/64	0.3906	9.92	5.3543	3.1496	2.2047	0.3906	
MDW1000HGS5	●		0.3937	10.0	136	80	56	10	
MDW1010HGS5	●		0.3976	10.1	149	84	61	11	
MDW1020HGS5	●		0.4016	10.2	149	84	61	11	
MDW1030HGS5	●		0.4055	10.3	149	84	61	11	
MDW04062HGS5	●	13/32	0.4062	10.32	5.8661	3.3071	2.4016	0.4375	
MDW1040HGS5	●		0.4094	10.4	149	84	61	11	
MDW1050HGS5	●		0.4134	10.5	149	84	61	11	
MDW1060HGS5	●		0.4173	10.6	149	88	61	11	
MDW1070HGS5	●		0.4213	10.7	149	88	61	11	
MDW04219HGS5	●	27/64	0.4219	10.72	5.8661	3.4646	2.4016	0.4375	
MDW1080HGS5	●		0.4252	10.8	149	88	61	11	
MDW1090HGS5	●		0.4291	10.9	149	88	61	11	
MDW1100HGS5	●		0.4331	11.0	149	88	61	11	
MDW1110HGS5	●		0.437	11.1	158	92	62	12	
MDW04375HGS5	●	7/16	0.4375	11.11	5.8661	3.4646	2.4016	0.4375	
MDW1120HGS5	●		0.4409	11.2	158	92	62	12	
MDW1130HGS5	●		0.4449	11.3	158	92	62	12	
MDW1140HGS5	●		0.4488	11.4	158	92	62	12	
MDW1150HGS5	●		0.4528	11.5	158	92	62	12	
MDW04531HGS5	●	29/64	0.4531	11.51	6.2205	3.7795	2.4409	0.4688	
MDW1160HGS5	●		0.4567	11.6	158	96	62	12	
MDW1170HGS5	●		0.4606	11.7	158	96	62	12	
MDW1180HGS5	●		0.4646	11.8	158	96	62	12	
MDW1190HGS5	●		0.4685	11.9	158	96	62	12	
MDW04688HGS5	●	15/32	0.4688	11.91	6.2205	3.7795	2.4409	0.4688	
MDW1200HGS5	●		0.4724	12.0	158	96	62	12	
MDW1210HGS5	●		0.4764	12.1	167	100	63	13	
MDW1220HGS5	●		0.4803	12.2	167	100	63	13	
MDW1230HGS5	●		0.4843	12.3	167	100	63	13	
MDW04844HGS5	●	31/64	0.4844	12.304	6.5748	3.937	2.4803	0.5156	
MDW1240HGS5	●		0.4882	12.4	167	100	63	13	
MDW1250HGS5	●		0.4921	12.5	167	100	63	13	
MDW1260HGS5	●		0.4961	12.6	167	104	63	13	
MDW1270HGS5	●	1/2	0.5000	12.7	167	104	63	13	
MDW05000HGS5	●	1/2	0.5000	12.7	6.5748	4.0945	2.4803	0.5156	
MDW1280HGS5	●		0.5039	12.8	167	104	63	13	
MDW1283HGS5	●		0.5051	12.83	167	104	63	13	
MDW1290HGS5	●		0.5079	12.9	167	104	63	13	
MDW1300HGS5	●		0.5118	13.0	167	104	63	13	
MDW05156HGS5	●	33/64	0.5156	13.09	6.5748	4.0945	2.4803	0.5156	
MDW1310HGS5	●		0.5157	13.1	176	108	64	14	
MDW1320HGS5	●		0.5197	13.2	176	108	64	14	
MDW1330HGS5	●		0.5236	13.3	176	108	64	14	
MDW1340HGS5	●		0.5276	13.4	176	108	64	14	
MDW05312HGS5	●	17/32	0.5312	13.49	6.9291	4.252	2.5197	0.5469	
MDW1350HGS5	●		0.5315	13.5	176	108	64	14	

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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 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
MDW1360HGS5	●		0.5354	13.60	176.0	112.0	64.0	14.0	
MDW1370HGS5	●		0.5394	13.70	176.0	112.0	64.0	14.0	
MDW1380HGS5	●		0.5433	13.80	176.0	112.0	64.0	14.0	
MDW05469HGS5	●	35/64	0.5469	13.89	6.9291	4.4094	2.5197	0.5469	
MDW1390HGS5	●		0.5472	13.90	176.0	112.0	64.0	14.0	
MDW1400HGS5	●		0.5512	14.00	176.0	112.0	64.0	14.0	
MDW1410HGS5	●		0.5551	14.10	185.0	116.0	65.0	15.0	
MDW1420HGS5	●		0.5591	14.20	185.0	116.0	65.0	15.0	
MDW05625HGS5	●	9/16	0.5625	14.29	7.2835	4.5669	2.5591	0.5937	
MDW1430HGS5	●		0.5630	14.30	185.0	116.0	65.0	15.0	
MDW1440HGS5	●		0.5669	14.40	185.0	116.0	65.0	15.0	
MDW1450HGS5	●		0.5709	14.50	185.0	116.0	65.0	15.0	
MDW1460HGS5	●		0.5748	14.60	185.0	120.0	65.0	15.0	
MDW05781HGS5	●	37/64	0.5781	14.68	7.2835	4.7244	2.5591	0.5937	5/8-18
MDW1470HGS5	●		0.5787	14.70	185.0	120.0	65.0	15.0	
MDW1480HGS5	●		0.5827	14.80	185.0	120.0	65.0	15.0	
MDW1490HGS5	●		0.5866	14.90	185.0	120.0	65.0	15.0	
MDW1500HGS5	●		0.5906	15.00	185.0	120.0	65.0	15.0	
MDW05937HGS5	●	19/32	0.5937	15.08	7.2835	4.7244	2.5591	0.5937	
MDW1510HGS5	●		0.5945	15.10	194.0	124.0	66.0	16.0	
MDW1520HGS5	●		0.5984	15.20	194.0	124.0	66.0	16.0	
MDW1530HGS5	●		0.6024	15.30	194.0	124.0	66.0	16.0	
MDW1540HGS5	●		0.6063	15.40	194.0	124.0	66.0	16.0	
MDW06094HGS5	●	39/64	0.6094	15.48	7.6378	4.8819	2.5984	0.6250	11/16-12
MDW1550HGS5	●		0.6102	15.50	194.0	124.0	66.0	16.0	M18x2.5
MDW1560HGS5	●		0.6142	15.60	194.0	128.0	66.0	16.0	
MDW1570HGS5	★		0.6181	15.70	194.0	128.0	66.0	16.0	
MDW1580HGS5	●		0.6220	15.80	194.0	128.0	66.0	16.0	
MDW06250HGS5	●	5/8	0.6250	15.88	7.6378	5.0394	2.5984	0.6250	11/16-16
MDW1590HGS5	●		0.6260	15.90	194.0	128.0	66.0	16.0	
MDW1600HGS5	●		0.6299	16.00	194.0	128.0	66.0	16.0	
MDW1650HGS5	●		0.6496	16.50	203.0	132.0		17.0	
MDW1700HGS5	●		0.6693	17.00	203.0	136.0		17.0	
MDW1750HGS5	●		0.6890	17.50	214.0	140.0		18.0	
MDW1800HGS5	●		0.7087	18.00	214.0	144.0		18.0	
MDW1850HGS5	●		0.7284	18.50	221.0	148.0		19.0	
MDW1900HGS5	●		0.7480	19.00	221.0	152.0		19.0	
MDW1950HGS5	●		0.7677	19.50	230.0	156.0		20.0	
MDW2000HGS5	●		0.7874	20.00	230.0	160.0		20.0	

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MDW-HGS8 Series Solid Carbide Coolant Through Drills

SERIES MDW-HGS8



Tolerances of Diameters (in.)		Tolerances of Diameters (in.)		Tolerances of Diameters (in.)	
$D \leq .118$	+0 -.00055	$.236 < D \leq .394$	+0 -.00087	$.709 < D \leq .768$	+0 -.00130
$.118 < D \leq .236$	+0 -.00071	$.394 < D \leq .709$	+0 -.00106		

MDW-HGS8 8XD drill for excellent chip management and long tool life (Internal coolant)

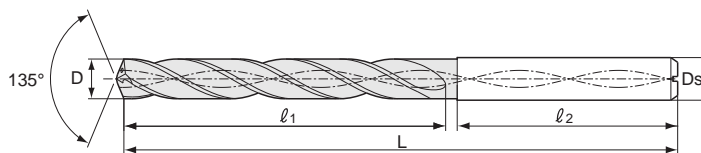
Catalog Number (inch/metric)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (mm)	Overall Length L (in/mm)	Flute Length ℓ_1 (in/mm)	Shank Length ℓ_2 (in/mm)	Shank Diameter Ds (in/mm)	Tap Size
MDW0150HGS8			0.0591	1.50	70.0	18.5		3.00	
MDW0200HGS8	●		0.0787	2.00	76.00	24.00	50.00	3.00	
MDW0210HGS8			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	
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	

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Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

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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 l ₁ (in/mm)	Shank Length l ₂ (in/mm)	Shank Diameter D _s (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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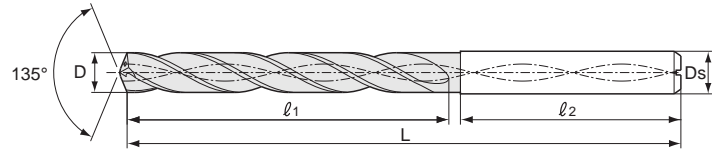
Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

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MDW-HGS8 Series Solid Carbide Coolant Through Drills

SERIES MDW-HGS8



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MDW-HGS8 8XD drill for excellent chip management and long tool life (Internal coolant)

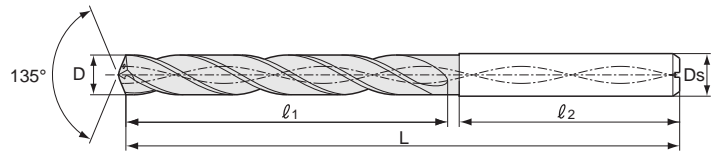
Catalog Number (inch/metric)	Stock	Fractional Wire & Letters	Diameter D (in)	Diameter D (mm)	Overall Length L (in/mm)	Flute Length ℓ_1 (in/mm)	Shank Length ℓ_2 (in/mm)	Shank Diameter D_s (in/mm)	Tap Size
MDW0880HGS8			0.3465	8.80	154.00	99.00	55.00	9.00	
MDW0890HGS8			0.3504	8.90	154.00	99.00	55.00	9.00	
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	62.00	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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Some drills can achieve greater depths. Always check for sufficient flute length. Note: Special diameters available upon request.

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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 l_1 (in/mm)	Shank Length l_2 (in/mm)	Shank Diameter D_s (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 SPEEDS & FEEDS (INCH)

GS2 & GS4 (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	115 - 250	115 - 250	115 - 185	60 - 140	50 - 115	50 - 115	50 - 115	140 - 700	115 - 300
	f	.006 - .010	.004 - .010	.006 - .010	.002 - .006	.002 - .006	.002 - .006	.002 - .006	.008 - .016	.006 - .012
.197 - .315	v	160 - 275	140 - 250	160 - 300	60 - 185	60 - 140	60 - 140	60 - 140	140 - 700	140 - 335
	f	.006 - .012	.006 - .010	.008 - .012	.004 - .008	.003 - .008	.003 - .008	.003 - .008	.008 - .016	.006 - .014
.315 - .394	v	160 - 275	140 - 250	160 - 300	80 - 210	60 - 160	60 - 160	60 - 160	275 - 830	195 - 390
	f	.008 - .012	.006 - .012	.008 - .014	.004 - .010	.003 - .008	.003 - .008	.003 - .008	.008 - .016	.008 - .016
.394 - .472	v	210 - 325	160 - 290	210 - 335	80 - 210	80 - 210	80 - 210	80 - 210	345 - 830	220 - 390
	f	.008 - .012	.006 - .012	.008 - .014	.004 - .010	.004 - .008	.004 - .008	.004 - .008	.008 - .018	.010 - .018
.472 - .551	v	210 - 360	160 - 325	210 - 355	115 - 220	80 - 210	80 - 210	80 - 210	345 - 830	250 - 415
	f	.010 - .014	.006 - .012	.008 - .014	.004 - .010	.004 - .010	.004 - .010	.004 - .010	.008 - .028	.010 - .024
.551 - .630	v	220 - 390	195 - 325	250 - 415	115 - 250	80 - 210	80 - 210	80 - 210	345 - 830	250 - 435
	f	.010 - .018	.008 - .014	.008 - .018	.004 - .012	.004 - .010	.004 - .010	.004 - .010	.008 - .028	.010 - .024

HGS3, HGS5, & HGS8 (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	290 - 460	190 - 380	155 - 305	75 - 190	115 - 215	115 - 225	150 - 380	305 - 455	75 - 150	40 - 85
	f	.006 - .010	.006 - .010	.004 - .008	.003 - .004	.003 - .006	.004 - .008	.006 - .010	.006 - .012	.003 - .004	.002 - .003
.197 - .394	v	415 - 550	265 - 530	155 - 305	115 - 225	185 - 275	190 - 325	305 - 540	380 - 540	90 - 150	40 - 100
	f	.008 - .014	.008 - .014	.004 - .010	.004 - .006	.004 - .008	.004 - .010	.008 - .014	.008 - .014	.003 - .005	.003 - .004
.395 - .630	v	495 - 630	305 - 570	155 - 380	115 - 225	185 - 275	190 - 355	325 - 460	460 - 630	90 - 150	40 - 115
	f	.010 - .014	.010 - .014	.006 - .012	.005 - .008	.005 - .009	.006 - .012	.010 - .014	.010 - .016	.004 - .006	.003 - .006

*For difficult-to-machine stainless steels, (316, 302, 304, 17-4ph, etc.) adjust speeds & feeds accordingly

Solid Carbide
Drills

RECOMMENDED SPEEDS & FEEDS (METRIC)

GS2 & GS4 (external coolant)

Speed: v=m/min Feed: f=mm/rev

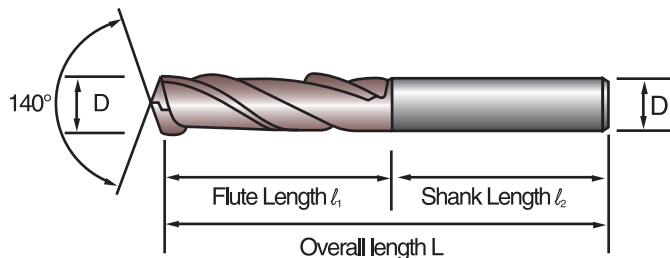
Drill Dia. (mm)		Steels <Hb250	Steels >Hb250	Nodular Cast Iron	Die Steel	Stainless Steel	Exotic Alloys	Titanium Alloy	Aluminum	Gray Cast Iron
2.0 - 5.0	v	34 - 75	34 - 68	34 - 55	16 - 41	13 - 34	13 - 34	13 - 34	41 - 210	34 - 92
	f	.15 - .25	.10 - .25	.15 - .25	.05 - .15	.05 - .15	.05 - .15	.05 - .15	.20 - .41	.15 - .30
5.0 - 8.0	v	50 - 85	41 - 76	50 - 92	16 - 55	16 - 41	16 - 41	16 - 41	41 - 210	41 - 100
	f	.15 - .30	.15 - .25	.20 - .30	.10 - .20	.08 - .20	.08 - .20	.08 - .20	.20 - .41	.15 - .36
8.0 - 10.0	v	50 - 85	41 - 76	50 - 92	25 - 63	16 - 50	16 - 50	16 - 50	85 - 253	60 - 117
	f	.20 - .30	.15 - .30	.20 - .36	.10 - .25	.08 - .20	.08 - .20	.08 - .20	.20 - .41	.20 - .41
10.0 - 12.0	v	63 - 97	50 - 89	63 - 101	25 - 63	25 - 63	25 - 63	25 - 63	105 - 253	68 - 117
	f	.20 - .30	.15 - .30	.20 - .36	.10 - .25	.10 - .20	.10 - .20	.10 - .20	.20 - .46	.25 - .46
12.0 - 14.0	v	63 - 110	50 - 97	63 - 110	33 - 68	25 - 63	25 - 63	25 - 63	105 - 276	76 - 125
	f	.25 - .36	.15 - .30	.20 - .36	.10 - .25	.10 - .25	.10 - .25	.10 - .25	.20 - .71	.25 - .61
14.0 - 16.0	v	63 - 110	50 - 97	63 - 110	33 - 68	25 - 63	25 - 63	25 - 63	105 - 276	76 - 125
	f	.25 - .36	.15 - .30	.20 - .36	.10 - .25	.10 - .25	.10 - .25	.10 - .25	.20 - .71	.25 - .61

HGS3, HGS5, & HGS8 (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	87 - 140	58 - 115	47 - 93	23 - 58	36 - 64	36 - 69	45 - 115	93 - 138	23 - 46	13 - 26
	f	.15 - .25	.15 - .25	.10 - .20	.08 - .10	.08 - .15	.10 - .20	.15 - .25	.15 - .30	.08 - .10	.05 - .08
5.0 - 10.0	v	126 - 168	80 - 161	47 - 93	36 - 69	56 - 84	58 - 98	93 - 140	115 - 164	28 - 46	13 - 30
	f	.20 - .35	.20 - .35	.10 - .25	.10 - .15	.10 - .20	.10 - .25	.20 - .25	.20 - .35	.08 - .13	.08 - .10
10.0 - 16.0	v	151 - 193	93 - 174	47 - 115	36 - 69	56 - 84	58 - 109	98 - 140	140 - 193	28 - 46	13 - 35
	f	.25 - .35	.25 - .35	.15 - .30	.13 - .20	.13 - .23	.15 - .30	.25 - .36	.25 - .41	.10 - .15	.07 - .15

*For difficult-to-machine stainless steels, (316, 302, 304, 17-4ph, etc.) adjust speeds & feeds accordingly





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	2.125	.828	1.297
MDS1470SV	●	#26	3.73	.1470			
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	2.250	.906	1.344
MDS041SV	●		4.10	.1614			
MDS1660SV	●	#19	4.22	.1660			
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	2.406	.984	1.422
MDS1820SV	●	#14	4.62	.1820			
MDS1850SV	●	#13	4.70	.1850			
MDS1875SV	●	3/16	4.76	.1875			
MDS1890SV	●	#12	4.80	.1890			
MDS048SV	●		4.80	.1890			
MDS1910SV	●	#11	4.85	.1910			
MDS1935SV	●	#10	4.91	.1935			

● = USA Stocked item

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Tolerances of Diameters (in.)	
$D \leq .118$	+0 -.00055
$.118 < D \leq .236$	+0 -.00071
$.236 < D \leq .394$	+0 -.00087
$.394 < D \leq .709$	+0 -.00106
$.709 < D \leq .768$	+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	2.563	1.063	1.500
MDS2090SV	●	#4	5.31	.2090			
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	2.719	1.188	1.531
MDS2380SV	●	#B	6.05	.2380			
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	2.875	1.297	1.578
MDS2610SV	●	#G	6.63	.2610			
MDS2656SV	●	17/64	6.75	.2656			
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	3.078	1.422	1.656
MDS2950SV	●	#M	7.49	.2950			
MDS075SV	●		7.50	.2953			
MDS2969SV	●	19/64	7.54	.2969			
MDS3020SV	●	#N	7.67	.3020			
MDS078SV	●		7.80	.3071	3.078	1.422	1.656
MDS3125SV	●	5/16	7.94	.3125			

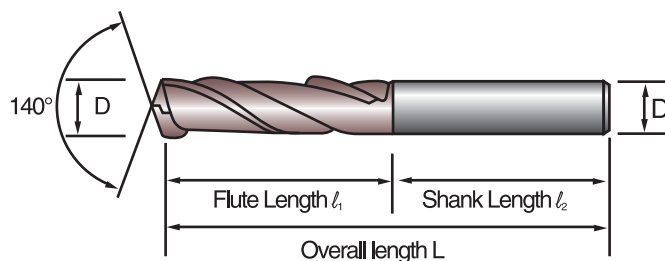
● = USA Stocked item

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SERIES MDS-SV

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	3.234	1.500	1.734
MDS3390SV	●	#R	8.61	.3390			
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

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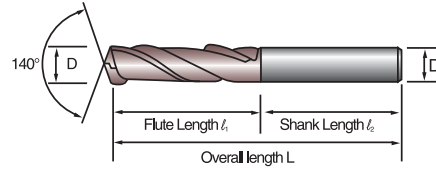
Tolerances of Diameters (in.)	
$D \leq .118$	+0 -.00055
$.118 < D \leq .236$	+0 -.00071
$.236 < D \leq .394$	+0 -.00087
$.394 < D \leq .709$	+0 -.00106
$.709 < D \leq .768$	+0 -.00130

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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
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	4.844	2.359	2.484
MDS182SV	●		18.20	.7165			
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



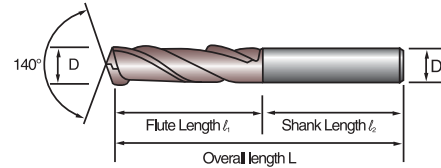
MDS-MV 3.5XD drill for excellent chip management and long tool life (External coolant)

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	
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
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	3.859	2.156		
MDS3390MV	●	#R	8.61	.3390				
MDS3438MV	●	11/32	8.73	.3438				
MDS3480MV	●	#S	8.84	.3480				
MDS090MV	●		9.00	.3543	4.016	2.281	1.734	
MDS3580MV	●	#T	9.09	.3580				
MDS3594MV	●	23/64	9.13	.3594				
MDS3680MV	●	#U	9.35	.3680				
MDS095MV	●		9.50	.3740	4.125	2.359	1.766	
MDS3750MV	●	3/8	9.53	.3750				
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				

● = USA Stocked item

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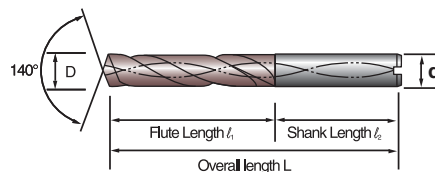
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MDS-MV 3.5XD drill for excellent chip management and long tool life (External coolant)

Catalog Number (inch/metric)	S t o c k	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	7.203	4.484	
MDS182MV	●		18.20	.7165			
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			

● = USA Stocked item





MDS-MHV 4XD 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
MDS015MHV	●		1.50	.0591	.1181	.594	1.891	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		1.969	
MDS1590MHV	●	#21	4.04	.1590	.1875			
MDS041MHV	●		4.10	.1614	.1969	.984		
MDS042MHV	●		4.20	.1654	.1969			
MDS1719MHV	●	11/64	4.37	.1719	.1875		1.969	3.156
MDS044MHV	●		4.40	.1732	.1969			
MDS045MHV	●		4.50	.1772	.1969			
MDS1875MHV	●	3/16	4.76	.1875	.1875		1.078	
MDS048MHV	●		4.80	.1890	.1969			
MDS050MHV	●		5.00	.1969	.1969			
MDS051MHV	●		5.10	.2008	.2362			
MDS2010MHV	●	#7	5.11	.2010	.2344		2.047	
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		2.047	3.234
MDS055MHV	●		5.50	.2165	.2362			
MDS2188MHV	●	7/32	5.56	.2188	.2344			
MDS056MHV	●		5.60	.2204	.2362			
MDS2210MHV	●	#2	5.61	.2210	.2344		1.188	
MDS057MHV	●		5.70	.2244	.2362			
MDS058MHV	●		5.80	.2283	.2362			
MDS2344MHV	●	15/64	5.95	.2344	.2344			
MDS060MHV	●		6.00	.2362	.2362		1.281	
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		2.094	
MDS06.53MHV	●		6.527	.2571	.2756			
MDS066MHV	●		6.60	.2598	.2756			
MDS067MHV	●		6.70	.2638	.2756			
MDS2656MHV	●	17/64	6.75	.2656	.2812		1.375	
MDS2660MHV	●	#H	6.76	.2660	.2812			
MDS068MHV	●		6.80	.2677	.2756			
MDS069MHV	●		6.90	.2717	.2756			
MDS2720MHV	●	#I	6.91	.2720	.2812		1.375	
MDS070MHV	●		7.00	.2756	.2756			
MDS2770MHV	●	#J	7.04	.2770	.2812			

● = USA Stocked item

(continued on next page)



MDS-MHV Series Solid Carbide Drills

Coolant Through Drills

SERIES

MDS-MHV



Tolerances of Diameters (in.)		Tolerances of Diameters (in.)		Tolerances of Diameters (in.)	
$D \leq .118$	$+0$ $-.00055$	$.236 < D \leq .394$	$+0$ $-.00087$	$.709 < D \leq .768$	$+0$ $-.00130$
$.118 < D \leq .236$	$+0$ $-.00071$	$.394 < D \leq .709$	$+0$ $-.00106$		

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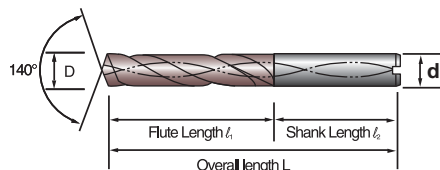
MDS-MHV 4XD drill with internal coolant holes for smooth chip flow at high speeds.

Catalog Number (inch/metric)	S t o c k	Cutting Diameter			Dimensions								
		Fractional Wire & Letters	Metric	Decimal D	Shank Diameter d	Flute Length ℓ ₁	Shank Length ℓ ₂	Overall Length L					
MDS071MHV	●	9/32	7.10	.2795	.3150	1.484	2.125	3.703					
MDS2812MHV	●		7.14	.2812	.2812								
MDS072MHV	●		7.20	.2835	.3150								
MDS074MHV	●		7.40	.2913	.3150								
MDS075MHV	●	19/64	7.50	.2953	.3150	1.578							
MDS2969MHV	●		7.54	.2969	.3125								
MDS078MHV	●	5/16	7.80	.3071	.3150				1.672				
MDS3125MHV	●		7.94	.3125	.3125								
MDS080MHV	●		8.00	.3150	.3150								
MDS081MHV	●	#P	8.10	.3189	.3543	2.156	3.938						
MDS082MHV	●		8.20	.3228	.3543								
MDS3230MHV	●		8.204	.3230	.3594								
MDS083MHV	●		8.30	.3268	.3543								
MDS3281MHV	●	21/64	8.33	.3281	.3594			1.766					
MDS3320MHV	●	#Q	8.43	.3320	.3594								
MDS085MHV	●	23/64	8.50	.3346	.3543								
MDS086MHV	●		8.60	.3386	.3543								
MDS087MHV	●		8.70	.3425	.3543								
MDS3438MHV	●		8.73	.3438	.3594								
MDS088MHV	●	11/32	8.80	.3465	.3543	2.203	4.172						
MDS089MHV	●		8.90	.3504	.3543								
MDS090MHV	●		9.00	.3543	.3543								
MDS3594MHV	●		9.13	.3594	.3594								
MDS092MHV	●	#U	9.20	.3622	.3937			1.969					
MDS093MHV	●		9.30	.3661	.3937								
MDS3680MHV	●		9.35	.3680	.3906								
MDS094MHV	●		9.40	.3700	.3937								
MDS095MHV	●	3/8	9.50	.3740	.3937			2.047	2.406	4.563			
MDS3750MHV	●		9.53	.3750	.3906								
MDS096MHV	●		9.60	.3780	.3937								
MDS097MHV	●		9.70	.3819	.3937								
MDS098MHV	●	25/64	9.80	.3858	.3937	2.172							
MDS099MHV	●		9.90	.3898	.3937								
MDS3906MHV	●		9.92	.3906	.3906								
MDS100MHV	●		10.00	.3937	.3937								
MDS102MHV	●	13/32	10.20	.4016	.4331	2.281	2.438				4.813		
MDS103MHV	●		10.30	.4055	.4331								
MDS4062MHV	●		10.32	.4062	.4375								
MDS104MHV	●		10.40	.4094	.4331								
MDS105MHV	●	27/64	10.50	.4134	.4331	2.359							
MDS106MHV	●		10.60	.4173	.4331								
MDS107MHV	●		10.70	.4213	.4331								
MDS4219MHV	●		10.72	.4219	.4375								
MDS108MHV	●	7/16	10.80	.4252	.4331	2.438		2.438	4.813				
MDS110MHV	●		11.00	.4331	.4331								
MDS4375MHV	●		11.11	.4375	.4375								
MDS112MHV	●		11.20	.4409	.4724								
MDS115MHV	●	29/64	11.50	.4528	.4724	2.281	2.438	4.813					
MDS4531MHV	●		11.51	.4531	.4688								
MDS117MHV	●		11.70	.4606	.4724								
MDS118MHV	●		11.80	.4646	.4724								

● = USA Stocked item

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Tolerances of Diameters (in.)		Tolerances of Diameters (in.)		Tolerances of Diameters (in.)	
$D \leq .118$	+0 -.00055	$.236 < D \leq .394$	+0 -.00087	$.709 < D \leq .768$	+0 -.00130
$.118 < D \leq .236$	+0 -.00071	$.394 < D \leq .709$	+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			Dimensions			
		Fractional Wire & Letters	Metric	Decimal D	Shank Diameter d	Flute Length ℓ ₁	Shank Length ℓ ₂	Overall Length L
MDS468MHV	●	15/32	11.91	.4688	.4688	2.359	2.438	4.813
MDS120MHV	●		12.00	.4724	.4724			
MDS122MHV	●		12.20	.4803	.5118			
MDS4844MHV	●	31/64	12.30	.4844	.5156	2.469		
MDS125MHV	●		12.50	.4921	.5118			
MDS126MHV	●		12.60	.4961	.5118			
MDS127MHV	●		12.697	.4999	.5118		2.484	5.032
MDS5000MHV	●	1/2	12.70	.5000	.5156	2.562		
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		
MDS135MHV	●		13.50	.5315	.5512			
MDS138MHV	●		13.80	.5433	.5512		2.516	5.281
MDS5469MHV	●	35/64	13.89	.5469	.5469	2.750		
MDS140MHV	●		14.00	.5512	.5512			
MDS141MHV	●		14.10	.5551	.5906			
MDS5625MHV	●	9/16	14.29	.5625	.5937	2.859		
MDS145MHV	●		14.50	.5709	.5906			
MDS5781MHV	●	37/64	14.68	.5781	.5937		2.562	5.516
MDS148MHV	●		14.80	.5827	.5906			
MDS150MHV	●		15.00	.5906	.5906	2.953		
MDS5937MHV	●	19/32	15.08	.5937	.5937			
MDS6094MHV	●	39/64	15.48	.6094	.6250	3.047		
MDS155MHV	●		15.50	.6102	.6299			
MDS158MHV	●		15.80	.6220	.6299		2.594	5.750
MDS6250MHV	●	5/8	15.88	.6250	.6250	3.156		
MDS160MHV	●		16.00	.6299	.6299			
MDS16.08MHV	●		16.08	.6331	.6693			
MDS162MHV	●		16.20	.6378	.6693	3.250		
MDS6406MHV	●	41/64	16.27	.6406	.6718		2.641	5.984
MDS165MHV	●		16.50	.6496	.6693			
MDS6562MHV	●	21/32	16.67	.6562	.6718			
MDS170MHV	●		17.00	.6693	.6693	3.344		
MDS6718MHV	●	43/64	17.06	.6718	.6718			
MDS6875MHV	●	11/16	17.46	.6875	.7031	3.438		
MDS175MHV	●		17.50	.6890	.7087			
MDS178MHV	●		17.80	.7008	.7087		2.672	6.219
MDS7031MHV	●	45/64	17.86	.7031	.7031	3.547		
MDS180MHV	●		18.00	.7087	.7087			
MDS7187MHV	●	23/32	18.26	.7187	.7500			
MDS185MHV	●		18.50	.7283	.7480	3.641		
MDS7344MHV	●	47/64	18.65	.7344	.7500		2.719	6.453
MDS190MHV	●		19.00	.7480	.7480	3.750		
MDS7500MHV	●	3/4	19.05	.7500	.7500			
MDS19.15MHV	●		19.15	.7539	.7874			
MDS19.25MHV	●		19.25	.7579	.7874			
MDS19.3MHV	●		19.30	.7598	.7874	3.844		
MDS7656MHV	●	49/64	19.45	.7656	.7812		2.750	6.688
MDS195MHV	●		19.50	.7677	.7874			
MDS198MHV	●		19.80	.7795	.7874			
MDS7812MHV	●	25/32	19.84	.7812	.7812	3.938		
MDS200MHV	●		20.00	.7874	.7874			

● = USA Stocked item

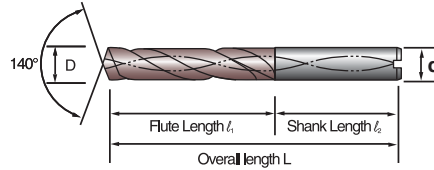


MDS-LHV Series Solid Carbide Drills

Coolant Through Drills

SERIES

MDS-LHV



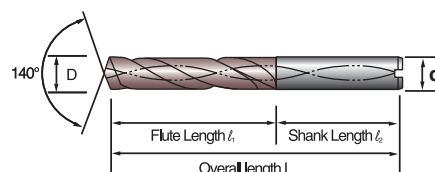
MDS-LHV 5XD drill with internal coolant holes for smooth chip flow at high speeds.

Catalog Number (inch/metric)	Stock	Cutting Diameter			Dimensions			
		Fractional Wire & Letters	Metric	Decimal D	Shank Diameter d	Flute Shank Length ℓ ₁	Overall Length ℓ ₂	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	1.734	2.047	3.938
MDS045LHV	●		4.50	.1772	.1969			
MDS1875LHV	●	3/16	4.76	.1875	.1875			
MDS048LHV	●		4.80	.1890	.1969			
MDS050LHV	●		5.00	.1969	.1969	1.891	2.047	3.938
MDS051LHV	●		5.10	.2008	.2362			
MDS2031LHV	●	13/64	5.16	.2031	.2344			
MDS052LHV	●		5.20	.2047	.2362			
MDS053LHV	●		5.30	.2087	.2362	1.891	2.047	3.938
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	2.047	3.938
MDS2210LHV	●	#2	5.61	.2210	.2344			
MDS057LHV	●		5.70	.2244	.2362			
MDS058LHV	●		5.80	.2283	.2362			
MDS2344LHV	●	15/64	5.95	.2344	.2344	2.047	2.094	4.297
MDS060LHV	●		6.00	.2362	.2362			
MDS061LHV	●		6.10	.2402	.2756			
MDS062LHV	●		6.20	.2441	.2756			
MDS063LHV	●		6.30	.2480	.2756	2.047	2.094	4.297
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	2.094	4.297
MDS6.53LHV	●		6.53	.2571	.2756			
MDS066LHV	●		6.60	.2598	.2756			
MDS067LHV	●		6.70	.2638	.2756			
MDS2656LHV	●	17/64	6.75	.2656	.2812	2.203	2.094	4.297
MDS2660LHV	●	#H	6.76	.2660	.2812			
MDS068LHV	●		6.80	.2677	.2756			
MDS069LHV	●		6.90	.2717	.2756			
MDS2720LHV	●	#I	6.91	.2720	.2812	2.359	2.125	4.641
MDS070LHV	●		7.00	.2756	.2756			
MDS2770LHV	●	#J	7.04	.2770	.2812			
MDS071LHV	●		7.10	.2795	.3150			
MDS2812LHV	●	9/32	7.14	.2812	.2812	2.359	2.125	4.641
MDS072LHV	●		7.20	.2835	.3150			
MDS074LHV	●		7.40	.2913	.3150			
MDS075LHV	●		7.50	.2953	.3150			
MDS2969LHV	●	19/64	7.54	.2969	.3125	2.516	2.125	4.641
MDS078LHV	●		7.80	.3071	.3150			
MDS3125LHV	●	5/16	7.94	.3125	.3125			
MDS080LHV	●		8.00	.3150	.3150			

● = USA Stocked item

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(continued from previous page)

MDS-LHV 5XD drill with internal coolant holes for smooth chip flow at high speeds.

Catalog Number (inch/metric)	S t o c k	Cutting Diameter			Dimensions			
		Fractional Wire & Letters	Metric	Decimal D	Shank Diameter d	Flute Length ℓ _f	Shank Length ℓ _s	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	2.828	2.172	5.000
MDS086LHV	●		8.60	.3386	.3543			
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	3.000	2.203	5.359
MDS3594LHV	●	23/64	9.13	.3594	.3594			
MDS092LHV	●		9.20	.3622	.3937			
MDS093LHV	●		9.30	.3661	.3937			
MDS3680LHV	●	#U	9.35	.3680	.3906			
MDS094LHV	●		9.40	.3700	.3937			
MDS095LHV	●		9.50	.3740	.3937	3.156	2.203	5.359
MDS3750LHV	●	3/8	9.53	.3750	.3906			
MDS096LHV	●		9.60	.3780	.3937			
MDS097LHV	●		9.70	.3819	.3937			
MDS098LHV	●		9.80	.3858	.3937			
MDS099LHV	●		9.90	.3898	.3937			
MDS3906LHV	●	25/64	9.92	.3906	.3906	3.313	2.406	5.859
MDS100LHV	●		10.00	.3937	.3937			
MDS102LHV	●		10.20	.4016	.4331			
MDS103LHV	●		10.30	.4055	.4331			
MDS4062LHV	●	13/32	10.32	.4062	.4375			
MDS104LHV	●		10.40	.4094	.4331			
MDS105LHV	●		10.50	.4134	.4331	3.469	2.438	6.219
MDS106LHV	●		10.60	.4173	.4331			
MDS107LHV	●		10.70	.4213	.4331			
MDS4219LHV	●	27/64	10.72	.4219	.4375			
MDS108LHV	●		10.80	.4252	.4331			
MDS110LHV	●		11.00	.4331	.4331	3.625	2.438	6.219
MDS4375LHV	●	7/16	11.11	.4375	.4375			
MDS112LHV	●		11.20	.4409	.4724			
MDS115LHV	●		11.50	.4528	.4724	3.781	2.438	6.219
MDS4531LHV	●	29/64	11.51	.4531	.4688			
MDS117LHV	●		11.70	.4606	.4724			
MDS118LHV	●		11.80	.4646	.4724			
MDS4688LHV	●	15/32	11.91	.4688	.4688	4.000	2.484	6.578
MDS120LHV	●		12.00	.4724	.4724			
MDS122LHV	●		12.20	.4803	.5118			
MDS4844LHV	●	31/64	12.30	.4844	.5156			
MDS125LHV	●		12.50	.4921	.5118	4.093	2.484	6.578
MDS126LHV	●		12.60	.4961	.5118			
MDS127LHV	●		12.70	.4999	.5118			
MDS5000LHV	●	1/2	12.70	.5000	.5156			
MDS128LHV	●		12.80	.5039	.5118			

● = USA Stocked item

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MDS-LHV Series Solid Carbide Drills

Coolant Through Drills

SERIES

MDS-LHV



Tolerances of Diameters (in.)		Tolerances of Diameters (in.)		Tolerances of Diameters (in.)	
$D \leq .118$	+0 -.00055	$.236 < D \leq .394$	+0 -.00087	$.709 < D \leq .768$	+0 -.00130
$.118 < D \leq .236$	+0 -.00071	$.394 < D \leq .709$	+0 -.00106		

(continued from previous page)

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 Shank Length ℓ_1	Overall Length ℓ_2	Length L
MDS12.83LHV	●		12.83	.5051	.5118			
MDS130LHV	●		13.00	.5118	.5118	4.093	2.484	6.578
MDS5156LHV	●	33/64	13.10	.5156	.5156			
MDS5312LHV	●	17/32	13.49	.5312	.5469	4.312		
MDS135LHV	●		13.50	.5315	.5512			
MDS138LHV	●		13.80	.5433	.5512		2.516	6.938
MDS5469LHV	●	35/64	13.89	.5469	.5469	4.406		
MDS140LHV	●		14.00	.5512	.5512			
MDS141LHV	●		14.10	.5551	.5906			
MDS5625LHV	●	9/16	14.29	.5625	.5937			
MDS145LHV	●		14.50	.5709	.5906	4.625		
MDS5781LHV	●	37/64	14.68	.5781	.5937		2.563	7.281
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		
MDS155LHV	●		15.50	.6102	.6299			
MDS158LHV	●		15.80	.6220	.6299		2.594	7.641
MDS6250LHV	●	5/8	15.88	.6250	.6250	5.031		
MDS160LHV	●		16.00	.6299	.6299			
MDS16.08LHV	●		16.08	.6331	.6693			
MDS162LHV	●		16.20	.6378	.6693	5.203		
MDS6406LHV	●	41/64	16.27	.6406	.6718		2.641	8.000
MDS165LHV	●		16.50	.6496	.6693			
MDS6562LHV	●	21/32	16.67	.6562	.6718			
MDS170LHV	●		17.00	.6693	.6693	5.359		
MDS6718LHV	●	43/64	17.06	.6718	.6718			
MDS6875LHV	●	11/16	17.46	.6875	.7031	5.515		
MDS175LHV	●		17.50	.6890	.7087			
MDS178LHV	●		17.80	.7008	.7087		2.672	8.344
MDS7031LHV	●	45/64	17.86	.7031	.7031	5.672		
MDS180LHV	●		18.00	.7087	.7087			
MDS7187LHV	●	23/32	18.26	.7187	.7500			
MDS185LHV	●		18.50	.7283	.7480	5.828		
MDS7344LHV	●	47/64	18.65	.7344	.7500		2.719	8.703
MDS190LHV	●		19.00	.7480	.7480	5.984		
MDS7500LHV	●	3/4	19.05	.7500	.7500			
MDS19.15LHV	●		19.15	.7539	.7874			
MDS19.25LHV	●		19.25	.7579	.7874			
MDS193LHV	●		19.30	.7598	.7874	6.140		
MDS7656LHV	●	49/64	19.45	.7656	.7812		2.750	9.062
MDS195LHV	●		19.50	.7677	.7874			
MDS198LHV	●		19.80	.7795	.7874			
MDS7812LHV	●	25/32	19.84	.7812	.7812	6.297		
MDS200LHV	●		20.00	.7874	.7874			

● = USA Stocked item





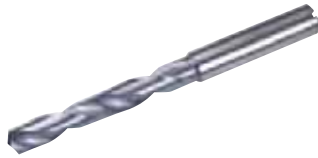
DIN 6537 METRIC DRILLS - COOLANT THROUGH

Catalog Number (inch/metric)	Stk	Drill Diameter d ₁ (mm)	Drill Diameter d ₁ (inches)	Shank Diameter d ₂ (mm)	Overall Length L (mm)	Flute Length ℓ ₃ (mm)	Tap Drill	Tube Drill
MDS040DMHV		4.00	.1575	6.00	74.00	36.00		
MDS042DMHV	▲	4.20	.1654	6.00	74.00	36.00	M5	
MDS045DMHV		4.50	.1772	6.00	74.00	36.00		
MDS048DMHV		4.80	.1890	6.00	82.00	44.00		
MDS050DMHV	▲	5.00	.1969	6.00	82.00	44.00	M6	
MDS051DMHV		5.10	.2008	6.00	82.00	44.00		
MDS052DMHV	▲	5.20	.2047	6.00	82.00	44.00		
MDS055DMHV		5.50	.2165	6.00	82.00	44.00		
MDS058DMHV		5.80	.2283	6.00	82.00	44.00		
MDS060DMHV	▲	6.00	.2362	6.00	82.00	44.00	M7	
MDS061DMHV		6.10	.2402	8.00	91.00	53.00		
MDS062DMHV		6.20	.2441	8.00	91.00	53.00		
MDS063DMHV		6.30	.2480	8.00	91.00	53.00		
MDS065DMHV		6.50	.2559	8.00	91.00	53.00		
MDS06.53DMHV	▲	6.53	.2571	8.00	91.00	53.00		1/4
MDS066DMHV		6.60	.2598	8.00	91.00	53.00		
MDS067DMHV		6.70	.2638	8.00	91.00	53.00		
MDS068DMHV	▲	6.80	.2677	8.00	91.00	53.00	M8	
MDS069DMHV		6.90	.2717	8.00	91.00	53.00		
MDS070DMHV		7.00	.2756	8.00	91.00	53.00		
MDS072DMHV		7.20	.2835	8.00	91.00	53.00		
MDS075DMHV		7.50	.2953	8.00	91.00	53.00		
MDS078DMHV	▲	7.80	.3071	8.00	91.00	53.00	M9	
MDS080DMHV		8.00	.3150	8.00	91.00	53.00		
MDS082DMHV		8.20	.3228	10.00	103.00	61.00		
MDS083DMHV		8.30	.3268	10.00	103.00	61.00		
MDS085DMHV	▲	8.50	.3346	10.00	103.00	61.00	M10	
MDS086DMHV		8.60	.3386	10.00	103.00	61.00		
MDS087DMHV		8.70	.3425	10.00	103.00	61.00		
MDS088DMHV		8.80	.3465	10.00	103.00	61.00		
MDS089DMHV		8.90	.3504	10.00	103.00	61.00		
MDS090DMHV		9.00	.3543	10.00	103.00	61.00		
MDS095DMHV	▲	9.50	.3740	10.00	103.00	61.00	M11	
MDS096DMHV		9.60	.3780	10.00	103.00	61.00		
MDS097DMHV	▲	9.70	.3819	10.00	103.00	61.00		3/8
MDS098DMHV		9.80	.3858	10.00	103.00	61.00		
MDS099DMHV		9.90	.3898	10.00	103.00	61.00		

▲ = Limited availability; others available on request.

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d1 (mm)	Tolerance m7	
~ 6	+0,016 ~	+0,004
~ 10	+0,021 ~	+0,006
~ 18	+0,025 ~	+0,007
~ 20	+0,029 ~	+0,008

(continued from previous page)

DIN 6537 METRIC DRILLS

Catalog Number (inch/metric)	Stk	Drill Diameter d ₁ (mm)	Drill Diameter d ₁ (inches)	Shank Diameter d ₂ (mm)	Overall Length L (mm)	Flute Length ℓ ₃ (mm)	Tap Drill	Tube Drill
MDS100DMHV		10.00	.3937	10.00	103.00	61.00		
MDS102DMHV	▲	10.20	.4016	12.00	118.00	71.00	M12	
MDS103DMHV	▲	10.30	.4055	12.00	118.00	71.00		
MDS105DMHV		10.50	.4134	12.00	118.00	71.00		
MDS106DMHV		10.60	.4173	12.00	118.00	71.00		
MDS107DMHV	▲	10.70	.4213	12.00	118.00	71.00		
MDS108DMHV		10.80	.4252	12.00	118.00	71.00		
MDS110DMHV		11.00	.4331	12.00	118.00	71.00		
MDS115DMHV	▲	11.50	.4528	12.00	118.00	71.00		
MDS117DMHV		11.70	.4606	12.00	118.00	71.00		
MDS120DMHV	▲	12.00	.4724	12.00	118.00	71.00	M14	
MDS122DMHV		12.20	.4803	14.00	124.00	77.00		
MDS125DMHV	▲	12.50	.4921	14.00	124.00	77.00		
MDS128DMHV		12.80	.5039	14.00	124.00	77.00		
MDS12.83DMHV	▲	12.83	.5051	14.00	124.00	77.00		1/2
MDS130DMHV		13.00	.5118	14.00	124.00	77.00		
MDS133DMHV	▲	13.30	.5236	14.00	124.00	77.00		
MDS135DMHV		13.50	.5315	14.00	124.00	77.00		
MDS138DMHV		13.80	.5433	14.00	124.00	77.00		
MDS140DMHV	▲	14.00	.5512	14.00	124.00	77.00	M16	
MDS145DMHV		14.50	.5709	16.00	133.00	83.00		
MDS150DMHV		15.00	.5906	16.00	133.00	83.00		
MDS155DMHV	▲	15.50	.6102	16.00	133.00	83.00	M18	
MDS160DMHV		16.00	.6299	16.00	133.00	83.00		
MDS16.08DMHV	▲	16.08	.6331	18.00	143.00	93.00		5/8
MDS162DMHV		16.20	.6378	18.00	143.00	93.00		
MDS165DMHV		16.50	.6496	18.00	143.00	93.00		
MDS170DMHV		17.00	.6693	18.00	143.00	93.00		
MDS175DMHV	▲	17.50	.6890	18.00	143.00	93.00	M20	
MDS180DMHV		18.00	.7087	18.00	143.00	93.00		
MDS185DMHV		18.50	.7283	20.00	153.00	101.00		
MDS190DMHV		19.00	.7480	20.00	153.00	101.00		
MDS19.15DMHV	▲	19.15	.7539	20.00	153.00	101.00		3/4
MDS19.25DMHV	▲	19.25	.7579	20.00	153.00	101.00		
MDS193DMHV	▲	19.30	.7598	20.00	153.00	101.00		
MDS195DMHV	▲	19.50	.7677	20.00	153.00	101.00	M22	
MDS198DMHV		19.80	.7795	20.00	153.00	101.00		
MDS200DMHV		20.00	.7874	20.00	153.00	101.00		

▲ = Limited availability; others available on request.

■ 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 464-468



MicroDrills/DLC Coated Drills

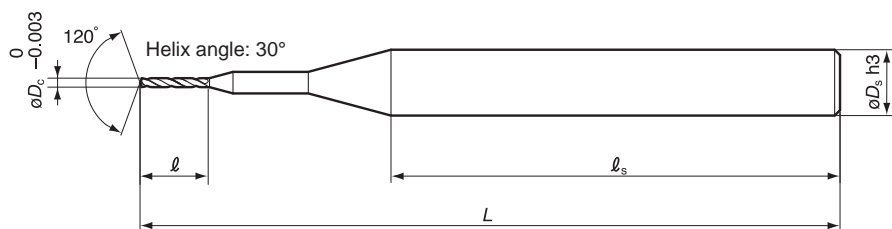
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■ MDUS-Features & Benefits

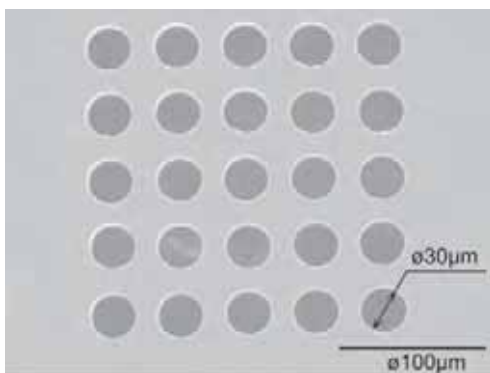
- **High precision shank**
Shank tolerance: h3
Concentricity: 0.3μm or less
Roundness: 0.5μm or less
- **New ultra-thin TiAlN coating**
Provides improved wear resistance
- **Wide material range**
Ideal for machining steel, stainless steel, and copper



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



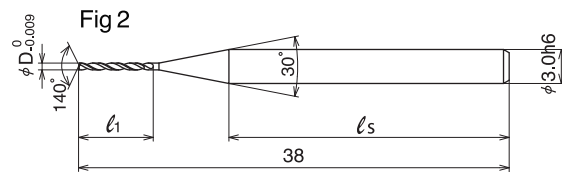
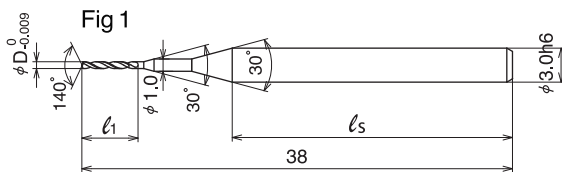
Material: 304 Stainless Steel
Drill: MDUS0030-30C (ø0.03mm)





■ 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



ø0.20 to ø0.49mm

Catalog Number	Stock	øDc (mm)	Dimensions (mm)		Style					
			ℓ	ℓ _s						
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		28	Fig2				
MDSS0031	★	0.31								
MDSS0032	★	0.32								
MDSS0033	★	0.33								
MDSS0034	★	0.34								
MDSS0035	★	0.35	4				28	Fig2		
MDSS0036	★	0.36								
MDSS0037	★	0.37								
MDSS0038	★	0.38								
MDSS0039	★	0.39								
MDSS0040	★	0.40	5						28	Fig2
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								

ø0.50 to ø0.79mm

Catalog Number	Stock	øDc (mm)	Dimensions (mm)		Style
			ℓ	ℓ _s	
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	Fig2
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	Fig2
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			

★ = Worldwide Warehouse item
available in 10 business days

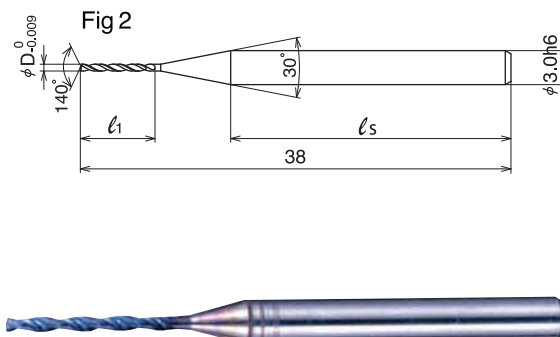
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ø0.80 to ø1.00mm

Catalog Number	Stock	øDc (mm)	Dimensions (mm)		Style
			ℓ	ℓ _s	
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



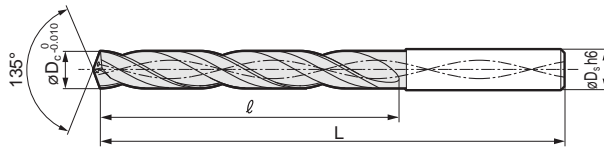
Recommended Cutting Conditions (Wet)

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.





Diameter $\phi 3.00$ to 8.00mm (5XD)

Catalog Number	ϕD_c (mm)	ϕD_s (mm)	Stock	Dimensions (mm)	
				ℓ	L
MDW0300NHGS5	3.00	3.0	★	28	78
MDW0340NHGS5	3.40	4.0	★	32	86
MDW0350NHGS5	3.50		★		
MDW0365NHGS5	3.65		★		
MDW0380NHGS5	3.80		★	36	
MDW0400NHGS5	4.00	5.0	★		98
MDW0430NHGS5	4.30		★	40	
MDW0450NHGS5	4.50		★		
MDW0460NHGS5	4.60		★	44	
MDW0500NHGS5	5.00	6.0	★		100
MDW0510NHGS5	5.10		★	44	
MDW0550NHGS5	5.50		★	48	
MDW0600NHGS5	6.00		★		
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 $\phi 8.50$ to 16.00mm (5XD)

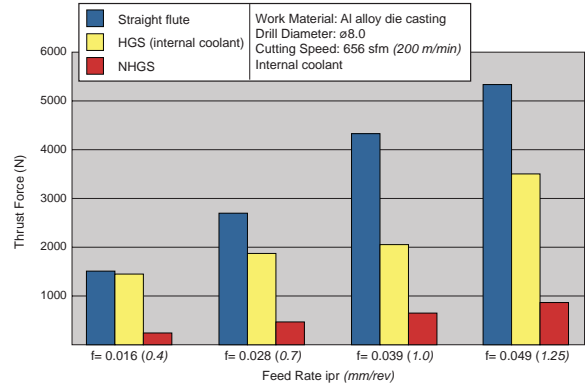
Catalog Number	ϕD_c (mm)	ϕD_s (mm)	Stock	Dimensions (mm)	
				ℓ	L
MDW0850NHGS5	8.50	9.0	★	68	127
MDW0860NHGS5	8.60		★	72	
MDW0900NHGS5	9.00		★		
MDW0921NHGS5	9.21		★	76	
MDW0950NHGS5	9.50	10.0	★		136
MDW0960NHGS5	9.60		★	80	
MDW1000NHGS5	10.00		★		
MDW1040NHGS5	10.40		★	84	
MDW1050NHGS5	10.50	11.0	★	88	149
MDW1100NHGS5	11.00		★		
MDW1110NHGS5	11.10		★	92	
MDW1150NHGS5	11.50		★	96	
MDW1200NHGS5	12.00	13.0	★	100	167
MDW1210NHGS5	12.10		★		
MDW1250NHGS5	12.50		★	104	
MDW1300NHGS5	13.00		★	108	
MDW1350NHGS5	13.50	14.0	★	112	176
MDW1400NHGS5	14.00		★		
MDW1410NHGS5	14.10		★	116	
MDW1450NHGS5	14.50		★	120	
MDW1490NHGS5	14.90	15.0	★		185
MDW1500NHGS5	15.00		★	124	
MDW1550NHGS5	15.50		★	128	
MDW1600NHGS5	16.00		★		

★ = 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 $\phi 6.00$	v	80 - 200	80 - 200
	f	0.2 - 0.5	0.2 - 0.3
Up to $\phi 10.00$	v	100 - 250	100 - 250
	f	0.4 - 0.8	0.2 - 0.4
Up to $\phi 16.00$	v	120 - 250	120 - 250
	f	0.4 - 1.0	0.3 - 0.5





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DEEP HOLE CARBIDE DRILLS

Pages 470-476



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FEATURES & BENEFITS

MDW-XHV

MDW-XHV Deep Hole Carbide Drills

Features & Benefits



■ 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



Pilot hole:

- $\phi 0.23 \times 0.47$ in ($\phi 5.73 \times 12$ mm)
- Drill point angle: 150°
- $V_c = 262.5$ SFM (80m/min)
- $f = 0.008$ IPR (0.20mm/min)

Deep hole:

- $\phi 0.22 \times 3.27$ in ($\phi 5.7 \times 83$ mm)
- $V_c = 262.5$ 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:

- $\phi 0.30 \times 0.51$ in ($\phi 7.63 \times 13$ mm)
- Drill point angle: 150°
- $V_c = 262.5$ SFM (80m/min)
- $f = 0.010$ IPR (0.25mm/min)

Deep hole:

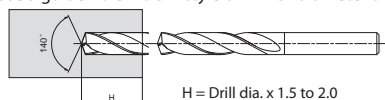
- $\phi 0.30 \times 9.10$ in ($\phi 7.60 \times 230$ mm)
- $V_c = 197$ SFM (60m/min)
- $f = 0.011$ IPR (0.30mm/min)
- $V_f = 29.70$ IPM (754mm/min)

⇒ Tool Life: 500 parts

■ Recommended Drilling Method

1. Make a guide hole using the MDS-V type drill

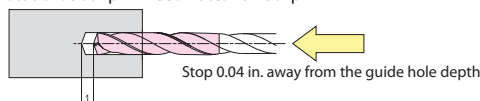
- Use a guide hole MDS-V style drill with diameter the same as the MDW-XHV type



H = Drill dia. x 1.5 to 2.0

2. Feed the MDW-XHV type through the guide hole at low rotation speed

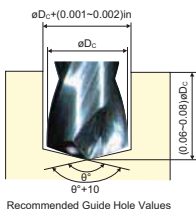
- Rotation: 500 rpm Feed Rate: 40 - 80 ipm



Stop 0.04 in. away from the guide hole depth

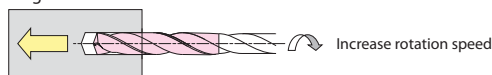
OTHER NOTES

- 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

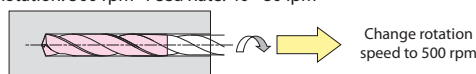
3. Increase rotation speed until the set rotation speed is reached and start normal drilling



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

$V_c = \text{sfm} / \text{m/min}$
 $f = \text{ipr} / \text{mm/rev}$

		General Steel (>300HB)	Hardened Steel (>45HRC)	Stainless Steel (>200HB)	Gray Cast Iron	Ductile Iron
~ $\phi 0.125$ in ~ $\phi 3.0$ 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
$\phi 0.125 \sim \phi 0.203$ in $\phi 3.1 \sim \phi 5.0$ 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
$\phi 0.203 \sim \phi 0.406$ in $\phi 5.1 \sim \phi 10.0$ 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
$\phi 0.406 \sim \phi 0.625$ in $\phi 10.1 \sim \phi 16.0$ 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

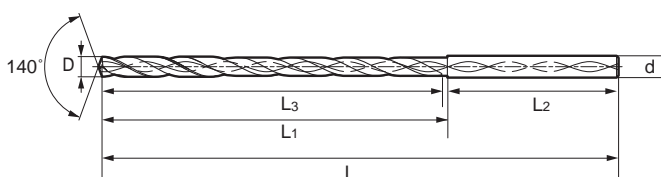


MDW-XHV Deep Hole Carbide Coolant Through Drills

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

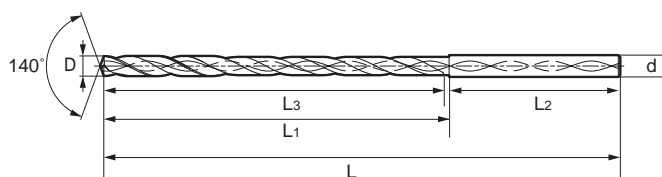
● = USA Stocked item

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.





Tolerance of Diameters	
ϕD	Tolerance
$.1181 < \phi D \leq .2362$	-.00080 -.00145
$.2362 < \phi D \leq .3937$	-.00080 -.00165
$.3937 < \phi D \leq .7087$	-.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

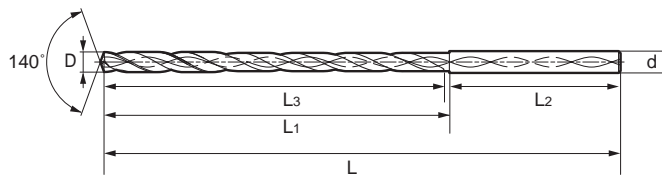


MDW-XHV Deep Hole Carbide Coolant Through Drills

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
MDW2188XHV20	●	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

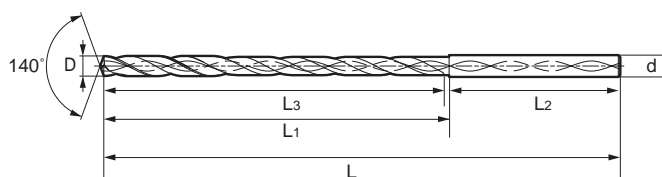
● = USA Stocked item

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.





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

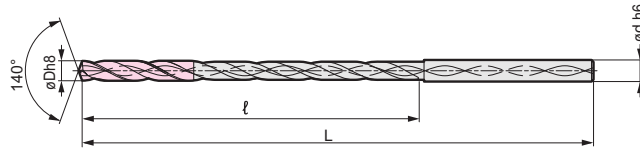
● = USA Stocked item

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.



MDW-XHT Deep Hole Carbide Coolant Through Drills

15, 25 & 30XD-METRIC MDW-XHT/PHT

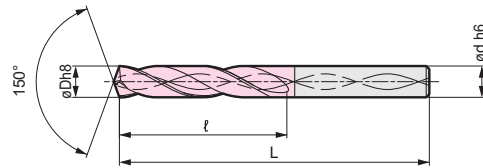


MDW-XHT-METRIC

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		25	L		30	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

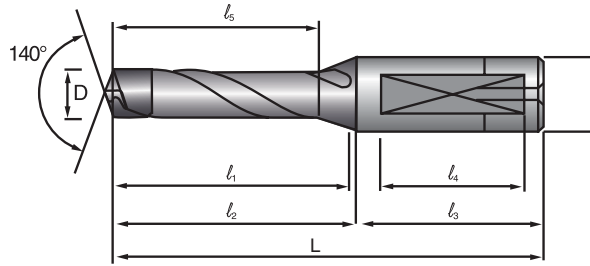
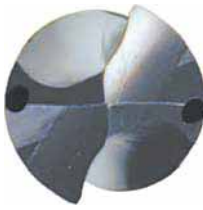
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Brazed Tip
Drills



KDS-MAV 3XD drill with internal coolant holes for smooth chip flow and deeper hole drilling.

Catalog Number (inch/metric)	S t o c k	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)							
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														
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														

● = USA Stocked item

Note: Special diameters available upon request

(continued on next page)



KDS-MAV Series

Brazed Carbide-Tipped Drills

SERIES

KDS-MAV

- TiAlN Coating
- Patented V-Point Geometry
- Brazed Carbide-Tip Offers Multiple Regrinds



Tolerances of Diameters (in.)		
Size	Cutting Dia.	Shank Dia.
$D \leq .3937$	+0 -.00059	+0 -.00035
$.3937 < D \leq .709$	+0 -.00071	+0 -.00043
$.709 < D \leq 1.181$	+0 -.00083	+0 -.00051
$1.181 < D$	+0 -.00098	+0 -.00063

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KDS-MAV 3XD drill with internal coolant holes for smooth chip flow and deeper hole drilling.

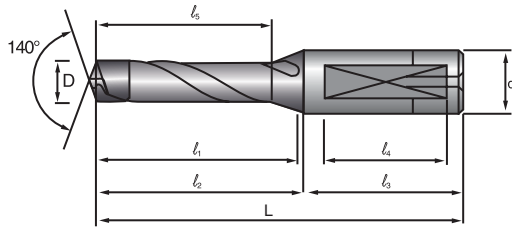
Catalog Number (inch/metric)	Stock	Cutting Diameter (D)			Dimensions						
		Fractional	Metric	Decimal	d	L	ℓ_1	ℓ_2	ℓ_3	ℓ_4	ℓ_5
					Shank Diameter (in/mm)	Overall Length (in/mm)	Flute Length (in/mm)	Body Length (in/mm)	Shank Length (in/mm)	Shank Flat (in/mm)	Flute Length (less taper) (in/mm)
KDS180MAV	●		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

● = USA Stocked item

Note: Special diameters available upon request

(continued on next page)





Tolerances of Diameters (in.)		
Size	Cutting Dia.	Shank Dia.
$D \leq .3937$	+0 -.00059	+0 -.00035
$.3937 < D \leq .709$	+0 -.00071	+0 -.00043
$.709 < D \leq 1.181$	+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						
		Fractional	Metric	Decimal	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)
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							
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							
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

● = USA Stocked item

Note: Special diameters available upon request

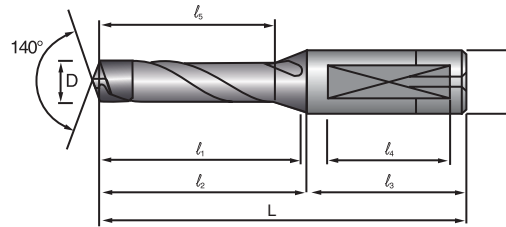
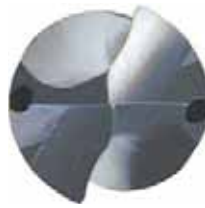


KDS-LAV Series

Brazed Carbide-Tipped Drills

SERIES

KDS-LAV



KDS-LAV 5XD drill with internal coolant holes for smooth chip flow and deeper hole drilling.

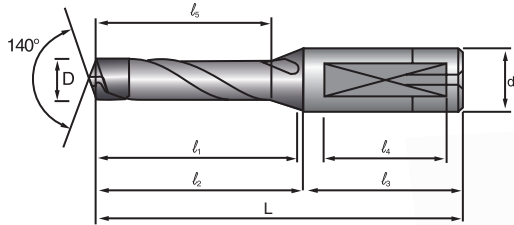
Catalog Number (inch/metric)	S t o c k	Cutting Diameter (D)			Dimensions							
					d	L	ℓ ₁	ℓ ₂	ℓ ₃	ℓ ₄	ℓ ₅	
		Fractional	Metric	Decimal	Shank Diameter (in/mm)	Overall Length (in/mm)	Flute Length (in/mm)	Body Length (in/mm)	Shank Length (in/mm)	Shank Flat (in/mm)	Flute Length (less taper) (in/mm)	
KDS03750LAV	●	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								
KDS04375LAV	●	7/16	11.11	.4375								
KDS04531LAV	●	29/64	11.51	.4531		5.109	3.141	3.234				2.906
KDS04688LAV	●	15/32	11.91	.4688								
KDS04843LAV	●	31/64	12.30	.4843								
KDS05000LAV	●	1/2	12.70	.5000								
KDS05156LAV	●	33/64	13.10	.5156								
KDS05313LAV	●	17/32	13.50	.5313	5.500	3.547	3.625					
KDS05469LAV	●	35/64	13.89	.5469								
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								
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		6.922	4.844	4.922			4.000	
KDS07031LAV	●	45/64	17.86	.7031								
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								
KDS07500LAV	●	3/4	19.05	.7500	1.000	7.531	5.203	5.281	2.250	1.750	4.203	
KDS07656LAV	●	49/64	19.45	.7656								
KDS07813LAV	●	25/32	19.85	.7813								
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		7.672	5.328	5.422				
KDS08281LAV	●	53/64	21.03	.8281		7.719	5.328	5.469				
KDS08438LAV	●	27/32	21.43	.8438								
KDS08594LAV	●	55/64	21.83	.8594								
						7.921	5.594	5.672			4.875	

● = USA Stocked item

Note: Special diameters available upon request

(continued on next page)





Tolerances of Diameters (in.)		
Size	Cutting Dia.	Shank Dia.
$D \leq .3937$	+0 -.00059	+0 -.00035
$.3937 < D \leq .709$	+0 -.00071	+0 -.00043
$.709 < D \leq 1.181$	+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)	S t o c k	Cutting Diameter (D)			Dimensions										
		Fractional	Metric	Decimal	d	L	ℓ ₁	ℓ ₂	ℓ ₃	ℓ ₄	ℓ ₅				
					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		1.250	8.641	6.219			6.266	2.375	1.875	5.313	
KDS09375LAV	●	15/16	23.81	.9375	8.875		6.422	6.500	5.516						
KDS09531LAV	●	61/64	24.21	.9531						9.063	6.609			6.688	5.750
KDS09688LAV	●	31/32	24.61	.9688											
KDS09844LAV	●	63/64	25.00	.9844						1.250	9.063			6.609	6.688
KDS10000LAV	●	1	25.40	1.0000											
KDS10156LAV	●	1 1/64	25.80	1.0156											
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		9.438	7.000	7.063			6.172				
KDS10938LAV	●	1 3/32	27.78	1.0938											
KDS11094LAV	●	1 7/64	28.18	1.1094		9.656	7.203	7.281			6.375				
KDS11250LAV	●	1 1/8	28.58	1.1250											
KDS11406LAV	●	1 9/64	28.97	1.1406		10.047	7.594	7.672			6.578				
KDS11563LAV	●	1 5/32	29.37	1.1563											
KDS11719LAV	●	1 11/64	29.77	1.1719											
KDS11875LAV	●	1 3/16	30.16	1.1875											

● = USA Stocked 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 484-491



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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)

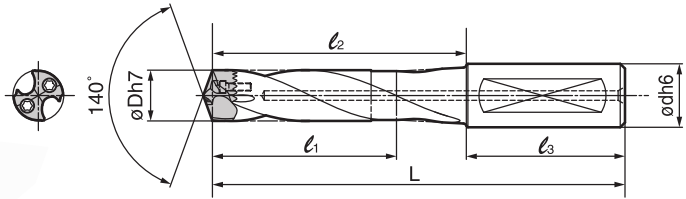
Material		MTL	MTL	MTL	MTL	MTL-C / MEL		MEL	MEL	MEL
		Steels	Steels	Prehard Steels	Die Steels	Ductile cast irons	Gray cast irons	Titanium	Inconel	Stainless Steels*
Drill Dia. (inch)		<HB250	HB250-300	HRC45	—	—	—	—	—	—
~ .4688	v	260 - 400	260 - 360	160 - 260	130 - 230	230 - 330	260 - 430	65 - 130	35 - 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	ℓ_1 max depth	ℓ_2	ℓ_3	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 - 1.1260	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

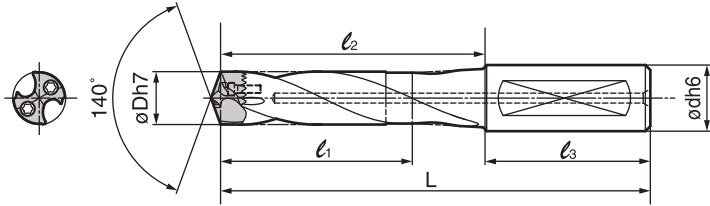
● = USA Stocked item

■ SMD BODIES (5X Diameter)

Catalog Number	Drill Tip Diameter (inch/mm)		Stock	ød	L	ℓ_1 max depth	ℓ_2	ℓ_3	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 - 1.1260	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

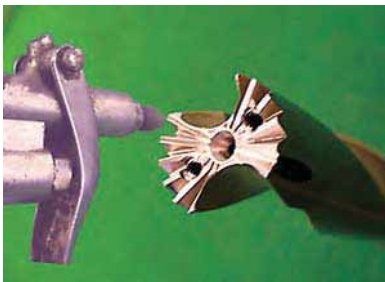


■ SMD BODIES (8X Diameter)

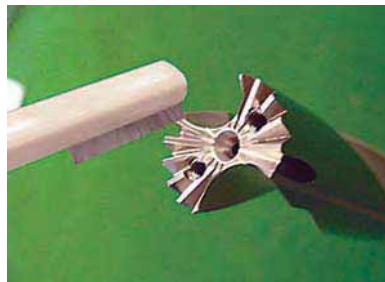
Catalog Number	Drill Tip Diameter (inch/mm)		Stock	ød	L	ℓ ₁ max depth	ℓ ₂	ℓ ₃	Screw	Wrench
SMDH055D	0.5315 - 0.5709	13.50mm - 14.50mm	●	0.750	7.480	4.961	5.480	2.000	BXD02208IP	TRDR08IP
SMDH059D	0.5713 - 0.6102	14.51mm - 15.50mm	●	0.750	7.874	5.315	5.874	2.000	BXD02208IP	TRDR08IP
SMDH063D	0.6106 - 0.6496	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.



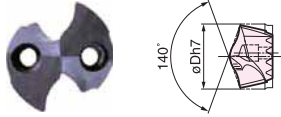
- 3) Use caution when tightening the head screws.
- 4) Replace screws as soon as they show signs of marked wear or deformation due to long-term use.
- 5) See table (right) for recommended tightening torque.

■ 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


STANDARD TIP

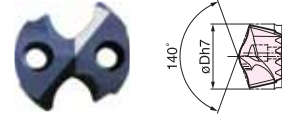
(SMDT-MTL)


SUPER ALLOY TIP

(SMDT-MEL)


CORNER BREAK TIP

(SMDT-C)


Inch & Metric

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





STANDARD TIP



SUPER ALLOY TIP



CORNER BREAK TIP

Inch & Metric

(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)	SMDH083□
SMDT08125MTL-ACX70	●	SMDT08125MEL-ACX80	●	SMDT08125MTL-C-ACX70	●	13/16	(0.8125)	
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)	SMDH087□
SMDT2150MTL-ACX70	●	SMDT2150MEL-ACX80	●	SMDT2150MTL-C-ACX70	●	21.5mm	(0.8465)	
SMDT08594MTL-ACX70	●	SMDT08594MEL-ACX80	●	SMDT08594MTL-C-ACX70	●	55/64	(0.8594)	
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)	SMDH091□
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)	
SMDT09062MTL-ACX70	●	SMDT09062MEL-ACX80	●	SMDT09062MTL-C-ACX70	●	29/32	(0.9062)	
SMDT09219MTL-ACX70	●	SMDT09219MEL-ACX80	●	SMDT09219MTL-C-ACX70	●	59/64	(0.9219)	SMDH096□
SMDT2350MTL-ACX70	●	SMDT2350MEL-ACX80	●	SMDT2350MTL-C-ACX70	●	23.5mm	(0.9252)	
SMDT09375MTL-ACX70	●	SMDT09375MEL-ACX80	●	SMDT09375MTL-C-ACX70	●	15/16	(0.9375)	
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)	SMDH100□
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)	
SMDT09844MTL-ACX70	●	SMDT09844MEL-ACX80	●	SMDT09844MTL-C-ACX70	●	63/64	(0.9844)	
SMDT10000MTL-ACX70	●	SMDT10000MEL-ACX80	●	SMDT10000MTL-C-ACX70	●	1	(1.0000)	SMDH104□
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	●	SMDT2600MTL-C-ACX70	●	26.0mm	(1.0236)	
SMDT10312MTL-ACX70	●	SMDT10312MEL-ACX80	●	SMDT10312MTL-C-ACX70	●	1-1/32	(1.0312)	SMDH107□
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)	
SMDT2700MTL-ACX70	●	SMDT2700MEL-ACX80	●	SMDT2700MTL-C-ACX70	●	27.0mm	(1.0630)	
SMDT10781MTL-ACX70	●	SMDT10781MEL-ACX80	●	SMDT10781MTL-C-ACX70	●	1-5/64	(1.0781)	SMDH112□
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)	
SMDT11094MTL-ACX70	●	SMDT11094MEL-ACX80	●	SMDT11094MTL-C-ACX70	●	1-7/64	(1.1094)	
SMDT2850MTL-ACX70	●	SMDT2850MEL-ACX80	●	SMDT2850MTL-C-ACX70	●	28.5mm	(1.1220)	SMDH115□
SMDT11250MTL-ACX70	●	SMDT11250MEL-ACX80	●	SMDT11250MTL-C-ACX70	●	1-1/8	(1.1250)	
SMDT11406MTL-ACX70	●	SMDT11406MEL-ACX80	●	SMDT11406MTL-C-ACX70	●	1-9/64	(1.1406)	
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)	SMDH118□
SMDT11719MTL-ACX70	●	SMDT11719MEL-ACX80	●	SMDT11719MTL-C-ACX70	●	1-11/64	(1.1719)	
SMDT3000MTL-ACX70	●	SMDT3000MEL-ACX80	●	SMDT3000MTL-C-ACX70	●	30.0mm	(1.1811)	
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


STANDARD TIP

SUPER ALLOY TIP

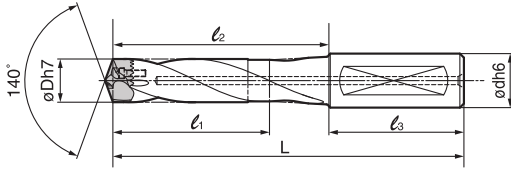
CORNER BREAK TIP
Inch & Metric

(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)	SMDH425□
SMDT4200MTL-ACX80	★	SMDT4200MEL-ACX80		SMDT4200MTL-C-ACX80		42.0mm (1.6535)	

★ = Worldwide Warehouse item available in 10 business days

○ = Available 4th Quarter 2012

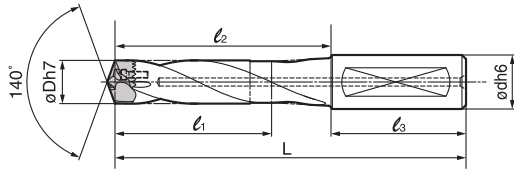
Note: Special diameters available upon request


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	SMDT3250M□ - SMDT3350M□	★	32.0	200	103.3	140	60	BXD04515IP	TRDR25IP
SMDH350M	SMDT3400M□ - SMDT3500M□	★	40.0	215	106.8	145	70	BX0515	HD040
SMDH365M	SMDT3550M□ - SMDT3650M□	★	40.0	220	112.3	150	70	BX0515	HD040
SMDH380M	SMDT3700M□ - SMDT3800M□	★	40.0	225	115.8	155	70	BX0515	HD040
SMDH395M	SMDT3850M□ - SMDT3950M□	★	40.0	230	121.3	160	70	BX0515	HD040
SMDH410M	SMDT4000M□ - SMDT4100M□	★	40.0	245	129.8	175	70	BX0515	HD040
SMDH425M	SMDT4150M□ - SMDT4250M□	★	40.0	250	135.3	180	70	BX0515	HD040





■ 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	SMDT3250M□□- SMDT3350M□□	★	32.0	270	171.5	210	60	BXD04515IP	TRDR25IP
SMDH350L	SMDT3400M□□- SMDT3500M□□	★	40.0	290	182	220	70	BX0515	HD040
SMDH365L	SMDT3550M□□- SMDT3650M□□	★	40.0	295	187.5	225	70	BX0515	HD040
SMDH380L	SMDT3700M□□- SMDT3800M□□	★	40.0	305	195.8	235	70	BX0515	HD040
SMDH395L	SMDT3850M□□- SMDT3950M□□	★	40.0	315	206.3	245	70	BX0515	HD040
SMDH410L	SMDT4000M□□- SMDT4100M□□	★	40.0	325	209.8	255	70	BX0515	HD040
SMDH425L	SMDT4150M□□- 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	SMDT3250M□□- SMDT3350M□□	★	32.0	370	273.3	310	60	BXD04515IP	TRDR25IP
SMDH350D	SMDT3400M□□- SMDT3500M□□	★	40.0	395	287	325	70	BX0515	HD040
SMDH365D	SMDT3550M□□- SMDT3650M□□	★	40.0	405	297.3	335	70	BX0515	HD040
SMDH380D	SMDT3700M□□- SMDT3800M□□	★	40.0	420	310.8	350	70	BX0515	HD040
SMDH395D	SMDT3850M□□- SMDT3950M□□	★	40.0	430	321.3	360	70	BX0515	HD040
SMDH410D	SMDT4000M□□- SMDT4100M□□	★	40.0	450	334.8	380	70	BX0515	HD040
SMDH425D	SMDT4150M□□- SMDT4250M□□	★	40.0	460	345.3	390	70	BX0515	HD040



INDEXABLE DRILLS

Pages 492-503



Indexable
Drills

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Indexable Drills:	Pages
WDX Drills	
WDX Features & Benefits	493
WDX 2-3XD (INCH)	494
WDX 4-5XD (INCH) & WDX Inserts.....	495
WDX 2-3XD (METRIC)	496
SR Reamer Series	
SR Reamer	498-503



■ 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

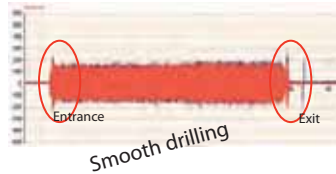


External turning

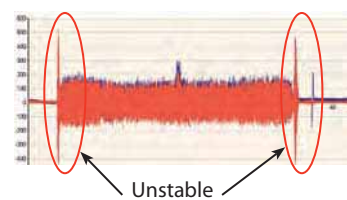
*For pre-drilled surface: secondary OD must be at least 1/16 larger than drill diameter.

Stable Drilling

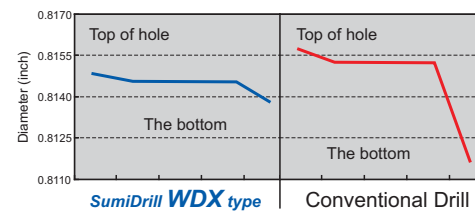
SumiDrill WDX type



Conventional Drill

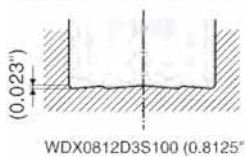


Comparison of Hole Accuracy

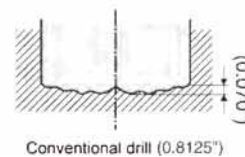


■ Flat Bottom Surface

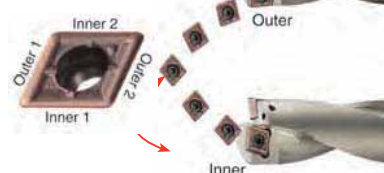
SumiDrill WDX type



Conventional Drill



Full 4 Corner Use Insert



WDX Chipbreakers

L type chipbreaker	G type chipbreaker	H type chipbreaker
Excellent chip control for lower feed rates	First choice for general applications	Strong cutting edge for higher feed rates

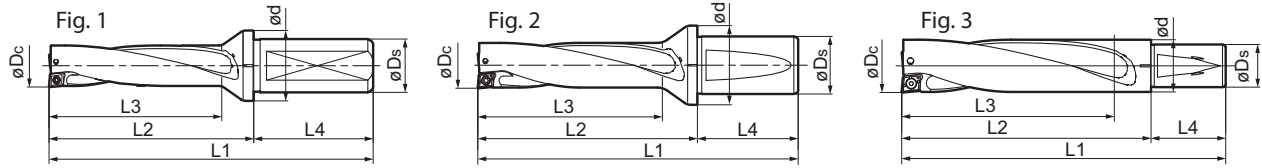
Hardware

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□

Recommended Running Conditions

Recommended Running Conditions			2XD WDX Drill Series		3XD WDX Drill Series		4XD WDX Drill Series	
			0.5620"-1.000"	1.000"-2.125"	0.5620"-1.000"	1.000"-2.125"	0.5620"-1.000"	1.000"-2.125"
Material	Chipbreaker-Grade	Speed (SFM)	Feed Rate (IPR)		Feed Rate (IPR)		Feed Rate (IPR)	
Steel	G-ACP300	200 - 725	0.002 - 0.010	0.002 - 0.011	0.0015 - 0.008	0.002 - 0.0085	0.002 - 0.007	0.002 - 0.0075
	L-ACP300	200 - 725	0.0015 - 0.006	0.0015 - 0.006	0.0015 - 0.004	0.0015 - 0.0045	0.0015 - 0.0035	0.0015 - 0.004
Stainless Steel	G-ACP300	300 - 600	0.0025 - 0.007	0.0025 - 0.0075	0.0025 - 0.006	0.0025 - 0.0065	0.0025 - 0.005	0.0025 - 0.0055
Gray Cast Iron	H-ACK300	400 - 650	0.004 - 0.014	0.0045 - 0.015	0.004 - 0.012	0.0045 - 0.0125	0.004 - 0.0105	0.0045 - 0.011
Ductile Iron	H-ACK300	300 - 500	0.004 - 0.014	0.0045 - 0.015	0.004 - 0.012	0.0045 - 0.0125	0.004 - 0.0105	0.0045 - 0.015
Exotic Material	G-ACP300	80 - 250	0.0025 - 0.0075	0.0025 - 0.0075	0.0025 - 0.006	0.0025 - 0.0065	0.0025 - 0.005	0.0025 - 0.0055





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	1	BFTX01604N	TRX06	WDX042004
WDX0594D2S075	●	0.5937	3.8960	1.8960	1.3060	1.1020	0.7500	2.0000		BFTX01604N	TRX06	WDX042004
WDX0625D2S100	●	0.6250	4.4590	1.9590	1.3680	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDX052504
WDX0656D2S100	●	0.6562	4.5210	2.0210	1.4300	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDX052504
WDX0687D2S100	●	0.6875	4.5830	2.0830	1.4920	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDX052504
WDX0750D2S100	●	0.7500	4.7090	2.2090	1.6180	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDX063006
WDX0787D2S100	●	0.7870	4.7830	2.2830	1.6920	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDX063006
WDX0812D2S100	●	0.8125	4.8340	2.3340	1.7430	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDX063006
WDX0875D2S100	●	0.8750	4.9590	2.4590	1.8680	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDX063006
WDX0937D2S125	●	0.9375	5.2020	2.7020	1.9930	1.6140	1.2500	2.5000	2	BFTX02506N	TRD08	WDX073506
WDX1000D2S125	●	1.0000	5.3270	2.8270	2.1180	1.6140	1.2500	2.5000		BFTX02506N	TRD08	WDX073506
WDX1062D2S125	●	1.0625	5.9520	2.9520	2.2430	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDX073506
WDX1125D2S125	●	1.1250	6.0770	3.0770	2.3680	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDX073506
WDX1187D2S125	●	1.1875	6.3590	3.3590	2.5320	1.9680	1.2500	3.0000		BFTX03584	TRX15	WDX094008
WDX1250D2S125	●	1.2500	6.4840	3.4840	2.6570	1.9680	1.2500	3.0000		BFTX03584	TRX15	WDX094008
WDX1312D2S150	●	1.3125	6.7270	3.7270	2.7820	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDX094008
WDX1375D2S150	●	1.3750	6.8520	3.8520	2.9070	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDX094008
WDX1437D2S150	●	1.4375	6.9770	3.9770	3.0320	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDX094008
WDX1500D2S150	●	1.5000	7.1020	4.1020	3.1570	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDX125012
WDX1562D2S150	●	1.5625	7.2260	4.2260	3.2810	1.9490	1.5000	3.0000	3	BFTX0511N	TRD20	WDX125012
WDX1625D2S150	●	1.6250	7.3520	4.3520	3.4070	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDX125012
WDX1687D2S150	●	1.6875	7.4780	4.4780	3.5330	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDX125012
WDX1750D2S150	●	1.7500	7.6020	4.6020	3.6570	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDX125012
WDX1812D2S150	●	1.8125	7.7280	4.7280	3.7830	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX1875D2S150	●	1.8750	7.8520	4.8520	3.9070	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX1937D2S150	●	1.9375	7.9780	4.9780	4.0330	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX2000D2S150	●	2.0000	8.1020	5.1020	4.1570	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX2125D2S150	●	2.1250	8.3520	5.3520	4.4070	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX2250D2S150	●	2.2500	9.0750	6.0750	4.8150	2.1730	1.5000	3.0000		BFTX0615N	TRD25	WDX186012
WDX2375D2S150	●	2.3750	9.3270	6.3270	5.0670	2.2950	1.5000	3.0000	3	BFTX0615N	TRD25	WDX186012
WDX2500D2S150	●	2.5000	9.5750	6.5750	5.3150	2.4210	1.5000	3.0000		BFTX0615N	TRD25	WDX186012
WDX2625D2S150	●	2.6250	9.8270	6.8270	5.5670	2.5470	1.5000	3.0000		BFTX0615N	TRD25	WDX186012
										BFTX0615N	TRD25	WDX186012

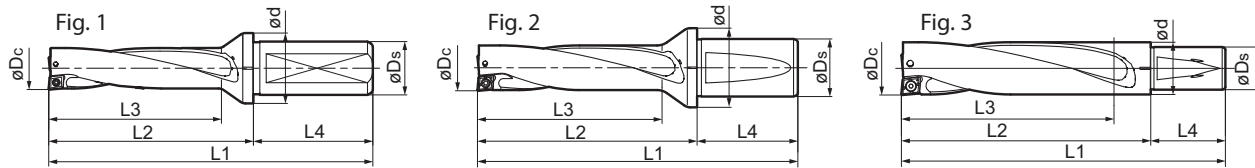
● = USA Stocked item

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	1	BFTX01604N	TRX06	WDX042004
WDX0594D3S075	●	0.5937	4.4910	2.4910	1.9000	1.1020	0.7500	2.0000		BFTX01604N	TRX06	WDX042004
WDX0625D3S100	●	0.6250	5.0840	2.5840	1.9930	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDX052504
WDX0656D3S100	●	0.6562	5.1770	2.6770	2.0860	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDX052504
WDX0687D3S100	●	0.6875	5.2700	2.7700	2.1790	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDX052504
WDX0750D3S100	●	0.7500	5.4590	2.9590	2.3680	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDX063006
WDX0787D3S100	●	0.7870	5.5700	3.0700	2.4790	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDX063006
WDX0812D3S100	●	0.8125	5.6460	3.1460	2.5560	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDX063006
WDX0875D3S100	●	0.8750	5.8340	3.3340	2.7430	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDX063006
WDX0937D3S125	●	0.9375	6.1390	3.6390	2.9310	1.6140	1.2500	2.5000	2	BFTX02506N	TRD08	WDX073506
WDX1000D3S125	●	1.0000	6.3270	3.8270	3.1180	1.6140	1.2500	2.5000		BFTX02506N	TRD08	WDX073506
WDX1062D3S125	●	1.0625	7.0140	4.0140	3.3060	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDX073506
WDX1125D3S125	●	1.1250	7.2020	4.2020	3.4930	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDX073506
WDX1187D3S125	●	1.1875	7.5470	4.5470	3.7200	1.9680	1.2500	3.0000		BFTX03584	TRX15	WDX094008
WDX1250D3S125	●	1.2500	7.7340	4.7340	3.9070	1.9680	1.2500	3.0000		BFTX03584	TRX15	WDX094008
WDX1312D3S150	●	1.3125	8.0400	5.0400	4.0950	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDX094008
WDX1375D3S150	●	1.3750	8.2270	5.2270	4.2820	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDX094008
WDX1437D3S150	●	1.4375	8.4150	5.4150	4.4700	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDX094008
WDX1500D3S150	●	1.5000	8.8780	5.8780	4.6970	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDX125012
WDX1562D3S150	●	1.5625	9.0640	6.0640	4.8830	1.9490	1.5000	3.0000	3	BFTX0511N	TRD20	WDX125012
WDX1625D3S150	●	1.6250	9.2530	6.2530	5.0720	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDX125012
WDX1687D3S150	●	1.6875	9.4420	6.4420	5.2610	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDX125012
WDX1750D3S150	●	1.7500	9.6280	6.6280	5.4470	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDX125012
WDX1812D3S150	●	1.8125	9.8170	6.8170	5.6360	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX1875D3S150	●	1.8750	10.0030	7.0030	5.8820	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX1937D3S150	●	1.9375	10.1920	7.1920	6.0110	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX2000D3S150	●	2.0000	10.3780	7.3780	6.1970	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX2125D3S150	●	2.1250	10.7530	7.7530	6.5720	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX2250D3S150	●	2.2500	11.3270	8.3270	7.0670	2.1730	1.5000	3.0000		BFTX0615N	TRD25	WDX186012
WDX2375D3S150	●	2.3750	11.7010	8.7010	7.4410	2.2950	1.5000	3.0000	3	BFTX0615N	TRD25	WDX186012
WDX2500D3S150	●	2.5000	12.0750	9.0750	7.8150	2.4210	1.5000	3.0000		BFTX0615N	TRD25	WDX186012
WDX2625D3S150	●	2.6250	12.4490	9.4490	8.1890	2.5470	1.5000	3.0000		BFTX0615N	TRD25	WDX186012
										BFTX0615N	TRD25	WDX186012

● = USA Stocked item

See page 395 for inserts





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	1	BFTX01604N	TRX06	WDX042004
WDX0594D4S075	●	0.5937	5.0850	3.0850	2.4940	1.1020	0.7500	2.0000		BFTX01604N	TRX06	WDX042004
WDX0625D4S100	●	0.6250	5.7090	3.2090	2.6180	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDX052504
WDX0656D4S100	●	0.6562	5.8330	3.3330	2.7420	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDX052504
WDX0687D4S100	●	0.6875	5.9570	3.4570	2.8660	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDX052504
WDX0750D4S100	●	0.7500	6.2090	3.7090	3.1180	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDX063006
WDX0787D4S100	●	0.7870	6.3570	3.8570	3.2660	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDX063006
WDX0812D4S100	●	0.8125	6.4590	3.9590	3.3680	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDX063006
WDX0875D4S100	●	0.8750	6.7090	4.2090	3.6180	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDX063006
WDX0937D4S125	●	0.9375	7.0770	4.5770	3.8680	1.6140	1.2500	3.0000	2	BFTX02506N	TRD08	WDX073506
WDX1000D4S125	●	1.0000	7.3270	4.8270	4.1180	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDX073506
WDX1062D4S125	●	1.0625	8.0770	5.0770	4.3680	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDX073506
WDX1125D4S125	●	1.1250	8.3270	5.3270	4.6180	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDX073506
WDX1187D4S125	●	1.1875	8.7340	5.7340	4.0907	1.9680	1.2500	3.0000		BFTX03584	TRX15	WDX094008
WDX1250D4S125	●	1.2500	9.8840	5.9840	5.1570	1.9680	1.2500	3.0000		BFTX03584	TRX15	WDX094008
WDX1312D4S150	●	1.3125	9.3520	6.3520	5.4070	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDX094008
WDX1375D4S150	●	1.3750	9.6020	6.6020	5.6570	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDX094008
WDX1437D4S150	●	1.4375	9.8520	6.8520	5.9070	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDX094008
WDX1500D4S150	●	1.5000	10.3780	7.3780	6.1970	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDX125012
WDX1562D4S150	●	1.5625	10.6260	7.6260	6.4450	1.9490	1.5000	3.0000	3	BFTX0511N	TRD20	WDX125012
WDX1625D4S150	●	1.6250	10.8780	7.8780	6.6970	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDX125012
WDX1687D4S150	●	1.6875	11.1300	8.1300	6.9490	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDX125012
WDX1750D4S150	●	1.7500	11.3780	8.3780	7.1970	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX1812D4S150	●	1.8125	11.6300	8.6300	7.4490	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX1875D4S150	●	1.8750	11.8780	8.8780	7.6970	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX1937D4S150	●	1.9375	12.1300	9.1300	7.9490	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX2000D4S150	●	2.0000	12.3780	9.3780	8.1970	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX2125D4S150	●	2.1250	12.8780	9.8780	8.6970	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX2250D4S150	●	2.2500	13.5750	10.5750	9.3150	2.1730	1.5000	3.0000		BFTX0615N	TRD25	WDX186012
WDX2375D4S150	●	2.3750	14.0750	11.0750	9.8150	2.2950	1.5000	3.0000		BFTX0615N	TRD25	WDX186012
WDX2500D4S150	●	2.5000	14.5750	11.5750	10.3150	2.4210	1.5000	3.0000		BFTX0615N	TRD25	WDX186012

● = 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	1	BFTX01604N	TRX06	WDX042004
WDX0594D5S075	●	0.5940	5.6790	3.6790	3.0880	1.1020	0.7500	2.0000		BFTX01604N	TRX06	WDX042004
WDX0625D5S100	●	0.6250	6.3340	3.8340	3.2430	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDX052504
WDX0656D5S100	●	0.6560	6.4890	3.9890	3.3980	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDX052504
WDX0687D5S100	●	0.6870	6.6440	4.1440	3.5530	1.2600	1.0000	2.5000		BFTX0204N	TRX06	WDX052504
WDX0750D5S100	●	0.7500	6.9590	4.4590	3.8680	1.2990	1.0000	2.5000		BFTY02206	TRD07	WDX063006
WDX0787D5S100	●	0.7870	7.1440	4.6440	4.0530	1.2990	1.0000	2.5000		BFTY02207	TRD07	WDX063006
WDX0812D5S100	●	0.8120	7.2690	4.7690	4.1780	1.2990	1.0000	2.5000		BFTY02208	TRD07	WDX063006
WDX0875D5S100	●	0.8750	7.5840	5.0840	4.4930	1.2990	1.0000	2.5000		BFTY02209	TRD07	WDX063006
WDX0937D5S125	●	0.9370	8.0120	5.5120	4.8030	1.6140	1.2500	3.0000	2	BFTX02506N	TRD08	WDX073506
WDX1000D5S125	●	1.0000	8.3270	5.8270	5.1180	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDX073506
WDX1062D5S125	●	1.0620	9.1370	6.1370	5.4280	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDX073506
WDX1125D5S125	●	1.1250	9.4520	6.4520	5.7430	1.6140	1.2500	3.0000		BFTX02506N	TRD08	WDX073506
WDX1187D5S125	●	1.1870	9.9200	6.9200	6.0930	1.9680	1.2500	3.0000		BFTX03584	TRX15	WDX094008
WDX1250D5S125	●	1.2500	10.2350	7.2350	6.4080	1.9680	1.2500	3.0000		BFTX03584	TRX15	WDX094008
WDX1312D5S150	●	1.3120	10.6630	7.6630	6.7180	2.1260	1.5000	3.0000		BFTX03584	TRX15	WDX094008
WDX1375D5S150	●	1.3750	10.9780	7.9780	7.0330	2.1260	1.5000	3.0000		BFTX03587	TRX15	WDX094008
WDX1437D5S150	●	1.4370	11.2880	8.2880	7.3430	2.1260	1.5000	3.0000		BFTX03588	TRX15	WDX094008
WDX1500D5S150	●	1.5000	11.8780	8.8780	7.6970	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDX125012
WDX1562D5S150	●	1.5620	12.1880	9.1880	8.0070	1.9490	1.5000	3.0000	3	BFTX0511N	TRD20	WDX125012
WDX1625D5S150	●	1.6250	12.5030	9.5030	8.3220	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDX125012
WDX1687D5S150	●	1.6870	12.8130	9.8130	8.6320	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDX125012
WDX1750D5S150	●	1.7500	13.1280	10.1280	8.9470	1.9490	1.5000	3.0000		BFTX0511N	TRD20	WDX125012
WDX1812D5S150	●	1.8120	13.4380	10.4380	9.2570	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX1875D5S150	●	1.8750	13.7530	10.7530	9.5720	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX1937D5S150	●	1.9370	14.0630	11.0630	9.8820	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX2000D5S150	●	2.0000	14.3780	11.3780	10.1970	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX2125D5S150	●	2.1250	15.0030	12.0030	10.8220	1.9490	1.5000	3.0000		BFTX0615N	TRD25	WDX156012
WDX2250D5S150	●	2.2500	15.5750	12.5750	11.3150	2.1730	1.5000	3.0000		BFTX0615N	TRD25	WDX186012

● = USA Stocked item

*NOTE: Coolant adapter sleeves for lathes are available upon request.

See page 395 for inserts

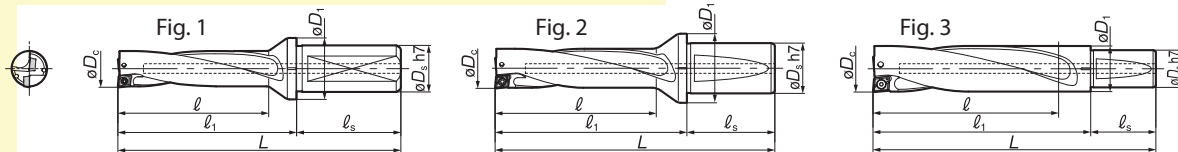


2XD & 3XD-METRIC WDX



SumiDrill WDX Bodies - 3XD - METRIC

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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	WDX135D4S20	042004
WDX135D4S20	★	13.5	116	72	57					
WDX140D4S20	★	14.0	118	74	59					
WDX145D4S20	★	14.5	120	76	61					
WDX150D4S20	★	15.0	122	78	63	30.0	20	44	WDX155D4S20	052504
WDX155D4S20	★	15.5	124	80	65					
WDX160D4S20	★	16.0	126	82	67					
WDX165D4S20	★	16.5	128	84	69					
WDX170D4S20	★	17.0	130	86	71	32.0	25	56	WDX175D4S25	063006
WDX175D4S25	★	17.5	144	88	73					
WDX180D4S25	★	18.0	146	90	75					
WDX185D4S25	★	18.5	148	92	77					
WDX190D4S25	★	19.0	150	94	79	33.0	25	56	WDX195D4S25	063006
WDX195D4S25	★	19.5	152	96	81					
WDX200D4S25	★	20.0	154	98	83					
WDX205D4S25	★	20.5	156	100	85					
WDX210D4S25	★	21.0	158	102	87	37.0	25	56	WDX215D4S25	073506
WDX215D4S25	★	21.5	160	104	89					
WDX220D4S25	★	22.0	162	106	91					
WDX225D4S25	★	22.5	164	108	93					
WDX230D4S25	★	23.0	169	113	95	41.0	32	60	WDX235D4S25	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	50.0	32	60	WDX255D4S32	094008
WDX255D4S32	★	25.5	185	125	105					
WDX260D4S32	★	26.0	187	127	107					
WDX265D4S32	★	26.5	189	129	109					
WDX270D4S32	★	27.0	191	131	111	54.0	40	70	WDX275D4S32	125012
WDX275D4S32	★	27.5	193	133	113					
WDX280D4S32	★	28.0	195	135	115					
WDX285D4S32	★	28.5	197	137	117					
WDX290D4S32	★	29.0	201	141	120	54.0	40	70	WDX295D4S32	156012
WDX295D4S32	★	29.5	203	143	122					
WDX300D4S40	★	30.0	218	148	124					
WDX310D4S40	★	31.0	222	152	128					
WDX320D4S40	★	32.0	226	156	132	54.0	40	70	WDX325D4S40	186012
WDX325D4S40	★	32.5	230	160	136					
WDX330D4S40	★	33.0	234	164	140					
WDX340D4S40	★	34.0	238	168	144					
WDX350D4S40	★	35.0	242	172	148	49.5	40	70	WDX355D4S40	125012
WDX355D4S40	★	35.5	246	176	152					
WDX360D4S40	★	36.0	250	180	156					
WDX365D4S40	★	36.5	254	184	160					
WDX370D4S40	★	37.0	258	188	164	49.5	40	70	WDX375D4S40	156012
WDX375D4S40	★	37.5	262	192	168					
WDX380D4S40	★	38.0	266	196	172					
WDX385D4S40	★	38.5	270	200	176					
WDX390D4S40	★	39.0	274	204	180	50.5	40	70	WDX395D4S40	186012
WDX395D4S40	★	39.5	278	208	184					
WDX400D4S40	★	40.0	282	212	188					
WDX405D4S40	★	40.5	286	216	192					
WDX410D4S40	★	41.0	290	220	196	51.5	40	70	WDX415D4S40	125012
WDX415D4S40	★	41.5	294	224	200					
WDX420D4S40	★	42.0	298	228	204					
WDX425D4S40	★	42.5	302	232	208					
WDX430D4S40	★	43.0	306	236	212	52.5	40	70	WDX435D4S40	156012
WDX435D4S40	★	43.5	310	240	216					
WDX440D4S40	★	44.0	314	244	220					
WDX445D4S40	★	44.5	318	248	224					
WDX450D4S40	★	45.0	322	252	228	53.5	40	70	WDX455D4S40	186012
WDX455D4S40	★	45.5	326	256	232					
WDX460D4S40	★	46.0	330	260	236					
WDX465D4S40	★	46.5	334	264	240					
WDX470D4S40	★	47.0	338	268	244	54.5	40	70	WDX475D4S40	125012
WDX475D4S40	★	47.5	342	272	248					
WDX480D4S40	★	48.0	346	276	252					
WDX485D4S40	★	48.5	350	280	256					
WDX490D4S40	★	49.0	354	284	260	55.5	40	70	WDX495D4S40	156012
WDX495D4S40	★	49.5	358	288	264					
WDX500D4S40	★	50.0	362	292	268					
WDX505D4S40	★	50.5	366	296	272					
WDX510D4S40	★	51.0	370	300	276	56.5	40	70	WDX515D4S40	186012
WDX515D4S40	★	51.5	374	304	280					
WDX520D4S40	★	52.0	378	308	284					
WDX525D4S40	★	52.5	382	312	288					
WDX530D4S40	★	53.0	386	316	292	57.5	40	70	WDX535D4S40	125012
WDX535D4S40	★	53.5	390	320	296					
WDX540D4S40	★	54.0	394	324	300					
WDX545D4S40	★	54.5	398	328	304					
WDX550D4S40	★	55.0	402	332	308	58.5	40	70	WDX555D4S40	156012
WDX555D4S40	★	55.5	406	336	312					
WDX560D4S40	★	56.0	410	340	316					
WDX565D4S40	★	56.5	414	344	320					
WDX570D4S40	★	57.0	418	348	324	59.5	40	70	WDX575D4S40	186012
WDX575D4S40	★	57.5	422	352	328					
WDX580D4S40	★	58.0	426	356	332					
WDX585D4S40	★	58.5	430	360	336					
WDX590D4S40	★	59.0	434	364	340	60.5	40	70	WDX595D4S40	125012
WDX595D4S40	★	59.5	438	368	344					
WDX600D4S40	★	60.0	442	372	348					
WDX605D4S40	★	60.5	446	376	352					
WDX610D4S40	★	61.0	450	380	356	61.5	40	70	WDX615D4S40	156012
WDX615D4S40	★	61.5	454	384	360					
WDX620D4S40	★	62.0	458	388	364					
WDX625D4S40	★	62.5	462	392	368					

★ = Worldwide Warehouse item

SumiDrill WDX Bodies - 5XD* - METRIC

Catalog Number	Stock	ϕD_c	L	ℓ_1	ℓ	ϕD_1	ϕD_s	ℓ_s	Insert	Fig.
WDX 130D5S20	★	13.0	127.0	83.0	68.0	28.0	20.0	44.0	WDX135D5S20	WDXT 042004
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	30.0	20.0	44.0	WDX155D5S20	WDXT 052504
WDX 155D5S20	★	15.5	139.5	95.5	80.5					
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	32.0	25.0	56.0	WDX175D5S25	WDXT 063006
WDX 175D5S25	★	17.5	161.5	105.5	90.5					
WDX 180D5S25	★	18.0	164.0	108.0	93.0					
WDX 185D5S25	★	18.5	166.5	110.5	95.5					
WDX 190D5S25	★	19.0	169.0	113.0	98.0	33.0	25.0	56.0	WDX195D5S25	1
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	37.0	25.0	56.0	WDX215D5S25	WDXT 073506
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	41.0	32.0	60.0	WDX235D5S25	2
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	50.0	32.0	60.0	WDX255D5S32	WDXT 094008
WDX 260D5S32	★	25.5	213.0	153.0	133.0					
WDX 270D5S32	★	26.0	218.0	158.0	138.0					
WDX 280D5S32	★	26.5	223.0	163.0	143.0					
WDX 290D5S32	★	27.0	230.0	170.0	149.0	54.0	40.0	70.0	WDX300D5S32	
WDX 300D5S32	★	27.5	238.0	178.0	154.0					
WDX 310D5S32	★	28.0	243.0	183.0	159.0					
WDX 320D5S32	★	28.5	248.0	188.0	164.0					
WDX 330D5S40	★	29.0	248.0	188.0	154.0	54.0	40.0	70.0	WDX330D5S40	
WDX 310D5S40	★	29.5	253.0	183.0	159.0					
WDX 320D5S40	★	30.0	258.0	188.0	164.0					
WDX 330D5S40	★	31.0	263.0	193.0	169.0					
WDX 340D5S40	★	32.0	268.0	198.0	174.0	54.0	40.0	70.0	WDX340D5S40	
WDX 350D5S40	★	33.0	273.0	203.0	179.0					
WDX 360D5S40	★	34.0	278.0	208.0	184.0					

- 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
- Predictable life for reground inserts
- Indexable cut edge design improves reliability of quality and life
- Cut edge diameters available from $\phi 11.9$ to $\phi 100.6$ 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 by attaching guide pads to the holder



A taper supports the insert by two faces (based on the HSK standard) for less-than 4 μm repeatability using random inserts

- 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 ϕ (mm)	$\phi 17.017$	$\phi 25.159$	$\phi 24$ F7	$\phi 65$ H6	$\phi 32.984$
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

SR Type Inserts

■ Stock Items (SRG Type)

Cat. No.	Stock	*iameter ϕ^*	Tolerance	Thickness B	No. of Teeth z
SRG 12.0H7-A01-F0512R1	★	$\phi 12$	H7	4.3	6
SRG 13.0H7-A01-F0512R1	★	$\phi 13$	H7	4.3	6
SRG 14.0H7-A01-F0512R1	★	$\phi 14$	H7	4.3	6
SRG 15.0H7-A01-F0512R1	★	$\phi 15$	H7	4.3	6
SRG 16.0H7-A01-F0512R1	★	$\phi 16$	H7	4.3	6
SRG 17.0H7-A01-F0512R1	★	$\phi 17$	H7	4.3	6
SRG 18.0H7-A01-F0512R1	★	$\phi 18$	H7	4.3	6
SRG 19.0H7-A01-F0512R1	★	$\phi 19$	H7	4.3	6
SRG 20.0H7-A01-F0512R1	★	$\phi 20$	H7	4.3	6
SRG 21.0H7-A01-F0512R1	★	$\phi 21$	H7	4.3	6
SRG 22.0H7-A01-F0512R1	★	$\phi 22$	H7	4.3	6
SRG 23.0H7-A01-F0512R1	★	$\phi 23$	H7	4.3	6
SRG 24.0H7-A01-F0512R1	★	$\phi 24$	H7	4.3	6
SRG 25.0H7-A01-F0512R1	★	$\phi 25$	H7	4.3	6
SRG 26.0H7-A01-F0512R1	★	$\phi 26$	H7	4.3	6
SRG 27.0H7-A01-F0512R1	★	$\phi 27$	H7	4.3	6
SRG 28.0H7-A01-F0512R1	★	$\phi 28$	H7	4.3	6
SRG 29.0H7-A01-F0512R1	★	$\phi 29$	H7	4.3	6
SRG 30.0H7-A01-F0512R1	★	$\phi 30$	H7	4.3	6

■ Order Items (Made-to-order)

Diameter Range ϕD_c	Thickness B	No. of Teeth z	Order Number
$\phi 11.900$ to $\phi 15.600$	4.3	6	SRG... (See below)
$\phi 15.601$ to $\phi 18.600$	4.3	6	
$\phi 18.601$ to $\phi 23.600$	4.3	6	
$\phi 23.601$ to $\phi 28.600$	4.3	8	
$\phi 28.601$ to $\phi 35.600$	4.3	8	
$\phi 35.601$ to $\phi 43.600$	4.3	8	or SRL... (See below)
$\phi 43.601$ to $\phi 51.600$	4.3	10	
$\phi 51.601$ to $\phi 60.600$	4.3	10	
$\phi 60.601$ to $\phi 80.600$	4.3	12	
$\phi 80.601$ to $\phi 106.600$	4.3	12	

SRG (Special) and SRL (Special) are made-to-order items.

■ Recommended Cutting Conditions

(Min. - Max.)

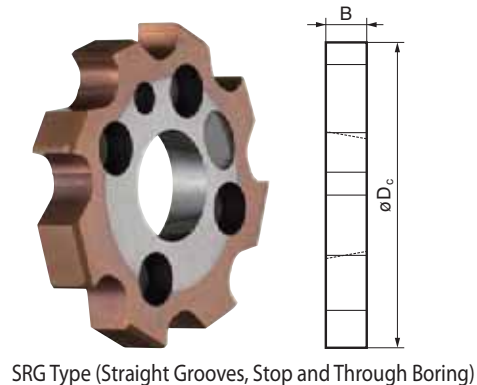
ISO	Work Material	Helix	Adopted Grades	Grade	Depth of Cut a_p (mm/radius)			Cutting Speed v_c (m/min)	Feed Rate f_z (mm/t)
					Below $\phi 20$	$\phi 20$ to $\phi 35$	$\phi 35$ or more		
P	Carbon Steel	G (Straight)	F0512R1	Micro-Fine Grained Carbide + PVD	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	80 to 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
M	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
	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
	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)	F0510P	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

■ SR Type Reamer Insert Identification

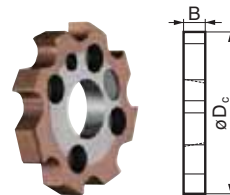
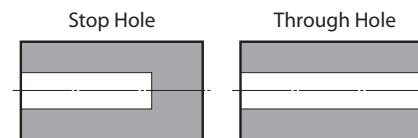
SRG 18.2 + 20 - 10 - A01 F0502P 1

(1) (2) (3) (4) (5) (6) (7) (8)

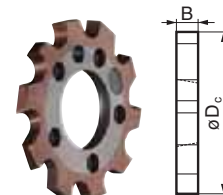
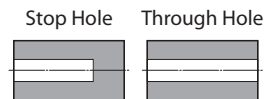
- | | |
|---|---|
| (1) SR Type | (5) Approach Angle Code |
| (2) G = Straight, L = Lefthand helix | (6) Insert Material Code |
| (3) Diameter (mm) | (7) Coating Code |
| (4) Tolerance (μ m) +/- or standard (ex. H7) | (8) Coating Thickness Code: 1 = Thin, 2 = Thick |



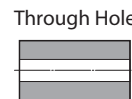
SRG Type (Straight Grooves, Stop and Through Boring)

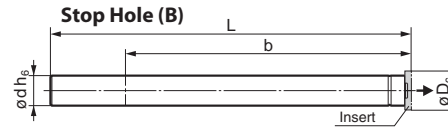
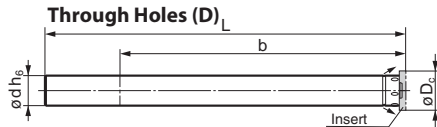


SRG Type
(Straight Grooves, Stop and Through Boring)



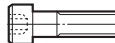
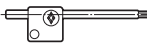
SRL Type
(Lefthand Helix, Through Boring)

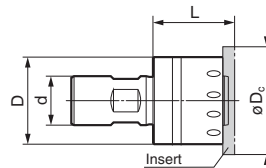




■ Holder


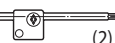


■ Spare Parts

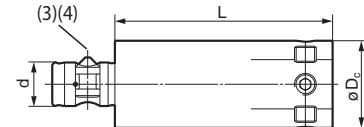
	Reamer Diameter ϕD_c Range	Cat. No.				Dimensions			Cap Screw	Wrench
		Through Holes (D)		Stop Hole (B)		ϕd_{h_6}	L	b		
		Cat. No.	Stock	Cat. No.	Stock					
Short	$\phi 11.900$ to $\phi 15.600$	SRD 16-10-100	★	SRB 16-10-100	★	10	100	60	C00-90-00-(3x)	G00-20-01
	$\phi 15.601$ to $\phi 18.600$	SRD 19-12-115	★	SRB 19-12-115	★	12	115	70	C00-90-00-(3x)	G00-20-01
	$\phi 18.601$ to $\phi 23.600$	SRD 24-16-128	★	SRB 24-16-128	★	16	128	80	C00-90-01-(3x)	G00-20-02
	$\phi 23.601$ to $\phi 28.600$	SRD 29-20-145	★	SRB 29-20-145	★	20	145	95	C00-90-01-(4x)	G00-20-02
	$\phi 28.601$ to $\phi 35.600$	SRD 36-25-170	★	SRB 36-25-170	★	25	170	120	C00-90-01-(4x)	G00-20-02
Long	$\phi 11.900$ to $\phi 15.600$	SRD 16-10-160		SRB 16-10-160		10	160	120	C00-90-00-(3x)	G00-20-01
	$\phi 15.601$ to $\phi 18.600$	SRD 19-12-185		SRB 19-12-185		12	185	140	C00-90-00-(3x)	G00-20-01
	$\phi 18.601$ to $\phi 23.600$	SRD 24-16-208		SRB 24-16-208		16	208	160	C00-90-01-(3x)	G00-20-02
	$\phi 23.601$ to $\phi 28.600$	SRD 29-20-240		SRB 29-20-240		20	240	190	C00-90-01-(4x)	G00-20-02
	$\phi 28.601$ to $\phi 35.600$	SRD 36-25-274		SRB 36-25-274		25	274	224	C00-90-01-(4x)	G00-20-02



■ Holder

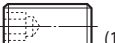


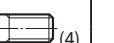
■ Spare Parts

Reamer Diameter ϕD_c Range	Cat. No.		Dimensions			Cap Screw	Wrench	Cap Screw	Wrench
	Through Holes (D)		D	d	L				
	Cat. No.	Stock							
$\phi 35.601$ to $\phi 43.600$	SRKG 44-32-18-030		32	18	30	C00-90-02-(4x)	G00-20-02	C00-26-23	G00-02-07
$\phi 43.601$ to $\phi 51.600$	SRKG 52-39-20-035		39	20	35	C00-90-02-(5x)	G00-20-02	C00-26-38	G00-02-07
$\phi 51.601$ to $\phi 60.600$	SRKG 61-46-25-040		46	25	40	C00-90-02-(5x)	G00-20-02	C00-24-26	G00-02-08
$\phi 60.601$ to $\phi 80.600$	SRKG 81-56-32-050		56	32	50	C00-90-04-(4x)	G00-20-03	C00-26-37	G00-02-09
$\phi 80.601$ to $\phi 100.600$	SRKG 101-76-40-060		76	40	60	C00-90-04-(4x)	G00-20-03	C00-24-31	G00-02-16



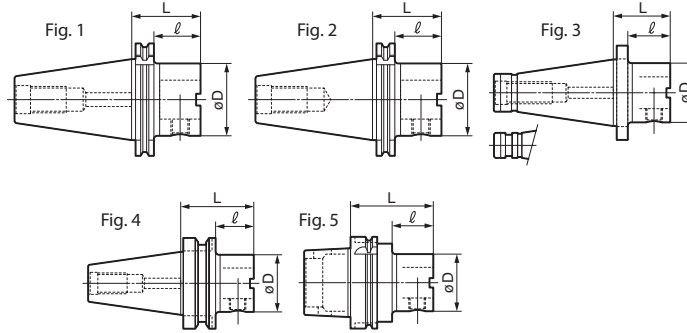
■ Holder (with diameter correction mechanism)

■ Spare Parts

Reamer Diameter ϕD_c Range	Cat. No.		Dimensions			Cap Screw	Wrench	Clamp	Screw
	Through Holes (D)		D	d	L				
	Cat. No.	Stock							
$\phi 35.601$ to $\phi 43.600$	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					
$\phi 43.601$ to $\phi 51.600$	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					
$\phi 51.601$ to $\phi 60.600$	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					
$\phi 60.601$ to $\phi 80.600$	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			BM-50	80				
	SRA 81-56-ZS40-140			ZS-40	140				
	SRA 81-56-ZS40-080			ZS-40	80				
	SRA 81-56-WD40-140			WD-40	140				
	SRA 81-56-WD40-080			WD-40	80				
$\phi 80.601$ to $\phi 100.600$	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			BM-63	100				
	SRA 101-76-ZS40-100			ZS-40	100				
	SRA 101-76-ZS40-160			ZS-40	160				
	SRA 101-76-WD40-100			WD-40	100				
	SRA 101-76-WD40-160			WD-40	160				
$\phi 80.601$ to $\phi 100.600$	SRA 101-76-WN40-100		76	WN-40	100	C00-90-16-(4x)	G00-02-08	Z00-63-21	Z00-63-23
	SRA 101-76-WN40-160			WN-40	160				



■ 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

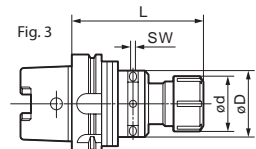
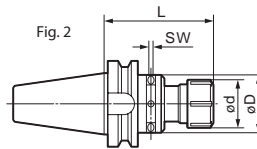
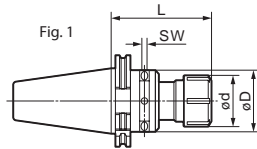
Clamp BETA No.	
25	Z00-25-24
32	Z00-32-24
40	Z00-40-24
63	Z00-63-24
80	Z00-80-24
100	Z00-100-24

■ Coolant Tubes

Taper Size	
50	H00-50-01
63	H00-63-01
100	H00-100-01



■ Holders with Diameter Correction Mechanism



■ DIN 69871-A/D-B

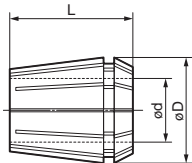
Cat. No. (L)	Stock	Taper Size	Size	Diameter Range	ød	øD	L	SW	Fig.
AAD60-40A-25-085		40	ER25	2.0 to 16.0	42	50	85	4	1
AAD60-40A-32-090		40	ER32	2.0 to 20.0	50	50	90	4	
AAD60-40A-40-115		40	ER40	3.0 to 26.0	63	60	115	4	
AAD60-50A-32-090		50	ER32	2.0 to 20.0	50	50	90	4	
AAD60-50A-40-100		50	ER40	3.0 to 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

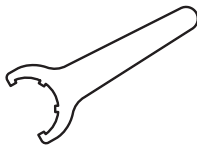
Ex. 1: ER25, d=12 ⇒ 62 25 12

These items are in stock in increments of 1 mm:

62-25-□□ from ø12 to ø16 mm

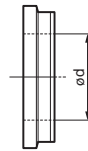
62-32-□□ from ø12 to ø20 mm

62-40-□□ from ø12 to ø26 mm.



■ Tightening Wrench

Cat. No.	Size
00-05-05	ER25
00-05-02	ER32
00-05-03	ER40



■ 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

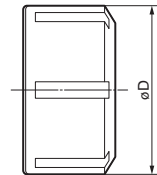
20.107.51-□□□ from ø12 to ø20 mm

20.107.61-□□□ from ø12 to ø26 mm.



■ 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



■ 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

■ Coolant Tubes

Taper Size	
40	H00-40-01
63	H00-63-01
100	H00-100-01

■ Spare Parts

	C00-96-16
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■ 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.

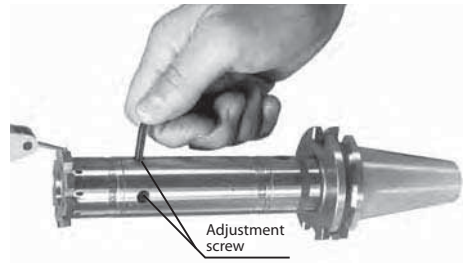


* Runout accuracy is higher in order of (1), (2) and (3).

■ Shank Holders with Correction Mechanism

Shank holders must have a correction mechanism when using reamers of $\phi 35$ 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

A.L.M.T.

PRODUCTS

Pages 504-511



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ALMT Products:	Pages
PCD Reamers	504-511



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



from Carbide to PCD Reamer

Efficient, 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 (Contains 12% Si)	1	10~20
A390 (Contains 10% Si)	1	20~

● Cutting machining time

(Test) Item	Carbide	PCD
Number of rotations S/min ⁻¹	2000	6000
Cutting speed V _m /min ⁻¹	125	380
Feeding speed F _m /min ⁻¹	600	1800
Machining time	3	1

Tool size: Ø20x4NT (Machining depth 20mm)

● Number of tool replacement

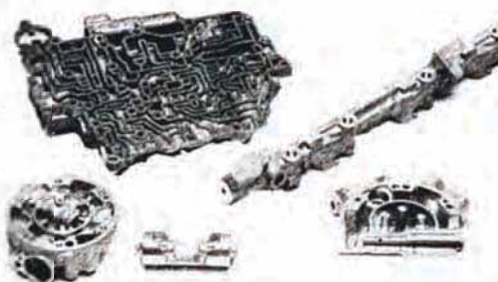
(Test) Item	Carbide	PCD
Number of tool replacement	10 times	once



Purposes Nonferrous metal (Aluminum alloy)

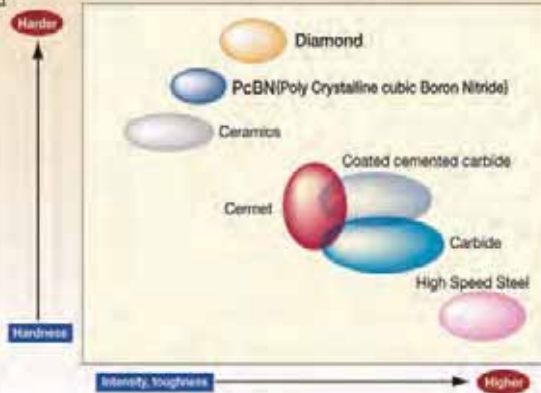
Machined components

- Cylinder head
- Cylinder block
- Transmission/steering components
- Compressor components



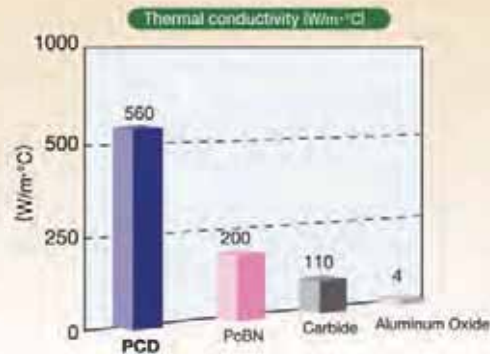
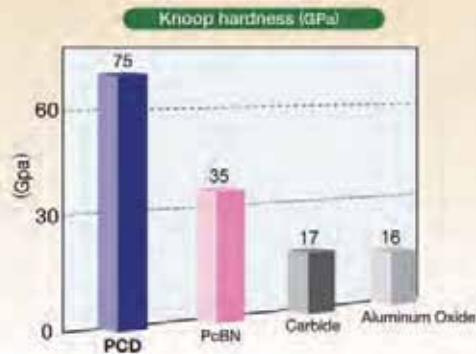
The position of diamonds

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)

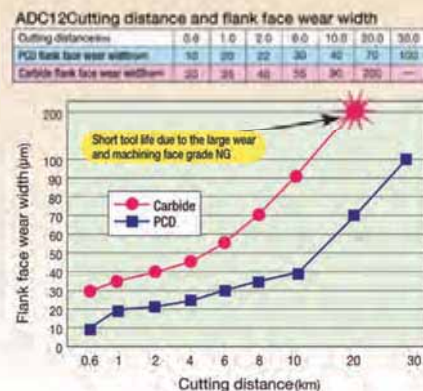
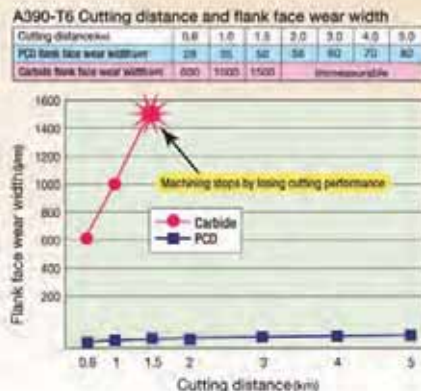
The features of PCD (Poly Crystalline Diamond) in poly crystalline cutting tool materials are as follows:
1. High hardness is high 2. High thermal conductivity is high 3. Coefficient of thermal expansion is small.
It has excellent thermal conductivity and hardness, that is required for cutting tools, 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.



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

- ① Edge honing specifications
Bend the flow of cutting chips moderately to shorten the length of cutting chips.
- ② Breaker specifications
Curl the cutting chips by the wall surface of the breaker to forcibly shorten the length of cutting chips.

Edge honing specification cutting edge



B. Width of cutting chips

- ③ Nick Specifications
Shorten the width of cutting chips by a recess prepared on the cutting edge.



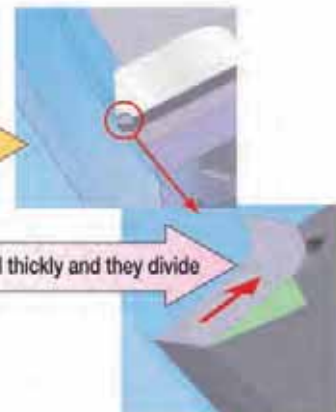
Without breaker



With breaker

Divided cutting chips

Cutting chips curl thickly and they divide



● Cutting resistance and contour accuracy have been improved by grinding technology

Conventional machining

Special grinding machining



Old



New

High machining accuracy without white turbidity is achieved by segmentalizing cutting chips

Data.2

Ability of Design and Quality [Achieved both high efficiency cutting and high machining accuracy]



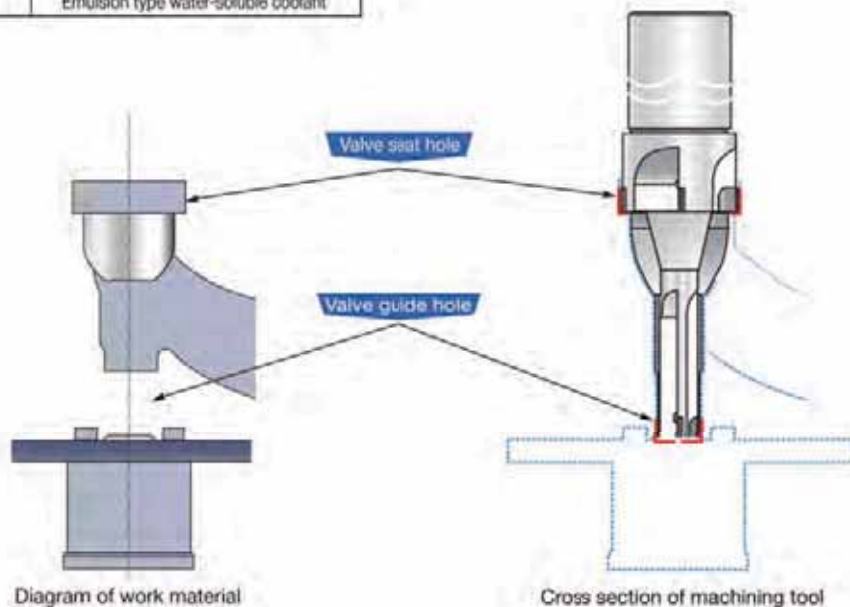
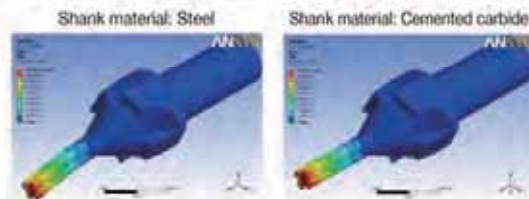
The concentricity and roundness of cutting edges have improved spectacularly by high shank rigidity (carbide) and grinding technology on the cutting edge.

The machining efficiency per cutting edge has improved by cutting down the machining time.

Machining conditions

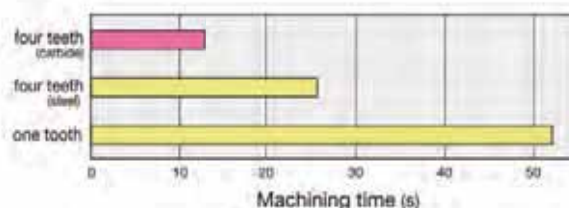
Name of work piece	Cylinder head, valve seat and guide hole
Work material	Aluminum alloy casting AC4B
Machines	Horizontal machining center
Tool size	Ø11-Ø3.6-L150
Number of rotations (min ⁻¹)	3500
Cutting speed (m/min)	395
Feeding rate (mm/rev)	0.3
Depth of cut (mm/diameter)	0.5
Coolant	Emulsion type water-soluble coolant

Deformation volume by CAE analysis



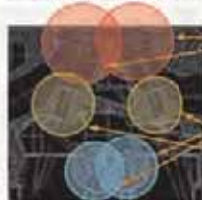
Differences of performance between shank materials

Machining results	one tooth	four teeth (steel)	four teeth (carbide)
Machining time (s)	52	26	13
Circularity (mm)	0.01	0.05	0.03
Concentricity (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



Stage 1 Valve seat and guide hole finishing

The issues such as concentricity and cylindricity are solved by high shank rigidity and high cutting edge accuracy.



Valve seat and guide hole finishing specifications

Machining conditions	Machine : Horizontal machining center	
	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



Stage 2 Hydraulic lash adjuster hole finishing

The issues such as removal of cutting chips and cylindricity are solved by the design that responded to thin-walled & blind hole machining portions.



HLA (Hydraulic Lash Adjuster) hole finishing specifications

Machining conditions	Machine : Horizontal machining center	
	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



Stage 3 Intake & exhaust valve guide hole finishing

Concentricity and cylindricity 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

Machining conditions	Machine : Horizontal machining center	
	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

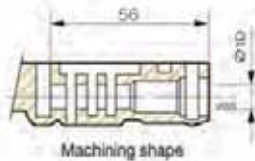
Cutting tool	Tool life (number of machined holes)	Ratio of pieces	Ratio of costs	Coaxiality	Inner diameter change volume
Carbide	1,200	1	1	—	—
Our PCD tool	12,000	3	0.8	10μm	3μm/10,000hole

PCD reamer



Application of PCD reamer machining

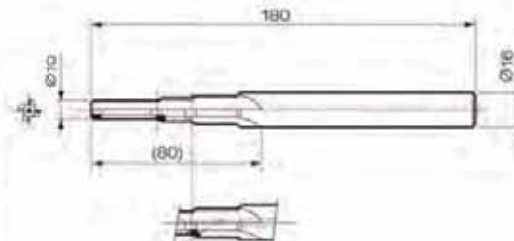
Reamer machining of automobile hydraulic regulator valves



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 $\mu m/Ra$	8	3
Circularity	10	5
Running cost	1	0.5

■ Shape

Cutting edge diameter ϕD	Maximum number of edges	Other specifications
"3 $\leq \phi$ < 4"	1tooth	Blade diameter tolerance Standard specifications $\phi D \pm 0.0025mm$ High-accurate specifications $\phi D \pm 0.0015mm$ (5 or bigger and 25 or below) Along the length : Maximum length 450mm (Standard L/D= from 3 to 5)
"4 $\leq \phi$ < 6"	3tooth	
"6 $\leq \phi$ < 8"	4tooth	
"8 $\leq \phi$	6tooth	



Our products

PCD reamer (Single-step reamer)



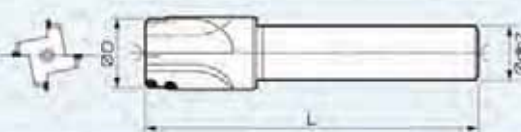
Body materials (1) Solid carbide (2) Combination of carbide and steel (3) Hardened steel
Applications : HDD, CD-ROM, rocker-arms, etc.



PCD reamer (with chamfering tip)



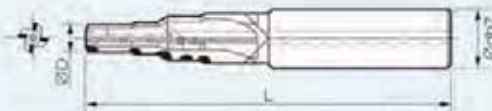
Body materials (1) Solid carbide (2) Combination of carbide and steel (3) Hardened steel
Applications : Compressor body, ABS actuator, power steering body, etc.



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)



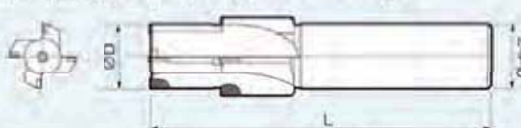
Body materials (1) Combination of carbide and steel
Applications : AT hydraulic control body, etc.



PCD reamer (with breakers)



Body materials (1) Combination of carbide and steel
Applications : ABS body, Oil pumps, AT hydraulic control body, etc.



DRILL ADAPTERS & HOLDERS

Pages 512-524



Drill
Adapters &
Holders

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AVAILABILITY:
All holders, collets and accessories have
a minimum shipment time of 3 working days
after receipt of order at Sumitomo.



sumiLock Plus™ Collets

sumiLock Plus™ has the highest accuracy and strongest gripping power available. Runout accuracy is less than 5µm at 100mm from the face of the collet. *sumiLock™* Collets will fit the *sumiLock Plus™* Drilling Chucks, but cannot accommodate the *sumiLock Plus™* accessory nuts.



TG Collets

These TG collets offer 33% more holding power than the ER Collets. This can mean increased production without any sacrifice in accuracy. The accuracy of the TG collets over 3/8", are guaranteed to be within 0.0005" at 4" from the face of the collet. Collets under 3/8", are guaranteed to be within 0.0005" runout, at a distance of four times the collet I.D. Coolant collets are also available in the TG100 series.



ER Collets

These are a good economical choice. They offer almost three times the gripping power of double angle collets and 75% of the gripping power of a TG collet. ER collects, over 3/8", are guaranteed to be within 0.0005" runout 4" from the face of the collet. Collets under 3/8", are guaranteed to be within 0.0005" runout, at a distance of four times the collet I.D. Coolant collets are also available in the ER variety.



Advanced Technology Drill Holders

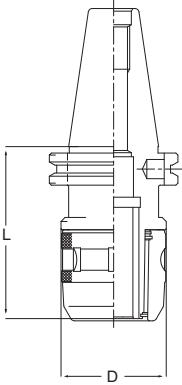
These holders should be used with Sumitomo's KDS style brazed drills. They are extremely accurate and thereby provide you with longer tool life and maximum feed rate capability. All drills have common shanks, and this family of holders is sure to cover your needs.



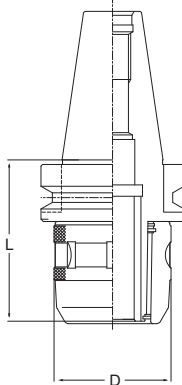
Tightening Fixtures and Retention Knobs

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.

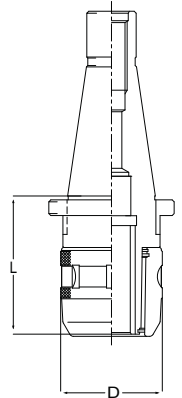
Our retention knobs are manufactured from the finest and most consistent steels required. Accurately machined surfaces and quality threads mean constant productivity and less down-time.


CT TAPER sumiLock Plus™ DRILLING CHUCKS

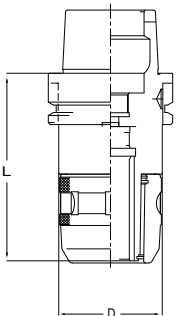
Catalog Number	Taper	Size Range	L	D	Collet Series
CT40-SLP750	40	1/8" - 3/4"	4.134"	2.047"	SLP750
CT40-SLP1000	40	1/8" - 1"	4.134"	2.362"	SLP1000
CT40-SLP1250	40	3/16" - 1-1/4"	4.724"	2.520"	SLP1250
CT50-SLP750	50	1/8" - 3/4"	5.315"	2.047"	SLP750
CT50-SLP1000	50	1/8" - 1"	5.315"	2.362"	SLP1000
CT50-SLP1250	50	3/16" - 1-1/4"	5.315"	2.717"	SLP1250


BT TAPER sumiLock Plus™ DRILLING CHUCKS

Catalog Number	Taper	Size Range	L	D	Collet Series
BT30-SLP750	30	1/8" - 3/4"	2.953"	2.047"	SLP750
BT40-SLP750	40	1/8" - 3/4"	4.134"	2.047"	SLP750
BT40-SLP1000	40	1/8" - 1"	3.543"	2.362"	SLP1000
BT40-SLP1250	40	3/16" - 1-1/4"	4.724"	2.717"	SLP1250
BT50-SLP1250	50	3/16" - 1-1/4"	5.315"	2.717"	SLP1250


NMTB TAPER sumiLock Plus™ DRILLING CHUCKS

Catalog Number	Taper	Size Range	L	D	Collet Series
NMTB40-SLP1250	40	3/16" - 1-1/4"	4.134"	2.717"	SLP1250
NMTB50-SLP1250	50	3/16" - 1-1/4"	3.543"	2.717"	SLP1250
NMTB50-SLP2000	50	1" - 2"	4.134"	4.134"	SLP2000


HSK sumiLock Plus™ DRILLING CHUCKS

Catalog Number	Taper	Max Capacity	L	D	Collet Series
HSK63-SLP0750-90	HSK-63A	3/4"	3.740"	2.047"	SLP750
HSK63-SLP1000-105	HSK-63A	1"	3.937"	2.362"	SLP1000
HSK100-SLP0750-105	HSK-100A	3/4"	4.528"	2.047"	SLP750
HSK100-SLP1000-105	HSK-100A	1"	4.528"	2.362"	SLP1000
HSK100-SLP1250-105	HSK-100A	1-1/4"	4.528"	2.717"	SLP1250
HSK100-SLP2000-120	HSK-100A	2"	4.921"	4.134"	SLP2000

Additional styles and sizes available on request.



sumiLock Plus™ Collets

The *sumiLock Plus™* Drilling Chuck Collets are manufactured to uniformly collapse around the cutting tool shank. This provides maximum gripping power, and concentric positioning of the cutting tool. Standard collets and coolant collets (not pictured) are available for all sizes of *sumiLock Plus™* Drilling Chucks. SumiLock™ Collets will fit *sumiLock Plus™* Drilling Chucks, but cannot accommodate the *sumiLock Plus™* accessory nuts.



Coolant-Thru Nut

The Coolant-Thru Nut forms a complete seal around the cutting tool. This is beneficial for coolant-thru cutting tools. The coolant collet and Coolant-Thru Nut must be ordered on size for each cutting tool.



Slotted Nut

The Slotted Nut allows coolant to travel down the tool's shank to its cutting edge. This is well suited for non-coolant-thru cutting tools. The coolant collet and Slotted Nut must be ordered on size for each cutting tool.



Nozzle Nut

The Nozzle Nut allows you to direct coolant to the cutting edge via three nozzles. This is ideal for coolant-thru cutting tools, specially when the cutting tool shank is smaller than the cutting diameter. The coolant collet and Nozzle Nut must be ordered on size for each cutting tool.

SLP750 sumiLock Plus™ COLLETS

Metric

Standard Collet	Collet I.D.	Coolant Collet	Coolant-Thru Nut	Slotted Nut	Nozzle Nut
SLP750-6	6mm	SLP750-6C	SLP750N-6C	SLP750N-6S	SLP750N-6N
SLP750-7	7mm	SLP750-7C	SLP750N-7C	SLP750N-7S	SLP750N-7N
SLP750-8	8mm	SLP750-8C	SLP750N-8C	SLP750N-8S	SLP750N-8N
SLP750-10	10mm	SLP750-10C	SLP750N-10C	SLP750N-10S	SLP750N-10N
SLP750-12	12mm	SLP750-12C	SLP750N-12C	SLP750N-12S	SLP750N-12N
SLP750-14	14mm	SLP750-14C	SLP750N-14C	SLP750N-14S	SLP750N-14N
SLP750-16	16mm	SLP750-16C	SLP750N-16C	SLP750N-16S	SLP750N-16N

Inch

Standard Collet	Collet I.D.	Coolant Collet	Coolant-Thru Nut	Slotted Nut	Nozzle Nut
SLP750-008	1/8"	SLP750-008C	SLP750N-008C	SLP750N-008S	SLP750N-008N
SLP750-012	3/16"	SLP750-012C	SLP750N-012C	SLP750N-012S	SLP750N-012N
SLP750-016	1/4"	SLP750-016C	SLP750N-016C	SLP750N-016S	SLP750N-016N
SLP750-020	5/16"	SLP750-020C	SLP750N-020C	SLP750N-020S	SLP750N-020N
SLP750-024	3/8"	SLP750-024C	SLP750N-024C	SLP750N-024S	SLP750N-024N
SLP750-028	7/16"	SLP750-028C	SLP750N-028C	SLP750N-028S	SLP750N-028N
SLP750-032	1/2"	SLP750-032C	SLP750N-032C	SLP750N-032S	SLP750N-032N
SLP750-036	9/16"	SLP750-036C	SLP750N-036C	SLP750N-036S	SLP750N-036N
SLP750-040	5/8"	SLP750-040C	SLP750N-040C	SLP750N-040S	SLP750N-040N



SLP1000 sumiLock Plus™ COLLETS
Metric

Standard Collet	Collet I.D.	Coolant Collet	Coolant-Thru Nut	Slotted Nut	Nozzle Nut
SLP1000-6	6mm	SLP1000-6C	SLP1000N-6C	SLP1000N-6S	SLP1000N-6N
SLP1000-8	8mm	SLP1000-8C	SLP1000N-8C	SLP1000N-8S	SLP1000N-8N
SLP1000-10	10mm	SLP1000-10C	SLP1000N-10C	SLP1000N-10S	SLP1000N-10N
SLP1000-12	12mm	SLP1000-12C	SLP1000N-12C	SLP1000N-12S	SLP1000N-12N
SLP1000-14	14mm	SLP1000-14C	SLP1000N-14C	SLP1000N-14S	SLP1000N-14N
SLP1000-16	16mm	SLP1000-16C	SLP1000N-16C	SLP1000N-16S	SLP1000N-16N
SLP1000-18	18mm	SLP1000-18C	SLP1000N-18C	SLP1000N-18S	SLP1000N-18N
SLP1000-20	20mm	SLP1000-20C	SLP1000N-20C	SLP1000N-20S	SLP1000N-20N

Inch

Standard Collet	Collet I.D.	Coolant Collet	Coolant-Thru Nut	Slotted Nut	Nozzle Nut
SLP1000-008	1/8"	SLP1000-008C	SLP1000N-008C	SLP1000N-008S	SLP1000N-008N
SLP1000-012	3/16"	SLP1000-012C	SLP1000N-012C	SLP1000N-012S	SLP1000N-012N
SLP1000-016	1/4"	SLP1000-016C	SLP1000N-016C	SLP1000N-016S	SLP1000N-016N
SLP1000-020	5/16"	SLP1000-020C	SLP1000N-020C	SLP1000N-020S	SLP1000N-020N
SLP1000-024	3/8"	SLP1000-024C	SLP1000N-024C	SLP1000N-024S	SLP1000N-024N
SLP1000-028	7/16"	SLP1000-028C	SLP1000N-028C	SLP1000N-028S	SLP1000N-028N
SLP1000-032	1/2"	SLP1000-032C	SLP1000N-032C	SLP1000N-032S	SLP1000N-032N
SLP1000-040	5/8"	SLP1000-040C	SLP1000N-040C	SLP1000N-040S	SLP1000N-040N
SLP1000-048	3/4"	SLP1000-048C	SLP1000N-048C	SLP1000N-048S	SLP1000N-048N
SLP1000-056	7/8"	SLP1000-056C	SLP1000N-056C	SLP1000N-056S	SLP1000N-056N

SLP1250 sumiLock Plus™ COLLETS
Metric

Standard Collet	Collet I.D.	Coolant Collet	Coolant-Thru Nut	Slotted Nut	Nozzle Nut
SLP1250-6	6mm	SLP1250-6C	SLP1250N-6C	SLP1250N-6S	SLP1250N-6N
SLP1250-8	8mm	SLP1250-8C	SLP1250N-8C	SLP1250N-8S	SLP1250N-8N
SLP1250-10	10mm	SLP1250-10C	SLP1250N-10C	SLP1250N-10S	SLP1250N-10N
SLP1250-12	12mm	SLP1250-12C	SLP1250N-12C	SLP1250N-12S	SLP1250N-12N
SLP1250-14	14mm	SLP1250-14C	SLP1250N-14C	SLP1250N-14S	SLP1250N-14N
SLP1250-16	16mm	SLP1250-16C	SLP1250N-16C	SLP1250N-16S	SLP1250N-16N
SLP1250-20	20mm	SLP1250-20C	SLP1250N-20C	SLP1250N-20S	SLP1250N-20N
SLP1250-25	25mm	SLP1250-25C	SLP1250N-25C	SLP1250N-25S	SLP1250N-25N

Inch

Standard Collet	Collet I.D.	Coolant Collet	Coolant-Thru Nut	Slotted Nut	Nozzle Nut
SLP1250-012	3/16"	SLP1250-012C	SLP1250N-012C	SLP1250N-012S	SLP1250N-012N
SLP1250-016	1/4"	SLP1250-016C	SLP1250N-016C	SLP1250N-016S	SLP1250N-016N
SLP1250-020	5/16"	SLP1250-020C	SLP1250N-020C	SLP1250N-020S	SLP1250N-020N
SLP1250-024	3/8"	SLP1250-024C	SLP1250N-024C	SLP1250N-024S	SLP1250N-024N
SLP1250-028	7/16"	SLP1250-028C	SLP1250N-028C	SLP1250N-028S	SLP1250N-028N
SLP1250-032	1/2"	SLP1250-032C	SLP1250N-032C	SLP1250N-032S	SLP1250N-032N
SLP1250-036	9/16"	SLP1250-036C	SLP1250N-036C	SLP1250N-036S	SLP1250N-036N
SLP1250-040	5/8"	SLP1250-040C	SLP1250N-040C	SLP1250N-040S	SLP1250N-040N
SLP1250-048	3/4"	SLP1250-048C	SLP1250N-048C	SLP1250N-048S	SLP1250N-048N
SLP1250-056	7/8"	SLP1250-056C	SLP1250N-056C	SLP1250N-056S	SLP1250N-056N
SLP1250-064	1"	SLP1250-064C	SLP1250N-064C	SLP1250N-064S	SLP1250N-064N



SLP2000 sumiLock Plus™ COLLETS

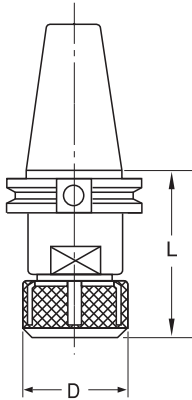
Inch

Standard Collet	Collet I.D.	Coolant Collet	Coolant-Thru Nut	Slotted Nut	Nozzle Nut
SLP2000-064	1"	SLP2000-064C	SLP2000N-064C	SLP2000N-064S	SLP2000N-064N
SLP2000-080	1-1/4"	SLP2000-080C	SLP2000N-080C	SLP2000N-080S	SLP2000N-080N
SLP2000-096	1-1/2"	SLP2000-096C	SLP2000N-096C	SLP2000N-096S	SLP2000N-096N

SLP SPANNER WRENCHES

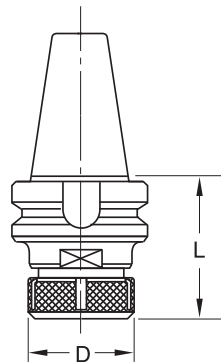
Catalog Number	For Use With
SLP750MC-SPAN	3/4" Capacity Chucks
SLP1000MC-SPAN	1" Capacity Chucks
SLP1250MC-SPAN	1-1/4" Capacity Chucks
SLP2000MC-SPAN	2" Capacity Chucks





CT TAPER TG COLLET CHUCKS

Cat. No.	Taper	Size Range	L	D	Collet Series
CT40-TG750	40	3/64-3/4"	3"	1-7/8"	TG75
CT50-TG750	50	3/64-3/4"	3-1/2"	1-7/8"	TG75
CT40-TG1000S	40	1/16-1"	2-3/4"	2-1/2"	TG100
CT40-TG1000	40	1/16-1"	3-1/2"	2-1/2"	TG100
CT50-TG1000	50	1/16-1"	3-1/2"	2-1/2"	TG100



BT TAPER TG COLLET CHUCKS

Cat. No.	Taper	Size Range	L	D	Collet Series
BT30-TG500	30	1/8-1/2"	2"	1-8/8"	TG50
BT30-TG750	30	3/64-3/4"	2-1/2"	1-7/8"	TG75
BT30-TG1000	30	1/16-1"	3-15/16"	2-1/2"	TG100
BT40-TG1000	40	1/16-1"	3-1/2"	2-1/2"	TG100

Note: Special diameters and dimensions available per quotation.

* Additional styles and sizes available on request.

TG50 COLLETS

INCH

CAT. No.	COLLET I.D.	CAT. No.	COLLET I.D.
TG050-008	1/8"	TG050-021	21/64"
TG050-009	9/64"	TG050-022	11/32"
TG050-010	5/32"	TG050-023	23/64"
TG050-011	11/64"	TG050-024	3/8"
TG050-012	3/16"	TG050-025	25/64"
TG050-013	13/64"	TG050-026	13/32"
TG050-014	7/32"	TG050-027	27/64"
TG050-015	15/64"	TG050-028	7/16"
TG050-016	1/4"	TG050-029	29/64"
TG050-017	17/64"	TG050-030	15/32"
TG050-018	9/32"	TG050-031	31/64"
TG050-019	19/64"	TG050-032	1/2"
TG050-020	5/16"		

TG100 COLLETS

INCH

CATALOG NUMBER			CATALOG NUMBER		
STANDARD COLLET	COOLANT COLLET	COLLET I.D.	STANDARD COLLET	COOLANT COLLET	COLLET I.D.
TG100-004	-	1/16"	TG100-035	TG100-035C	35/64"
TG100-005	-	5/64"	TG100-036	TG100-036C	9/16"
TG100-006	-	3/32"	TG100-037	TG100-037C	37/64"
TG100-007	-	7/64"	TG100-038	TG100-038C	19/32"
TG100-008	-	1/8"	TG100-039	TG100-039C	39/64"
TG100-009	-	9/64"	TG100-040	TG100-040C	5/8"
TG100-010	-	5/32"	TG100-041	TG100-041C	41/64"
TG100-011	-	11/64"	TG100-042	TG100-042C	21/32"
TG100-012	-	3/16"	TG100-043	TG100-043C	43/64"
TG100-013	-	13/64"	TG100-044	TG100-044C	11/16"
TG100-014	-	7/32"	TG100-045	TG100-045C	45/64"
TG100-015	-	15/64"	TG100-046	TG100-046C	23/32"
TG100-016	TG100-016C	1/4"	TG100-047	TG100-047C	47/64"
TG100-017	TG100-017C	17/64"	TG100-048	TG100-048C	3/4"
TG100-018	TG100-018C	9/32"	TG100-049	TG100-049C	49/64"
TG100-019	TG100-019C	19/64"	TG100-050	TG100-050C	25/32"
TG100-020	TG100-020C	5/16"	TG100-051	TG100-051C	51/64"
TG100-021	TG100-021C	21/64"	TG100-052	TG100-052C	13/16"
TG100-022	TG100-022C	11/32"	TG100-053	TG100-053C	53/64"
TG100-023	TG100-023C	23/64"	TG100-054	TG100-054C	27/32"
TG100-024	TG100-024C	3/8"	TG100-055	TG100-055C	55/64"
TG100-025	TG100-025C	25/64"	TG100-056	TG100-056C	7/8"
TG100-026	TG100-026C	13/32"	TG100-057	TG100-057C	57/64"
TG100-027	TG100-027C	27/64"	TG100-058	TG100-058C	29/32"
TG100-028	TG100-028C	7/16"	TG100-059	TG100-059C	59/64"
TG100-029	TG100-029C	29/64"	TG100-060	TG100-060C	15/16"
TG100-030	TG100-030C	15/32"	TG100-061	TG100-061C	61/64"
TG100-031	TG100-031C	31/64"	TG100-062	TG100-062C	31/32"
TG100-032	TG100-032C	1/2"	TG100-063	TG100-063C	63/64"
TG100-033	TG100-033C	33/64"	TG100-064	TG100-064C	1"
TG100-034	TG100-034C	17/32"			

TG75 COLLETS

INCH

CAT. No.	COLLET I.D.	CAT. No.	COLLET I.D.
TG075-003	3/64"	TG075-026	13/32"
TG075-004	1/16"	TG075-027	27/64"
TG075-005	5/64"	TG075-028	7/16"
TG075-006	3/32"	TG075-029	29/64"
TG075-007	7/64"	TG075-030	15/32"
TG075-008	1/8"	TG075-031	31/64"
TG075-009	9/64"	TG075-032	1/2"
TG075-010	5/32"	TG075-033	33/64"
TG075-011	11/64"	TG075-034	17/32"
TG075-012	3/16"	TG075-035	35/64"
TG075-013	13/64"	TG075-036	9/16"
TG075-014	7/32"	TG075-037	37/64"
TG075-015	15/64"	TG075-038	19/32"
TG075-016	1/4"	TG075-039	39/64"
TG075-017	17/64"	TG075-040	5/8"
TG075-018	9/32"	TG075-041	41/64"
TG075-019	19/64"	TG075-042	21/32"
TG075-020	5/16"	TG075-043	43/64"
TG075-021	21/64"	TG075-044	11/16"
TG075-022	11/32"	TG075-045	45/64"
TG075-023	23/64"	TG075-046	23/32"
TG075-024	3/8"	TG075-047	47/64"
TG075-025	25/64"	TG075-048	3/4"

TG100 COLLETS

METRIC

CATALOG NUMBER			CATALOG NUMBER		
STANDARD COLLET	COOLANT COLLET	COLLET I.D.	STANDARD COLLET	COOLANT COLLET	COLLET I.D.
TG100-204	-	4MM	TG100-218	TG100-218C	18MM
TG100-206	TG100-206C	6MM	TG100-220	TG100-220C	20MM
TG100-208	TG100-208C	8MM	TG100-222	TG100-222C	22MM
TG100-210	TG100-210C	10MM	TG100-224	TG100-224C	24MM
TG100-212	TG100-212C	12MM	TG100-225	TG100-225C	25MM
TG100-214	TG100-214C	14MM	TG100-226	TG100-226C	26MM
TG100-216	TG100-216C	16MM			

(CONTINUED ON NEXT PAGE)

NOTE: TG STANDARD COLLETS COLLAPSE APPROXIMATELY 0.015"
TG COOLANT COLLETS COLLAPSE APPROXIMATELY 0.004" ~ 0.006"



(CONTINUED FROM PREVIOUS PAGE)

TG CHUCK NUT WRENCHES

CAT. No.	DESCRIPTION
TG25-HEX	FITS TG25 CHUCK NUT
TG50-SPAN	FITS TG50 CHUCK NUT
TG75-SPAN	FITS TG75 CHUCK NUT
TG100-SPAN	FITS TG100 CHUCK NUT
TG150-SPAN	FITS TG150 CHUCK NUT

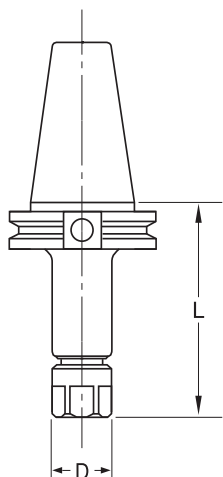
REPLACEMENT TG BACKUP SCREWS

CAT. No.	COLLET TYPE
TG25-3	TG25
TG50-3	TG50
TG75-3	TG75
TG100-3	TG100
TG150-3	TG150

REPLACEMENT**TG CHUCK NUT ASSEMBLIES**

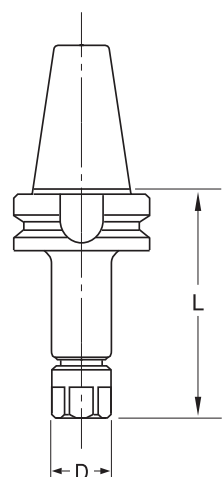
CAT. No.	DESCRIPTION
TG25-NUT	TG25 CHUCK NUT, COMPLETE
TG50-NUT	TG50 CHUCK NUT, COMPLETE
TG75-NUT	TG75 CHUCK NUT, COMPLETE
TG100-NUT	TG100 CHUCK NUT, COMPLETE
TG150-NUT	TG150 CHUCK NUT, COMPLETE
TG50-1	TG50 NUT BEARING/SPACER SET
TG75-1	TG75 NUT BEARING/SPACER SET
TG100-1	TG100 NUT BEARING/SPACER SET
TG150-1	TG150 NUT BEARING/SPACER SET





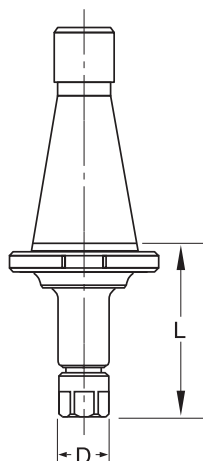
CT TAPER ER COLLET CHUCKS

Cat. No.	Taper	Size Range	L	D	Collet Series
CT40-ER11	40	.019-.275"	2-1/2"	3/4"	ER11
CT40-ER16	40	1/32-13/32"	3-1/2"	1-1/4"	ER16
CT50-ER16	50	1/32-13/32"	4-1/8"	1-1/4"	ER16
CT40-ER20	40	.039-.511"	2-1/2"	1-3/8"	ER20
CT50-ER20	50	.039-.511"	2-1/2"	1-3/8"	ER20
CT40-ER25	40	.039-.629"	2-1/2"	1-11/16"	ER25
CT50-ER25	50	.039-.629"	2-1/2"	1-11/16"	ER25
CT40-ER32	40	.078-.787"	3-1/8"	2"	ER32
CT50-ER32	50	.078-.787"	4"	2"	ER32
CT40-ER40	40	.118-1.023"	3"	2-1/2"	ER40
CT50-ER40	50	.118-1.023"	4"	2-1/2"	ER40



BT TAPER ER COLLET CHUCKS

Cat. No.	Taper	Size Range	L	D	Collet Series
BT30-ER11	30	.019-.275"	2"	3/4"	ER11
BT30-ER11L	30	.019-.275"	4"	3/4"	ER11
BT40-ER11	40	.019-.275"	2-1/2"	3/4"	ER40
BT30-ER16	30	1/32-13/32"	2-3/8"	1-1/4"	ER16
BT30-ER16L	30	1/32-13/32"	4"	1-1/4"	ER16
BT40-ER16	40	1/32-13/32"	3-1/2"	1-1/4"	ER16
BT50-ER16	50	1/32-13/32"	4-1/8"	1-1/4"	ER16
BT40-ER20	40	.039-.511"	2-1/4"	1-3/8"	ER20
BT50-ER20	50	.039-.511"	2-5/8"	1-3/8"	ER20
BT30-ER25	30	.039-.629"	2"	1-5/8"	ER25
BT30-ER25L	30	.039-.629"	4"	1-5/8"	ER25
BT40-ER25	40	.039-.629"	2-1/4"	1-5/8"	ER25
BT50-ER25	50	.039-.629"	2-5/8"	1-5/8"	ER25
BT30-ER32	30	.078-.787"	3"	2"	ER32
BT40-ER32	40	.078-.787"	3-1/8"	2"	ER32
BT50-ER32	50	.078-.787"	4"	2"	ER32
BT50-ER40	50	.118-1.023"	4"	2-1/2"	ER40



NMTB TAPER ER COLLET CHUCKS

Cat. No.	Taper	Size Range	L	D	Collet Series
NMTB40-ER16	40	1/32-13/32"	1-3/4"	1-1/4"	ER16

ER Collets are on the following page.

* Additional styles and sizes available on request.

ER COLLETS

ER SERIES 11
STANDARD COLLETS

Metric

Catalog Number	Collet I.D.	
	Metric	Inch
ER11-039	0.5-1mm	.019-.039"
ER11-059	1-1.5mm	.039-.059"
ER11-078	1.5-2mm	.059-.078"
ER11-098	2-2.5mm	.078-.098"
ER11-118	2.5-3mm	.098-.118"
ER11-137	3-3.5mm	.118-.137"
ER11-157	3.5-4mm	.137-.157"
ER11-177	4-4.5mm	.157-.177"
ER11-196	4.5-5mm	.177-.196"
ER11-216	5-5.5mm	.196-.216"
ER11-236	5.5-6mm	.216-.236"
ER11-255	6-6.5mm	.236-.255"
ER11-275	6.5-7mm	.255-.275"

ER SERIES 11
COOLANT COLLETS

Metric

Catalog Number	Collet I.D.
	Metric
ER11-157C	4.0mm
ER11-177C	4.5mm
ER11-196C	5.0mm
ER11-216C	5.5mm
ER11-236C	6.0mm
ER11-255C	6.5mm
ER11-275C	7.0mm

ER SERIES 11
COOLANT COLLETS

Inch

Catalog Number	Collet I.D.
	Inch
ER11-012C	3/16"
ER11-013C	13/64"
ER11-014C	7/32"
ER11-015C	15/64"
ER11-016C	1/4"
ER11-017C	17/64"

ER SERIES 16
STANDARD COLLETS

Metric

Catalog Number	Collet I.D.	
	Metric	Inch
ER16-039	0.5-1mm	.019-.039"
ER16-059	1-1.5mm	.039-.059"
ER16-078	1.5-2mm	.059-.078"
ER16-098	2-2.5mm	.078-.098"
ER16-118	2.5-3mm	.098-.118"
ER16-137	3-3.5mm	.118-.137"
ER16-157	3.5-4mm	.137-.157"
ER16-177	4-4.5mm	.157-.177"
ER16-196	4.5-5mm	.177-.196"
ER16-216	5-5.5mm	.196-.216"
ER16-236	5.5-6mm	.216-.236"
ER16-255	6-6.5mm	.236-.255"
ER16-275	6.5-7mm	.255-.275"
ER16-295	7-7.5mm	.275-.295"
ER16-314	7.5-8mm	.295-.314"
ER16-334	8-8.5mm	.314-.334"
ER16-354	8.5-9mm	.334-.354"
ER16-374	9-9.5mm	.354-.374"
ER16-393	9.5-10mm	.374-.393"

ER SERIES 16
COOLANT COLLETS

Metric

Catalog Number	Collet I.D.
	Metric
ER16-157C	4.0mm
ER16-177C	4.5mm
ER16-196C	5.0mm
ER16-216C	5.5mm
ER16-236C	6.0mm
ER16-255C	6.5mm
ER16-275C	7.0mm
ER16-295C	7.5mm
ER16-314C	8.0mm
ER16-334C	8.5mm
ER16-354C	9.0mm
ER16-374C	9.5mm
ER16-393C	10.0mm

ER SERIES 16
STANDARD COLLETS

Inch

Catalog Number	Collet I.D.
	Inch
ER16-002	1/64-1/32"
ER16-004	1/32-1/16"
ER16-006	1/16-3/32"
ER16-008	3/32-1/8"
ER16-010	1/8-5/32"
ER16-012	5/32-3/16"
ER16-014	3/16-7/32"
ER16-016	7/32-1/4"
ER16-018	1/4-9/32"
ER16-020	9/32-5/16"
ER16-022	5/16-11/32"
ER16-024	11/32-3/8"
ER16-026	3/8-13/32"

ER SERIES 16
COOLANT COLLETS

Inch

Catalog Number	Collet I.D.
	Inch
ER16-012C	3/16"
ER16-013C	13/64"
ER16-014C	7/32"
ER16-015C	15/64"
ER16-016C	1/4"
ER16-017C	17/64"
ER16-018C	9/32"
ER16-019C	19/64"
ER16-020C	5/16"
ER16-021C	21/64"
ER16-022C	11/32"
ER16-023C	23/64"
ER16-024C	3/8"
ER16-025C	25/64"
ER16-026C	13/32"

ER SERIES 20
STANDARD COLLETS

Metric

Catalog Number	Collet I.D.	
	Metric	Inch
ER20-078	1-2mm	.039-.078"
ER20-118	2-3mm	.078-.118"
ER20-137	2.5-3.5mm	.098-.137"
ER20-157	3-4mm	.118-.157"
ER20-196	4-5mm	.157-.196"
ER20-236	5-6mm	.196-.236"
ER20-275	6-7mm	.236-.275"
ER20-314	7-8mm	.275-.314"
ER20-354	8-9mm	.314-.354"
ER20-393	9-10mm	.354-.393"
ER20-433	10-11mm	.393-.433"
ER20-452	11-11.5mm	.433-.452"
ER20-472	11-12mm	.452-.472"
ER20-511	12-13mm	.472-.511"

ER SERIES 20
COOLANT COLLETS

Metric

Catalog Number	Collet I.D.
	Metric
ER20-196C	5.0mm
ER20-216C	5.5mm
ER20-236C	6.0mm
ER20-255C	6.5mm
ER20-275C	7.0mm
ER20-295C	7.5mm
ER20-314C	8.0mm
ER20-334C	8.5mm
ER20-354C	9.0mm
ER20-374C	9.5mm
ER20-393C	10.0mm
ER20-413C	10.5mm
ER20-433C	11.0mm
ER20-452C	11.5mm
ER20-472C	12.0mm
ER20-492C	12.5mm
ER20-511C	13.0mm

ER SERIES 20
COOLANT COLLETS

Inch

Catalog Number	Collet I.D.
	Inch
ER20-012C	3/16"



ER SERIES 25 STANDARD COLLETS

Catalog Number	Collet I.D.	
	Metric	Inch
ER25-078	1-2mm	.039-.078"
ER25-118	2-3mm	.078-.118"
ER25-137	2.5-3.5mm	.098-.137"
ER25-157	3-4mm	.118-.157"
ER25-196	4-5mm	.157-.196"
ER25-236	5-6mm	.196-.236"
ER25-275	6-7mm	.236-.275"
ER25-314	7-8mm	.275-.314"
ER25-354	8-9mm	.314-.354"
ER25-393	9-10mm	.354-.393"
ER25-433	10-11mm	.393-.433"
ER25-452	11-11.5mm	.433-.452"
ER25-472	11-12mm	.452-.472"
ER25-511	12-13mm	.472-.511"
ER25-551	13-14mm	.511-.551"
ER25-590	14-15mm	.551-.590"
ER25-629	15-16mm	.590-.629"

ER SERIES 25 COOLANT COLLETS

Catalog Number	Collet I.D.	
	Metric	Inch
ER25-236C	6.0mm	
ER25-255C	6.5mm	
ER25-275C	7.0mm	
ER25-295C	7.5mm	
ER25-314C	8.0mm	
ER25-334C	8.5mm	
ER25-354C	9.0mm	
ER25-374C	9.5mm	
ER25-393C	10.0mm	
ER25-413C	10.5mm	
ER25-433C	11.0mm	
ER25-452C	11.5mm	
ER25-472C	12.0mm	
ER25-492C	12.5mm	
ER25-511C	13.0mm	
ER25-531C	13.5mm	
ER25-551C	14.0mm	
ER25-570C	14.5mm	
ER25-590C	15.0mm	
ER25-610C	15.5mm	
ER25-629C	16.0mm	

ER SERIES 25 COOLANT COLLETS

Catalog Number	Collet I.D.	
	Inch	Metric
ER25-016C	1/4"	
ER25-017C	17/64"	
ER25-018C	9/32"	
ER25-019C	19/64"	
ER25-020C	5/16"	
ER25-021C	21/64"	
ER25-022C	11/32"	
ER25-023C	23/64"	
ER25-024C	3/8"	

ER SERIES 32 STANDARD COLLETS

Catalog Number	Collet I.D.	
	Metric	Inch
ER32-118	2-3mm	.078-.118"
ER32-137	2.5-3.5mm	.098-.137"
ER32-157	3-4mm	.118-.157"
ER32-196	4-5mm	.157-.196"
ER32-236	5-6mm	.196-.236"
ER32-275	6-7mm	.236-.275"
ER32-314	7-8mm	.275-.314"
ER32-354	8-9mm	.314-.354"
ER32-393	9-10mm	.354-.393"
ER32-433	10-11mm	.393-.433"
ER32-452	11-11.5mm	.433-.452"
ER32-472	11-12mm	.452-.472"
ER32-511	12-13mm	.472-.511"
ER32-551	13-14mm	.511-.551"
ER32-590	14-15mm	.551-.590"
ER32-629	15-16mm	.590-.629"
ER32-669	16-17mm	.629-.669"
ER32-708	17-18mm	.669-.708"
ER32-748	18-19mm	.708-.748"
ER32-767	18.5-19.5mm	.728-.767"
ER32-787	19-20mm	.748-.787"

ER SERIES 32 COOLANT COLLETS

Catalog Number	Collet I.D.	
	Metric	Inch
ER32-393C	10.0mm	
ER32-413C	10.5mm	
ER32-433C	11.0mm	
ER32-452C	11.5mm	
ER32-472C	12.0mm	
ER32-492C	12.5mm	
ER32-511C	13.0mm	
ER32-531C	13.5mm	
ER32-551C	14.0mm	
ER32-570C	14.5mm	
ER32-590C	15.0mm	
ER32-610C	15.5mm	
ER32-629C	16.0mm	
ER32-649C	16.5mm	
ER32-669C	17.0mm	
ER32-688C	17.5mm	
ER32-708C	18.0mm	
ER32-728C	18.5mm	
ER32-748C	19.0mm	
ER32-767C	19.5mm	
ER32-787C	20.0mm	

COLLET COLLAPSE RANGE

Series	Standard	Coolant	
ER11	0.015"	0.004"	
ER16	0.031"	<0.236"	0.004"
		>0.236"	0.019"
ER20	0.031"	<0.236"	0.004"
		>0.236"	0.019"
ER25	0.031"	<0.393"	0.004"
		>0.393"	0.019"
ER32	0.031"	<0.629"	0.004"
		>0.629"	0.019"
ER40	0.031"	<0.708"	0.004"
		>0.708"	0.019"



ER SERIES 40 STANDARD COLLETS

Metric

Catalog Number	Collet I.D.	
	Metric	Inch
ER40-157	3-4mm	.118-.157"
ER40-196	4-5mm	.157-.196"
ER40-236	5-6mm	.196-.236"
ER40-275	6-7mm	.236-.275"
ER40-314	7-8mm	.275-.314"
ER40-354	8-9mm	.314-.354"
ER40-393	9-10mm	.354-.393"
ER40-433	10-11mm	.393-.433"
ER40-452	11-11.5mm	.433-.452"
ER40-472	11-12mm	.452-.472"
ER40-511	12-13mm	.472-.511"
ER40-551	13-14mm	.511-.551"
ER40-590	14-15mm	.551-.590"
ER40-629	15-16mm	.590-.629"
ER40-669	16-17mm	.629-.669"
ER40-708	17-18mm	.669-.708"
ER40-748	18-19mm	.708-.748"
ER40-767	18.5-19.5mm	.728-.767"
ER40-787	19-20mm	.748-.787"
ER40-826	20-21mm	.787-.826"
ER40-866	21-22mm	.826-.866"
ER40-905	22-23mm	.866-.905"
ER40-944	23-24mm	.905-.944"
ER40-984	24-25mm	.944-.984"
ER40-1023	25-26mm	.984-1.023"

ER SERIES 40 COOLANT COLLETS

Metric

Catalog Number	Collet I.D.	
	Metric	
ER40-393C	10.0mm	
ER40-413C	10.5mm	
ER40-433C	11.0mm	
ER40-452C	11.5mm	
ER40-472C	12.0mm	
ER40-492C	12.5mm	
ER40-511C	13.0mm	
ER40-531C	13.5mm	
ER40-551C	14.0mm	
ER40-570C	14.5mm	
ER40-590C	15.0mm	
ER40-610C	15.5mm	
ER40-629C	16.0mm	
ER40-649C	16.5mm	
ER40-669C	17.0mm	
ER40-688C	17.5mm	
ER40-708C	18.0mm	

Catalog Number	Collet I.D.	
	Metric	
ER40-728C	18.5mm	
ER40-748C	19.0mm	
ER40-767C	19.5mm	
ER40-787C	20.0mm	
ER40-807C	20.5mm	
ER40-826C	21.0mm	
ER40-846C	21.5mm	
ER40-866C	22.0mm	
ER40-885C	22.5mm	
ER40-905C	23.0mm	
ER40-925C	23.5mm	
ER40-944C	24.0mm	
ER40-964C	24.5mm	
ER40-984C	25.0mm	
ER40-1003C	26.0mm	
ER40-1023C	26.5mm	

REPLACEMENT ER CHUCK NUTS

Cat. No.	Description
ER11-NUT	ER11 Chuck Nut, Complete
ER16-NUT	ER16 Chuck Nut, Complete
ER20-NUT	ER20 Chuck Nut, Complete
ER25-NUT	ER25 Chuck Nut, Complete
ER32-NUT	ER32 Chuck Nut, Complete
ER40-NUT	ER40 Chuck Nut, Complete

ER CHUCK NUT WRENCHES

Cat. No.	Description
ER011-HEX	Fits ER11 Chuck Nut
ER016-SPAN	Fits ER16 Chuck Nut
ER020-SPAN	Fits ER20 Chuck Nut
ER025-SPAN	Fits ER25 Chuck Nut
ER032-SPAN	Fits ER32 Chuck Nut
ER040-SPAN	Fits ER40 Chuck Nut

ER COLLET RACKS

Cat. No.	Description
ER11-RACK	ER11 Collet Rack
ER16-RACK	ER16 Collet Rack
ER20-RACK	ER20 Collet Rack
ER25-RACK	ER25 Collet Rack
ER32-RACK	ER32 Collet Rack
ER40-RACK	ER40 Collet Rack

REPLACEMENT ER BACKUP SCREWS

Cat. No.	Collet Type
ER11-3-Screw	ER11
ER16-3-Screw	ER16
ER20-3-Screw	ER20
ER25-3-Screw	ER25
ER32-3-Screw	ER32
ER40-3-Screw	ER40

ER NUT BEARINGS

Cat. No.	Description
ER16-1	ER16 Bearing/Spacer Set
ER20-1	ER20 Bearing/Spacer Set
ER25-1	ER25 Bearing/Spacer Set
ER32-1	ER32 Bearing/Spacer Set
ER40-1	ER40 Bearing/Spacer Set



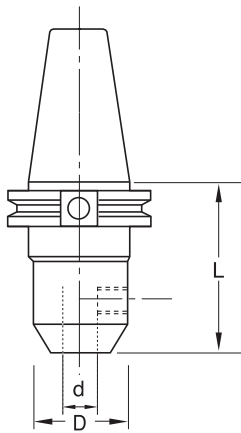
CT40 DRILL HOLDERS

Inch

Cat. No.	Taper	d	L	D	Set Screw Size	Retention Stud Thread
CT4006-0375	40	3/8"	2-1/2"	1"	3/8-24x5/16	5/8"-11
CT4006-0750	40	3/4"	3"	1-3/4"	5/8-18x1/2	5/8"-11
CT4006-1000	40	1"	4"	2-3/8"	3/4-16x11/16(2)	5/8"-11
CT4006-1250	40	1-1/4"	4"	2-1/2"	3/4-16x11/16(2)	5/8"-11
CT4006-1500	40	1-1/2"	4-1/2"	3"	3/4-16x11/16(2)	5/8"-11

Metric

Cat. No.	Taper	d	L	D	Set Screw Size	Retention Stud Thread
CT4006-18	40	18mm	3"	1-3/4"	5/8-18x1/2	5/8"-11
CT4006-20	40	20mm	3"	1-3/4"	5/8-18x1/2	5/8"-11
CT4006-25	40	25mm	4"	2-3/8"	3/4-16x11/16(2)	5/8"-11
CT4006-32	40	32mm	4"	2-1/2"	3/4-16x11/16(2)	5/8"-11



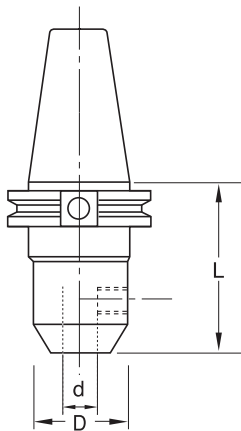
CT50 DRILL HOLDERS

Inch

Cat. No.	Taper	d	L	D	Set Screw Size	Retention Stud Thread
CT5006-0750	50	3/4"	3"	1-7/8"	5/8-18x1/2	1"-8
CT5006-1000	50	1"	4"	2-3/8"	3/4-16x11/16(2)	1"-8
CT5006-1250	50	1-1/4"	4"	2-1/2"	3/4-16x11/16(2)	1"-8
CT5006-1500	50	1-1/2"	4-1/2"	3"	3/4-16x11/16(2)	1"-8

Metric

Cat. No.	Taper	d	L	D	Set Screw Size	Retention Stud Thread
CT5006-20	50	20mm	3"	1-7/8"	5/8-18x1/2	1"-8
CT5006-25	50	25mm	4"	2-3/8"	3/4-16x11/16(2)	1"-8
CT5006-32	50	32mm	4"	2-1/2"	3/4-16x11/16(2)	1"-8

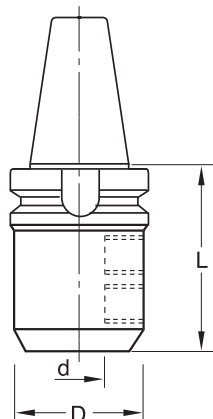


BT40 DRILL HOLDERS

Inch

Cat. No.	Taper	d	L	D	Set Screw Size	Retention Stud Thread
BT4006-0750	40	3/4"	2-1/2"	1-7/8"	5/8-18x1/2	M16 P2
BT4006-1000	40	1"	3-9/16"	2-3/8"	3/4-16x11/16(2)	M16 P2
BT4006-1250	40	1-1/4"	3-9/16"	2-1/2"	3/4-16x11/16(2)	M16 P2
BT4006-1500	40	1-1/2"	4-1/2"	3"	3/4-16x11/16(2)	M16 P2

All holders are available with flange coolant DIN specification 69871 Form (B).



* Additional styles and sizes available on request.

TIGHTENING FIXTURES & RETENTION KNOBS

Pages 526-528



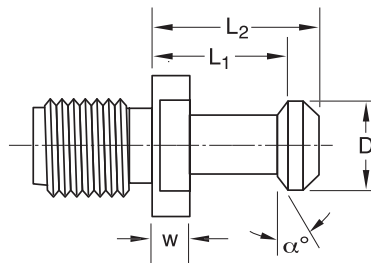
Drill
Adapters &
Holders

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TIGHTENING FIXTURES & RETENTION KNOBS

Tightening Fixtures & Retention Knobs



CT TOOLING RETENTION KNOBS

Cat. No.	D (In.)	L1 (In.)	L2 (In.)	α°	W (In.)	Thread (In.)
CT40-1500C*	.75	.79	1.03	15	.28	5/8-11
CT40-1500ISOC*	.75	.79	1.02	15	.16	5/8-11
CT40-4500	.59	.99	1.26	45	.12	5/8-11
CT40-4500B	.59	.99	1.26	45	.12	5/8-11
CT40-4500C*	.59	.99	1.26	45	.12	5/8-11
CT40S-4500	.59	.99	1.26	45	.12	5/8-11
CT40-6000	.59	.99	1.26	60	.12	5/8-11
CT40-6000B	.59	.99	1.26	60	.12	5/8-11
CT40-6000C*	.59	.99	1.26	60	.12	5/8-11
CT40S-6000	.59	.99	1.26	60	.12	5/8-11
CT40-9000	.59	.99	1.26	90	.12	5/8-11
CT40-9000B	.59	.99	1.26	90	.12	5/8-11
CT40-9000C*	.59	.99	1.26	90	.12	5/8-11
CT40S-9000	.59	.99	1.26	90	.12	5/8-11
CT40-C*	.74	.44	.64	45	.12	5/8-11
CT40-BC*	.74	.44	.64	45	.12	5/8-11
CT40-MAZAK	.59	.777	1.05	90	.19	5/8-11
CT40-MITSUI	.94	.708	.98	90	.19	5/8-11
CT45-4500	.74	1.23	1.58	45	.31	3/4-10
CT45-6000	.74	1.23	1.58	60	.31	3/4-10
CT45-9000	.74	1.23	1.58	90	.31	3/4-10
CT45-C*	.94	.58	.82	45	.16	3/4-10
CT50-1500C*	1.1	.992	1.35	15	.28	1-8
CT50-1500ISOC*	1.1	.992	1.35	15	.2	1-8
CT50-4500	.9	1.377	1.77	45	.39	1-8
CT50-4500B	.9	1.377	1.77	45	.39	1-8
CT50-4500C*	.9	1.377	1.77	45	.39	1-8
CT50-6000	.9	1.377	1.77	60	.39	1-8
CT50-6000B	.9	1.377	1.77	60	.39	1-8
CT50-6000C*	.9	1.377	1.77	60	.39	1-8
CT50-9000	.9	1.377	1.77	90	.39	1-8
CT50-9000B	.9	1.377	1.77	90	.39	1-8
CT50-9000C*	.9	1.377	1.77	90	.39	1-8
CT50-C*	1.14	.7	1	45	.2	1-8
CT50-BC*	1.14	.7	1	45	.2	1-8
CT50-MAZAK	.9	1.385	1.78	90	.69	1-8
CT50-MITSUI	.94	.905	1.22	90	.21	1-8

* Supplied with coolant hole.

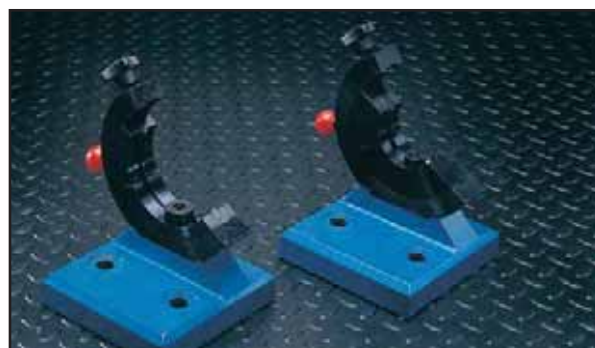


BT TOOLING RETENTION KNOBS

Cat. No.	D (In.)	L1 (In.)	L2 (In.)	α°	W (In.)	Thread (In.)
BT30-4500	.44	.709	.9	45	.19	M12P1.75
BT30-6000	.44	.709	.9	60	.19	M12P1.75
BT35-4500	.54	.885	1.1	45	.19	M12P1.75
BT35-6000	.54	.885	1.1	60	.19	M12P1.75
BT35-9000	.55	.788	.9	90	.19	M12P1.75
BT40-1500C*	.75	.91	1.14	15	.27	M16P2
BT40-1500ISOC*	.75	.788	1.02	15	.16	M16P2
BT40-4500	.59	1.102	1.37	45	.23	M16P2
BT40-4500C*	.59	1.102	1.37	45	.23	M16P2
BT40-6000	.59	1.102	1.37	60	.23	M16P2
BT40-6000C*	.59	1.102	1.37	60	.23	M16P2
BT40-9000	.59	1.102	1.37	90	.23	M16P2
BT40-9000C*	.59	1.102	1.37	90	.23	M16P2
BT40-C*	.74	.43	.64	45	.12	M16P2
BT40-FADAL	.74	.542	.752	45	.12	M16P2
BT45-4500	.75	1.22	1.57	45	.31	M20P2.5
BT45-6000	.75	1.22	1.57	60	.31	M20P2.5
BT50-4500	.9	1.377	1.77	45	.39	M24P3
BT50-4500C*	.9	1.377	1.77	45	.39	M24P3
BT50-6000	.9	1.377	1.77	60	.39	M24P3
BT50-6000C*	.9	1.377	1.77	60	.39	M24P3
BT50-9000	.9	1.377	1.77	90	.39	M24P3
BT50-9000C*	.9	1.377	1.77	90	.39	M24P3

* Supplied with coolant hole

TOOL TIGHTENING FIXTURES



Cat. No.	Description
C30-TOOLSET	CT30-Taper TOOL SET
C40-TOOLSET	CT40-Taper TOOL SET
C50-TOOLSET	CT50-Taper TOOL SET
B30-TOOLSET	BT30-Taper TOOL SET
B40-TOOLSET	BT40-Taper TOOL SET
B50-TOOLSET	BT50-Taper TOOL SET

STANDARD TIGHTENING FIXTURES



Cat. No.	Taper (Degrees)
30-SCFX	30°
40-SCFX	40°
50-SCFX	50°



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TECHNICAL INFORMATION & HARDWARE

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Technical
Information

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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)					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)				
	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)					
	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)					
	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	.047

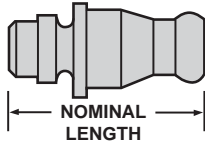
Trigon Shim	Sumitomo Cat. No.	Size (mm)				
	SWW433	12.65	4.76	6.2	8	-
	SWW544	15.85	5.15	7.8	9.7	-

Threading Shim	Sumitomo Cat. No.	Size (mm)				
	LSTE31-0	9.5	2.7	5.2	-	-

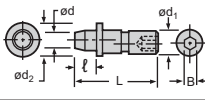


**Lock Pins
Negative Rake**

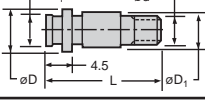
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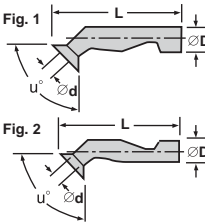
Sumitomo Cat. No.	Insert I.C.	Nominal Length	Hex Wrench	Use With Seat
BWP-46	.500	.578	.094	Yes
NL-23	.250	.328	.0625	No
NL-33	.375	.344	.078	No
NL-33L	.375	.406	.078	No
NL-34	.375	.453	.078	Yes
NL-34L	.375	.516	.078	Yes
NL-44	.500	.516	.094	No
NL-46	.500	.672	.094	Yes
NL-46L	.500	.734	.094	Yes
NL-58	.625	.859	.125	Yes
NL-68	.750	.859	.141	Yes

Cam Pin

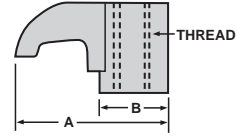
Sumitomo Cat. No.	Size (mm)					
	d	d ₁	d ₂	L	ℓ	B
CPB33	3.4	4.1	5.5	17	3.4	2.5
CPB43	4.5	5.5	7	19	5	3
CPB43S	4.5	5.5	7	16	5	3
CPB44T	4.5	5.5	7	22	5	3

Cam Pin

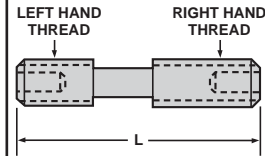
Sumitomo Cat. No.	Size (mm)					
	d	Pitch	L	D	D ₁	d ₁
MP416	M5	0.8	14	7.5	6	5
MP420	M5	0.8	20	7.5	6	5
MP531	M6	1.0	19.7	9.5	7	6.26
MP534	M6	1.0	26.1	9.5	7	6.76

Clamp Stud

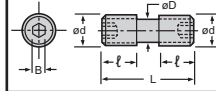
Sumitomo Cat. No.	Size (mm)				
	d	D	L	u°	Shape
SR104B	3	3.4	21	60	Fig. 1
SW43B	4	4.9	27.5	90	Fig. 2
SW42L	4	4.9	22	90	Fig. 2
SW43	4	4.9	27.5	90	Fig. 2
SW53L	4.8	5.9	28.3	90	Fig. 2
SW53R	4.8	5.9	28.3	90	Fig. 2
SW54	4.8	5.9	35.5	90	Fig. 2
SW54B	4.8	5.9	35.5	90	Fig. 2
SW64L	5.5	6.9	33.8	90	Fig. 2
SW64R	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

Calculating Power Requirement

$$P_c = \frac{v_c \times f \times a_p \times k_c}{60 \times 10^3 \times \eta}$$

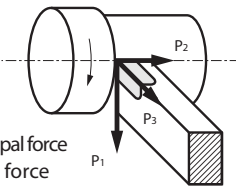
$$H = \frac{P_c}{0.75}$$

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 Rough Value of K_c

Aluminium: 800MPa
 General Steel: 2,500 to 3,000MPa
 Cast Iron: 1,500MPa

Cutting Force



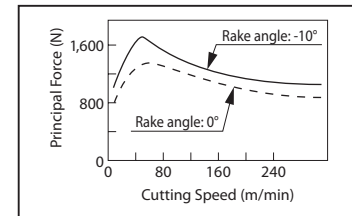
P_1 : Principal force
 P_2 : Feed force
 P_3 : Back force

D Calculating Cutting Force

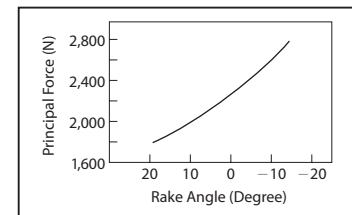
$$P = \frac{K_c \times q}{1,000}$$

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

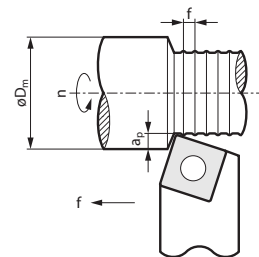
(Ex.) $v_c = 150$ m/min, $D_m = 100$ mm

$$n = \frac{1,000 \times 150}{3.14 \times 100} = 478 \text{ (min}^{-1}\text{)}$$

(2) Calculating cutting speed from rotational speed

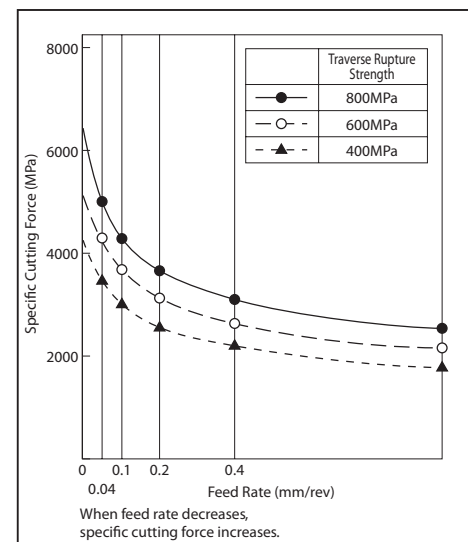
$$v_c = \frac{\pi \times D_m \times n}{1,000}$$

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)

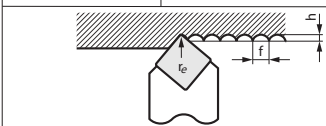
Relation Between Feed Rate and Specific Cutting Force (For Carbon Steel)



Theoretical Surface Finish

$$h = \frac{f^2}{8 \times r_e} \times 10^3$$

h : Theoretical surface roughness (μm)
 f : Feed rate (mm/rev)
 r_e : Nose radius (mm)



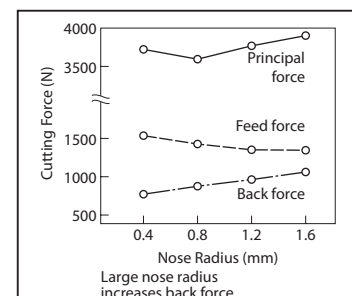
Actual Surface Roughness

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

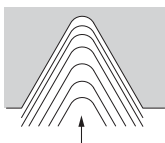
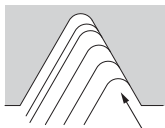
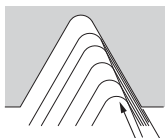
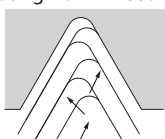
Relation Between Nose Radius and Cutting Force



Work : SCM440(38HS)
 Inserts : TNGA2204 SS
 Holder : PTG NR2525-43
 Cutting Conditions : $v_c = 100$ m/min
 $a_p = 4$ mm
 $f = 0.45$ mm/rev



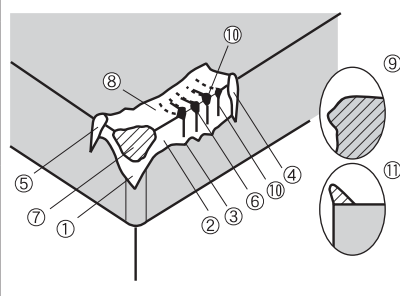
Threading

Machining Method	Characteristics
Radian Infeed 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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.

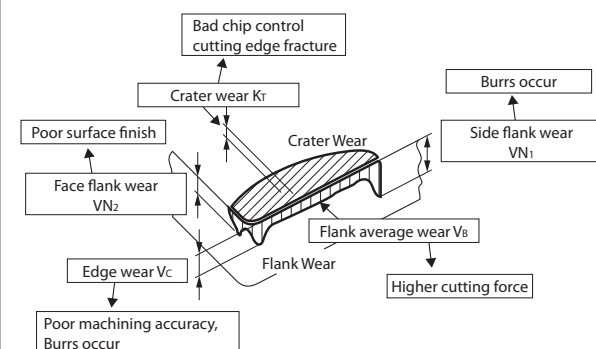
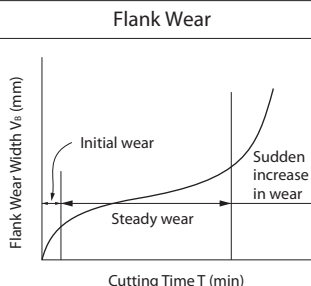
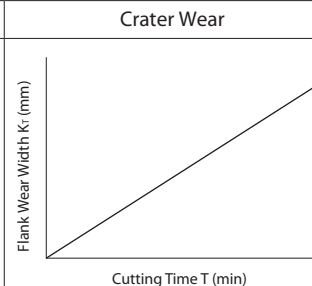
Troubleshooting for Threading

	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

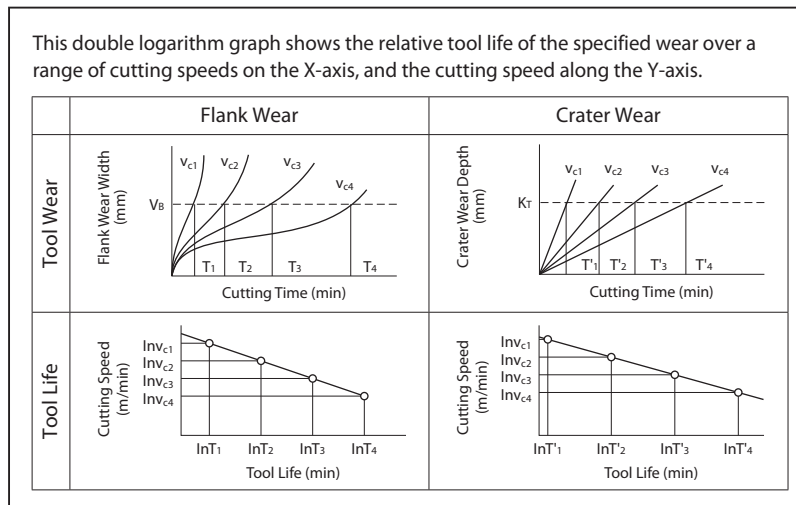
Forms of Tool Failures

	Cat.	No.	Name of Failure	Cause of Failure
		(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	Swift 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.






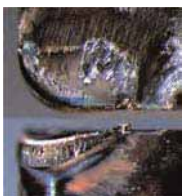

Tool Wear

Forms of Tool Wear		Flank Wear	Crater Wear
			
		<ul style="list-style-type: none"> Wear is rapid initially, then it proceeds more gradually in proportion with cutting time until a certain limit, beyond which it increases rapidly again. 	<ul style="list-style-type: none"> Crater wear is more progressive with no sudden breakdown pattern.





Tool Life (V-T)













Troubleshooting for Turning

Failure		Cause	Countermeasures
Tool Edge Failure	Flank Wear 	<ul style="list-style-type: none"> Grade lacks wear resistance. Rake angle is too small. Cutting speed is too fast. Feed rate is far too slow. 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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. Grade lacks toughness. 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Cutting edge lacks toughness. Holder lacks toughness. Feed rate is too fast. Depth of cut is too large. 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Inappropriate grade selection. Dull cutting edge. Cutting speed is too slow. Feed rate is too slow. 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Grade lacks wear resistance. Rake angle is too small. Cutting speed is too fast. Feed rate is too fast. Depth of cut is fixed. 	<ul style="list-style-type: none"> 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.

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

Chip Types	Depth	A	B	C	D	E
	Large					
Evaluation	Small					
	NC Lathe (For Automation)	H	H	S	S	J
Evaluation	General Lathe (For Safety)	H	S	S	S-J	H

Good: C type, D type

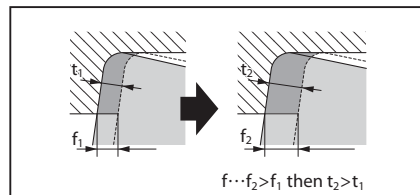
A type: Twines around the tool or workpiece, damages the machined surface and affects safety.

Poor 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.

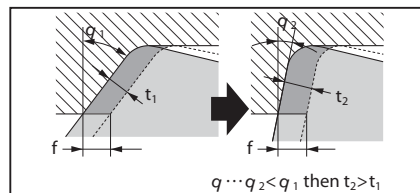
Factor of Improvement Chip Control

(1) Increase Feed Rate (f mm/rev)



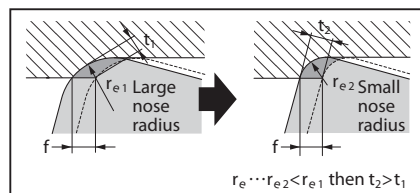
When feed rate increases, chips become thick and chip control improves.

(2) Decrease Side Cutting Edge (θ)



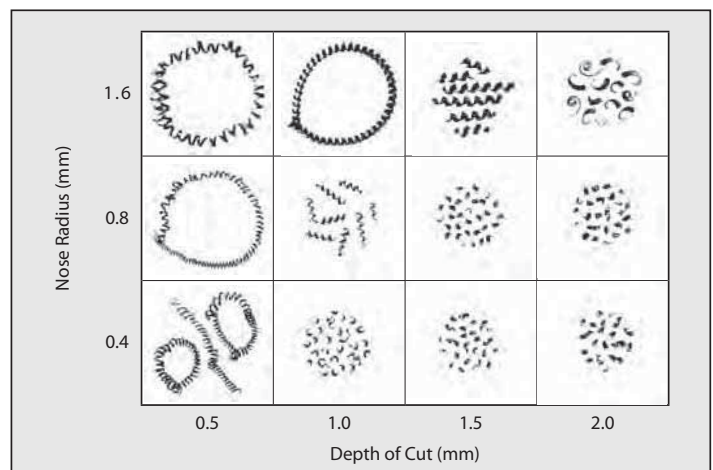
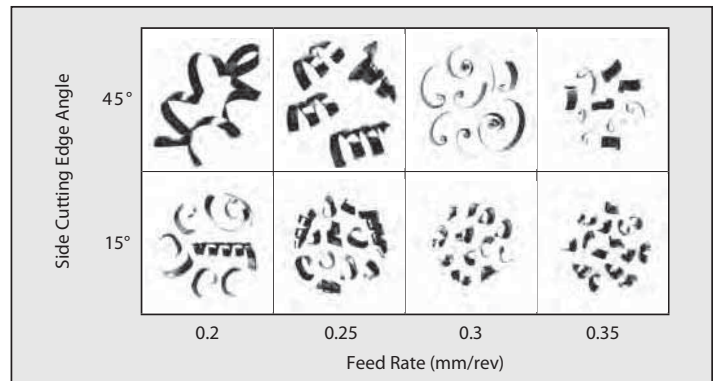
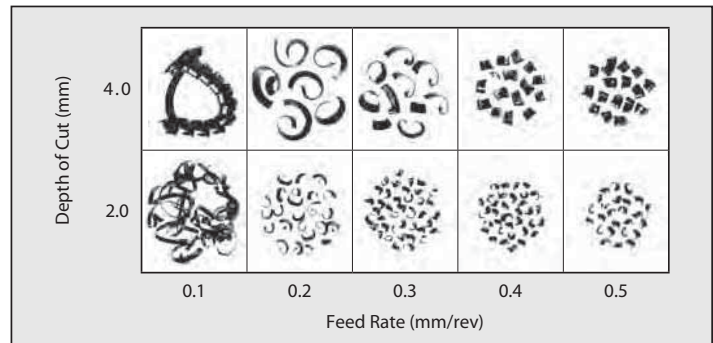
Even if feed rate is the same, smaller side cutting edge angle makes chips thick and chip control improves.

(3) Decrease Nose Radius (r_e)

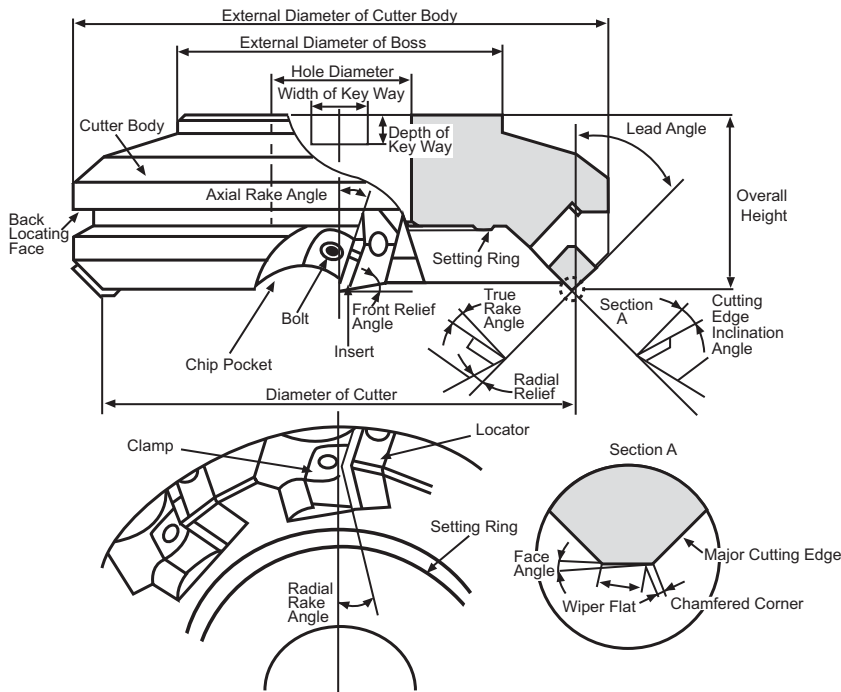


Even if feed rate is the same, a smaller nose radius makes chip thick and chip control improves.

*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.



■ Illustration of Technical Terms



Calculating Power Requirement

• Power Requirement

$$P_c = \frac{a_e \times a_p \times v_f \times k_c}{60 \times 10^6 \times \eta} = \frac{Q \times k_c}{60 \times 10^6 \times \eta}$$

• Horsepower Requirement

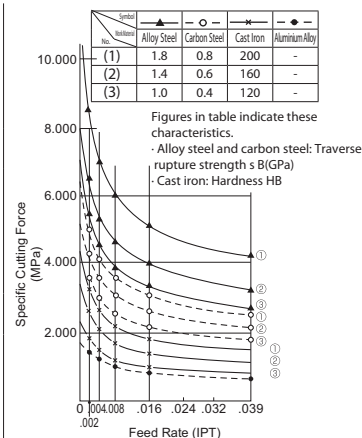
$$H = \frac{P_c}{0.75}$$

• 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 (cm³/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



Cutting Force Comparison of Typical Sumitomo Mills

Cutter Series	Cutting Edge Angle (deg)			Cutting Force (MPa)				
	A.R	R.R	A.A	0	0.5	1.0	1.5	
UFO	+27°	-7°	45°	Back force	Feed force	Principal force	Total force	• Work: 4137 (250HB) • Machine: M/C (15HP) • Cutting Conditions: $vc=394$ SFM $fz=0.012$ IPT $ap=0.118$ "
FPG	+15°	-4°	45°					
DPG	+8°	-0°	15°					

• Calculating Cutting Speed

$$v_c = \frac{\pi \times D_c \times n}{1,000}$$

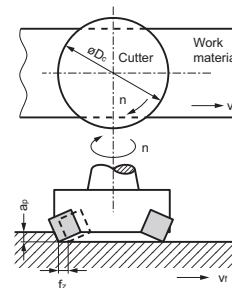
$$n = \frac{1,000 \times v_c}{\pi \times D_c}$$

• 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)



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
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
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
ACK300	PVD "Super ZX" Coating	General to heavy cutting of gray and ductile cast irons	Bronze
AC325	Double Phase PVD	General purpose milling of steels and stainless steels	Gold
AC230	Multi-Phase Al ₂ O ₃	High speed milling of steels and stainless steels	Gold
AC211	Multi-Phase Al ₂ O ₃	General purpose milling of cast iron	Gold
ACZ120	ZX Coating (TiN/AlN)	Finish milling of heat treated tool steels and alloys	Pink
ACZ310	ZX Coating (TiN/AlN)	General purpose milling of cast iron	Pink
ACZ330	ZX Coating (TiN/AlN)	General purpose milling of steels and stainless steels	Pink
ACZ350	ZX Coating (TiN/AlN)	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/mm ²)	Applications
T250A	1430	220	Finish milling of steels and stainless steels

3. Ceramic Grades

Grade	Composition	Hardness (Hv)	Applications
SN2100K	Si ₃ N 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	8,000-10,000	Milling of non-ferrous alloys and plastics
DA150	10,000-12,000	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
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AC211	Multi-Phase Al ₂ O ₃	General purpose milling of cast iron	Gold
ACZ120	ZX Coating (TiN/AlN)	Finish milling of heat treated tool steels and alloys	Pink
ACZ310	ZX Coating (TiN/AlN)	General purpose milling of cast iron	Pink
ACZ330	ZX Coating (TiN/AlN)	General purpose milling of steels and stainless steels	Pink
ACZ350	ZX Coating (TiN/AlN)	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/mm ²)	Applications
T250A	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.

Sumitomo 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 ₃ N 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

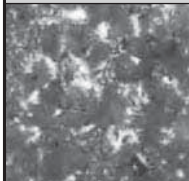
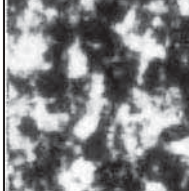
Grade	Hardness (Hv)	Applications
BN500	3,300-3,500	High speed milling of gray and nodular cast irons
BN700	4,100-4,400	High speed milling of cast iron and powdered metals
BNS800	4,000-4,300	High speed milling of gray cast iron

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

Polycrystalline 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 Description	<ul style="list-style-type: none"> • Ultra-fine grain structure • Superior hardness and wear resistance with sharp edge 	<ul style="list-style-type: none"> • High density sintered material made of ultra-micro diamond particles • Superior hardness and wear resistance with sharp edge 	<ul style="list-style-type: none"> • Fine grain diamond • High abrasion resistance 	<ul style="list-style-type: none"> • Ultra-fine grain structure • Superior tool edge sharpness and toughness
Applications	<ul style="list-style-type: none"> • High Silicon Aluminum • Copper • Fiberglass • Hard Rubber • Graphite Epoxy • Wood • Aluminum Alloys • Plastics • Carbon (finishing, roughing, interrupted) 	<ul style="list-style-type: none"> • High Silicon Aluminum • Copper • Fiberglass • Hard Rubber • Graphite Epoxy • Wood • Aluminum Alloys (finishing, roughing, interrupted) 	<ul style="list-style-type: none"> • High Silicon Aluminum • Copper • Fiberglass • Hard Rubber • Graphite Epoxy • Wood • Carbon 	<ul style="list-style-type: none"> • 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.

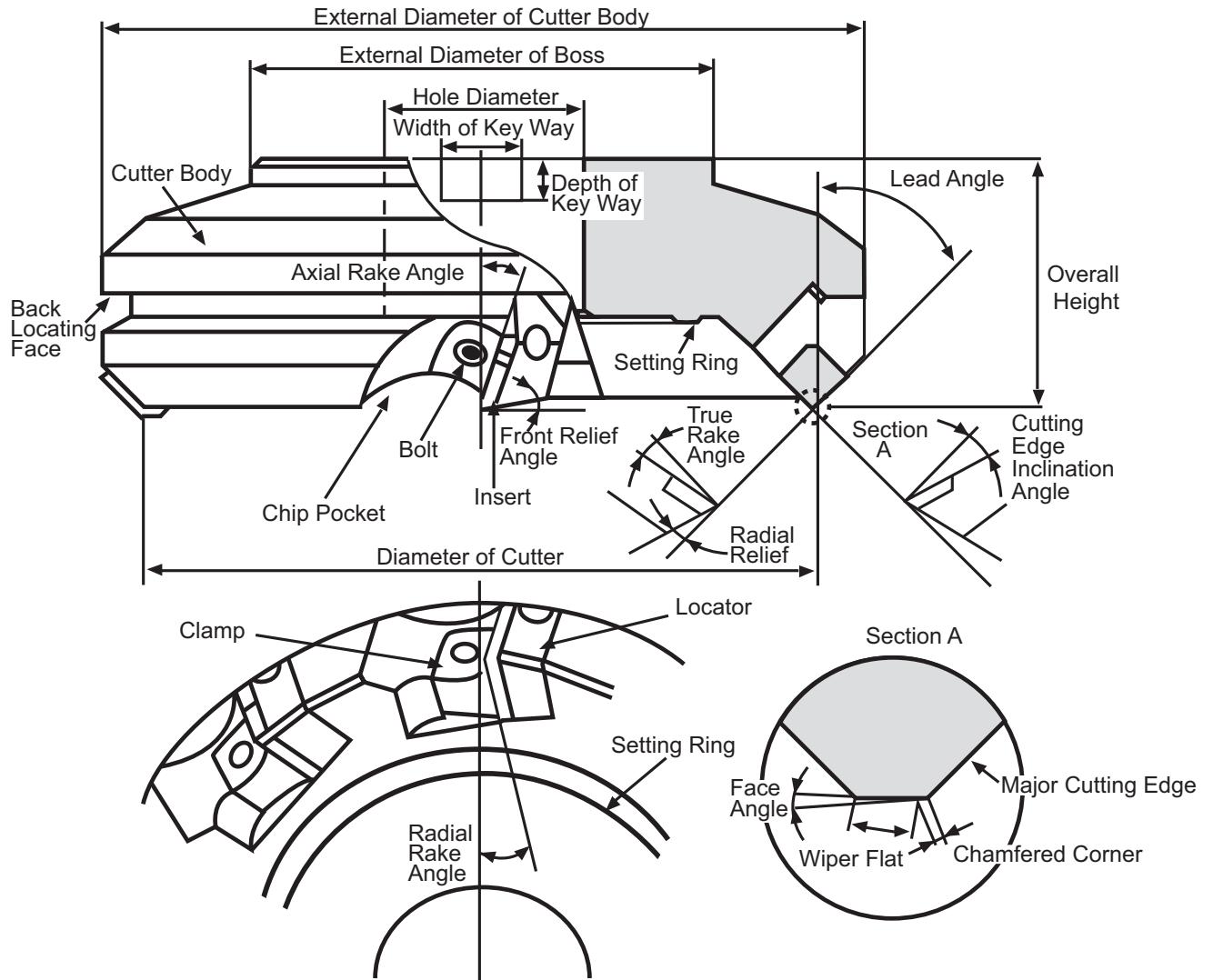
Our closely controlled manufacturing process produces unequaled consistency resulting in superior tool edge quality. SUMIDIA DA inserts and wipers are replacing

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
<u>Cast iron</u>	
Ferrite	1.5
Pearlitic	1.0
Chilled	.6
<u>Steel</u>	
up to 150 BHN	1.0
up to 300 BHN	.8
up to 400 BHN	.5
up to 500 BHN	.4

Material	'K'
<u>Stainless steel</u>	
Free machining	1.0
Others	.6
<u>Titanium</u>	
under 100,000 psi	.8
100,000-135,000 psi	.6
135,000 psi and over	.4
<u>High-tensile alloys</u>	
180,000-220,000 psi	.5
220,000-260,000 psi	.4
260,000-300,000 psi	.3
<u>High-temperature alloys</u>	
Nickel base alloys	.4
Cobalt base alloys	.4
Austenitic alloys	.4

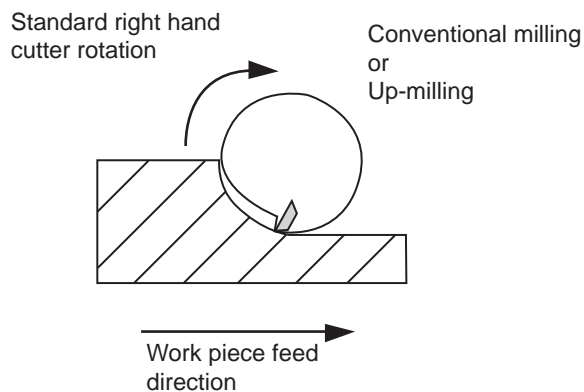
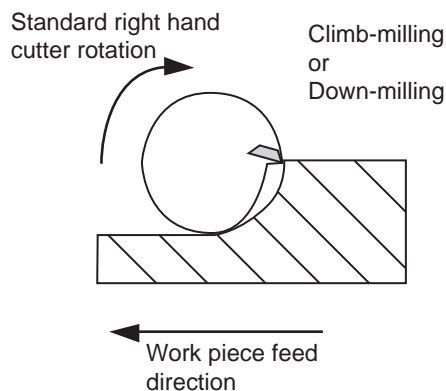


■ COMMENTARY ON GENERAL MACHINING PRACTICES

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*.

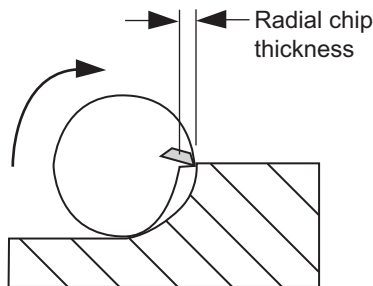
Example: 1.00" diameter end mill
0.020" radial width of cut
0.004" *desired feed per tooth*

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

SPEEDS & FEEDS

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) based upon Depth of Cut Inch			Feed (IPT)
		Carbide	Cermet	Diamond	Ceramic	.002-.050	.050-.125	.125 and over	
Low and medium carbon steels 1008,1010,1018 1020,1025 etc.	~.250 Bhn	ACP200				721-1213	675-1180	600-1125	.006-.0135
		ACP100				775-1310	725-1275	675-1225	.006-.0125
		ACZ330				650-1050	620-1020	575-900	.005-.0125
		ACZ310				675-1075	650-1025	550-950	.004-.0085
		AC230				685-1125	650-1050	525-950	.004-.008
			T250A			700-1310	675-1200	575-1000	.0035-.0075
		ACP300				675-1075	650-1025	525-925	.006-.014
		ACZ350				650-1050	600-1000	500-925	.005-.0125
		AC325				625-900	585-850	500-800	.004-.011
		A30N				600-850	575-825	475-750	.005-.011
Free machining steels and alloys Freemax 15 Freemax 45 12L14, etc.	~.250 Bhn	ACP200				725-1300	700-1250	675-1200	.006-.0135
		ACP100				750-1325	725-1275	675-1225	.006-.0135
		AC230				725-1200	700-1150	675-1100	.004-.008
		ACZ330				675-1125	650-1050	650-1000	.005-.0125
			T250A			825-1450	825-1375	775-1300	.0035-.0085
		ACZ310				675-1125	650-1100	650-1075	.004-.0085
		AC325				650-950	625-925	625-900	.004-.011
		ACP300				675-1075	650-1050	650-1025	.006-.014
		ACZ350				675-1075	650-1050	650-1025	.005-.0125
		A30N				650-950	625-900	600-875	.005-.011
Medium-high carbon steels 1040,1045 1055,1080 50100,51100 52100,M-50	<.250 Bhn	ACP200				575-950	550-925	500-875	.006-.012
		ACZ330				525-900	500-850	475-800	.005-.0105
		ACP100				600-975	575-950	550-900	.006-.011
		ACP300				575-950	550-925	500-875	.006-.012
		ACZ350				450-900	425-850	525-925	.005-.0115
		AC325				475-725	425-750	475-775	.004-.010
			T250A			450-950	425-850	400-825	.0035-.0075
		ACZ310				500-925	475-900	450-875	.004-.0075
		AC230				550-1000	500-900	500-925	.004-.008
		A30N				400-775	375-575	450-925	.005-.011

*NOTE: THESE SPEEDS ARE BASED ON 2/3 THE DIAMETER OF THE CUTTER ENGAGED.



SPEEDS & FEEDS

Material	Hardness	Insert Grade				Speed (SFM) based upon Depth of Cut Inch			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
		ACZ330				550-875	525-850	500-825	.0045-.0105
		ACP100				600-875	575-950	550-900	.006-.0095
		ACP300				525-875	500-825	475-800	.006-.0115
		ACZ350				525-850	500-825	500-800	.0045-.011
		AC325				500-800	500-800	475-775	.0045-.009
			T250A			450-950	425-850	400-825	.0035-.0075
		ACZ310				550-875	525-850	500-800	.004-.008
		AC230				575-900	550-875	525-850	.004-.008
Tool steels D2, H13, S7, etc.	<.250 Bhn	ACP200				450-820	435-790	425-750	.0047-.011
		ACZ330				450-790	425-750	400-725	.0045-.0095
		ACP300				450-820	425-790	400-725	.0047-.012
		ACP100				475-820	450-790	425-750	.0047-.010
		ACZ350				450-725	435-710	425-700	.005-.010
		AC325				375-700	360-685	350-675	.004-.009
		T250A				450-650	425-600	250-550	.0039-.0079
	Bhn 220-350	ACP200				425-750	400-725	375-690	.0045-.010
		ACZ330				400-750	400-725	400-690	.0045-.0095
		ACP300				420-700	420-695	375-685	.0047-.012
		ACP100				400-775	400-735	400-700	.004-.009
		ACZ350				400-700	420-695	410-685	.005-.009
		AC325				350-675	345-670	335-660	.004-.008
		A30N				325-625	320-620	310-610	.005-.0085
	>.33 Hrc	ACP200				325-650	300-625	300-590	.0045-.0095
		ACP100				325-650	300-625	300-590	.003-.007
		ACZ330				400-750	400-725	400-690	.0045-.0095
		ACZ310				325-650	300-625	300-590	.003-.007
Martensitic and Ferritic stainless steels 414, 416, 430, 440		ACP300				525-840	515-820	250-800	.004-.012
		ACP200				535-850	520-830	275-820	.004-.011
		ACZ350				525-840	515-820	250-800	.005-.010
		ACZ330				535-850	520-830	275-820	.0045-.009
		ACZ310				550-875	540-850	275-835	.0035-.0075
		T250A				550-950	500-900		.0035-.0075
		ACP300				425-740	275-825	250-800	.004-.012
		ACP200				325-875	300-850	275-825	.004-.011
		ACZ350				425-740	415-720	175-675	.0035-.009
		ACZ330				435-750	420-720	175-700	.0035-.008
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
		ACZ350				300-850	275-825	250-800	.0035-.009
		ACZ330				325-875	300-850	275-825	.0035-.009
		T250A				650-950	600-900		.0035-.0075
Titanium alloy		EH520				100-300	100-275	100-265	.003-.008
		ACZ310				100-300	100-275	100-265	.003-.007
Exotic alloys Inconel, Hastalloy Waspalloy, etc.		ACK200				100-160	70-150	60-135	.003-.0075
		ACK300				100-160	70-150	60-135	.004-.0075
		ACZ310				80-160	70-150	60-135	.0025-.0065
		G10E				70-125	60-110	50-100	.003-.007

*NOTE: THESE SPEEDS ARE BASED ON 2/3 THE DIAMETER OF THE CUTTER ENGAGED.



SPEEDS & FEEDS

Material	Hardness	Insert Grade				Speed (SFM) based upon Depth of Cut Inch			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
		K245R2				700-1050	625-925	590-900	.004-.014
		ACZ310				650-975	625-925	590-900	.004-.0095
		AC211				600-900	550-875	525-850	.004-.0085
		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
		K245R2				600-950	525-825	490-800	.004-.014
		ACZ310				550-875	525-825	490-800	.004-.0085
		AC211				500-800	450-775	425-750	.0035-.008
		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
		K235R2				650-925	600-875	490-800	.004-.012
		ACZ310				650-925	600-875	490-800	.004-.0085
		AC211				500-800	475-750	450-675	.0035-.0075
Aluminum, Brass, Copper				DA200/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				DA200/DA1000		1800-6500	1700-5500	1600-5000	.0035-.0085
		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						





■ 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-SDUC

GAGE INSERT
DC□□

Sumitomo Cat. No.		Dimensions					Gage Insert	Hardware	
Right Hand	Left Hand	Min. Bore	D	L	S	θ°		Screw	Wrench
D08RSDUCR2	-	0.730"	0.500"	8"	0.360"	-8°	DC-21.5	BFTX02506N	TRX08
D10SSDUCR2	-	0.850"	0.625"	10"	0.430"	-6°	DC-21.5	BFTX02506N	TRX08
D12SSDUCR3	-	0.980"	0.750"	10"	0.510"	-6°	DC-32.5	BFTX0409N	TRX15
D16TSDUCR3	-	1.300"	1.000"	12"	0.670"	-6°	DC-32.5	BFTX0409N	TRX15

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



NUMERICAL

2MD-CNMA	143
2MD-DNMA	145
2MD-SNMA	147
2MD-VNMA	151
2NC-CCGA	153
2NC-CNGA	143
2NC-DCGA	155
2NC-DNGA	145
2NC-SNGA	147
2NC-VBGA	160
2NC-VCGA	161
2NC-VNGA	152
2NU-CCGA	153
2NU-CNGA	143-144
2NU-CPGA	154
2NU-DCGA	155
2NU-DNGA	145
2NU-SNGA	147
2NU-VBGA	160
2NU-VNGA	152
30-SCFX	412
3MD-TNMA	149
3NC-TNGA	150
3NC-TPGA	158
3NU-TCGA	157
3NU-TNGA	150
3NU-TPG	158
3NU-TPGA	159
3NU-WNGA	152
40-SCFX	412
4NC-CNGA	143
4NC-DNGA	145
4NC-VNGA	152
50-SCFX	412
6NC-TNGA	150
6NC-WNGA	152

A

AAD	500
AAH	500
AAT	500
A-DTR	208
AECT	311-312
ALMT PCD Reamer	289-292
A-MCKNR/L	209
A-MCLNR/L	209
A-MDQNR/L	210
A-MDUNR/L	210
A-MTFNR/L	211
A-MVUNR/L	211
A-MWLNR/L	212
APET	345
APG	359
APMT	51
A-SCFPR/L	213
A-SCLCR/L	213
A-SCLPR/L	214
A-SDUCR/L	215
A-SDUPR/L	214
A-SDXPR/L	215
A-SER/L	250
ASM	376
A-STFCR/L	216
A-STFPR/L	216
A-SVQBR/L	217
A-SVUBR/L	217
A-SWVLR/L	218
AXMT	301-304, 307-308

B

B30	412
BCTJPR/L	229
BH10	499
BMCLNR/L	226
BMDLNR-L	226
BMSKNR/L	226
BMTFNR/L	227
BMWLNR/L	227
BNBB-R	234
BNBP	385
BNB-R	234
BNC-R	234
BNGGR/L	257
BNGNT-R/L	134, 162, 257
BNGSR/L	257
BNITT-R	257
BRC	384
BSCLOR/L	227

BSDJOR/L	228
BSSKOR/L	228
BSTJOR/L	228
BSWJOR	229
BT (Chucks)	391, 395, 398, 401, 406, 512, 516, 519, 523
BT (Retention Knob)	412, 526
B-TOOL SET	412
BTR	128

C

C30	412
CCGT	82-84
CCMA	82
CCMT	79-81
CF	255
CFB	255
CGA	134, 162
CHE	357-358
CHG	361
CKBR	201
CKBSR	201
CNG	136
CNGA	137, 143, 144
CNGG	144
CNGX	144
CNMA	137, 143, 163
CNMA-H	163
CNMG	17-26
CNMM	27
CNMN	137
CNMX	137
CPG	166
CPG	362
CPGT	87
CPMA	86
CPMT	85-86
CPMX	166
CRD	184
CRG	184
CSCLOL/L	234
CSNH	360
CSTJOR/L	234
C-STUBR/L	237
C-STUPR/L	237
CSWJOR/L	230
CT (Chucks)	391, 395, 400, 401, 405, 512, 516, 519, 523
CT (Retention Knob)	411, 525
C-TOOL SET	412
CTR/L	128

D

DCGT	91-94
DCL	180
DCMA	90
DCMT	88-90
DCMX	167
DDJ	180
DGC	317-320
D-DCLN	224
D-DDQN	224
D-DDUN	224
D-DVUN	225
D-DWLN	226
DNF	360
DNG	138, 146
DNGA	137, 145
DNGG	146
DNJG	36
DNMA	37, 145, 164
DNMA-H	164
DNMG	29-36
DNMM	37
DNMX	138, 164
DNX	327-328
DPG	363-364
DPGT	95
DPMT	95
DPW	363
D-SCLC	559
D-SCLP	559
D-SDUC	559
D-STUC	559
D-STUP	221
D-SVUB	221
D-SVZB	221
DTF	180
DTG	181
DTR-C	179

DTR-Q	179
DWL	181

E

EHG	365
ER	399, 520-522
E-SCLCR/L	218
E-STFCR/L	219
E-STFPR/L	219

F

FM	383
FMU	382
FPG	366

G

GCM	245
GFV	326
GND	237-244
GWB	256
GWC	247

H

HHM	375
HSK	402, 407, 512

J

J-SCLCR/L	220
J-STFCR/L	220

K

KDS-LAV	480-481
KDS-MAV	477-479
KMBX-L/R	129
KT	402

L

LNGX	140, 326
LNMX	330
LTER	250

M

MCKNR/L	183
MCLNR/L	183
MCRNR/L	183
MDE	173
MDJNR/L	184
MDPNN	186
MDQNR/L	184
MDS-DMHV	459-460
MDS-LHV	456-458
MDS-MHV	453-455
MDS-MV	451-452
MDSS	464-465
MDS-SV	447-450
MDUS	463
MDW-GS2	425-429
MDW-GS4	430-433
MDW-HGS3	434-437
MDW-HGS5	438-441
MDW-HGS8	442-445
MDW-XHV	470-471
MRGNR/L	184
MS	334
MSDNN	185
MSRNR/L	185
MSX	333
MTANR/L	186
MTENNS	186
MTGNNR/L	186
MTJNR/L	187
MVJNR/L	187
MVVNN	188
MWLNR/L	188
MZBI	377
MZBI-C	377
MZI	373-374
MZI-C	373-374
MZM	373-374
MZM-C	373-374